Habitual Constipation

from

Weakened Peristaltic Action

Of what are called "trifling ailments" there are few so frequent as Constipation, and, unfortunately from its very frequency, it comes to be little thought of. The practitioner is seldom consulted till some of the consequences of the habitual disorder make their appearance, and these are literally few or devoid of danger. But though from being so common it is slighted by the subject of it, for this very reason ought it to be the study of the Physician to ascertain its causes, consequences and treatment, prophylactic and curative. It is only by obtaining a just conception of the causes or nature of any disease that we can hope successfully to apply our
remedies for its cure or amelioration; and when we know that certain consequences or secondary affections are liable to be produced by the primary one, we are often enabled to partially check or altogether prevent their developments. Constipation, however, can scarcely be called a disease. It is merely a symptom of some derangement in the system, generally existing in the alimentary canal itself, or in its immediate neighbourhood. Our object must therefore be to ascertain what are the principal disorders which may give rise to this symptom and what are the existing causes of these disorders.

In some individuals, even in a state of health, the bowels are unloaded every second or third day only, and these persons complain of being "out of sorts" when this their natural condition is changed for one which would appear to us to be more consistent with health. Others again have naturally more than one motion daily, and among children we find this to be usually the case. But although we meet with various anomalous conditions, it may be set down as a general
rule,- that one stool daily is most consistent with health. Constipation may therefore be defined to be: a retention of the stools beyond twenty-four hours, from whatever cause this may arise; or it may imply a dry and hardened condition of the excrement with some difficulty in discharging it.

When the Chyme passes from the Stomach into the duodenum, it there meets with the biliary and pancreatic secretions, and with the secretion from the glads of Brunner, and by the time it leaves this part of the intestine, from being acid, it has become alkaline and is now called Chyle. Other secretions are added to it as it passes through the jejunum and ileum, and in its transit it is taken up by the bloodvessels and absorbents. At the same time the excreting vessels throw into the canal their contents, the product of the waste which is constantly going on in every part of the system. This excreted matter is mingled with the indigestible and undissolved constituents of the food, and the whole is destined to be discharged from the system.
as excretaitious matter. As it passes downwards through the gut it gradually becomes freer in character, but this change is believed to take place principally in the Cecum, where it also again becomes acid from the addition of new secretions. Although absorption is much less active in the large intestines than in the small, still it does go on to a certain extent, so that by the time its contents reach the Rectum they have acquired a considerable degree of consistency.

Through the whole of this long, winding tube the alimentary matters are carried onward by the alternate contractions and relaxations of the minute muscular fibres of its walls; and these contractions are excited by direct stimulation, by the contact of the products of digestion chiefly, but also perhaps in some measure by the stimulus afforded by the various secretions poured into the canal. But, although capable of being accelerated by the action of certain stimulants, this peristaltic or vermicular motion, as it is called, would seem to be quite independent of any connection with the Cerebrospinal Centres, as is shown by its continuance.
after the destruction of these, and even for some time after death. Having killed a rabbit and destroyed the whole of the spinal marrow with a red hot wire, Dr. Philip found, on opening the abdomen, the peristaltic motion as vigorous as when the nervous system was left untouched. Removal of both the brain and the spinal cord at once was attended with the same result. The motions continued till the intestines become cold, for it is found that when those exposed to the air have lost their contractile power, those beneath still retain it. Yet though these muscular fibres be independent of the nervous system, they may to a certain extent be influenced through it. It was found by Valentini that "contractions of the intestinal tube, varying in place according to the part of the Spinal Cord experimented on, may be excited by irritation of the roots of the dorsal, lumbar and sacral nerves and of the trigeminius; and similar effects are produced by irritation of the lower part of the thoracic portion of the lumbar, and of the sacral portion of the sympathetic, also of the splanchnia, and of the gastric plexus." The effects of the passion
on the Alimentary Canal also show that it may be
influenced through the nervous system. But
though the movements of the greater part of the
intestinal Canal are independent of any connec-
tion with the Cerebro-spinal centres, and are
entirely involuntary, yet we find that the outlet
by which the faces are voided, is under the Con-
trol of the Spinal Cord. We are unconscious
of the presence or passage of matter along the
small intestines, the Colon and the Sigmoid
flexure, but when it reaches the rectum we
are made aware of its presence, owing to
this part of the gut being supplied with nerves
from the Cerebro-spinal system. The same
stimulus which produces the contractions, here
also excites sensation, in order that by aroun-
ing the will, the otherwise involuntary motions
may be restrained. Were this not the case
great inconvenience would ensue.

