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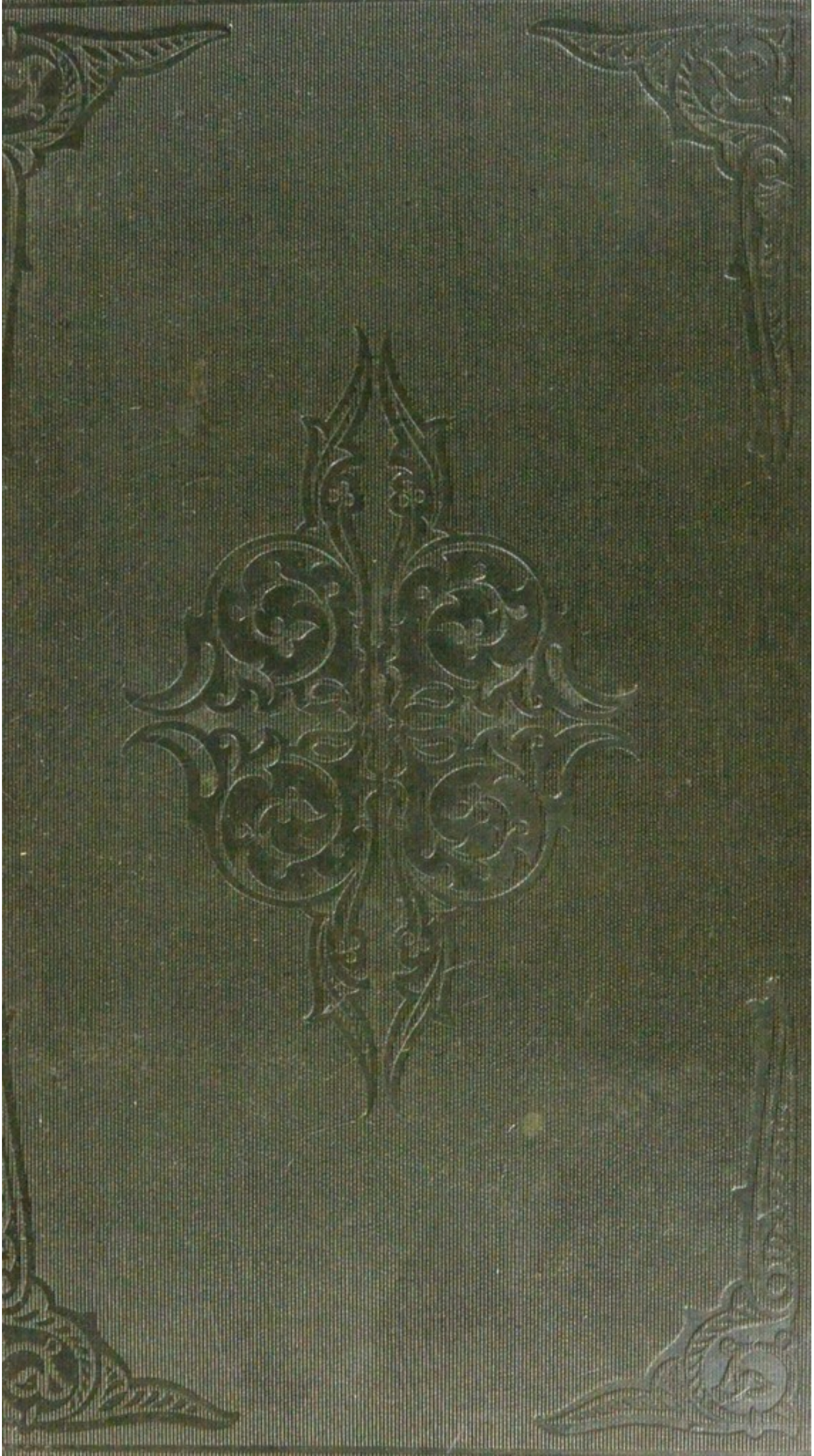

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The Royal College of Physicians
of Edinburgh

From the Author —

ON

INDIGESTION.

ON

INDIGESTION

AND CERTAIN

BILIOUS DISORDERS OFTEN CONJOINED WITH IT.

TO WHICH ARE ADDED,

SHORT NOTES ON DIET.

BY

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PREFACE.

ALTHOUGH the great harvest of facts belonging to every medical inquiry can be gathered by few only, there always remains something useful which may be gleaned by those who possess ordinary opportunities for observation, and a competent share of professional skill. Encouraged by this reflection, I venture to offer the present work to the public, fully sensible, however, that it will not be found to equal, in general merit, some already written on the same subject.

The materials of this volume have been gradually collected in the course of several years, during which my attention was closely directed to its subject. Throughout the inquiry, I recorded in an uniform manner—secured by means of printed tables—all cases of indigestion that occurred to me in practice; and by carefully collating these together, I endeavoured to deduce accurate inferences respecting the disease. The opinions contained in this book may be viewed as the conclusions to which I was in this way led.

The consideration of various functional disorders of the liver formed no part of my original design, but has been engrafted on it, because, in this metropolis, dyspepsia and what is popularly called "biliousness" are so often conjoined, that it would be difficult to treat the one subject fairly, without

touching upon the other. It seemed expedient, therefore, to alter the plan of the work, and make it more completely practical, by describing certain hepatic derangements which, blended with the symptoms of indigestion in every possible way, constitute the majority of cases actually presented for treatment.

Some rare diseases are deemed of high importance, because they are fraught with danger; others, comparatively little to be feared, equally claim the practitioner's careful study, on account of their frequency and the vast aggregate of suffering they produce: to this class belong indigestion and "biliousness." These complaints pervade all ranks of society, and although seldom so urgent as wholly to interrupt the patient's daily pursuits, they deprive him of the inclination to engage in them with alacrity, and render them irksome and cheerless. But besides this, the mischief ultimately inflicted by chronic indigestion on the constitution, and through it on various organs of the body, is both serious and certain; nor ought it to be less regarded, because it is occasionally long deferred. It is much wiser for the patient to reflect that when the remote consequences here alluded to have begun to show themselves, the time for applying remedies effectually has often passed away. For these reasons, the subject of indigestion cannot be too frequently investigated; and, deeply impressed with its importance, I have endeavoured, in the following pages, to contribute towards the elucidation of those principles on which it may be successfully treated.

27, *Mortimer-street, Cavendish-square,*
January, 1847.

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THE CAUSES OF INDIGESTION.

Indigestion or dyspepsia defined — Predisposing and exciting causes of the complaint—Sex—Occupation—Disease external to the stomach, Depressing influences—The food—Abuse of medicine—Reflex action of the stomach in exciting hydrocephalus and other cerebral attacks —Cough—Dyspeptic phthisis—Palpitation—Cutaneous diseases.

(1.) In the following pages, indigestion and dyspepsia are used synonymously to express "habitual uneasiness while the food in the stomach is being converted into chyme." Some authors, however, include under these terms every disorder in the alimentary canal connected with the assimilation of food:—the difference in the meaning of the words is simply conventional, for they will bear either signification equally well. If we separate all really known from what is merely speculative, respecting the signs of disorder caused by ill-prepared chyme after it has passed from the stomach, there is little on which, as practical men, we can rely. At all events, it is certain that disorders *limited* to parts beyond the stomach and duodenum, do not assume the true characters of dyspepsia. On the other hand, when both stomach and intestines suffer simultaneously, there results a compound disease, or rather two diseases, the intrinsic characters of the dyspepsia remaining as distinctly referable to the stomach, as if there had been no such complication.

(2.) It is always important to have clear ideas in regard to the predisposing and exciting causes of a complaint, since

they supply the key to explain the origin of each case. Disease springs essentially from the action of some noxious agent either sufficiently energetic to throw a healthy organ into disorder, or at all events capable of deranging one that chances to be morbidly impressionable, or, as it is called, "predisposed." In both instances, disease is equally the result; only, in the first, it is due to the force of the attacking agent; in the last, to the weakness of the organ that resisted. In illustration, I may refer to the spreading of common fever. If the contagious principle or miasm be strong, even those whose organs are sound fall under its influence. But so long as the contagion is weak, it can make no impression on those so fortified, nor does it act at all, until it meets with persons "predisposed," that is to say, whose power of resistance has been lowered or brought within its range. So it is, also, in regard to dyspepsia. There are a few—a very few—whose stomach is, as they say, "made of iron," on which years of excess can produce no effect; but, generally speaking, many circumstances are in play which weaken the tone of the stomach, and predispose it to disease.

(3.) The chief predisposing causes of dyspepsia relate to

The Age.

The Sex.

The Occupation.

Various diseases and depressing influences, as exposure to cold, mental distress, &c.

(4.) *Age.*—Table of 226 cases of indigestion, showing its comparative frequency at different periods of life.

Age from	10 to 19	years included.	29
„	20 to 29	„	68
„	30 to 39	„	50
„	40 to 49	„	38
„	50 to 59	„	30
„	60 to 69	„	11

According to Dr. Wilson Philip, the period of life most

favourable to indigestion is between puberty and the age of forty. Judging from the above table as well as from my experience generally, I should say, that the age most liable is between twenty and fifty years. At the time called "the change of life" in females, an extremely obstinate form of indigestion is very common.

(5.) During infancy the power of the stomach is feeble, and suited to digest a few simple articles of food only: hence nothing is more common than to see it fall into disorder from improper diet, particularly during weaning. In most cases, the complaint takes the shape of diarrhœa, or rather the bowels are first relaxed and then constipated; but if mothers would only be a little patient, and not urge their medical attendant to give first strong medicines to restrain, and then strong medicines again to open, this alternate oscillation between looseness and costiveness would soon cease, and the bowels would regulate themselves, provided the feeding were managed with judgment. At other times, the disorder is characterized by great irritability of the stomach, by constant vomiting, and often by general or partial convulsions. Lastly, where infants are improperly fed for a length of time, the complaint becomes chronic, running a course of weeks or months, with all the signs of infantile remittent fever; the latter is, indeed, on many occasions, merely another name for infantile indigestion, and there is no more certain cure for it than the due adjustment of the diet. There are various medicines, no doubt, which shorten the time required for recovery, but even the best of these will do no good, unless the food of the little sufferer be brought within the range of his feeble powers of digestion. During these affections, the teeth are often more scrupulously examined than the diet, and a deal of useless gum-cutting is the consequence. This is a critical period for the child, if the seeds of consumption, scrofula, or hydrocephalus, lurk in its organs.

(6.) In childhood, and up to puberty, dyspepsia is not frequent, while "fits of indigestion" (61) from surfeits are extremely common. But after the age of twenty, it is one of the most frequent complaints met with; partly on account of the increased opportunities for indulging in "good things" which persons then have, and partly from a natural falling off in the energy of the stomach itself. So long as the youth is growing, the stomach enjoys its highest vigour, and easily digests the materials required both for support and development: but when the growth is complete, and consequently when less nourishment suffices for the wants of the animal economy, the stomach loses a portion of its power. On this principle we can explain why the appetite of persons at thirty usually falls short of what it was at twenty years of age, and how the diet, which, in the lad, was barely *enough*, is, physiologically speaking, *excess* in manhood. From ignorance of this law of nature, the stomach is sometimes blamed without cause. Thus persons in full health at thirty, cannot understand why they are unable to eat and drink as they were wont, and often erroneously suppose they have reason to be dissatisfied with the state of their stomach.

As we reach manhood, not only is the energy of the stomach reduced, but it is often directed into different channels, so that certain wholesome articles of diet, previously much sought after and readily digested, are now apt to disagree. Of some of these natural changes in our taste, Liebig's views afford a theoretical explanation. Children, as is well known, are remarkably fond of sugar, which they digest without suffering from the acidity and heart-burn so often caused by it in grown up persons. Now respiration, that is, according to Liebig, the combustion of charcoal at the lungs, is exceedingly active in children, to whom, therefore, a large supply of fuel or carbon is absolutely necessary; and as much carbon is contained in sugar, it forms for them an exceedingly appropriate article of diet. But in adult age

respiration becomes less active, and less carbon is required, hence the power to digest sugar is partially lost by many; with some of whom the taste changes also, so that they no longer look with their early longing towards the sugar-basin. On the other hand, various facts equally common run counter to this explanation; thus children are rarely partial to fat, although, on the above theory, they ought to be so, as it is very rich in carbon. The taste for fat only becomes general as persons grow up—at the time, therefore, when, according to Liebig, it is least required.

(7.) *Sex.*—All practitioners agree that dyspepsia is more common in the female than in the male sex. Several causes concur to explain this, but the principal seem connected with the more sedentary and in-door life which women generally lead; for partly from want of inclination, partly from want of opportunity, they usually neglect to take exercise in the open air sufficient to maintain the various organs in full vigour. The use of tightly applied corsets has also a powerful effect in exciting the complaint, from the pressure they throw upon the stomach—intended by nature to expand and contract at different times, to suit the changing bulk of its contents (16, 118).

Lastly, females are subject to many complaints predisposing to indigestion, from which men are exempt (101).

(8.) *Occupation.*—Among the employments apt to lead to indigestion, those that are sedentary and within doors claim the foremost place; hence it is a sad torment to men of letters, clerks, and others, passing much time at the desk. The position usually assumed in writing, co-operates as a cause of the complaint; for when the right shoulder is raised and the chest bent towards the left side, the margins of the ribs are thrust inwards, and press injuriously upon the stomach. Many book-keepers find it better to stand than sit at the desk; and the custom is certainly healthier, provided the strength permit it; but if fatigue ensue from this prac-

tice, any advantage that might otherwise have been obtained, is more than counterbalanced. When clerks are subject to dyspepsia, they will always do well to stand at least a part of their time. Writing at a high table is more hurtful than at a low one, because in the former case, the twisting of the body is greater.

Artists are very liable to indigestion, especially when they paint by gas-light. The strong burners they use in their generally ill-ventilated studios produce a hot, relaxing, and poisonous atmosphere (159).

All employments that require constant stooping are hurtful to digestion; and it is not unusual for dyspeptics to state that assuming an irksome posture after eating, is of itself certain to bring on an attack of pain from which they might possibly have escaped, if they had placed themselves more conveniently (118). Among artisans, tailors and shoemakers suffer most from dyspepsia, partly from the posture maintained while working, partly from close confinement. Milliners and needle-women are especially subject to this complaint; the evil inseparable from a sedentary employment being aggravated, in their case, by the number of hours through which they toil, and the crowded state of the ill-ventilated work-rooms.

(9.) *Various weakening diseases.*—All diseases, by undermining the general system, impair the vigour of the stomach, and predispose it to indigestion. While the constitution is sound, many liberties may be taken in eating and drinking, from which the stomach either does not suffer at all, or quickly rallies; but if it have been previously weakened through distant local, or through constitutional disease, its healthy action is easily upset by any of the ordinary causes of dyspepsia.

The following morbid states may be mentioned as peculiarly predisposing to indigestion:—

Anæmia from poverty of diet, chlorosis, &c.

The state resulting from repeated losses of blood, or from exhausting discharges of any kind, as menorrhagia, leucorrhœa: protracted lactation, &c.

Depression of mind.

(10.) Besides the morbid conditions just mentioned, which predispose indirectly through the general system, there are certain diseases in distant organs which act partly in this way, but chiefly by a more special effect exerted on the stomach :— in ordinary phrase, a strong sympathy exists between them. Among these, the principal are—

Amenorrhœa, and other diseases of the uterus and ovaries.

Chronic bronchitis and other catarrhal affections of the mucous membranes, or "colds" as they are called.

Certain diseases of the brain.

Cutaneous complaints, and lastly

Disorder of the liver.

(11.) *Exciting causes.*—Dyspepsia is occasionally the direct consequence of a "fit of indigestion," following a single gross dietetic error (64), but oftener it is the slow result of a diet either hurtful in itself, or which the stomach can no longer digest, because it has been enfeebled through the operation of the predisposing causes just mentioned.

The food excites irritation, morbid sensibility, and indigestion—

From the quantity being too large.

From its mechanical properties, as when the morsels swallowed are hard, or not easily permeable by the gastric juice.

From its difficult solubility.

From its stimulant qualities.

From acting chemically on the gastric juice, and thereby impairing its energy.

These and some other circumstances that disturb digestion will be noticed more fully in the next chapter.

(12.) It is usually thought that the diet of the rich is more

calculated to produce indigestion than that of the poorer classes; but I am not sure if the opinion be quite correct. It may, perhaps, not be without advantage shortly to contrast the two together, as an opportunity will be thereby given of pointing out wherein, in each plan, the evil lies.

With respect to the quality of the food, the advantage is clearly on the side of the rich, as the articles brought to his table must be at least tolerably tender and in season. The purse of the poor man does not allow the same nicety in selection, and he usually goes to a cheaper market, where he buys what may be out of season, or old and fat, or tough and stringy. At other times his meals consist solely of hard salted or pickled meat. The vegetables and fruit also bought by him are often old, tough, and unsound.

Next, as to the *mode of preparation*. From time immemorial it has been customary to heap blame on a highly useful class, and to regard cooks as plotters against the health of the people; "innumerabiles esse morbos miraris? coquos numera." Cookery, however, is not a mere luxury, but a necessary art adopted both by civilized and savage nations. Its proper object is to prepare the crude food, and bring it to the state that best fits it for digestion. The question therefore arises, whether the cookery of the rich or of the poor be most conducive to this end.