Since as we have seen then, it is by
the peristaltic motion of the bowels that the
intestinal Contents are propelled along the gut,
and since this action is involuntary and not
controlled by the will, it is evident that when
the muscular fibres, which give rise to the motion, are weakened in any way Constipation will be the result. And although there are other causes, as defective mucous secretion, and the various kinds of mechanical obstructions, which may give rise to Constipation, I shall confine my remarks to the causes which by weakening the peristaltic action, may induce this disorder.

**Inflammation.** When inflammation occurs in a part it not only deranges the particular function of that part for the time being, but in many cases it alters and weakens it permanently. This is well seen in cases of Pneumonia. The lung seldom, if ever, altogether regains its healthy function, and it is very apt to again take on the inflammatory action with the slightest exciting cause. Again when Dyspepsia attacks a limb to any serious extent, the part, on recovery, is left weak, its vitality is lessened, and this weakness may be felt during the remainder of the patient's life. In the intestinal canal we find that inflammation may attack one or all of the coats, the symptoms varying with
The seat of the morbid action. We may have violent inflammation attended with dysenury or diarrhea, and in this case the inflammation would seem principally to affect the mucous coat, for on examination after death, ulceration or some other result of inflammation, is found on the internal surface of the canal, often without any implication of the other coats. In another case although the inflammatory action ran high, the bowels may remain natural or easily regulated, being complicated neither with diarrhea nor obstruction. On inspection after death false membranes are found producing adhesions, and very frequently there is a collection of purulent matter. The inflammation has chiefly affected the periurethral coat. Lastly we have inflammation attended with total obstruction of the bowels, and in such cases the muscular coat is found to be the seat of the disease, although in most, if not all of the cases the periurethral coat is also affected. The muscular tissue is seldom the seat of inflammatory action, and when
it is so, it would seem to be secondarily affected by the disease spreading from its coverings. This is seen in Rheumatism, in which the diseased action spreads from the aponeurotic sheaths of the muscles, or from their tendons or the fasciae in their neighbourhood. So in Enteritis the inflammation generally begins in the peritoneal covering of the gut, and thence spreads to the muscular, or to the cellular sheaths of the muscular fasciculi. When this takes place, the fibres are completely paralyzed; no irritation of their nerves or even the application of galvanism will cause their contraction. It cannot be expected then that the intestinal matter, their natural stimulant, will in such cases produce contraction. It rather helps to aggravate the disease by distending and stretching the parts inflamed. The same muscular paralysis takes place in the Iris when it is the seat of inflammation. The pupil will not as usual, contract by the stimulus of light, or dilate in the dark; and this abnormal condition is observed before adhesions have taken place.

According to Dr. Huxley, "muscular substance
When inflamed undergoes no decided change, but loss of substance and of power. Is this loss of substance ever restored? Is this power ever entirely renewed?

Perhaps in many cases it may; but in others, may not the exudation thrown out into the surrounding cellular tissue, during the inflammatory process, be transformed into tissue of a similar kind, and by its pressure, as well as by appropriating part of the nutritive fluid which should nourish the muscular fibres, cause atrophy of those fibres, and therefore permanent weakness?

"Inflammation of muscle," says Rakitansky, "if it do not subside, may terminate in induration, suppuration and gangrene. Intense inflammation leaves the muscle wasted." Or "the exudation may coagulate and become converted into a whitish, hard, dense, firm callus, which assumes a fibroid structure, but is still traversed by a few pale and broken muscular fibres."

Since this is the case then, it must be evident that when a considerable portion of the muscular coat of the intestine has been the seat of violent inflammatory action, there must be for some time after the subsidence of the morbid process, weakness...
of the peristaltic movement, and therefore temporary constipation. And if the exudation be transformed into cellular tissue, there must be permanent weakness and habitual constipation.