When meat is roasted in the way which best prepares it for yielding to the solvent action of the gastric juice, it ought not to be overdone, as mastication is thereby impeded, and the fibres hardened so as to be almost impermeable to that fluid; nor ought it to be underdone, as some of the advantage of cooking in making the fibres short and tender is thereby lost. Neither should meat be overboiled, because when the soluble part has been dissolved out of it, little is left but a hard stringy mass—the portion, in short, that is least digestible. Now it is evident that these details are more likely to be attended to in the well-appointed kitchens

of the rich, than in the poor man's dwelling, where there is seldom much time left for nicety in cooking. Even in respect to "made dishes," from which it is thought the poor are safe, there lies a fallacy. It would, perhaps, not be technically correct to call by that name the messes and stews of humble life, yet, in point of fact, their composition is much the same. Made dishes, for the most part, consist of various meats with fat and seasoning. Now, although these must always be deemed heavy, and of course not suited to delicate stomachs, still if the fat be fresh, in moderate quantity, and not too long exposed to heat (261), they are, on the whole, very superior in point of digestibility to what I am about to compare them. In the "made dishes" or messes eaten by the poor man, we probably find the meat tough, the fat bordering on rancidity, and to him, moreover, greasiness is seldom an objection. Besides this, the same dish is often warmed up again and again, and all its bad qualities are thus made worse by long exposure to heat and air (261). Such appears to me to be the chief difference in the style of cooking, and it is quite obvious that the former is the least prejudicial of the two. The real mischief of a well-cooked dinner is less in the dishes than in the want of self-denial in those partaking of them, who cannot stop eating when they have had enough: surely, however, it is unjust to hold the cook responsible for their intemperance. The former brings us food in a state as favourable to digestion as the mode in which it is ordered to be made ready will permit, and it is no fault of his, if, for want of a little self-denial, we convert this advantage into a cause of disease.

(13.) Among the causes of indigestion ought to be mentioned the custom of taking strong medicines—as drastic purgatives—for every slight ailment or accidental constipation (224). While this habit is followed, digestion can never be said to be healthy, as both the peristaltic movements and the secretions of the canal are so frequently excited into

disorder. For the same reason, also, it is desirable to discover remedies that may be administered through other channels than the stomach:—by inhalation, friction, injection, &c. As the case now stands, wherever a disease may happen to be seated, the stomach has to put up with the disturbing effect of nearly all the medicines given to cure it.

(14.) The manner in which distant disease affects the stomach has been pointed out, but as all sympathies are reciprocal, it follows that irritation in the stomach must sometimes, in its turn, excite disease in distant organs. Every practitioner is familiar with hydrocephalus and convulsions occurring in children from disordered stomach and bowels, as well as with those obscure and often fatal cerebral attacks described by Andral, Langston Parker, Marshall Hall, and others. Again, what is called a stomach cough, is a good example of the irritation that organ sometimes reflects upon the lungs; and it is interesting to watch how an increase of the dyspepsia instantly aggravates the cough, just as catching cold adds to the severity of the indigestion. Dr. Wilson Philip believed he had discovered another and even more special action of the stomach upon the lungs, in a form of consumption which he named "dyspeptic phthisis." But although all must admit the general fact, that indigestion, by impairing the vigour of the body, renders it less able to resist phthisis or any other complaint to the causes of which it may be exposed, still Dr. Philip's peculiar views on this subject have not been adopted by the profession.

The influence of dyspepsia on the heart is marked; hence palpitation is known to be one of its most common symptoms. And as incessant *functional* excitement often ends in fatal *structural* change, we must regard dyspepsia not less seriously than as the root whence hypertrophy or dilatation of that organ occasionally springs. Irritation is also frequently reflected on the skin; thus many cutaneous eruptions arise

from indigestion, and disappear when it is cured. Nettle-rash often follows the eating of lobsters and other shell fish, and in short, there is no organ of the body on which gastric irritation may not act, either directly as an exciting, or indirectly through the general system as a predisposing, cause of disease.

CHAPTER II.

THE PHYSIOLOGY OF DIGESTION, WITH REFERENCE TO THE SIGNS AND TREATMENT OF DYSPEPSIA.

The stomach considered as a reservoir or crop for holding a supply of food, as a muscular organ or gizzard for mixing and crushing it, and as a gland to secrete the gastric juice, &c.—The gastric juice—Pepsine—Mucus—Watery fluids—Gas or flatulence—Acids—The saliva—Pancreatic fluid—Bile—Advantage of careful mastication.

It is not intended in this chapter to enter fully into the physiology of digestion, but rather to place shortly before my readers the different aspects in which the stomach must be viewed by the practitioner, and to notice those steps in the process, from disorder of which the symptoms of indigestion spring.

(15.) The stomach may be considered as a diverticulum or expansion in the course of the alimentary canal, wherein the food is retained for a while, for the purpose of being changed into chyme. Digestion—the first step in the process of making new blood—consists essentially in the solution, or disintegration of the food by the gastric juice, and it has been compared to the rough sifting of crude materials, because it appropriates those parts only of the ingesta which contain aliment, and separates them from other matters containing none. After the food—or more strictly the nutritious part of it—has been chymified, it is in a fit state for absorption by the lacteals, or for undergoing chylification and any farther change that may be necessary before it is converted into blood.

Digestion comprises several acts that may be most dis-

tinctly observed in animals with compound stomachs, where each division performs separately its own function. And although the human stomach is simple, consisting of a single cavity only, still its different portions sufficiently correspond to those forming the compound stomach of other animals to justify Blondlot's comparison between them.* The stomach of the common fowl, for example, may be said to consist of three parts,—viz., the crop or reservoir of food, the proventriculus or true stomach where the gastric juice is secreted, and lastly, the gizzard, in which the food, after having been mixed with the gastric juice, is crushed by a strong muscular apparatus. Now, as Blondlot points out, the most capacious end or great cul de sac of the human stomach, being for a time the receptacle in which the food is chiefly lodged, corresponds to the crop of birds; the body of the organ, where much of the gastric juice is secreted, may be regarded as the proventriculus; while the comparatively strong muscular part towards the pylorus, may be said to represent the gizzard.

This comparison, no doubt, limits too abruptly the office of the different parts of the human stomach, but it still illustrates clearly the several uses the latter has to serve as the organ of digestion. I shall follow the plan thus suggested, and briefly consider the stomach, 1st, As a reservoir for food; 2ndly, As a muscular apparatus to mix and churn it with the gastric juice; and 3rdly, As an organ of secretion, in which the food is chymified.

(16.) The size of the stomach varies in the same individual at different times, and it is liable to more sudden distention than any other part of the alimentary canal. In the dead body it is usually either inflated with gas from decomposition, or lies flaccid with its walls in contact. But during life, the muscular coat of the stomach possesses a tonicity

* Blondlot, Traité analytique de la Digestion. Paris, 1843.

which keeps it firmly applied upon its contents, whether these be bulky or small. It appears, however, that this faculty of adaptation has certain limits, and that if the fibres be too suddenly put upon the stretch, inconvenience is apt to follow. We know, for example, that weight, or other uneasiness, is felt even by those who digest well, if they hurriedly eat a hearty meal (112); and it is probably on account of the interruptions to eating which arise from conversation, that it is better to dine in company than alone. For the same reason, uneasiness occasionally follows the sudden drinking of large quantities of fluids. Thus, if a patient who has been living abstemiously, and in whom, therefore, the fibres of the stomach are usually in a contracted state, suddenly stretch them by swallowing a basin of gruel, fulness and distress are apt to supervene; but if, instead of gulping it down, he sip it slowly, it will probably produce no inconvenience. It is well known, too, that when invalids, at watering places, begin their morning libations, they are apt to suffer from distention of the stomach, which was previously contracted during fasting. The effect of habit, in accustoming the stomach to rapid changes in size, is remarkable, for, after a time, these uneasy feelings generally diminish, or altogether subside.

(17.) A variety of pains in indigestion are all popularly referred to the stomach; but although, no doubt, the irritation causing them is seated in that organ, the pains themselves are often really felt in parts at a distance from it. In order, therefore, to distinguish accurately between direct and radiated pain (95), it is essential that the position of the stomach be kept in view. The space occupied by it naturally varies according as it is empty or full. The splenic end is comparatively fixed, and corresponds to the left hypochondrium: the pyloric extremity is more free, and can seldom be traced by external examination. In general, the pylorus terminates about the centre of the epigastrium, where it is overlapped

by the liver, and lies upon the third portion of the duodenum: at other times, the pylorus extends even more towards the right hypochondrium, or down towards the umbilicus. That part of the epigastrium immediately adjoining the ensiform cartilage (scrobiculus cordis) corresponds to the liver, and it is seldom any part of the stomach reaches up so high. When the stomach is empty, or, more correctly, when it contains nothing but mucus and air, as in fasting, the sound on percussion is clear: after eating a full solid meal, the sound becomes comparatively dull; while occasionally, during digestion, or after drinking, it is humoric, denoting the presence both of solids and fluids. Small eaters, or persons who live on very concentrated food, have usually a small stomach; on the other hand, if the food be of so poor a quality that a great deal of it is requisite to afford sufficient nourishment, the stomach may be expected to be large. The same may be observed in gluttons, in whom the stomach is apt to be at length dragged downwards out of its natural situation by the mass of food with which it is daily loaded. But the most striking examples of displacement from weight are to be found in the works of Morgagni, and other old writers, who often describe the stomach as long, narrow, and reaching low down in the abdomen of persons who had followed the common practice in those days of swallowing quicksilver to remove obstruction in the bowels. It is strongly corroborative of the reflex or sympathetic nature (95) of most dyspeptic pains, that when displacement of the stomach co-exists with morbid sensibility of the mucous membrane, the pain is still referred to the places where it is usually felt when the stomach occupies its natural position.

(18.) The general appearance of the gastric mucous membrane in the living man has been described by Dr. Beaumont. This physician had for many years a male servant, in whom the mucous membrane, and the whole process of digestion could be watched through an opening into the stomach,

about two inches below the left breast. The case of Alexis St. Martin now almost necessarily forms a part of every work on physiology; and I need here merely state, that the person alluded to was, at the age of eighteen, desperately wounded in the left side and chest by a musket shot. Although he escaped with life, the destruction both of the ribs and soft parts was so great, that the wound could never be subsequently closed, and a fistulous opening into the stomach remained at the place described. After a lingering illness, St. Martin recovered his former good health, and his digestion was apparently as vigorous as that of other people. In the course of this work, Dr. Beaumont's experiments will be frequently quoted.*

(19.) The stomach chiefly receives its blood from the coronary, the pyloric, the two gastro-epiploic arteries, and the vasa brevia. The supply is large when compared to the size of the organ, but the quantity actually circulating in it varies considerably at different times. During fasting, when the stomach is quiescent, and secretion is nearly suspended, there is comparatively little blood in the mucous membrane, which presents a pale pinkish colour; but while digestion is going on, and the secretion of gastric fluid is in full activity, it becomes turgid, and of a bright rosy tint, from the increased afflux of blood. Thus, after every meal, there is an active determination towards the stomach. So long as the capillaries are healthy, they contract to their former dimensions when digestion is finished; but if from over-stimulation they lose tone, the fulness which ought to be temporary becomes permanent, and congestion is established (40, 41).

(20.) The stomach derives its nerves chiefly from the eighth pair and the sympathetic. In health, its power of common sensation is feeble; hence we neither feel its movements nor the contact of food during digestion; but in disease, the

* Beaumont's Experiments on Digestion. By Dr. Combe. Edinburgh, 1838.

mucous membrane acquires sensibility, and numerous pains arise (45).

(21.) The stomach may be next viewed as a hollow muscle or gizzard wherein mastication is finished, and the mixture of food and gastric juice "churned" to promote solution and disintegration. For some time after the food has been swallowed, the stomach remains nearly quiescent; but as soon as a considerable supply of gastric juice has been poured out, its movements gradually quicken, and are briskest from an hour and a half to three hours after eating a full meal. If the muscular fibres be feeble in relation to the quantity of food, the churning will be defective, and indigestion must arise; and the same effect will follow, if the gastric fluids be so weak as to exhaust the muscular power, by prolonging unduly the period during which it has to be exerted. As digestion advances, the stomach propels the chyme into the duodenum; at other times it assists in the act of vomiting (200), in eructation, pyrosis and rumination. The layer of muscular fibres is thickest and the power of attrition greatest towards the pylorus, to which, as it appears from Beaumont's experiments, cramp of the stomach is chiefly limited (127). Defective churning power may arise from actual wasting of the muscular coat, but it is more commonly the effect of impaired energy or tone. Dilatation and thinning are chiefly observed at the œsophageal end, hypertrophy or thickening towards the pylorus.

(22.) According to microscopic researches, the mucous membrane of the stomach may, in the third place, be regarded as a large glandular expansion; its substance being in a great measure formed by involutions of the epithelium in the shape of tubular follicles packed closely side by side. The blind extremity or cul de sac of these tubes corresponds to the submucous layer, and their opening to the free surface of the membrane. They occupy the whole, or almost the whole, of that surface, and are gathered into bundles sepa-

rated from each other by cellular tissue and a network of nervous fibrils with vessels bringing the materials for nourishment and secretion. In these tubular glands, the gastric juice is believed by many to be formed, and we are indebted to Dr. Sprott Boyd, of Weymouth, for the first account of their general arrangement.* The stomach, therefore, possesses the secreting or peripheral part of a large gland, without ducts like those seen in the liver and pancreas. By this disposition, not only is there a cavity left to hold the food during digestion, but its perfect admixture with the gastric juice is also admirably promoted. If the juice streamed into the stomach from a few large ducts, it would naturally collect at the lowest parts; so that while the food lying there would be saturated, other portions less favourably placed would not receive their due share. But from the way in which the secreting apparatus is contrived, the gastric juice exudes from all points of the membrane, and each layer of the food, as it passes along the surface, sucks up in its turn a due supply.

The pylorus of the stomach acts as a true sphincter, and its faculty of opening to admit the chyme, and shutting to bar the passage of crude food, is nearly akin to instinct. Occasionally, however, from faulty muscular action, undigested morsels slip through into the duodenum and small intestines, where they are apt to create disorder. The chief characteristic of the disease called lientery is the passage of food from the stomach, and consequently through the rest of the alimentary canal, in an undigested state.

(23.) *The gastric juice* is thus described by Dr. Beaumont: "Pure gastric juice, when taken directly out of the stomach of a healthy adult, unmixed with any other fluid, save a portion of the mucus of the stomach, with which it is most commonly, and perhaps always combined, is a clear transparent

* Essay on the structure of the mucous membrane of the stomach. Edinburgh, 1836.

fluid; inodorous, a little saltish, and very perceptibly acid. Its taste, when applied to the tongue, is similar to thin mucilaginous water, slightly acidulated with muriatic acid. It is readily diffusible in water, wine or spirits, slightly effervesces with alkalis, and is an effectual solvent of the materia alimentaria. It possesses the power of coagulating albumen in an eminent degree; is powerfully antiseptic, checking the putrefaction of meat; and effectually restorative of healthy action, when applied to old fœtid sores, and foul ulcerating surfaces."

(24.) The fact noticed by Spallanzani, that gastric juice can dissolve animal substances even out of the body, has lately suggested a mode of removing stone from the bladder. Urinary calculi consist essentially of earthy particles held together by a cement of animal matter. In attacking them, therefore, by chemical injections, the object has been either to dissolve the earthy matter out of the matrix, or, by acting on the latter, to destroy the bond of cohesion that kept the earthy particles together. The first plan has been often tried by means of acids, but has failed because they could not be used sufficiently strong to remove the stone without at the same time injuring the coats of the bladder. But in the gastric juice an agent seemed to be discovered quite unirritating to the mucous membrane, and acting on the calculus by dissolving—not the stony particles—but the animal matter cementing them together. The theory was moreover supported by some experiments of M. Millot, who found that the gastric juice did really dissolve the animal matter out of certain calculi, so far as to cause them to crumble into fragments. Like many other promising schemes, however, this one failed when it came to be applied in practice. M. Leroy d'Etiolles injected gastric juice into the bladder of a patient labouring under stone, but although no mischief followed from irritation, he did not succeed in removing the disease.

(25.) The energy of the gastric juice is thought to depend

on a peculiar principle termed pepsine. In the Journal de Pharmacie, from 1840 to 1843, no fewer than three chemists—Wasmann, Vogel, and Payen—announce its discovery, but as their descriptions of it do not agree, further research on the subject is necessary. M. Payen states that he had been able to separate from the gastric juice of the dog, a substance capable of digesting more than 300 times its weight of boiled beef, in even a shorter time than pure gastric juice would have required. He describes it as a "white or slightly amber-coloured substance, transparent, very soluble in water, and easily dried." According to Vogel, the pepsine can be again recovered by a chemical process, after it has served for digestion.

(26.) The natural and most powerful stimulus to the secretion of gastric juice is the contact of food with the mucous membrane, and the larger the surface over which this contact extends, the more quickly and plenteously is the juice poured out. It appears, however, from the observations of Beaumont and Blondlot that the stomach is unable to secrete, at one time, more than a certain quantity of juice, which in its turn can digest only a limited quantity of aliment. The juice combines with, and its power is neutralized by food, just as an acid is saturated by an alkali. Hence it follows that if a meal be more abundant than the juice secreted can dissolve, indigestion is the inevitable result. The irritation excited by crude matters in the stomach, may still, it is true, cause a fluid to be poured out, but it is no longer pure gastric juice; on the contrary, it is acrid and possesses little solvent virtue. From the great difference in the digesting power of individuals, we may infer that the quantity and probably the energy of the fluid is subject to much variety.

(27.) Blondlot mentions, as the result of repeated observation, that a temperature far short of that at which food is often swallowed—namely from 104° to 122° of Fahrenheit—is sufficient to destroy the activity of the gastric juice; nor

can its power be again restored. The exact nature of the change thus produced is unknown; but the fact clearly points out the propriety of enjoining all persons with weak digestion to avoid very hot food. On the other hand, Dr. Beaumont states, that when St. Martin suddenly reduced the temperature of his stomach by drinking very cold water, digestion appeared to be retarded. In corroboration of this, it may be mentioned, that few things are more calculated to excite gastric disorder than eating ice after dinner. The temperature most conducive to digestion is probably one nearly approaching that of the stomach itself, or about 100° of Fahrenheit; and the safest precept for dyspeptics is to avoid equally extreme degrees of heat and cold.