But besides this form of weakened peristaltic action produced by inflammation of the muscular coat, we find very serious and often fatal cases following inflammation of the serous coat. When part of the intestines is fixed by adhesions, the result of the serous inflammation, the movements of that part are much impaired, free contraction of the bowel is prevented, and if these adhesions extend along a considerable extent of the canal, there will be a constant tendency to constipation. From the slow action of the part accumulations of feculent matter are apt to take place, and the movements are thus still farther destroyed by the distention in the first instance, and by the inflammation which that distention may excite in the muscular coat. When death occurs as it frequently does in these cases, the intestine is generally found inflamed and
dangerous, and the obstruction which may have been slight at first, has become
mountable by the complete destruction of the
muscular contractility.

Even chronic inflammation of the
mucous coat may give rise to constipation
by producing induration of the mucous coat;
for this change has been seen to follow a
similar action in the bladder. The muscular
col, says Rakitansky, "was changed into a
pretty thick, and firm lamina, of an uniform,
pale-red colour, inclining to yellow; the original
bundles of muscular fibres had disappeared.
The bladder was paralysed and
distended." But chronic inflammation of
this coat more frequently gives rise to indura-
tion and thickening of all the coats of the
bowel, or it produces thickening in the sub-
mucous cellular tissue alone, and thus we
have a result produced similar to that
following inflammation of the muscular coat.
Or if the induration be confined to a particular
part, it may go on increasing till a structure is
formed, and as this morbid change is progressing
the evacuations become less and less frequent; they lose the natural form of the bowel, become ribbon-shaped and smaller in bulk till at last the patient dies of complete obstruction unless in some way relieved naturally or artificially.

Inflammations however, of the intestinal coats, although they may and often do give rise to complete paralysis of the muscles, can not be considered as very frequent causes of that permanent weakness which I more particularly wish to consider. Their effects are more often temporary than permanent. They either terminate in the death of the individual or in resolution; and the action of the muscular fibres is after a time more or less completely restored, except in those cases where the cellular tissue has become hypertrophied and caused atrophy of them; or where, from thickening of all the coats or of the cellular coat alone, strictures are apt to be produced.

Deficiency of Bile. I formerly mentioned that besides the stimulus afforded by the alimentary matters, the various secretions may also be of
use in stimulating the motions of the intestines; This remark applies chiefly to the bile. This fluid is not now considered as an excitation, destined to be wholly eliminated from the body, because of the small quantity of it detected in the fæces compared with the amount secreted. Its various uses however have not been as yet definitely pointed out; but that it assists in exciting the bowels to action seems to be almost universally granted. It is considered as the natural purgeative of the bowels, from the fact that Constipation is induced when it is diminished in quantity, or rather when its passage into the intestines is obstructed: while Diarrhoea is the result of its presence in excess. In Jaundice we find the bowels almost invariably Constipated, and the stools unnaturally white, the latter circumstance proving the absence of bile, while the former may be inferred to be the result of that deficiency. In some cases of Jaundice however, the bowels remain in their natural condition. There is no Constipation and the stools retain their ordinary colour instead of becoming white, owing to part of the bile finding its way into the intestines.
Or again we may have jaundice accompanied with diarrhoea; but this is generally due to the hepatic disease being connected with disease of the mucous coat of the intestine. That a deficiency of bile gives rise to constipation is also proved by the result of certain experiments performed on the lower animals, in which it was found that the bowels became torpid when a ligature was placed on the bile duct so as to prevent the flow of the fluid into the intestine. The same result is seen in the human subject when from the pressure of a tumour on the duct, or the lodgment of a Calculus in it, the onward flow of bile is prevented. On the other hand it has been ascertained that insipidated ox-gall possesses purgative properties. So also some purgatives are supposed to owe their action to the power they are said to possess of increasing the secretion of bile and promoting its discharge into the intestine; and although this choloagogue action is doubtful, I cannot help thinking that medicines which in their action increase the flow of saliva, may also similarly affect other secretions, the hepatic.
But besides contributing to maintain the peristaltic action of the intestines, the bile would seem to stimulate their glands to secrete their various products; for Eberle found, that in animals which he made the subject of experiment, and especially in such as had fasted for some time before death, the mucous of the intestine was much more abundant as far as bile had reached than below that point. This observation is of great importance, because, besides the effect which these secretions may have in promoting the intestinal action, the mucous is of essential service in lubricating and facilitating the passage of the excrementitious matter.