(28.) It has been stated, that the secretion of gastric juice is most efficiently excited by the contact of food with the mucous membrane; substances, however, that are quite indigestible, do not produce a large supply. Thus, on many occasions, when Beaumont introduced the bulb of a thermometer into St. Martin's stomach, the gastric juice, although it flowed at first, soon ceased to do so; and exactly the same result was observed by Blondlot on irritating the stomach of the dog with a sound. It is likewise remarkable, that things utterly indigestible—as coins, pins, or stones of fruit, are less apt to excite disorder than what is *merely difficult* of solution—as salmon, or fried meat, &c. In the first case, the stomach seems to recognise instinctively the nature of the substance it has to deal with, and soon ceases to waste juice upon what it cannot dissolve; but when the food is merely difficult of digestion, it struggles to overcome the resistance thereby offered. Hence the secretion of gastric juice is apt to be urged beyond the healthy limit, after which it becomes vitiated, and excites irritation.

(29.) *Mucus.*—The apparatus for secreting mucus is on a small scale in the stomach, compared to what we observe in some other parts of the canal. So long as the food remains

in the stomach, no more mucus is required than what is sufficient to protect the lining membrane against the crude food; but when the chyme enters the duodenum and begins its long course through the bowels, a larger quantity is necessary, and is supplied from the thickly set glands of Brunner. The mucus serves as oil to lubricate the walls of the canal, and to favour the passage of its contents when urged by the peristaltic action of the muscular coat.

(30.) *Watery Fluids.*—When the contents of the stomach are too watery, the juice is weakened by being over much diluted; in favourable circumstances, however, they soon acquire a suitable consistence through a kind of regulating absorbent action in the mucous membrane. An excess of fluid may be introduced along with the food, or it may result from undue exhalation. Dr. Beaumont often observed St. Martin's stomach "full of fluids," at various periods after meals, at which no drink whatever had been taken, and he always noted as the effect, that digestion went on slowly until the excess of fluids had disappeared. When food is taken in a liquid form, as soup, for example, the first step is the absorption of its watery part, by which the nutritious matter is left as a soft and yielding pulp:—a state most favourable to digestion (36). Some fluids, as milk, are first of all curdled by a special property of the gastric juice, the fluid portion is next absorbed; and, lastly, the solid cheesy substance is digested.

(31.) *Gas, or "Wind."*—When digestion is healthy, there is seldom much excess of gas in the stomach; but in dyspepsia, flatulence is one of the most troublesome symptoms. The ordinary gases found there are carbonic acid, nitrogen, and hydrogen; in indigestion, however, sulphuretted hydrogen, and, probably, phosphoretted and carburetted hydrogen are also generated.*

* Simons' Animal Chemistry, by Dr. Day, vol. ii. p. 41.

(32.) *Acids.*—According to chemists, the acids in the stomach, either free or in combination, are the muriatic, acetic, lactic, and phosphoric. In dyspepsia, the butyric and other fatty acids are frequently formed, and may be detected by their odour during eructation. An excess of acid in the stomach gives rise to heart-burn, and other kinds of pain; also to pyrosis or vomiting.

(33.) *The Saliva.*—Physiologists are by no means agreed as to the use of the saliva. The most prevalent opinion is, that it converts the starchy part of the food into sugar, and thus renders it soluble. In Liebig's fermental theory of digestion, the saliva acts an important part by supplying oxygen. It has often occurred to me, that one use of the saliva may be, by means of the air it contains, to keep the morsel porous, and readily permeable to the gastric juice. The effect of morbid changes in the saliva upon digestion is not known. An increased flow, or ptyalism, sometimes occurs as a symptom of dyspepsia (189).

(34.) *Pancreatic Juice.*—The pancreatic juice, which is alkaline, resembles the saliva in containing a substance that exercises a very powerful solvent action upon farinaceous food. From the experiments of MM. Bouchardat and Sandras, it appears to be the chief solvent of this important class of aliments.* According to the late researches of MM. Bernard and Barreswil, the active principle in gastric juice, saliva, and the pancreatic secretion, is identical, and the difference in their power is supposed to depend on the acid or alkaline state of the fluid at the time. If acid, as the gastric juice usually is, it dissolves animal food; if alkaline, as is the case with the saliva and pancreatic fluid, it dissolves farinaceous food.

(35.) Bile is not observed in the stomach in a state of per-

* Supplément à l'Annuaire de Thérap. 1846, p. 162.

fect health, although, from various causes, it often finds its way there. In small quantity, it is said to promote the digestion of certain articles—as fat; but if the quantity be considerable, it excites giddiness, nausea, and vomiting (207).

(36.) When the food glides from the gullet into the stomach, it is grasped by the latter, and subsequently spread over the surface of the mucous membrane, in order that, by being brought into contact with as many points as possible, it may solicit a quick and copious flow of gastric juice (26). All things being equal, food will be well and uniformly spread, in proportion as its consistence is either naturally fitted to yield to the pressure of the stomach, as is the case with arrow-root, for example, or has been made so by careful mastication. Well-chewed meat is easily diffused, but, if eaten hurriedly, or "bolted," it lies in lumps having comparatively few points of contact. Besides, if the morsel be thoroughly bruised, the juice is soaked into it, so as to act at once on every part; but dense lumps can be attacked only at the circumference, nor does the digestion of the inner portion make much progress until the outer layers have been successively dissolved away. Food carefully masticated is, moreover, softer and less irritating to a delicate stomach, as was well illustrated in a patient I lately saw labouring under organic disease with extreme sensibility. This man was obliged to chew his food, until, as he said, he "made it almost liquid;" without this precaution, it was sure to excite pain and vomiting. He also required to pause between each morsel swallowed, on purpose to avoid the extreme uneasiness produced by quickly distending the stomach (112). While on this subject, I may notice a very useful knife, contrived by cutlers, with the view of aiding mastication in persons who, either from the badness of their teeth, or from want of care, are apt to bolt their food. The

knife merely consists of three parallel blades which, of course, cut the morsel in three different places every time it is drawn across. Thus, with hardly more trouble than if a common dinner knife had been used in the ordinary way, the bit of meat is much more perfectly divided.

CHAPTER III.

THE PROXIMATE CAUSE, AND MORBID ANATOMY, OF INDIGESTION.

Disordered circulation, disordered sensibility, defective muscular action, morbid secretion—Morbid appearances considered by some to denote chronic inflammation requiring antiphlogistic treatment—Dark discoloration of the mucous membrane—Thickening—Thinning—Milk white colour—Softening.

(37.) ALTHOUGH dyspepsia may cut life short, by gradually undermining the constitution, it is seldom, if ever, directly fatal; and hence, notwithstanding its prevalence, opportunities of observing the earliest structural changes produced by it are not frequent. And in regard to certain morbid appearances of the mucous membrane, as discoloration, &c. (49), often seen in those who have suffered from stomach disorder, there is some doubt both as to the nature of the action in which they originate, and the degree of connexion necessarily subsisting between them and the symptoms of indigestion. It is, at all events, well ascertained, that dyspepsia may continue during its whole course a *functional disorder only*, and may thus cause great distress during life, without leaving any morbid change of texture traceable after death. The primary functional disorders, in one of which the complaint usually begins, are four—namely,

(38.) I. Disturbance in the circulation of the mucous membrane of the stomach.

II. Disordered sensibility.

III. Weak, or irregular muscular action.

IV. Morbid secretion.

From these elements of disease, the signs of indigestion chiefly spring, and its varieties have sometimes been arranged by authors, according as one or other of them seemed to preponderate. On this principle is described dyspepsia from congestion, from muscular weakness, &c. In point of fact, however, these *exclusive* forms of indigestion do not occur in practice, for although each of the states just mentioned forms an *element* of the complaint, it does not singly constitute it. Moreover, it appears that each of these morbid conditions is not marked by a distinct set of signs, and therefore it does not offer a sufficient basis of classification. For example, most of the symptoms mentioned in books as diagnostic of congestion, really spring from morbid sensibility or secretion. In the actual state of our knowledge, there are in fact, no signs belonging to congestion alone, hence its presence can only be inferred from circumstances about to be pointed out. The same remark partially applies to muscular weakness of the stomach (47).

I now proceed to notice more particularly the proximate causes of indigestion already named, and shall treat, in the sequel, of certain structural changes in the mucous membrane often found in those who have long suffered from that complaint.

(39.) I. DETERMINATION *of blood towards, and* CONGESTION *of the stomach.*—In the last chapter, it was stated that food acts on the stomach as a natural stimulus, whereby an increased flow of blood periodically sets in towards it. The mucous membrane becomes turgid and redder than during fasting, and this plethora continues until it has been relieved by an abundant flow of gastric juice. When digestion is finished, the membrane returns to the state in which it was before the food was

eaten (19). Such is the natural vascular condition of the stomach, and the healthy excitement to which it is liable; but in dyspepsia, the circulation is apt to be disturbed in various ways: thus, sometimes it is too active, or, on the contrary, it may be languid and defective. To these two states I now beg to call the attention of my readers, premising that they are highly important in keeping up the complaint, in leading to organic change, and in affording indications for treatment.

(40.) When gentle irritants are applied to vascular parts on the surface of the body, more blood than natural rushes to the injured spot. There is what is called "determination" of blood: nevertheless the circulation is not materially obstructed, partly because the current moves with increased speed through the capillaries, and partly, because many vessels—previously invisible from receiving colourless fluid only—now dilate a little, and thus supply new channels through which the blood can pass. The *bright* redness of the injected part implies both that more arterial blood than natural is received, and that it traverses the capillaries before it has had time to change into venous.

The simple principle here mentioned applies by analogy to internal parts also; but with reference, more especially, to the gastric mucous membrane, it has been verified by Dr. Beaumont. Thus, after St. Martin had been drinking to excess, determination supervened, and the stomach remained injected, not only while digestion was in progress, but also during fasting. This condition of the stomach always follows a "fit of indigestion" from intemperance, and the term erythema has been applied to it (61).

(41.) To determination, a very different state—congestion—usually succeeds. The vessels lose some of their contractile power or tone, and yield too much to the expansive force of their contents; there is consequently a languid circulation in dilated capillaries. Contrary to what happened before, the blood now changes its hue from arterial to venous at an

early period of its course; hence the injection is not bright but *dark red*. This dark congestion was occasionally observed by Dr. Beaumont in St. Martin's stomach after intemperance, and it may be viewed as the effect of previous determination.

(42.) Congestion of the stomach, instead of being the effect of strong determination produced by alcoholic liquors, &c., may slowly arise even from very slight irritation, provided the latter be frequently renewed. Many patients become dyspeptic, and liable to congestion, who have never lived so recklessly as to bring on violent determination from fits of indigestion (70). In such persons, the blood vessels get congested from the long continued use of food only in a slight degree perhaps too stimulating or abundant for the stomach. The vascular excitement thus produced may be trifling, and scarcely pass beyond the bounds of health, so that for a time the vessels recover themselves in the intervals between meals; but by little and little, their tone is worn out, and then they both become more sensitive to the action of slight irritants and recover themselves less completely. It may be remarked, that so long as capillaries are sound, they resist disturbing influences with comparative power, but when once they have begun to lose tone, their proneness to dilate from irritation rapidly increases. The state of the mucous membrane in most cases of dyspepsia may be said to oscillate between short periods of morbid determination and long periods of congestion; the former, chiefly corresponding to fits of indigestion or over-excitement from errors in diet, the latter to the intervals between. Determination, however, whether in the stomach or elsewhere, is sustained with difficulty, because the blood-vessels inevitably lose tone—sooner or later in proportion to its violence; on the other hand, congestion—the state in which dark blood slowly passes through dilated capillaries—may be prolonged indefinitely.

(43.) Both determination and congestion, if accompanied by effusion of lymph, are still classed together as inflam-

mation, although diametrically opposite in their nature and the plan of treatment required. Practically speaking, it would have been better to have distinguished them as inflammatory and anti-inflammatory, for while the remedies against determination are antiphlogistic, the blood-vessels in simple congestion require to be strengthened. From the circumstance that these two states pass insensibly into each other, it naturally happens that there is a period in the treatment of most local inflammatory diseases, generally recognised by practitioners, when, for an interval of perhaps twenty-four hours, the cure is best promoted by suspending all active interference. The indications which up to this point may have been strong and broadly marked, now cease altogether or are balanced: they point neither one way nor the other—neither towards lowering nor strengthening—so that it is difficult to decide even on the *class* of remedies that ought to be employed. The local disease is, in fact, passing from determination to congestion; it is equidistant between the sthenic and asthenic state; nor is it until the transition from the one to the other is finished, that the indications again become distinct. The congestion above described—the result of excitement—is of course very different from that produced by mechanical impediments to the passage of the blood towards the heart.

(44.) An erythematic condition of the stomach checks or arrests the secretion of the gastric juice and mucus; and congestion, while it vitiates the latter, is probably not without some bad effect on the former also. The period of digestion being thus lengthened out, and the membrane inadequately protected by mucus, morbid sensibility soon takes root.

(45.) II. Disordered sensibility.—It was well shown by the late Dr. Johnson, that morbid sensibility of the stomach is a sign of slow growth, produced by repeated irritation from improper food. So far as is yet known, it is purely a func-

tional disorder, for although in a few cases the trunk of the pneumo-gastric nerve has been found diseased, still no change of structure has been observed in the filaments ramifying in the mucous membrane. It is remarkable that more pain is often felt from mere functional exaltation of the sensibility, than in grave organic diseases—as in ulcers that have eaten into and destroyed a part of the stomach itself (96). M. Barras, a martyr to dyspepsia, as well as a writer on it, has thus vividly sketched the degree which morbid sensibility reached in his own case. "Everything," he remarks, "that went on in my stomach I felt, just as if it had been an organ of touch; and the contact of food was perceived as plainly as it could have been by the hands."* Not only does the gastric mucous membrane become extremely sensitive in dyspepsia, but it also acquires the property of exciting numerous "radiated pains" elsewhere, as will be more fully pointed out in the chapters on pain and headache.

The symptoms that belong to morbid sensibility *alone* occur at an early period of digestion, when the crude food is first brought into contact with the mucous membrane. At a later stage, they are usually mixed with the signs of muscular debility, and depraved secretion.

(47.) III. Irregular or weak muscular action.—The important office of mixing the food with the gastric juice, devolves, as we have seen, on the muscular coat of the stomach (21), and hence dyspepsia will certainly arise if its power be defective, either from want of tone or scanty development. The first effect of this fault is to prolong unduly the period of digestion, and this necessarily leads to vitiation of the fluids, congestion, and morbid sensibility. Weakness of the muscular coat, moreover, prevents the food from being sufficiently grasped by, and distributed over the surface of, the stomach (36). It likewise favours dilatation, and probably

* Sur les gastralgies, p. 29. Paris, 1829.

flatulence (176), if we may judge from its frequency in feeble individuals. Muscular debility of the stomach is not attended with any special symptoms, but it may be inferred when dyspepsia, in debilitated patients, is chiefly limited to the later stages of digestion; or when in the same persons, a meal is quickly followed by distressing fulness, and dragging at the epigastrium. Irregular movements or cramps of the stomach excite in many instances the severe neuralgia described in another chapter (125).

(48.) IV. DISORDER IN THE GASTRIC SECRETIONS occupies a prominent place among the ordinary symptoms of dyspepsia. It probably depends on some change in the glandular portion of the mucous membrane, arising from its being overstimulated, and urged into exhausting activity by food that is either indigestible or too abundant (26). The symptoms due to faulty secretion—as flatulence, pyrosis, and some kinds of vomiting,—belong chiefly to the later stages of digestion.

(49.) In many old cases of stomach complaint, the mucous membrane exhibits structural changes regarded by the Broussaists as sure signs of previous chronic inflammation or gastritis—a state requiring, as they maintain, antiphlogistic remedies. "The different alterations of the stomach," observes M. Andral,* "reviewed in the preceding chapter, have for the practitioner this important characteristic in common—that the antiphlogistic treatment is the one by which they may be most successfully combated." Let us now inquire into the truth of this doctrine. The changes in the mucous membrane here alluded to are,—

Dark, or slate-grey discoloration.
Hypertrophy.
Atrophy.
A milk-white colour.
Softening.

* Clinique, tom. iv. p. 108.

(50.) Dark, or slate-grey discoloration. Being, for obvious reasons, unable to observe the slow formation of this appearance in the stomach itself, we are obliged to search for an explanation in analogous changes occurring in external parts. In the dingy complexion of the gin-drinker, for instance, we have an illustration of the way in which the tissues are discoloured. Excessive potations flush the face, and if these be daily repeated, the flushing soon ends in permanent congestion. The vessels, from over-excitement and distention, lose tone, and a dusky hue is at last produced, that *remains even after death*. Another example may be found in the discoloration round old ulcers, where the tone of the blood-vessels has been long impaired, and the circulation sluggish. It is true, the disease may have begun with inflammation; but the dark tint cannot be considered its direct effect, since it was not seen in the part until long after all signs of inflammation and determination had passed away; but for the congestion alone, this peculiar consequence would not have happened. Lastly, I may point to the brown or dark discoloration of the skin above the inner ankle, when the veins are varicose. In many such cases, there neither is, nor has been, any inflammation. In fact, if we attend to the actions most clearly inflammatory, in external parts, we shall, I think, seldom remark discoloration of this kind to occur. Now the frequency of congestion in the stomach from dyspepsia, as well as the indefinite period during which it may be prolonged (42), especially fits it to undergo the process here pointed out. While the congestion lasts, the dilated capillaries habitually contain a darker blood than natural, and, favoured by the sluggishness of its motion, it would appear that some of its colouring matter becomes incorporated with the mucous membrane. For these reasons, therefore, I conclude that the dark or slate-grey discoloration of the stomach is the direct effect of long-continued congestion;

and that, as the latter state is one of debility, strengthening and not antiphlogistic remedies are indicated.

The colour of the gastric mucous membrane may also be darkened from acids or gases acting through the walls of the vessels upon the contained blood. This change, however, is not organic, like the one just described, but chemical, and in most instances is merely a post-mortem appearance.

(51.) Hypertrophy. The *thickening of the mucous membrane*, which has been thought to prove the previous existence of chronic gastritis, is due to the interstitial effusion and subsequent organization of lymphy matter, and, like similar deposits elsewhere, its character varies considerably. In favourable circumstances, the effusion is enplastic, or susceptible of a comparatively healthy organization; so that the membrane, although thickened, appears little altered in its other sensible properties. Sometimes, on the contrary, from the preponderance of the albuminous principle, the effusion is cacoplastic, and incapable of a higher organization than is exhibited in the hard, white tissue, often called scirrhus of the mucous membrane. Between these two extremes is found an endless variety in the character of the hypertrophy. The previous history of the case usually shows that the person has been long subject to dyspepsia, and, by inference, to congestion (40, 41), or to short periods of erythema, alternating with long periods of congestion (42). The symptoms of the complaint, however, may have been mild; and it sometimes even happens that the mucous membrane is found thickened, or granular, in persons who, during lifetime, were never known to have suffered from any stomach disorder whatever. I lately saw this clearly exemplified in the case of a patient who died of scarlet fever, with whose previous medical history I was well acquainted. A thickening very similar in its nature may be occasionally observed round old ulcers, and in varicose and

œdematous parts, where the circulation has been long feeble and congested.

(52.) Atrophy, or wasting of the mucous membrane, is justly regarded as a cause of one of the worst forms of indigestion, and has been ranged by Andral among the effects of chronic gastritis (49). Two kinds of atrophy may be distinguished; the one depending merely on defective nutrition, the other being probably the consequence of previous hypertrophy. In the former—the less dangerous affection of the two—the constituents of the membrane seem to disappear in equal proportion, so that its substance, although thin, is scarcely indurated. In the second variety, the mucous membrane is condensed and hard throughout; it is also whiter than natural, and the velvety softness of its surface is lost. Dyspepsia from this cause is incurable, because the secreting structure of the organ has been injured; and hence the importance of early detecting and curing the morbid state in which it originates. The condition that immediately precedes this form of atrophy, I believe to be thickening from effusion (51), and the wasting of the membrane to be produced by the contraction of the effused matter. This last action will be readily understood by all who have remarked the changes that occur in cicatrices (organized lymph) left after burns, which often produce great deformity by shrinking, and thus drawing parts together. The same changes happen also in internal organs. In illustration, I may allude to the liver, as the part wherein they have been chiefly observed. In the first stage of cirrhosis—corresponding to the hypertrophy of the gastric mucous membrane last described—an effusion of organizable lymph takes place into the cellular tissue, enveloping the portal veins, hepatic arteries, and secreting cells throughout the liver, which thus becomes bulkier than before. As in the stomach, so in the liver, it may be remarked, that such effusions

are not formed by active inflammation, but rather as the slow result of long-continued general congestion. At length, the second stage of cirrhosis begins, analogous to the shrinking of the gastric mucous membrane now being described, during which the organized effusion, by gradually contracting upon the blood vessels and secreting cells, constringes, and may finally obliterate them. Such appears to be the series of morbid changes which, in the end, produce incurable atrophy of the mucous membrane of the stomach.

The importance of congestion as a cause of serious structural change can hardly be over-rated; and yet it seems to me, that while the very name of inflammation carries dread, and at once obtains effectual treatment, congestion, from being too little feared, is often too much neglected. Unfortunately, its symptoms are seldom urgent, and consequently, the structural changes it produces may be formed almost without warning: the danger, moreover, is usually far distant; hence when it comes at last, it is not always traced back to its true origin. With energetic treatment, we seldom fail to control inflammation; but we know not any remedies that can arrest the shrinking of internal organs from the contraction of effused lymph. Under these circumstances, whenever congestion may be inferred,—and this may always be done where the causes of irritation have been long in action,—it demands the most careful and persevering treatment (239).

The dull, milk-white colour of the mucous membrane has also been viewed as the effect of chronic gastritis. On the whole, I am disposed to consider it as often due to a deficient supply of blood, in consequence of shrinking of the membrane after a *slight* albuminous effusion into its substance.

Softening of the mucous membrane is the last of the reputed signs of chronic gastritis which I shall here notice. Although sometimes symptomatic of inflammation,

it is much oftener a post-mortem appearance, caused either by putrefaction, maceration, or by the gastric juice. The latter is most apt to act on the coats of the stomach, when the body cools slowly after death, and the part chiefly affected is the splenic end. In rare instances, the stomach has been found actually perforated; at other times, the membrane is reduced to a pulp, which is either colourless, or tinged red with blood that has oozed through the corroded vessels. Some care is required to distinguish this last appearance from inflammatory softening. But it may be safely inferred, that an attack of gastritis so violent as to reduce the membrane to a reddish pulp, is not likely to correspond either with the history or with the signs of mere indigestion.

CHAPTER IV.

ON THE VARIETIES OF INDIGESTION.

The great number of varieties referred to by practitioners, or described in books—No fixed principle of classification followed; inconveniences arising therefrom—Varieties based on the state of the stomach, on diseases accidentally co-existent with dyspepsia, on the part of the intestinal canal affected. The nature of simple indigestion, and of the more complicated forms of the complaint seen in practice.

(53.) NOTHING is more common than to hear practitioners referring to numerous varieties of indigestion, although they rarely agree as to the plan on which these should be arranged: hence, the same group of symptoms—in other words, the same case—receives different names. What one calls dyspepsia from torpor, another terms congestion of the stomach; a third, indigestion from muscular debility; and so on. If we look into books, we find these varieties still more numerous. Some are founded on the presence of inflammation, chronic gastritis, congestion, erythema, or morbid sensibility of the mucous membrane; others, on the accidental co-existence of different diseases, as gout or scrofula; and a third class are named after the part affected—as follicular, duodenal, colonic, pancreatic, or hepatic dyspepsia. The difficulty of mastering so many descriptions may be easily imagined, while the advantage gained does not seem to be in proportion to the labour bestowed, since, after all, it is impossible to

distinguish them by symptoms referable to the stomach itself. A minute examination of all these varieties would occupy—perhaps to little purpose—more space than can be here given, but I may be permitted briefly to notice a few of them. If any one will take the trouble to analyze the symptoms of chronic gastritis as described by the Broussaists, he will perceive they are merely those of ordinary indigestion—at least, I have been quite unable to detect any sufficient diagnostic marks between them. In upwards of 200 cases of dyspepsia recorded by myself, there are few which do not offer the conventional signs of gastritis, although with equal justness they might rank as dyspepsia from disordered secretion, from congestion, morbid sensibility, &c. Where symptoms are thus suited for different interpretations, it is clear that the practitioner will give them the one most in accordance with his own medical theories. Hence it is that some discover "chronic gastritis" in almost every case they see, and employ an antiphlogistic treatment; while others, not inoculated with Broussaism, cannot detect in the same symptoms any evidence of inflammatory action whatever, and cure equally well, or better, without resorting to lowering remedies. As an illustration of the dangerous tendency of the French theory of "gastrite," I am here tempted to quote a case related by Mr. Langston Parker, at page 12 of his excellent treatise on Disorders of the Stomach—"A lady, aged thirty, miscarried in the third month of her pregnancy, at which time she lost much blood. At the present time, two months after the abortion, she is labouring under the following train of symptoms:—Great pain in the epigastrium, aggravated by pressure, and accompanied by strong pulsation in this region. Fulness, pain, and distention after meals, with nausea, occasional vomiting, palpitation, and inactive bowels. A medical practitioner, supposing these symptoms were dependent upon some inflammatory affection, had ordered leeches to the

stomach, which had aggravated all the symptoms. The pil. aloes assafœted. et saponis was ordered subsequently, to regulate the bowels, and chalybeates were freely given. Under this plan, the pain, tenderness, pulsation, vomiting, and distention, disappeared, and the patient recovered her usual health." It is a dangerous doctrine to maintain that certain symptoms denote gastritis, and require antiphlogistics, if it be true that the same phenomena are just as likely to spring from a state of weakness, wherein antiphlogistics are contra-indicated. The experimental application of "leeches to the stomach" is hardly an allowable expedient to decide upon the exact nature of a complaint wherein the formation of the blood itself is obstructed.

(54.) Indigestion, instead of being simple, may be complicated with other disorders, and the mixed assemblage of symptoms arising therefrom is often described as a distinct variety. On this principle, authors treat of scrofulous, gouty, rheumatic, hysteric, anæmic, and many other similar forms of dyspepsia. It is no doubt true that these diseases impart peculiarities to each case, but if we analyze the variety so formed, it will be found that the characters really specific do not belong to the dyspepsia at all, but to the second or co-existing disease. To describe varieties thus established seems needless, and as every conjoined disease necessarily causes some corresponding change in each case, the principle, if fully carried out, would lead to endless subdivision.

(55.) Duodenal dyspepsia has been minutely described by writers, but it seems to me that a remark of the late Dr. Abercrombie pointing out the poverty of our knowledge respecting it, still applies with full force. Nevertheless, as the term "duodenal indigestion" has crept into such familiar use that even patients speak about it, the subject must not be wholly passed over in a practical work. Let us first of all examine the value of the signs by which it is said to be most distinctly

marked. Much stress was formerly laid on "uneasiness at the epigastrium occurring four or five hours after eating," because it used to be thought that at this time the chyme was entering into and irritating the duodenum. But, of course, the opinion became untenable when it was shown that the chyme begins to pass from the stomach at a much earlier period. Some authors describe "duodenal" much in the same terms as others describe "bilious" indigestion; the complaint being, in fact, a mixture of gastric and hepatic symptoms. Among the latter are mentioned "headache affecting the back part of the head," pain at the top of the right shoulder, and under the angle of the right scapula. Another symptom considered highly characteristic is "a sensation of dryness in the bowels, as if they were unable to propel their contents." If this sign were really constant, or even often present, its oddness ought not to be allowed to detract from its value, but I can only say that I have never yet heard it mentioned, except on one or two occasions, when I myself happened to suggest it to hysterical patients. The appearance of brilliant spectra before the eyes was thought by Dr. Warren to be a good sign, but subsequent observers have not confirmed this opinion.

(56.) It is a common thing for medical men to examine the epigastric region by palpation, on purpose to ascertain the state of *the duodenum;* but if we consider the depth at which that organ lies, and the nature of the parts covering it, we must feel convinced that this procedure can rarely be satisfactory. Nearly the whole of the duodenum is overlapped by the liver, while its commencement is for the most part covered also by the pylorus, and its ending by the transverse arch of the colon. Some rely on mere tumour, or puffiness, in that situation, as a sign of duodenal disease; but besides the cause of fallacy just mentioned, it may be observed, that as the epigastrium is placed between the two unyielding hypochondria, it is the only part of the upper circle of the abdo-

men which can give way to pressure. Hence, swelling of the liver, stomach, transverse colon, or, in fact, of any adjacent organ, naturally pushes out and produces tenseness of that region.

(57.) That the duodenum, however, is often the seat of morbid action in dyspepsia is clearly proved by the changes seen in it after death; thus the mucous membrane may be thickened or injected, and the mucous glands hypertrophied. I am accustomed to infer the presence of irritation there, when regurgitation of bile (91) persists after every cause of disturbance in the stomach and liver has been removed. If, together with regurgitation, the epigastrium be not only tumid, but tender, *on the right side*, while there is no tenderness over other parts of the liver, the duodenal complication is still more evident. But independently of all direct symptoms, it must be recollected that the duodenum is the connecting channel between the liver and the stomach; hence the practitioner will seldom err in applying soothing or counter-irritating remedies to it, in cases where the stomach and liver have been long disordered and are acting injuriously on each other.

(58.) Varieties of dyspepsia have also been based on the *predominance* of certain signs, as irritability, biliousness, acidity, &c. But it appears to me that little advantage results from this plan, because the predominance is usually fluctuating and temporary. For instance, the case fitly termed bilious indigestion to-day, may perhaps deserve to be called morbid sensibility to-morrow, and in a week afterwards, the urgency of acidity might lead the same practitioner to view it as "dyspepsia from depraved secretions." Thus, in the course of most severe examples of indigestion, one symptom after another acquires prominence, and for a time gives its own character to the complaint.

(59.) The simplest and, as it seems to me, the most useful

and practical view of indigestion, such as we daily meet with it, may be thus stated:—

Indigestion is a functional complaint, consisting essentially of disorder in the act of chymification. Some parts of that process are usually more in fault than others, and hence a varying prominence is given to the symptoms: nevertheless, as all the steps of digestion are closely connected, disorder in one quickly spreads to the rest;—just as a trifling defect anywhere soon stops the perfect action of a complicated machine, of which all the parts are fitted to work together.

Very frequently, the symptoms directly referable to the stomach—indigestion proper (38)—are conjoined with some extrinsic disease or general morbid state. Hence, new elements, producing a vast number of new symptoms, are introduced into the case.

The manner in which dyspepsia thus becomes intricate may be illustrated by the following plan, in which I have supposed four different degrees of complication to occur.

Starting point:—simple indigestion in a person otherwise sound (38).

1st Complication. *Indigestion* in a person of scrofulous constitution.

2nd „ *Indigestion in a scrofulous person* exhausted by a weakening discharge, or by nursing.

3rd „ *Indigestion complicated with scrofulous diathesis and exhaustion from nursing:* also with some local complaint, as chronic bronchitis, or uterine disorder.

4th „ Arising from the addition of erythematic inflammation (63) to the above.

To this it need only be added, that simple, unmixed indigestion is rarely met with, and that all the complex forms of the complaint usually observed in practice are made up of these, or similar elements, combined together in endless variety.

CHAPTER V.

ON THE MANNER IN WHICH INDIGESTION BEGINS. BILIOUSNESS.

Dyspepsia arises in four different ways; from "a fit of indigestion;" from habitual full living; from general debility, in which the stomach participates; from bilious irritation—General account of "Biliousness."

(60.) A CAREFUL inquiry into the circumstances under which each case of indigestion is developed, affords the practitioner many useful hints respecting its future management. From the vast number of causes leading to the complaint, it might at first sight appear that the difference in its modes of origin must be almost endless; but on close examination, it will be found that there are a few well-marked types to which all cases may be referred.

I. The dyspepsia comes on after a "fit of indigestion."

II. It arises during the habitual use of an over-abundant diet.

III. The dyspepsia slowly takes root during a state of general weakness and impaired health, in which the stomach participates.

IV. The dyspepsia is excited by a peculiar faulty action of the liver and duodenum. Under this head, I shall treat of certain common forms of biliousness.

(61.) Type I.—A "fit of indigestion" is often the starting point of dyspepsia, and, in a modified form, it constantly recurs in the course of most chronic examples of the complaint. On these last occasions, its effect is to change the apparent nature of the case, and give it for the moment a febrile character quite opposite to what it may usually present.

The consequences of a debauch are—1st, Excitement or inflammation of the mucous membrane of the stomach, from the stimulating properties of wine or other alcoholic liquors; 2ndly, Diminution in the quantity of gastric juice secreted; and 3dly, A vitiated or acrid state of the fluids of the stomach, from the protracted sojourn of the food.

If the fit of indigestion be severe, sickness supervenes, and the stomach at length discharges its sour and undigested contents. But the relief so obtained is in general only partial; nor is recovery complete until the mucous membrane has regained its healthy state. As to the actual condition of the membrane, Dr. Beaumont informs us, that on several occasions after St. Martin's stomach had been disordered by intemperance, he found it red and dry, or coated with adherent viscid mucus or yellow bile, while the secretion of juice was scanty, or altogether arrested. Aphthous patches, or abrasions, were also frequently seen—an appearance plainly denoting irritation, although the peculiarity of the form in which it was shown may have had some connexion with the habitual exposure of St. Martin's stomach to the air. In short, the mucous membrane is on such occasions in a state of erythematic inflammation. The symptoms presented by St. Martin – so far as they are stated—agree exactly with those observed in practice. On the day following a fit of indigestion, the patient is usually feverish, with uneasiness and anxiety at the epigastrium; there are headache and nausea; the appetite is lost, the tongue coated, the mouth hot and parched, and there is a strong desire for cooling drinks. The skin also is hot, especially on the forehead and

in the palms of the hands; the urine is scanty, high-coloured, and very acid, or loaded with lithates.

(62.) The first attacks of vomiting after excess in eating and drinking are obviously due to the sour, undigested food with which the stomach is charged; but afterwards, when it returns at intervals during fasting, it may generally be considered as an effect of inflammation. Sometimes the sickness is excited by the tough mucus that collects in the stomach on these occasions, or it may arise from regurgitation of bile (207). As soon as the bile, or "frothy mucus," has been discharged, the patient feels lighter and better, nor does he again vomit until there has been time for another accumulation. In slight cases, where there is less irritability of the stomach, and less tendency to bilious regurgitation, a little food often does good, by causing a flow of gastric juice, and thereby relieving the vascular fulness (39).