For these reasons then I think it must be allowed that bile both directly and indirectly, promotes the natural motions of the bowels: and if this be admitted, we should reasonably expect that when its flow into the intestine is wholly or partially prevented there will be a tendency to Constipation.

There as to Chronic Dyspepsia...
Diet and Regimen. In a great majority of cases, habitual constipation would seem to depend on errors in diet and regimen, which might be prevented by the patient. The diet may be indigestible, or of too astringent or too stimulant a character; or it may not be in quantity proportioned to the wants of the system, or it may be taken too frequently.

The appetite is our guide in determining the amount of food required to repair the waste which has taken place in the system; but it is too often neglected, and the consequence is that the Stomach is overloaded with food day after day, and at length dyspepsia appears with all its train of disagreeable symptoms, including constipation.

The amount of food required by the system varies with the age, the sex and the habits of the individual. The youth requires more in proportion than the adult, for while the latter has merely to make up for the waste in the system, the former is in want of an additional supply to build up and strengthen his body which
is as yet only in a state of development.

The man in general requires more food than the woman, because, while the life of the latter is a sedentary one, that of the former is active and on that account more destructive to the tissues. The habits of the individual ought to regulate the quantity of food taken, for it is impossible that one who leads a sedentary life, and is much confined within doors, can be in want of the same amount of food as the man who leads an active life and is constantly in the open air.

I shall in the first place endeavour to point out how it is that food, from being indigestible or from being taken in excess, produces weakness in the expulsive power of the intestines, and then shall go on to consider those most common errors in diet and regimen which ought to be avoided.

That food passing into the intestine undigested and in large quantity may frequently from the very irritation it produces, cause increased secretion and increased peristaltic action and consequently diarrhoea.
undoubtedly true. Nature thus endeavours to relieve herself by expelling the offending mass. But when day after day a large amount of this undigested matter is passed into the bowels, the irritability of the parts is weakened; the muscular fibres are no longer capable of being excited by the same stimulus. They become accustomed to the irritation, and their contractility gets exhausted by excessive stimulation. The motion therefore soon becomes slower and slower; the undigested substance from its very nature tends to congeal together, and overdistend the intestine so that serious con.

sequences ensue. It is well known that when the bladder is overdistended with urine, the muscular fibres lose their contractility by the overstretching which takes place, so that retention of the fluid is the consequence. The organ being no longer able to repel its contents, the urine is drawn off by the catheter, and for some time afterwards it remains more or less paralysed and may require to be relieved till the muscular coat regains its contractility. The same thing
occurs in the intestines, when, from previously weakened peristaltic action or from the nature of the diet, or inattention to the calls of nature or any other cause, an accumulation of undigested alimentary matter or of faces takes place. If the intestines have been before in a torpid condition the collection tends still farther to produce Constipation, for besides the weakening of the muscular power by the distention, the fluid matter of the excrement is gradually absorbed; the faces become dry, hard and knotty, and in this condition are with more difficulty, expelled along the canal. And these accumulations are not only of immediate danger for the time being but are apt when frequently repeated to produce permanent weakness of the parts, just as the bladder is permanently weakened by a similar cause, for according to Mr. Syme, "more inordinate and long continued distention (of the bladder) by ever-stretching the muscular fibres, destroys more or less completely and permanently the contractility of the organ." Obstructions are most frequent in the Colon, the
sigmoid flexure and the rectum. When an accumula-
tion takes place in the latter portion of
the gut, it is to far fortunate as artificial
means may be had recourse to for its removal.
Very frequently violent tenesmus and bearing-
down accompany the intussusception, and there are
occasionally slight watery discharges which
may simulate diarrhea, and thus mislead both
patient and practitioner. In Duncan's Medical
Commentaries (Vol. III p. 282) I find a case related
in which a lady, 78 years of age, is said to have
had no stool of the form of the bowel for a
month. Although purgatives were given they
never brought away anything considerable, but
merely fluid excrement. She complained of
violent tenesmus and pains like those of labour.
When the finger was introduced into the
rectum, a large ball was found "nearly the
size of a child's head" which was broken up
by the finger and brought away. She was
immediately relieved; and a little opening
medicine brought away a great deal more,
after which she perfectly recovered.
distention, the constant overloading of the bowels is apt to excite inflammation, acute or chronic, in the intestinal walls, and then the bad effects follow which we have already seen to take place.