(63.) Violent fits of indigestion, like those just described, are rarely observed in dyspeptic patients, because they seldom commit the same gross dietetic errors which healthy persons venture to do. Still, in a modified form, slight fits of indigestion, from very trifling causes, may always be detected in the course of chronic cases of dyspepsia. The ordinary symptoms then become a little worse; the pulse mounts up, all the pains are aggravated, the skin is hot, the urine dark-coloured, and, in short, there are many of the signs of the erythematic inflammation just described. It is exactly at this period that dyspeptics often apply for advice, and as the febrile nature of the disorder is evident, it is apt to be viewed as gastritis of long standing, although, in reality, it is merely a case of chronic indigestion, to which a slight dietetic error, or some other cause, has given acuteness. As soon as the effects of this accident are subdued, the complaint re-assumes its previous character. Most examples of protracted dyspepsia may be considered as composed of

long intervals of chronic action, changed into acute, every now and then, from some slight imprudence in eating. It must also be recollected that the same result will be produced without any absolute error in diet, if, from exposure to cold, over-fatigue, or other depressing influence, the power of the stomach have been temporarily weakened (3). Under these circumstances, it is obvious that wholesome articles of food which the day before agreed well, may now excite indigestion and erythema.

(64.) When dyspepsia originates in a "fit of indigestion," the patient usually reports that his health was good up to a certain day, when, after having eaten or drunk something that disagreed, he was seized with epigastric uneasiness, headache, sickness, and fever. After vomiting the offending matters, the violence of the symptoms subsided, but instead of recovering perfectly in the course of a day or two, he found that the stomach remained weak, and, in short, that since then he has been unable to digest with his former comfort. But unless the stomach was on the brink of disease, through the operation of some predisposing cause (9), dyspepsia seldom begins so abruptly, and a *single* "fit of indigestion" rarely produces permanent mischief. The patient probably suffers from many similar attacks, and although ill enough while they continue, manages to regain a tolerably sound state of digestion during the intervals. The disease, however, is only staved off, and in proportion as these irritations are repeated, the vascular and nervous energy of the stomach is worn out. Thus, after every fresh excess, recovery is slower and less complete, until at length dyspepsia takes firm root.

(65.) All the other modes of invasion I am about to describe are chronic; the above is acute, and always accompanied in the beginning with fever and inflammation (61). After a time, the latter subside, and then the case assumes the character of ordinary indigestion. At an early stage of

dyspepsia, which has come on in this way, the prognosis is favourable, because the general health is as yet unbroken, and the stomach still retains enough of energy to recover quickly, if placed by the practitioner in favourable circumstances. The nearer the case approaches to a fit of indigestion, or the regular effects of a fit, the better the prognosis may be.

(66.) Type II.—In a large class of patients, dyspepsia arises in the course of a long habitual indulgence in full living. The diet may be faulty, either because it is over-abundant, or composed of things that are "rich and heavy," in other words, of difficult solubility in the stomach. Daily observation, as well as experiment, have proved, that even in the most active stomach, there are limits beyond which digestion cannot be pushed with impunity, and the inevitable effect of over-working that organ is a lengthening out of the process, with the evils necessarily springing therefrom—viz., an acrid or otherwise vitiated state of the gastric fluids, flatulence, heart-burn, and other signs of indigestion (26). When the complaint begins in this way, it does not at first involve the early stages of chymification, and there is little morbid sensibility in the mucous membrane. All goes on well until towards the end of the process, when the resources of the stomach being nearly exhausted, it has to labour and struggle to complete the work of digestion. Nothing is more surprising than the energy with which that organ resists the different causes tending to throw it into disorder. In strongly constituted persons, it may require years of habitual indiscretion, on most days of which the stomach was brought to the verge of a "fit of indigestion," before its vigour is finally worn out, and dyspepsia established.

It is in this manner that dyspepsia usually overtakes the bon vivant. His appetite is for a long period but little impaired, except, perhaps, in the morning; and he is as well,

if not better, immediately after eating than during fasting. His discomfort seldom begins until three or four hours, or even longer, after dinner. The stomach then becomes unpleasantly distended; there are rancid eructations, or perhaps heart-burn, from which he relieves himself for the time by means of soda or magnesia. His sleep is uneasy, disturbed by dreams or palpitation, and indefinable nervous fears: in the morning he awakes unrefreshed, feverish, and hot. Generally speaking, breakfast, (if he be able to eat any,) brings partial relief, and for awhile "sets him up." In the middle of the day he is faint for want of food, and again staves off his misery by eating and drinking. The period just after dinner may be said to be his best time. His nerves are then braced, his mind cheerful, and the various stimulants he has swallowed produce a transient feeling of comfort, the more dangerous as it blinds him to the true nature of his case. A man readily believes what he wishes to be true, and hence the patient now probably takes up the idea that his complaint has nothing to do with over-feeding. Under this impression, he carefully explains to his medical adviser, that "eating is the only thing that does him good." Contrasting his comfortable sensations after dinner with the feeling of languor and "unstrung nerves," oppressing him at other times, he remonstrates against any material reduction in his allowances, fully convinced that a spare diet does not suit his constitution. His excitability and lowness of spirits perhaps suggest to him that the fault is "in the nerves," and he would have more faith in a course of quinine, than in giving up the stimulating food he finds so indispensable. There comes a time, at length, when the appetite begins to flag; but the temptation of savoury dishes, or perhaps the mere habit of eating largely, (which has often much to do with the quantity of food consumed,) keeps up the mischief, and allows no interval for the stomach to regain its healthy tone of action. Still the progress of such cases is usually slow; for persons

endowed originally with strong powers of digestion may go on overtasking their stomach for years, without any greater suffering than occasional distention, acidity, flatulence, or nervousness. As yet, the complaint can hardly be considered confirmed dyspepsia, and it seldom falls under the notice of a physician. But, although slowly, still not the less certainly, morbid sensibility is eventually excited, and all the steps of digestion, one after the other, becoming involved, the symptoms multiply and increase in severity.

(67.) The sad consequences of high living, traced far beyond their starting-point—indigestion—have been well sketched by Mr. Thackrah, in his work on the Effects of Arts, &c., on Health. Of commercial travellers, he remarks, "Well fed, riding from town to town, and walking to the houses of the several tradesmen, they have an employment not only more agreeable, but more conducive to health, than almost any other dependent on traffic. But they destroy their constitutions by intemperance; not generally by drunkenness, but by daily taking more liquor than nature requires. Dining at the travellers' table, each drinks his pint or bottle of wine; he then takes negus or spirit with several of his customers; and at night he must have a glass or two of brandy and water. We cannot refer to such conduct, except in terms of the strongest reprobation. The illiterate poor take ale at the public-house on the Saturday evening, and often get drunk; but the traveller, who is, or ought to be, better informed, and has, moreover, less temptation, daily takes what would intoxicate a temperate man. The result is disease: first, an affection of the stomach and head, frequently a variety of nervous and hypochondriacal feelings; subsequently, congestion of the abdominal veins; finally, organic disease of the liver. And if the drinker be not suddenly taken off by apoplexy, or other affection of the brain, he merges into dropsy, and the bloated mass sinks into an early grave. Few commercial travellers bear the employ

for thirty years, the majority not twenty. Thus an occupation, in itself so healthy that a man might follow it from boyhood to eighty in health and vigour, is corrupted to the production of disease, and the destruction of at least half the term of human existence." As a graphic sketch of the effects of excessive indulgence in eating and drinking, the above will always be valuable, although I am glad to think it no longer applies in its full force to those of whose habits, only a few years ago, it was too true a picture.

(68.) When dyspepsia, after creeping on in this way, has taken firm root, it is a very difficult complaint to treat; for while the habits of the patient make strong and stimulating food almost a necessity, there is yet no chance of cure until an opposite mode of living be adopted. It may be observed that there are always two indications for treatment in such cases, arising in reality from two elements in the complaint, each of which must be considered separately. There is, first, the exhausted and worn-out stomach, that pleads for rest; and, secondly, the morbid condition of the general system—the weakness, depression, and nervousness, apparently requiring, with equal urgency, that the stomach should still be plied with rich and stimulating nourishment. There is, in fact, that peculiar state of the constitution which, according to the view such patients delight to take, "does not do" with low diet. Luxurious livers, however, may rest assured, that neither the constitution nor the stomach is ever naturally formed for bad habits; although, from long indulgence in them, artificial cravings, scarcely less imperious than those of nature herself, are easily engrafted on the system. The position of the man in whom these have grown strong is perplexing. If he go forward and continue to satisfy them, the time will inevitably come when he must break down and fall into disease; if, on the other hand, he stop to retrace his steps, he is at once discouraged by the inconvenience that super-

venes on suddenly checking habits changed by indulgence into urgent wants. Hence it should be repeatedly and carefully explained to patients in this predicament, that all the bad effects likely to arise from adopting a new mode of living may be escaped, provided the change be not carried through too hurriedly. The sot, whom an accident keeps sober in his bed for a few days, is often seized with delirium tremens, because he is deprived of the accustomed stimulants; and in like manner, the man who lives "too well" suffers in a minor degree, if *suddenly* put on spare diet. Experience proves, however, that when the drunkard is *gradually weaned* from tippling, no such accident is likely to happen; and more certainly still, if the intemperate feeder be treated on the same principle, he will reap the benefit, without the inconvenience of sudden change. The vague idea entertained by some, of an inherent constitutional necessity for stimulating food, is a pernicious fallacy; and the drinker might argue that to be tipsy every day suited his constitution with as much truth as the bon vivant that his required full living. Nevertheless, for reasons assigned above, the practitioner who has to treat cases of this kind, must keep in view both the gastric disorder and the morbid cravings of the system. He must concede a little to habits, even although they be bad, and not press forward over zealously with short allowances. He may rest assured, that the reformation ultimately planned in the patient's mode of life will be brought round with most success if made slowly.

It has been stated that these cases are difficult to cure. Too often the old "liking for good things" revives to check the progress towards recovery; and, provokingly enough, this almost always occurs just when the patient begins to find out the strength his stomach has regained, and the physician to look forward to a speedy cure. At other times, the habit of morbid secretion established in the stomach long baffles every effort to restrain it. But here, as in all other forms

of indigestion, perseverance in the use of remedies, and resolution in avoiding the causes of disease, ultimately gain the day.

(70.) Type III.—Dyspepsia slowly invades during a state of general weakness and impaired health in which the stomach participates.

In the cases thus far described, there was no primary defect in the stomach. It fell into disease simply because it was over-tasked; but the term "weak" did not apply to it, more than it would to a man who cannot work well with a heavier load than nature intended him to carry. Its vigour was worn out, because it was urged beyond what might in reason have been expected from it. In the preceding types, therefore, the disease sprung from the violence of the exciting cause; in this, we witness precisely the same effect produced by the strength of the predisposition.

The class of cases about to be considered has this distinctive character—that the stomach, before the dyspepsia invades, has acquired so strong a predisposition to the disease, that, not only is it unequal to any extraordinary effort called for by an accidental dietetic error, but it is unable even to digest food which, under other circumstances, would be deemed both wholesome and in proper quantity.

(71.) We are, on the whole, too apt to associate indigestion with intemperate living, and to regard it as a proof that the stomach has been, at one period or another, unwisely pampered; it is, in fact, popularly viewed as little else than a punishment for self-indulgence. The inaccuracy, not to say harshness, of this opinion is clearly shown by the number of dyspeptics daily seen who have never lived otherwise than carefully; who have neither brought on "fits of indigestion" by gross blunders in diet (type first), nor worn out the strength of their stomach by a long course of luxurious feeding, (type second.)

The predisposition essential to this form of the disease

may be acquired in various ways, but I may here content myself by referring to the first chapter of this work, wherein they have been fully considered.

(72.) The theory of the origin of this form of dyspepsia is easily understood. The stomach, as is well known, sympathizes with many distant organs, and often suffers through their disorders. Moreover, most weakening diseases of the general system partially impress their own character on the stomach, which accordingly performs its function with corresponding languor. Its muscular, nervous, and secreting energy are all indirectly lowered, and its power may in this manner be at length reduced to a degree that unfits it for digesting wholesome food. Hence, one patient becomes dyspeptic after a hæmorrhoidal flux is established; another, on recovering from a tedious confinement; a third, after her strength has been wasted by protracted nursing, &c.

The origin of this form of dyspepsia is most insidious, for the weak and valetudinarian subjects of it are hardly aware of its approach before it is firmly established. The symptoms it presents, even from its commencement, extend over all the stages of indigestion, and not unfrequently over the period of fasting also. In severe cases, both sanguification and secretion are defective, and every system—the nervous, the vascular, the muscular, the dermoid, &c.,—and, I might almost say, every important organ in the body is involved, and furnishes its quota of symptoms. These last, therefore, being derived from so many different sources, are more numerous, and the whole amount of suffering is greater, than in any other form of indigestion.

(73.) The general characters of this kind of dyspepsia are as follows:—The patient's countenance denotes debility, depression, and perhaps nervousness. In bad cases, it is either pale, smooth, and tumid, as from anasarca, or thrown into folds, finely wrinkled, or as if cracked; at other times, the skin is pinched, and stretched tightly over the cheek bones. In the

worst examples, the patient is emaciated, and not unfrequently supposed to be consumptive, both from his hectic look and short hacking cough, caused by gastric irritation reflected on the lungs. The eyes, too, are dull and hollow, and often have the staring expression remarked in phthisis, from the eyelids being kept widely apart. The general aspect of the body is pale, as in anæmia; or dingy and dirty looking; the appetite is always bad; not unfrequently there is loathing at the sight of food. As nothing developes morbid sensibility so certainly as weakness, patients of this class are full of aches, and they are more especially liable to the sharp pains of the abdomen and chest described farther on (132).

(74.) When compared with the forms of dyspepsia hitherto considered, the prognosis is unfavourable, and greater tact and delicacy of treatment are required. The paramount indication is to strengthen, and the main obstacle in the way of its fulfilment is that the practitioner has to work with a worn-out or inefficient stomach. In the cases last described, our object was to reduce the diet as quickly as certain morbid cravings would permit, but here, it is to allow one as nourishing as a feeble digestive apparatus can manage. The curative direction in the first is to restrict, in the second, to increase the diet. In the class of cases, therefore, now being considered, the nature of the food must be such as to afford the system the greatest quantity of support at the least possible cost of digestive labour. The constitutional excitability of these patients is usually strong; hence, fever is easily lit up from the most trifling mismanagement—either in food or medicine—and so also is erythematic inflammation of the stomach (61).

In what way soever dyspepsia may have begun, it seldom fails at last to break down the constitution, and therefore most old cases of the complaint ultimately assume the characters just described. It may be observed, however, that

in simple indigestion, it requires a long period of months or years to undermine the health, and reduce the stomach to that state of permanent weakness which many exhausting diseases, co-operating with indigestion, are able to produce in a few weeks.

(75.) Type IV.—This last form of dyspepsia arises solely, or in part, from faulty action in the liver and duodenum.

The frequency with which the signs of hepatic disorder are mixed with those of indigestion has been generally noticed. In some instances, it is hard to say whether the liver or the stomach be primarily or most at fault, because many of the symptoms—for example, the headache, the sickness, the foul tongue, &c.—belong equally to both organs. Hence it happens that each case is apt to be viewed according to the peculiar bias of the practitioner—with some, it is "all stomach;" with others, it is "all liver." In truth, the complaint up to a certain point will bear either interpretation, as *both* organs are involved, and it requires care and skill in tracing symptoms to their true source, before the amount of disorder in each can be exactly settled.

(76.) Under the term "biliousness" are comprised several different forms of hepatic derangement; as, 1st, suppression of bile; 2ndly, retention of bile—bilious engorgement—or congestion; 3rdly, overflow, or excessive secretion of bile; and lastly, regurgitation of that fluid into the stomach.

Dr. Budd has described a highly dangerous form of suppression of bile, depending on a peculiar disorganization of the liver, which involves the hepatic cells—the minute laboratories wherein the secretion is manufactured from the blood. As the disease may be circumscribed to a part of the liver, while the remainder still performs its function, there may be no material diminution in the quantity of bile visible in the excretions; and hence, the difficulty of the diagnosis is much increased. In a general way, the symptoms resemble those of poisoning of the blood: thus there

are prostration of strength and jaundice, followed ultimately by delirium and coma. For a full statement of all that is known of this rare and obscure disease, I cannot do better than refer to the excellent treatise by Dr. Budd on Diseases of the Liver.

(77.) Partial suppression, failure, or mere scantiness of bile from functional disorder, is very common, although many cases are considered as examples of it on erroneous grounds. Some practitioners, and nearly all patients, habitually take for granted that the formation of the bile is defective whenever the evacuations are of a light colour. Among the various uses attributed to the bile, two of the best ascertained are, to remove certain noxious matters from the blood, and to promote the alvine discharge by its stimulating properties. Bile, therefore, is an excretion as regards the blood, and a kind of natural laxative as regards the alimentary canal. Now, if the degree of depuration needed by the blood in passing through the liver were always the same, it would follow that the same quantity of bile should always be excreted in order to maintain perfect health. But as the amount of depuration required is liable to change, and moreover, as a varying portion of this duty may be performed by some other vicarious organ, as the lungs (81), it follows that the quantity of bile actually excreted, although at times so small as hardly to tinge the evacuations, may yet effect all the purification needed by the blood at the moment. There is consequently no disorder as regards the first use of the bile; while, with respect to the second, the bowels may be regular without its aid. Thus, the mere fact of the evacuations being light-coloured is no positive proof of any departure from healthy action (224).

(78.) Biliousness is popularly distinguished by different names, according to its intensity and the particular symptom that happens to be predominant. The slightest form of the complaint, consisting of nothing more, perhaps, than

loss of appetite, languor, and a general sensation of discomfort, is at once recognised by patients liable to it, who speak of themselves as merely "feeling bilious" for that day. Passing through endless shades of severity, we come to cases remarkable for the degree in which the head sympathizes with the liver, and these are familiarly known as "bilious headaches," or "sick headaches" (149), if with the latter, nausea or vomiting be conjoined. On other occasions, when excessive secretion and regurgitation of bile are added to engorgement, the complaint breaks out in violent disturbance of the stomach and bowels, forming what are called "regular bilious fits, or attacks," or bilious diarrhœa; the chief symptoms being vomiting and purging, or the latter alone, if the regurgitation be slight. The reader will find many details respecting these symptoms in the chapters of this work which treat of headache, vomiting, and the state of the bowels. Lastly, when to some of the above-mentioned signs are joined high febrile disturbance, we have the most intense form of the complaint—namely, bilious fever. In the latter, the symptoms are usually more violent than dangerous, at least, in this country; but in tropical climates, they are often conjoined with the distemper arising from pestilential miasmata, and both together produce a highly perilous kind of yellow fever.