Or again the changes which take place in the alimentary matter itself tend to destroy the muscular power of the intestines. From being so long retained decomposition begins in the mass; great accumulations of flatus take place, and give rise to most distressing symptoms frequently complained of by the dyspeptic. The gases thus generated, not only increase the distention by their bulk, but from their very properties, destroy more or less completely the action of the muscles. The most important of them are Carbonic acid gas, and Sulphuretted and Carburetted Hydrogen, all narcotic in their action, and therefore all capable of destroying the irritability of the muscular fibres. It has been ascertained that in Carbonic acid gas, muscles contract very feebly or not at all when stimulated, and I presume Sulphuretted and Carburetted
Hydrogen would have a similar effect on the muscles, since they are both narcotic and since it can only be from possessing this narcotic property that Carbonic Acid has the power of destroying the muscular contractility. Even the blood charged with Carbonic Acid and deficient in Oxygen, has the effect of diminishing the contractility of muscles when it continues to circulate through them; for it has been found that the muscles of persons who have died of Asphyxia, lose their irritability almost as soon as the circulation ceases. On the other hand a due supply of Oxygen is essential to the continued development of the contractile force; but there cannot be an adequate supply for the intestinal muscles if the bowels are so overcharged as to produce congestion of the hepatic and abdominal vessels.

For years patients may live with their bowels almost constantly constipated, and yet suffer little inconvenience except from occasional febrile attacks, attended with intense headaches which they get quit off
by having recourse to purgative medicine. Other, however, are not so fortunate. They allow this state of matters to continue too long, till at last they find all the Physician's remedies are useless. According to Dr. Abercrombie, "the most uniform morbid appearance in fatal cases of Fever, is a greater or less extent of the intestinal canal in a state of great and uniform distention." Moreover he affirms that the case may grow fatal without passing into any further state of disease, but that usually inflammation supervenes and carries off the patient.

Let us now point out three more common errors in diet and regimen which tend to produce distention of the bowels and which ought therefore to be avoided.

The first process of digestion, namely, mastication, is frequently too little attended to. The food is swallowed too quickly, is not properly broken down and mixed with the saliva; and on this account, is not only deprived of the action of this important fluid, but is also in a state which prevents its being
freely exposed to the action of the gastric juice. The consequence is that it remains for a long time in the Stomach, hampering that organ in its action, and giving out various gases as it decomposes; or it passes through the system in an undigested state. So also when food is taken in too large a quantity the Stomach is paralysed by the distention; it is unable to contract and triturate the mass, and consequently a great part of it is left undigested. But even though the quantity be not so great as to cause inordinate distention, it will still remain undigested if in larger amount than is actually required by the system; for Dr. Beaumont in his experiments on Alexis St. Martin, found that the Stomach only secreted a sufficient quantity of gastric juice to digest that amount of food which is demanded by the system.

Another very common error in diet and one which greatly impairs digestion is too frequent eating, or filling the Stomach with a second meal before or soon after the first has left it. This is much the same as eating too large a quantity at a time, and is followed
by similar results. As a general rule the food
is digested and leaves the Stomach in the
course of four or five hours; in some cases
earlier, in others later, according to its diges-
tibility. During the whole of this time then the
organ has been in action and is now in a
condition requiring rest. But if a second
supply of food be introduced before the first
has passed into the intestine, no rest is allowed.
The Stomach may still endeavour to digest
the mass, but this it is unable to do perfectly,
because its power of contraction has become
impaired by overwork, and the secretion of
gastric juice is too scanty because there
is no further demand for nourishment. A
second diet then ought not to be taken till
the previous one has left the Stomach for
some time.