(79.) In one or other of these forms, biliousness is exceedingly common, and produces a vast amount of suffering, especially in large and densely peopled towns. It attacks all ages and both sexes, but more especially females, from the sedentary nature of their occupations. Changing from a bustling to an inactive employment, or from a country to a town life, is extremely apt to bring it on. Thus, many date the origin of their bilious complaints from the time they commenced residing in London; and others know from experience that their liver ceases to be troublesome as soon as they begin to travel or ramble in the open fields. Among

the chief causes of the complaint are a luxurious mode of life and indulgence in heavy meals.

(80.) Bilious attacks are most frequent in spring and autumn —at those seasons, in fact, which are remarkable for sudden alternations of temperature. When the warm weather first sets in, in spring, the number of persons "loaded with bile" who, all at once, begin to apply for relief at public institutions is very striking: and throughout the whole summer, sudden changes in the weather always increase the prevalence of hepatic disorders. Not unfrequently, persons, after walking under a broiling summer's sun, become yellow, prostrated in strength, and bilious.

(81.) Physiologists sometimes explain on chemical principles the tendency of hot weather to produce bilious complaints, ascribing it to a lost balance between the liver and the lungs in that part of their function which is vicarious—namely, the excretion of carbon. Assuming that each of these organs has to perform a certain share of this duty, anything that shifts the labour from the one upon the other, must be apt to lead to disorder. In the liver, the carbon is excreted along with the bile; in the lungs, it is thrown off as carbonic acid by means of the air respired, and the greater the quantity of oxygen contained in the inspired air, the more freely will the carbon be eliminated. Now, as cold air is denser than warm air, it contains more oxygen, and it is supposed, therefore, that in hot seasons and still more in hot climates, the atmosphere is so rarified, that it does not supply sufficient oxygen to withdraw or burn out the due proportion of carbon from the blood. Under these circumstances, the extra duty is thrown upon the liver, which, in its efforts to compensate for the deficient action of the lungs, often falls into disorder. In tropical climates, where the heat is both intense and long continued, the above theory may afford some explanation, but it does not satis-

factorily apply to biliousness in this country; for late in the autumn, when the order of atmospheric changes is reversed, and the temperature passes from hot to cold, bilious attacks are scarcely less frequent than in the spring. I have also observed, on several occasions, that persons who have lived long in warm climates, actually suffer more from biliousness in England than when they were exposed to a tropical sun. I lately saw a young gentleman severely affected with jaundice, which broke out at the commencement of winter, a very short time after he had landed from Calcutta. Great heat may favour biliousness by inspissating the secretions in general, which usually contain less water in proportion as the cutaneous transpiration increases.

(82.) The yellow tinge of the skin, so conspicuous in this class of patients, suggests that the bile itself, or, at all events, its colouring matter, is present in the blood—an opinion which has been confirmed by various chemists. There is some doubt, however, as to the way in which it gets there. Many suppose that the bile, after having been secreted from the blood, is re-absorbed into it; others, that it exists ready formed in that fluid, and that the colour arises simply because it is not drawn off, in consequence of some fault in the secretory act. The first opinion seems to me to be by far the more probable. On some occasions, the bile pigment is probably absorbed from the surface of the duodenum or stomach (207).

(83.) The frequent coincidence of a yellow tinge in the skin with biliousness, has suggested that the presence of bile in the blood is the cause of the symptoms. This, however, is very unlikely—at least, in its full extent; for the intensity of the latter does not correspond to the depth of colour; the symptoms may be trifling, although the colour is well marked; or the complexion may be clear, while bilious signs run high. Moreover, in jaundice, where the

tint is deeper than we ever see it in ordinary bilious complaints, many of the most common signs of the latter, as headache, nausea, &c., may be absent altogether.

Bilious attacks for the most part recur periodically, and from the improved state of health in which they often leave the patient, he begins at length to regard them as a kind of constitutional necessity; or in the same way as others view a fit of the gout, a hæmorrhoidal flux, or an old discharging sore. This inference, however, is quite erroneous; for admitting that patients enjoy better health for a while after such attacks, and are occasionally even protected by them from some worse mischief, still it cannot be denied that it would be better for these persons were the state of their constitution so altered or modified, as to enable them altogether to dispense with safety valves so painful and debilitating. A severe bilious fit seldom breaks out without warning; thus many feel a threatening of headache, uneasiness in the eyes, nausea, giddiness, or chilliness, for a day or two previously. It seems as if the pent-up bile were charging the whole system before the attack begins; and many who recognise these premonitory symptoms know from sad experience that no comfort is in store for them, until, in one way or other, the load of bile has been carried off.

The yellowish tinge of many bilious patients is characteristic of their state. In some, the tint forms an index to the intensity of their disorder, deepening as the latter increases, and shading away into the natural colour of the skin, in proportion as it is removed. On other occasions, the face has merely a dingy look; and in not a few bilious patients the complexion remains clear. There is often slight tumidness about the face, depending sometimes on vascular determination from frequent headache (149), and at other times on congestion caused by the vomiting or retching to which bilious patients are so liable (207). The expression of the eyes varies; in the intervals, they are usually listless and

dull; but during an attack, they are either suffused, or full and lustrous, especially where the complexion is dark.

(84.) When persons are, as it is called, "full of bile," they usually droop and feel indisposed for mental or bodily exertion; everything is a trouble to them. Heats alternate with chills, or even shivering. They willingly take up their quarters by the fireside, from which they can hardly be induced to stir; and they continue chilly, although to others their skin may feel hot and parched. They are often overcome with drowsiness in the day-time, so that they keep themselves awake with difficulty. The appetite is gone, but there is generally much thirst.

(85.) The *direct* uneasiness felt in bilious engorgement is usually trifling. There may be some pain, distention, or tenderness over the liver, but oftener it is entirely wanting. On the other hand, the patient's suffering chiefly arises from the number and violence of the "secondary or radiated pains" or sympathies (95), which, in point of fact, are hardly less numerous than those observed in morbid states of the stomach itself, and, unluckily for diagnosis, many of them are of the same nature. Thus headache, pain about the front of the chest and epigastrium, nausea, flushing, and chills of the skin belong equally to indigestion and to biliousness. Nevertheless, on close examination it will be found that the symptoms mentioned usually offer certain characters by which it may be distinguished whether they have their primary source in the stomach or in the liver; but for these, in order to avoid repetition, I beg to refer the reader to the chapters of this work wherein they are specially treated.

(86.) Among the pains more immediately hepatic may be mentioned dull aching referred to some part of the back—usually over or between the shoulder-blades, less frequently at their inferior angles. It may be accompanied by considerable tenderness on pressure. Not long ago, a patient was under my care, who could not lean back against her chair on

account of superficial soreness of the shoulders. Nothing is so apt to excite this pain in those liable to it as remaining long in a sitting posture.

(87.) The chief cause of the symptoms just described is bilious congestion or engorgement of the liver, which may arise in several ways. Thus, a tumour in some adjacent organ may imprison the bile by pressing on the ductus communis choledochus; or, if a gallstone get impacted in its channel, or if its walls adhere from old inflammation, the same effect will follow. It has also been suggested that temporary obstruction may occur from the orifice of the duct being plugged up by tough mucus, or closed from swelling in the lining membrane of the duodenum. But as all these are comparatively rare accidents, they cannot serve to explain the vast number of cases daily met with in practice. As to causes connected with the bile itself, out of which engorgement is likely to arise, there is reason to believe, 1st, that the secretion may be too active, or that a larger quantity of bile may be poured out than can be easily carried away by the ducts, after their tone has been perhaps impaired by undue distention. Some will naturally inquire what prevents the excess from flowing off into the duodenum, as the ductus communis choledochus has no sphincter to close the channel? It must be recollected, however, that comparatively little bile passes from the liver, except while digestion is in progress; and hence, if bile be too abundantly secreted during fasting (88), it may stagnate in, and distend the ducts, because the main stimulus to its discharge—viz., chyme in the duodenum—is wanting. But, secondly, the cause of congestion may lie, not in the quantity, but the quality of the bile. Observation shows it is sometimes of a morbidly thick and viscid consistence, the natural effect of which is, that instead of flowing freely along the hepatic ducts, it clogs or obstructs them. I need hardly add, that engorgement will be most apt to happen when the biliary secretion is both thicker and more copious than natural.

(88.) Bilious symptoms are usually worst in the morning, and, indeed, are often limited to that period of the day, as appears from the following table:—

Cases where bilious symptoms were limited to the morning	51
Cases where they occurred in the morning and also at other times	23
Cases where the symptoms appeared only in the evening	1
	75

A certain amount of bilious congestion seems to be natural, in the morning. That the bile is periodically stored up might be inferred from the anatomical structure of the liver, which has not only its system of ducts, but also a gall bladder to hold that fluid until it is wanted; experimental research, moreover, has shown that little bile escapes into the duodenum except during digestion. For four or five hours, therefore, after eating, the liver is slowly drained of its bile; but, when digestion is finished, the flow stops, and the liver gathers up a supply against the next repast. Hence it is after fasting that the liver is most fully charged with bile; and as the period of longest abstinence is between the evening meal and breakfast, it follows that there will always be towards morning a natural accumulation of bile, which any of the causes already mentioned may convert into morbid engorgement. The quantity of bile secreted by many patients is enormous. Some vomit a cupful or two every morning for weeks together, without either losing their yellow colour, getting rid of the general bilious symptoms, or apparently stinting the chyme of its due supply. There is literally what patients call an "overflow of bile;" and sometimes it seems as if the *excess or overflow* only passed off from the liver, which may thus be said to continue in a state of permanent engorgement; nor is it easy to empty it

thoroughly except by the powerful expulsive efforts produced by an emetic.

(89.) It has been already mentioned that the chief stimulus to the flow of bile is food in the duodenum or stomach; hence many who are bilious in the morning, feel themselves relieved after breakfast: in other words, after some bile has been drained from the congested liver. Acting on this hint, I have often recommended a light supper to prevent morning biliousness, and sometimes with success. It keeps the bile flowing during a part, at least, of the night, and thus shortens the period of accumulation.

(90.) Of all modes of emptying an engorged liver, none is so direct, so effectual, or so little irritating to the bowels as an emetic. It may be said to squeeze the bile from every part of the organ like water from a sponge. The good produced by it often follows almost immediately; hence many a day begun in misery is, through its operation, ended in comfort. For some practical remarks on this remedy, the reader is referred to the chapter on Nausea.

A brisk walk, or a rough ride, often wards off a bilious attack; and even when a slight one has come on, exercise, although at first apt to make the headache and giddiness worse, generally brings relief if the patient have courage to persevere. Rowing is even more efficacious than riding, as a means of relieving the liver and quickening the flow of bile along its ducts; and where persons have no opportunity of taking out-door exercise, the daily systematic use of the dumb-bells is of the highest importance.

The exhibition of saline purgatives is usually followed by a flow of bile. A dose of sulphate of magnesia, the potassio-tartrate of soda, or the sulphate of manganese is, generally speaking, effectual. If something more powerful be required, nothing succeeds better than six grains of calomel with ten of rhubarb. Much benefit may also be expected, in cases of bilious engorgement, from the use of

saline mineral waters, as those of Leamington, Cheltenham, and Harrowgate; the more especially as the patient gets, at the same time, the advantage of plain food, early rising, and plenty of exercise in the open air. Cupping and leeches, although fit remedies in *sanguineous congestion*, do no good in that which is *bilious*. Severe counter-irritation, as by means of blisters, may probably stimulate the ducts; but any advantage so obtained is more than counter-balanced by the difficulty the patient afterwards experiences in taking exercise with an excoriated side. Brisk rubbing and shampooing over the situation of the liver, especially if the patient can be induced to do it for himself, are highly useful. Blondlot hazards the remark, that the acidity of one secretion excites the flow of another which is alkaline. Thus, he says, the alkaline saliva provokes the secretion of the acid gastric juice, which, in its turn, solicits the alkaline bile. Be this as it may, the nitro-muriatic acid has certainly acquired a high repute for curing torpor of the liver; and many trials lead me to believe it is very effectual in this complaint. Much advantage may also be expected from the extract of taraxacum. The fel bovinum inspissatum is not suited to bilious engorgement (223).

(91.) The bile may be properly discharged into the duodenum, and yet excite disturbance by regurgitating into the stomach, instead of taking its natural course downwards through the bowels. If the quantity be small, little inconvenience is produced; but if more abundant, it checks digestion, and excites intense nausea, sickness, and vomiting (207). Between these extremes are endless gradations of discomfort. These last effects of bile on the mucous membrane may be compared to the action of irritating food; hence, if the regurgitation be repeated often enough, it leads at length to morbid sensibility and indigestion.

The cause of regurgitation is often obscure. There is every reason to believe that it occasionally depends on

disease of the duodenum itself (57); at other times, it is the effect of irritation in the stomach propagated to the liver, either by continuity, or radiation. Improper or stimulating food, for example, may excite regurgitation the instant it is swallowed, and consequently long before it can have come into direct contact with the duodenum (207). The feeling of anger has, according to Beaumont, a remarkable power in causing regurgitation; and the same author observes, that "when the use of fat or oily meat has been persevered in for some time, there is generally the presence of bile in the gastric fluids."* As bile somewhat assists the digestion of fat, it is not unlikely that the latter encourages the secretion of the former, just as the immoderate use of alkalis appears to augment enormously the quantity of acid formed in the stomach. As a general rule in practice, therefore, all kinds of fat meat should be forbidden to bilious patients, even although they may seem at the time to agree, because in the end they encourage regurgitation of bile. Like some other faulty acts (204), regurgitation is probably produced by very slight causes, when once the habit has been fairly established. It is often conjoined with other forms of "biliousness" already described (76); nevertheless, many persons are liable to it whose complexions are clear, and who have never known what it was to *feel* bilious in any way. Exercise, as has been stated, tends to relieve bilious engorgement by quickening the current in the ducts; it does not, however, prevent regurgitation, but, on the contrary, more frequently leads to it in those predisposed, by bringing down bile into the duodenum.

(92.) The frequent co-existence of indigestion and biliousness is very remarkable, and the latter appears to act powerfully as a cause of the former. In numerous instances, the history of cases arising in this way is as follows. The patient states that he has suffered for many years from sick headache,

* Experiments on Digestion, p. 86.

or other forms of biliousness; and that the attacks, which at first occurred but once, perhaps, in the course of two or three months, gradually became more frequent,—returning every six weeks or month, then every fortnight or week; until, at length, he is rarely free from bilious symptoms of some kind. The nature of the hepatic complaint may be torpor or engorgement only, and the stomach suffers from sympathy, but very generally there is also regurgitation of bile, which directly irritates the gastric mucous membrane. So long as the intervals between the bilious fits are protracted, the stomach is little affected, or rather, although violently deranged during the paroxysm, it quickly recovers when the latter has passed off, and performs its office as well as before. By and by, however, when the stomach is in this manner irritated almost every day, morbid sensibility is slowly but surely developed, and dyspepsia having once commenced, the two disorders mutually aggravate each other, until at last a very intractable form of indigestion is produced. The partly bilious origin of many of these cases continues strongly marked throughout their progress, more especially in the morning (153, 163, 207).

(93.) If, in these mixed cases, bilious symptoms arise only in the afternoon or evening, they are usually less marked, and not so readily picked out from others purely dyspeptic. Early in the morning, there was no food in the stomach to obscure the diagnosis by adding the signs of indigestion to those of bilious disorder, so that the latter stood out prominently by themselves. But it is different in the evening, after the meals of the day have been eaten, because the dyspepsia arising therefrom may modify or mask the hepatic disorder.

(94.) When slight bilious fever is conjoined with much gastric sensibility, there results a very common case which is often mistaken for inflammation of the stomach. The symptoms are anxiety, distress, and prostration of strength, general heat of

skin, headache, with pain and tenderness of the epigastrium. The appetite is lost; nausea and vomiting are frequent. The more stress is laid on the vomiting as a diagnostic sign, because it occurs both in the morning and during the day, both before and after food, so that it is usually described as constant. These cases, therefore, present very perfectly the conventional signs of gastritis. Nevertheless, antiphlogistic remedies will do no good whatever; while if an emetic be administered, or some other means taken effectually to clear the liver of the load of bile oppressing it, the patient rapidly gets well. In perusing the writings of the Broussaists, I am satisfied that cases of this nature may be often picked out, and it will moreover be observed that they are sometimes put on record *because the antiphlogistic treatment, contrary to expectation, failed to relieve them.*

I now beg the reader's attention to the various symptoms presented by indigestion: and as every one of these occasionally becomes so prominent as almost to constitute the patient's whole complaint, and, consequently, to require special treatment, I have thought it the most useful and practical plan to treat of each symptom separately. Thus each chapter, although forming a part of the entire work, will yet be found, to a certain degree, complete in itself.

CHAPTER VI.

GASTRALGIA.—GENERAL OBSERVATIONS ON PAIN AND TENDERNESS IN INDIGESTION.

The nature of the pains excited by indigestion—Primary and sympathetic pain—Amount of gastric disease that may be present without pain—Morbid sensibility acquired in indigestion—The causes which, by predisposing to primary and sympathetic pains, multiply the aches observed in indigestion—The relations between the various pains felt and the irritation in the mucous membrane of the stomach.