Besides a due supply of the caloric
and gastric fluids, a certain temperature is
necessary in order that digestion may be properly
carried on. The temperature of the Stomach
varies from 96° to 100° F. When it falls below
or rises above this, digestion is imperfectly
performed. Dr. Beaumont found that when a
gill of water at the temperature of 65° F., was
received into the empty Stomach of St. Martin,
in which the thermometer previously indicated
a heat of 99°, it immediately diffused itself
over the surface, and brought down the ther-
mometer to 76°, at which temperature it stood
for a few minutes and then began to rise
slowly. It was not till thirty minutes had
elapsed, and all the water had been absorbed,
that the mercury regained its former level of
99°. Although so small a quantity of water
as this would not in all probability reduce
the temperature so much if taken when food
is in the Stomach as when it is empty; yet
a larger quantity would undoubtedly lower
the temperature, and in this way, the blood, which
is required in large abundance during di-
gestion in order that the gastric juice may
be secreted, would be expelled from the
vessels and a fluid so important in digestion
would not be secreted in sufficient quantity
for some time.

On the other hand a temperature elevated above
106°F, is said to decompose the gastric juice and destroy its digestive property. It must be of vital importance therefore to all, and especially to one troubled with indigestion, to avoid as much as possible the drinking of a large quantity of cold water during meals, or of too hot liquids after them.

I previously mentioned that those who lead sedentary lives, who are little in the open air, and do not take regular daily exercise, are not in want of the same amount of food as those who spend active lives and are much out of doors; the reason of this being that the waste of the tissues in the former is much less. Regular daily exercise is of the greatest importance to everyone, and more especially to one whose bowels are constantly constipated. During ordinary respiration, when the chest is filled by inspiration, the diaphragm is pushed down, the intestines receive the impulse and the abdominal walls bulge outwards. On the other hand when the chest is emptied by expiration, the abdominal walls subside, the intestines are pushed.
backwards, and the diaphragm ascends. Thus the intestines are kept in perpetual motion by two forces acting in opposite directions and in constant play; and, in this way, their healthy movements are encouraged. During active exercise respiration becomes more frequent, and on that account are kept in more active motion and their functions are more perfectly performed. Besides this mechanical assistance afforded by exercise to the peristaltic movement, a healthy state of the whole system is kept up, the blood is more perfectly oxygenated, the various secretions and excretions better performed, and the muscular system is more perfect and consequently better fitted to perform its functions. But though active exercise be thus important in facilitating the natural motion of the bowels, yet, if not properly toned, it may do harm instead of good. We have seen that when food is introduced into the stomach the vessels of that organ become turgid with blood in order that the gastric juice may be secreted. If at this time then,
immediately after a meal, exercise be taken, the blood is propelled to the surface of the body and the Stomach is deprived of its proper supply and is thus unable to furnish a sufficient amount of digestive fluid to its contents. Exercise therefore should not be taken immediately after meals, nor for an hour at least, at the end of which time all or nearly all the gastric juice will have been secreted.

In large towns habitual Constipation is by far more frequent than in the country, owing to the more sedentary occupations and greater confinement of the town inhabitants. Among Clerks, Milliners, Shopmen and the like, Constipation of a most obstinate character is remarkably common, and the reason appears to be obvious. From the nature of their employment they are much confined, and have seldom regular exercise, the only time allowed for the recreation being immediately after meals. They "gulch" their food perhaps, rather than masticate it, in order that they may the longer "enjoy the fresh air" before
returning to their confinement, and that while they suppose they benefit by the exercise, they may be doing themselves much injury.

Among females in general Constitution is much more frequent than among males, not only on account of their sedentary habits, but also in great measure from their tight lacing which confines the natural movement of the chest, and thus deprives the intestines of that stimulus which healthy respiration affords.

Lastly inattention to the "Calls of nature" has of ten very much to do with habitual Constipation. This must be evident from what we have already seen. The fluid part of the feces is absorbed when long retained; they become more difficult to discharge therefore; the distention increases and the rectum loses its sensibility when this is frequently repeated, so that it gradually requires a greater stimulus to provoke it to act. Not only should the bowels be unloaded when warning is given that this is necessary, but a definite time should be fixed for the
The influence of habit does much in this way to keep the action of the bowels regular. Dr. Carpenter, in speaking of the influence of expectant attention on muscular movements, says: "We may frequently trace the rapid descent of the fecal mass into the rectum, when we expect to be shortly able to discharge it, and it is in great part in this mode, that habit operates in promoting a readiness for defecation at particular times, and that bread pills and other suppositions purgatives unload the bowels."

Charles F. Fettes