THE exact mode in which we feel irritation of the gastric mucous membrane has led to much difference of opinion among writers. Some, struck with the almost total absence of pain in many cases of severe organic disease, regard that organ as nearly destitute of common sensibility. Others, basing their opinion on clinical observation also, have arrived just at the opposite conclusion, and believe that the stomach reveals its sufferings by direct sensation, like other parts, as skin or muscle.*

(95.) I may remind the reader that all kinds of pain may be classified as—

1st. Direct or primary, as when the skin is pinched. The sensation is referred by the brain directly to the spot irritated.

2ndly. Indirect, secondary, radiated, or, as they are often called, sympathetic pains: when the sensation is referred by

* Louis on Phthisis, by Dr. Walshe, p. 184. London, 1844.

the brain, not to the part primarily irritated, but to some organ at a distance from it. As familiar illustrations, I may mention pain about the shoulder in disorder of the liver, or pain in the knee from hip-joint disease. A multitude of other examples will be found among the symptoms of dyspepsia.

(96.) The amount of disease in the stomach that may run its course with scarcely any pain at all, has often been remarked by practitioners. Thus, Dr. Abercrombie* mentions the case of a strong and healthy looking servant girl, aged 21, who while engaged at her work was suddenly seized with symptoms of inflammation of the abdomen, and died in eighteen hours afterwards. On inspection, marks of recent peritonitis were found, and in the middle of the smaller curvature of the stomach, was a round opening about one-third of an inch in diameter, through which the contents of the organ had burst into the abdominal cavity. At this part, the walls of the stomach were nearly half an inch in thickness. "The inner surface at the place of the rupture presented a deep excavation with rounded and smooth edges, like a deep eroding ulcer that had cicatrized." Dr. Abercrombie adds, that "the patient had been residing in the house where she died for four months, and was never known to complain of her stomach, or to show the smallest deviation from most robust health; and the only farther information that could be obtained in regard to her was, that she had had fever in the spring." As another striking instance of the same kind, I may mention, that not long ago I assisted at a post-mortem inspection, where more than two inches square of the mucous membrane towards the pylorus were found destroyed by cancerous ulceration. Now, although the patient had been ill for several months, so little pain or other inconvenience had been referred to the region of the stomach, that

* Pathological Researches on Diseases of the Stomach, p. 41. Edinburgh, 1828.

serious disease there was never suspected. The following interesting illustration occurs in Dr. Beaumont's work on Digestion:*—"Stomach empty; not healthy; some erythema and aphthous patches on the mucous surface. St. Martin has been drinking ardent spirits pretty freely for eight or ten days past—*complains of no pain*, nor shows symptoms of any general indisposition—says he feels well, and has a good appetite."

(97.) On most occasions, however, when the mucous membrane of the stomach has been long subjected to frequently recurring irritation, as in dyspepsia, it both becomes very sensitive in itself, and acquires, in a high degree, the property of exciting secondary or sympathetic pains elsewhere. The comparative frequency of pain in different parts of the abdomen and chest in 200 cases of indigestion is shown in the following table:—

(98.)

Pain referred to the epigastrium, or pit of the stomach	141
About the sternum, or front of the chest	110
In the left hypochondrium	36
In various parts of the abdomen . .	25
About the pharynx	17
In the right hypochondrium	15
In the umbilical region	13

(99.) In the chapter on the physiology of digestion, the usual situation occupied by the stomach has been carefully pointed out (17), and if the reader now compare what has been there stated with the above table, or with the cases that occur to him in his own practice, he will at once remark, that in a large number the pain is actually referred to regions into which the stomach does not extend. All such pains, therefore, are to be regarded, strictly speaking, as examples of secondary sensation, although many of them

* P. 249.

are familiarly spoken of as if they were seated in the stomach itself. A short, general survey of the causes that predispose to pain, and more especially to secondary pain (95), may be of use in enabling us to account for the numerous and obscure aches which so often complicate indigestion.

(100.) Secondary sensations occasionally happen from slight causes, even in health; as, for example, when we feel a creeping in the skin from disagreeable impressions received by the nerve of hearing. Both in health and in disease, it appears that one chief predisposing cause of these sensations is emotion, and its mode of acting may be distinctly observed in the following case:—A gentleman, walking along a gallery, hit his knee against a bench which lay unperceived in his way, and instantly afterwards felt pain not only at the spot injured, but in many other parts of the body. As soon as he had recovered from the shock, he *voluntarily* struck the knee again upon the bench, but although the blow was harder than before, he could no longer make the pain spread; this time it was limited to the knee only, and there was no radiation. It is quite obvious that it was the emotion, or alarm, which in the first instance enabled the blow to excite sympathetic sensations elsewhere. The emotion alone could not produce the pain, neither could the blow; but when the latter acted on nerves rendered impressionable by the former, the effect was instantly shown. Emotion, in short, temporarily predisposes to radiated sensations, just as certain morbid states now about to be considered, do so permanently.

(101.) Sympathetic sensations are extremely frequent in disease, because one common effect of the latter is to increase the general impressionability of the nervous fibrils. Emotion, flurry, or mental uneasiness now act with redoubled power. The following morbid states may be specially remarked for their influence in promoting radiation; and hence, when any of them happen to be conjoined with indi-

gestion, the number of pains felt by the patient is for the most part increased.

General nervousness, mobility, or sensitiveness.

Hysteria, chlorosis, amenorrhœa.

Debility, or the state produced by exhausting discharges, menorrhagia, leucorrhœa, loss of blood, or excessive fatigue, &c.

The state of the nervous system during the catamenia.

A weak or impressionable condition of the nerves secondarily affected—as from recent disease in the part.

The various morbid states above mentioned agree in this important point, that they occasionally heighten the irritability of the nerves to such a degree as to bring them within the range on which many common or unavoidable agents act painfully; and, moreover, they probably increase the conducting qualities of the fibrils; hence, primary irritations, which in a healthier condition of the nervous system would have remained local, spread so as to produce secondary *pains or effects* elsewhere. A few of the states just enumerated, as they consist both of a primary irritation in some diseased organ, and of a peculiar constitutional condition accompanying it, act in the double capacity of exciting and predisposing causes. Among these, I may more especially point to menorrhagia, leucorrhœa, and the catamenia; and to this list might be added *indigestion*. The latter, for example, by deteriorating the nutritive and strengthening properties of the blood, makes the nerves weak and irritable; while the predisposition thus produced is being continually excited into action by the contact of food with the mucous membrane.

During the catamenial periods, the whole frame is highly impressionable, as is shown in the following examples, which likewise illustrate the influence of an unsound state of the nerves secondarily affected, in favouring sympathetic sensations.

A married lady, aged twenty-nine, generally enjoying ex-

cellent health, was confined about ten years ago, and subsequently suffered from phlegmasia dolens of the left thigh, from which in due time she recovered. Ever since that period, however, although perfectly well in other respects, she has always felt severe pain in the limb during the catamenia. The affected thigh has remained somewhat larger than the other, but otherwise it is serviceable and sound. She has now been pregnant for three months, and it is remarkable that as there has been no menstruation during that time, there has been no return of the pain.

Mrs. W., aged twenty-seven, a strong and healthy woman, about a year and a half ago received a kick from a horse on the right groin, which became swollen and discoloured, but did not suppurate; at the same time, her right shoulder was slightly injured. Ever since, for a day or two before the catamenia appear, and during their continuance, both parts, although to all appearance sound previously, are exceedingly painful, and the groin frequently swells.

The influence of the catamenia in multiplying or aggravating the different pains felt in indigestion occurring in women, may, in general, be distinctly observed.

(102.) The subject here touched upon is extremely interesting, but the plan of this work prevents me from doing more than noticing two powerful promoters of pain—hysteria and debility,—whose influence may be often perceived in indigestion. There is much difference of opinion respecting the exact nature of hysteria. Thus, while some maintain its seat to be essentially in the brain, others look upon it as belonging more especially to the spinal marrow. For my own part, I am not inclined to limit its seat to either, or even to both, of the nervous centres; at all events, one of its most remarkable characters is extreme impressionability of every sensory and motor nervous fibre in the body. Along with this—one might almost say, corresponding to it—there is a peculiar condition of the mind, which, although difficult to describe, is yet generally known, and of great service in diagnosis.

When this mental oddness is present, the various pains that arise are easily recognised as hysterical; but, on the contrary, where it is absent, their nature is less clear, and they are sometimes mistaken for inflammatory, either during the whole period they last, or until the unlooked-for action of the remedies employed leads the practitioner to suspect their hysterical origin. From the general morbid sensibility prevailing in this complaint, numberless aches and pains spring up in various parts of the body, from such trifling causes as would produce no inconvenience whatever—either primary or secondary—in sounder and firmer nerves. In many hysterical cases, the nerves seem to be perpetually on the verge of painful action, and hence any agent of slight disturbing power is not only felt, but produces effects quite disproportioned to its force. The latter are, in most instances, chiefly limited to the nerves, and therefore, although we pity persons who suffer hysterical pain, we seldom feel alarmed, because we know that, in spite of its severity, the agent producing it has little strength, and is not likely to lead to organic mischief. On the other hand, it is equally true that nerves of a healthier tone are not apt to be thus inordinately disturbed in function from trifling causes, and consequently, when severe pain springs up in them, we argue that the agent exciting it is powerful, and the effects likely to be serious. The violence of the pain in the first case is due solely to the predisposed state of the nerves, which makes them feel a slight irritation with disproportionate acuteness. The violence of the pain in the second is due to the strength of the disturbing agent, which may probably act, therefore, not only on the nerves, but also on the bloodvessels, and thus lead to inflammation and its consequences.

(103.) In the hysterical state of the constitution, when the nerves sometimes vibrate between ease and pain, very little suffices to turn the scale, so as either to bring them within the range, or place them beyond the reach, of numerous

unavoidable sources of irritation. A few doses of a tonic or anti-spasmodic mixture, or the change from a relaxing to a bracing air (138), will often "alter" the condition of the nerves to the requisite degree, and thus remove intense suffering. The effect of the most trifling remedies in quieting the severest pain is frequently, therefore, as much out of proportion, as the pain itself was to the slightness of the cause that originally produced it. In patients so affected, the various pains may be harassing one day, and hardly felt the next, according to accidental, and, in other respects, inappreciable changes in the tone of the general health.

(104.) In some cases of hysteria, it seems as if the impressionability became exalted in certain parts only, where, consequently, pains are alone felt; but in other instances, the nerves in many regions of the body are equally on the verge of morbid action, so that the excitability of some can hardly be said to surpass that of others; hence a number of parts are apt to be painful, either at the same time or in rapid succession. From slight and, generally speaking, inappreciable differences in their relative sensibility, the pain breaks out to-day, for example, in one side of the abdomen, to-morrow in the other, and shifts about, as it seems, most capriciously. It is in vain we strive to detect the reason why it selects any particular spot: all we can say is, that the nervous impressionability apparently preponderates for the moment in that particular place. But if the local condition of the nerves be improved, ever so little, as by a blister, the pain probably ceases altogether, or flies to some other quarter. When we "chase pains about," as it is called, in this manner, we impart tone *only to the spot* where the remedy is applied, so that its nerves are no longer influenced by the cause that acted hurtfully on them before; but if we strengthen the nervous system generally, as by means of steel, we not only cure the local pain, but *prevent it from breaking out elsewhere.*

From want of force in the irritations that excite nervous or hysterical pains, the latter may continue violent for a long time without leading to organic change, or even to much constitutional disturbance. For the most part, however, these paroxysms are broken by intervals, or "lulls," of pain, during which the patient—oftentimes a female—is comparatively well, because her extreme nervous impressionability is at the moment unacted on. This circumstance, which ought, in fact, to be regarded as a blessing both by patients and their friends, sometimes leads the latter, from misapprehension of the *nature* of the complaint, to suspect the *genuineness* of it altogether. They, naturally enough, cannot understand how it is possible for persons to be so ill and so well all at once.

(105.) Debility, although allied to hysteria, differs from it in many points. Thus, in mere debility, we remark the absence of the odd mental affection alluded to; the weakness, moreover, involves the *vascular* as well as the *nervous* system, and hence, although pain arises readily, yet so does inflammation also. The capillaries are easily disordered from slight causes, and, possessing little tonicity, soon get congested, obstructed, and inflamed. The hysterical state may be considered as bearing, in many respects, the same relation to the nerves as want of tone does to the blood-vessels.

(106.) Such are the chief predisposing causes both of direct and sympathetic pain; and in regard to the primary irritations which excite them into action, it is sufficient in this work to distinguish carefully the mode in which one of them operates; I mean irritation of the gastric mucous membrane from food. The influence of indigestion in producing neuralgia has given rise to much difference of opinion. Thus, a recent writer of experience observes that he has never seen a case of neuralgia referable to such an origin;* while others, on

* Elliotson, Art. Neuralgia, Cyclop. of Practical Medicine.

the contrary, view the stomach as the root whence springs almost every obscure ache or pain which the body suffers. I am not without hope that the preceding remarks, together with those that follow, may impart additional precision to some points connected with this intricate subject.

(107.) In the complicated cases of dyspepsia seen in practice, the following relations between the different pains felt and the gastric irritation, may be observed. The word Neuralgia is here used as synonymous with pain.

1. *Neuralgia and dyspepsia, without any mutual connexion or reaction on each other.* This class is, in reality, a very small one.

2. *Dyspepsia and neuralgia; the former—that is, irritation of the gastric mucous membrane by food — being the single and only cause that excites the latter.* To this group belong the true or characteristic pains of indigestion, as gnawing or burning at the pit of the stomach (114, 119); sometimes, also, other pains, not commonly observed in that complaint. Thus I had a dyspeptic under my care, who, if he swallowed spirits, pepper, or anything stimulating, was instantly seized with a severe pain at the back of the neck, that could be excited in no other way. To this class, likewise, belong the pure gastric headache (152), and sometimes the *sharp pains* that occur in indigestion. If neuralgiæ occurring in cases of dyspepsia be "radiated or sympathetic," they of course cease when the primary irritation in the gastric mucous membrane has been cured; unless, indeed, the latter from long continuance has led to idiopathic disease in the place secondarily affected. Many examples of a similar sympathetic action are commonly observed in other organs,—as pain over the right shoulder, from irritation in the liver; or in the left arm, from affections of the heart. One can scarcely open a journal without seeing an endless variety of instances of the same kind. Thus, I lately read the account of a case of obstinate sciatica cured by re-

moving some hæmorrhoids; and of another even more remarkable, where tic-douloureux of twenty-five months' standing was relieved by the excision of a fibrous tumour from the neck of the uterus. Examples like these last mentioned merely form curious and out-of-the-way illustrations of the above very common law of sympathetic or radiated action, and are interesting only from the rarity of the combination.

It may be here observed, that the diagnostic value of all secondary pains depends on their being known to be excited by *one* or by a *very few primary irritations only*. For this reason, such symptoms as uneasiness at the epigastrium, or headache, &c., taken by themselves, are of little diagnostic value, because they arise from so many different primary irritations. On the other hand, certain secondary pains about the shoulder, at the end of the urethra, in the cord, &c., are of great use in diagnosis, because they instantly suggest to the practitioner the few causes capable of producing them.

(108.) 3. *Dyspepsia and Neuralgia—the latter excited by the former, but also by other causes.* To this class, it will be found, most of the sharp and anomalous pains observed in indigestion belong (132, 141). For the reason stated in the definition, they are not characteristic of dyspepsia, but usually indicate that some of the predisposing causes formerly mentioned are in full operation (101). These pains are cured in proportion as the various exciting causes, besides the indigestion, are removed, and as the general tone of the nerves is strengthened. For some additional remarks and illustrations on this subject, the reader is referred to the section on sharp pain.

I have endeavoured, in the preceding pages, to point out to the reader the general nature and relations of the pains usually met with in cases of indigestion. Many of them, although radiated or sympathetic, are of great use to the experienced practitioner; but, on the other hand, they often

mislead the patient himself as to the true seat of his complaint. One, for example, seeks advice on account of a tormenting headache; another applies to be cured of giddiness or palpitation; a third seeks relief for pain in the chest, with hacking cough and occasional dyspnœa; or a fourth, on account of neuralgia in some part of the abdomen, without once suspecting that the cause of all his suffering lies in the stomach, or stating anything to draw attention to that organ. Such persons even show impatience when minute—and, as it appears to them, needless—inquiries are made about digestion; and they are perpetually leading the physician's attention away from the stomach to some other part, whence, as they fancy, all their troubles proceed. It must be recollected, that sympathetic pains do not afford so exact a measure of the strength of the primary disease as those which are direct. Hence there may be, in fact, only slight indigestion, although the secondary pains arising from it are extremely severe.

CHAPTER VII.

THE NATURE AND SPECIAL TREATMENT OF THE VARIOUS PAINS OBSERVED IN INDIGESTION.

The importance of pain in indigestion with respect to diagnosis and treatment—The great variety of terms used to express it—Principle on which they may be classified—Weight—Aching—Hot sensations—Cramp of the stomach—Sharp or neuralgic pains—Anomalous pains.

(109.) Among the signs of indigestion, pain referred to the front of the chest, and upper abdominal region, is the most important, both because it is the chief source of suffering to the patient, and because, when rightly understood, it indicates to the practitioner the proper line of treatment. Its value, in this last point of view, rests on the fact, that as digestion consists of several stages, so disorder in any one of them is announced by uneasiness of some kind. The *period* when this occurs, marks the stage of the process in fault; and, from *the way in which it is described by the patient*, we infer the nature of the disturbance. Unless dyspeptic pain be exactly noted in respect to these two points, it gives little real insight to the medical attendant, and affords no groundwork for accurate treatment. Now, to conduct this part of the examination with success requires patience, caution, and above all, a practical familiarity with the terms commonly used by patients themselves.

Most cases of indigestion present several different kinds of pain: these the patient usually *lumps* together; in other words,

he does not keep each distinct by itself. When examined about them, therefore, his replies refer sometimes to one pain, sometimes to another; in short, to the particular uneasiness of which he happens to be thinking at the moment; hence, unless the practitioner fix the patient's attention to each pain in succession, both parties will speedily be at cross-purposes. The history of each pain, usually corresponding to a separate fault in the digestive process, must be investigated by itself.

With regard to deep-seated pains, most persons may probably have experienced, at one time or other, the difficulty of pointing out their exact seat off-hand, and the same allowance must be made for dyspeptics. But besides this, indigestion often produces a nervousness or confusion of memory, one effect of which is, that patients, if too quickly plied with questions, repeatedly contradict themselves, so that the whole examination becomes unsatisfactory. Of the state of some patients, indeed, full of aches and sensations and symptoms of all kinds, with lively fancies and short memories, it is quite impossible to extract anything like a trustworthy account. A poor, but well-meaning Irishman, for example, often gives me the impression that he would consider it a breach of good manners not to feel everything about which his doctor was kind enough to ask.

(110.) The terms in which dyspeptics describe their sensations are almost endless. The cause lies partly, no doubt, in a corresponding difference in the state of the stomach, but chiefly in the morbid condition of the nervous system engendered by indigestion, in which the feelings become exaggerated or perverted. Still there will be remarked a generic resemblance between many of these terms, admitting of their being arranged into groups, each of the latter being typical of certain lesions, and suggesting a particular line of treatment. For example, the irritation caused by acrid fluids in the stomach is described by one patient as hot; by another, burning; by a third, acrid; or a different sort of pain, denoting

cramp (125), may be felt by some, "like a bone, or a ball," or "as if the stomach were tied into a hard knot," and so on. Cautiously proceeding on this principle, I have classified the terms used in upwards of two hundred well-marked cases of indigestion that occurred in my own practice; and the list is large enough to include all the more common kinds of pain observed in the complaint. A classification of this nature, being approximative merely, is, of course, not intended to supersede, but only to help the judgment, which must always decide on the fitness of the interpretation here suggested, by carefully weighing collateral symptoms. If some of the terms appear too singular or trivial for printing, I beg to remind the reader that my aim is to be practical; and that, as patients are far from expressing themselves with technical precision, and often make use of very odd language, much of his success will depend on his being able to extract from the latter its true pathological meaning.

(111.) All the terms may be arranged in six groups.

I. Weight about the pit of the stomach, or front of the chest—and as more or less synonymous with this, may be regarded,
   Distention.
   Tightness.
   Oppression.
   Pressure.
   Stoppage; the lodging of food, as if it would pass no further than the epigastrium.

II. Aching.—Gnawing.
   A dull, wearing, or "dead" pain.
   A dragging or "heavy" pain

III. Sensation of heat (*fer chaud* of French writers).
   Burning or hot pain.
   Acridity.
   Rawness, &c.

IV. A sensation like cramp.
   Spasms (often applied by patients to sharp pain).

As if the stomach were fixed or nailed to, or drawn up against, the spine; as if it were turned into bone; as if a bone were in it.

A ball, bullet, or something hard at the epigastrium, or under the sternum.

A knot in the same place.

A drawing pain, forcing the patient to stoop, or "bending him double."

A severe dragging, twisting, or tearing pain.

As if a cord were drawn tightly round the waist.

V. Sharp pains.

Spasms (used also to denote cramp).

Acute, quick, or darting pain.

Plunging, twinging, or pinching.

Like pins and needles (often an anomalous pain).

VI. Anomalous pains form a less numerous class than one might expect, and are chiefly observed in the nervous, hysterical, and hypochondriacal. They are insufficient of themselves to characterize dyspepsia, and hence are always associated with some of the other pains above-mentioned.

Beating, fluttering, hammering, pulsation.

"A moving" in the stomach: "nerves working."

Tumbling, trickling.

A sensation of cold at the pit of the stomach.

A sinking, emptiness, or numbness at the same place.

Table showing the comparative frequency of the different kinds of pain above-mentioned in 200 well-marked cases of indigestion:—

Weight or oppression in . .	160	cases.
Gnawing or aching. . . .	121	,,
Sharp pains.	95	,,
Hot or acrid sensations . .	40	,,
Cramps or spasms. . . .	26	,,

(112.) 1.—WEIGHT, DISTENTION, OR OPPRESSION, &c., after eating, is the most common kind of uneasiness felt in dyspepsia. In two hundred cases of the complaint, it was observed 160 times. It is generally seated in the epigastrium; frequently, also, behind the lower part of the sternum, or across the abdomen. Weight at the pit of the stomach may be the only uneasiness caused by the food; but, except in very slight cases, it is always associated with some of the other pains. In 160 instances where it was felt, it is marked as existing alone 15 times only.

The cause of this unpleasant sensation varies according to the period of digestion when it occurs. If it come on immediately, or within a few minutes after eating, it depends on the mechanical pressure excited by the food, or on the dragging necessarily produced by quickly loading a feeble stomach. Even those who digest well, feel some degree of oppression after a hearty dinner has been hurriedly eaten. Weight thus caused subsides in proportion as the stomach gets lightened during the progress of digestion (16).

A feeling of weight, &c., often occurs three or four hours after dinner, in consequence of flatulence from indigestion.

Lastly, weight and distention from flatulence may happen during fasting, either as an effect of indigestion, or hysteria, of which the inordinate secretion of air in the bowels is so remarkable a symptom (176). In the last two cases, the epigastrium is tense and elastic, and both it and the left hypochondrium are highly resonant on percussion. It follows, that if all the causes above-mentioned be acting in the same patient, he will describe the weight as an almost constant annoyance.

(113.) Having ascertained on which of these causes the sensation of weight depends, the appropriate *treatment* naturally suggests itself. In the first case, it will be right to enjoin slow eating, with careful mastication; likewise to proscribe all but the more easily digested kinds of food, and

to diminish the quantity taken at one time. If the patient have two meals only—breakfast and dinner—during the day, he should be advised to interpose a slight luncheon, after which he will be less likely to overload the stomach at dinner (257). Sedentary occupations seem to prolong, gentle exercise to mitigate uneasiness of this kind; exercise, however, is apt to bring on other and more severe pains. In some instances, carminatives and anti-flatulent remedies are obviously indicated; and as atrophy or debility of the muscular fibres of the stomach is present in most cases, tonic and strengthening medicines should be exhibited as soon as circumstances permit (248). For the same reason, galvanism and friction of the epigastrium with stimulating liniments, are often useful.

(114.) II.—ACHING PAIN. If weight be the most common, aching or gnawing is the most characteristic of dyspeptic pains, because it is almost invariably excited by the *presence of food or the products of indigestion in a morbidly irritable stomach*. With regard to its frequency in the complaint, I have noticed it present 121 times in 200 cases. Like the sensation of weight, it is usually conjoined with other pains; thus, in 121 cases, it existed alone only nine times. Gnawing or aching sensations are chiefly referred to the lower end or middle third of the sternal region, the ensiform cartilage, and epigastrium adjoining. I have often tried to ascertain exactly the tissue affected, but without success. If we attend to the patient's own account, we find that most persons declare the pain to be in the breast-bone itself; others, behind it; and some, in the skin covering the bone. The part actually involved probably varies in different cases; but judging from the fact that the pain is by no means limited to the sternal region, but often extends—as if by continuity—to some distance in a lateral direction, as well as downwards towards the umbilicus, I am inclined to think that it is sometimes seated in the skin,—an opinion favoured by

the readiness with which skin and mucous membrane are known to sympathize with each other. The skin, moreover, is often the seat of the soreness which the aching leaves behind it. Gnawing sensations are not common in other parts of the abdomen,—contrasting, in this respect, with sharp pains which fasten upon every region both of the abdomen and chest (133).

(115.) The period of digestion at which aching supervenes is comparatively regular; thus, most patients begin to complain of it *ten or fifteen minutes*, or, at all events, *within the first half-hour*, after eating. On the other hand, the time of its duration is very uncertain; it may last for one hour, or for several. Occasionally, it does not declare itself until *towards the end of digestion;* it then continues until the process is finished.

When aching arises soon after eating, it depends on the food coming into contact with the morbidly sensitive walls of the stomach. Hence we might infer, what experience confirms, that the intensity and duration of the pain will generally be in proportion to the hardness and toughness of the meat. For instance, I have known many patients, who dared not taste beef on account of the speedy supervention of aching at the epigastrium, escape all uneasiness if they confined themselves to rice, bread, animal jellies, or other things of soft consistence. Having once begun, the pain gradually increases, and is at its maximum from one to two hours after eating; it then slowly subsides. It may occur to some, that if the pain were due to the hardness and toughness of the food, it ought to be worst immediately after a meal, as the morsels have not then had time to be softened in the gastric juice. But it must be recollected that for awhile after eating, the stomach remains nearly quiescent, nor do its movements become brisk, and consequently the friction between its walls and the food considerable, until half-an-hour or more has elapsed (21).

(116.) When aching arises at a late stage of digestion, it seldom depends on the physical qualities of the food, because the latter has been macerated and softened in the gastric juice. The process of digestion, however, has become disordered, and as the fluids poured out are acrid or vitiated, they irritate the coats of the stomach. When both the causes mentioned are in operation, the aching lasts throughout the whole process; sometimes there is an intermission seldom distinctly marked, about the middle period of digestion, apparently because the food has been softened, while the fluids have not yet had time to become acrid.

(117.) *Treatment.*—When the cause is mechanical, the softness and lightness of the food should be secured by careful mastication, and by selecting articles of tender consistence. In the worst cases, farinaceous food alone will be admissible for the first few days; or we may allow eggs lightly boiled, animal jellies, or beef tea. Subsequently the diet may be improved in proportion as the pain subsides (255, 256).

Anodynes, as might be expected, relieve both kinds of aching by deadening the nervous sensibility (242). Alkalies, on the other hand, as they cannot materially alter the consistence of the food, rarely succeed against aching at the beginning of digestion, although from their power in neutralizing acids, they generally check it in the later stages. The secretion of acrid fluids is to be controlled by the means pointed out in the chapter on Pyrosis.

(118.) Every kind of pressure on a dyspeptic stomach readily excites aching; hence the practitioner should ascertain that it is not constricted by corsets, waistcoats, or other unyielding garments. Not unfrequently, patients of their own accord unfasten their dress after eating, on account of their inability to bear the slightest pressure upon the epigastrium: some women are compelled, from the same cause, to remove the busk from their stays. Many dyspeptics find that stooping brings on aching; and, indeed, no kind of pressure acts

more hurtfully than that arising from irksome postures. One of my patients—a gun-maker—never failed to suffer severely from this pain, if his work required him to stoop after dinner, and he always used to obtain relief, merely by standing upright for a few minutes. The reason is obvious: in stooping, the margins of the ribs are thrust inwards against the stomach; while on standing straight, this pressure is of course removed. These facts help to explain the proneness to dyspepsia of persons following certain trades, as shoemakers, tailors, milliners, &c., and the risk of subjecting delicate girls to constrained positions, for hours together, in learning drawing, music, or in working with the needle. When flatulence co-operates with external constriction, the mischief is naturally increased, as the stomach is thereby placed between two pressures—one from without, the other from within. It may be here observed, that eructation temporarily relieves nearly *every kind* of pain felt in indigestion: hence it may be inferred, that if the gases generated in the stomach on these occasions, be of themselves insufficient to excite pain, they at least co-operate with other causes in aggravating it.

(119.) III.—HOT OR BURNING PAINS. HEART-BURN. Persons who habitually live too well (66), are troubled with occasional heart-burn for a long time before indigestion is fairly established. At this early stage, however, they rarely seek professional aid, but, by the help of various antacids, bear with their complaints until "the acidity," as it is called, becomes more severe, and a source of almost daily annoyance. It is sometimes attended with a discharge of fluid from the stomach, or pyrosis (180), forming one of the most prominent symptoms of indigestion. Hot sensations are by no means so common in dyspepsia, as weight or aching: thus, in two hundred cases, I have observed them forty times.

(120.) Burning pain chiefly affects the middle or inferior

sternal region, and, more rarely, the epigastrium; but it differs from other dyspeptic sensations, in being often referred to some part of the throat—from the depression above the breast-bone, as high as the pharynx—where it is conjoined with a feeling of constriction. Patients sometimes complain of an indistinct sensation of heat about the throat, but are unable to point out its exact seat, until, on swallowing a morsel of food, the latter passes over the painful spot. Heart-burn is rarely felt in the left hypochondrium, where the great bulk of the stomach lies (17).

(121.) Hot sensations chiefly belong to the later stages of digestion, at which period the dyspeptic stomach is apt to contain much acrid fluid (182). For the most part, they begin gradually from one to three or four hours after a meal, and subside when they have lasted, with exacerbations and remissions, from ten minutes to an hour. In confirmed indigestion, heart-burn is preceded by some of the other pains, as weight, or gnawing: and occasionally, it is suddenly masked, or, as it were, superseded, by an attack of cramp, or "spasms" in the stomach (125); but as the latter subside after a few minutes, the heart-burn often returns again.

(122.) *Treatment.*—In regulating the diet of dyspeptics who suffer from heart-burn, the following points should be kept in view. The allowance, even of wholesome food, must be moderate. All the gastric juice which the stomach is able to supply at one time, can digest only a certain quantity of aliment. If the quantity of the latter exceed this limit, the juice degenerates, and becomes irritating to the mucous membrane. In respect, therefore, to the formation of acrid fluids, it is the same thing, whether the diet comprise too large an allowance of wholesome food, or a smaller quantity of articles that are of difficult solution. Careful mastication should likewise be enjoined, as it will often be observed that persons liable to this kind of pain "bolt" their food.

(123.) In the next place, certain articles of diet should be forbidden, on account of their favouring the formation of acrid fluids. Of these the principal are such as contain cooked butter in any shape: viz., pastry, hot muffins and rolls, fried meat, stews, gravies; also cured meat, raw vegetables, oatmeal, and tea with sugar and cream.*

Stooping, or pressure on the stomach produced in any other way, seems often to be the immediate exciting cause of an attack; and, judging from the relief obtained by the discharge of flatus, distention of the stomach by gas, especially by those kinds generated during faulty digestion (31), aggravates the pain.

(124.) If heart-burn depend on acidity, it is relieved by alkalis—as potass, soda, ammonia, magnesia, or Brandish's alkaline solution. After a time, however, these remedies lose their power, probably from some change in the nature of the fluids which they are intended to neutralize; and there consequently remains no other alternative than to administer anodynes to palliate present suffering: and alteratives, astringents, or tonics in the intervals, to check the fault in the secreting process. The pulvis kino comp., and the trisnitrate of bismuth, have deservedly obtained a high reputation in curing this disorder. Of astringent tonics, the mineral acids are the most useful (190, 193).

In a work on "Diseases of the Stomach," by Dr. Stone, (London, 1806), it is stated that farmers, in some parts of the country, are in the habit of "chewing beans" to allay heart-burn; and, on the same principle, temporary relief may generally be obtained by eating a bit of bread, or other light and porous substance. It seems to act partly by soliciting a fresh flow of healthier juice, but chiefly by sucking up and removing the acrid fluid that is irritating the mucous membrane. As expedients of this kind, however, neces-

* See the chapters on Pyrosis and Diet—Articles Fat, Tea, Farinaceous Food, &c.

sarily add to the amount of matter to be digested—already too great—the pain soon returns worse than ever. A draught of water temporarily relieves, by diluting the acrid fluids.

(125.) IV.—PAIN, commonly characterized as CRAMP, or SPASM OF THE STOMACH. If the reader turn to page 85, he will find a list of various terms applied by patients to this disorder. Cramp of the stomach is less frequently observed in indigestion than the other pains already described: thus, in two hundred cases, I have noticed it twenty-six times. On the other hand, when present, it is always the worst among the different pains felt. In severe cases, the patient is sometimes forced to cry out, and his countenance expresses intense suffering. Occasionally, he is drawn by the pain until he is nearly "bent double;" or the respiration may be embarrassed from sympathetic action on the lungs or diaphragm, so that he is described by his friends, as "turning black in the face."

(126.) The character of the attack resembles that of cramp elsewhere. The paroxysm comes on suddenly, quickly increases in severity, and after continuing for a few minutes subsides, but may again return at intervals to run the same course, until digestion is finished. The pain is referred to the epigastrium, and, still more frequently, to the lower end of the sternum; but I have also noticed it extending upwards, as high as within an inch of the top of that bone, and laterally as far as the centre of the right breast.

(127.) The pathology of this sensation has been illustrated by the experiments of Dr. Beaumont, who found he could excite cramp of the muscular fibres of the stomach whenever he chose, by merely irritating for a time the pyloric end with the bulb of a thermometer.* The symptoms produced were "considerable distress, vertigo, and a sense of sinking at the

* Op. cit. p. 222.

scrobiculus cordis." On other occasions,* he notices these spasms, as "giving severe pain and distress at the pyloric extremity, like the cramp, or sensations frequently described by persons suffering from undigested food in the stomach, and leaving a sensation of soreness if repeated a few times." Sometimes they caused "involuntary manifestations of pain, expressed in the muscular motions of his face." †

According to Dr. Beaumont, cramp chiefly engages the pyloric or more muscular end of the stomach;—a circumstance that explains why it is so rarely observed at an early period of digestion, because, as that part of the organ is then to a certain extent contracted upon itself, large lumps of food cannot readily enter to irritate it. But when the process of digestion is advanced, the pylorus relaxes to allow the chyme to pass into the duodenum; and if, at this time, hard, undigested fragments slip in also, they may be arrested for awhile, and, like the bulb of the thermometer in Beaumont's experiments, excite spasmodic action. Cramps of the stomach so produced are analogous to the painful convulsive straining of other circular muscles—as the orbicularis palpebrarum, from the fretting of a grain of sand in the eye; or the sphincter ani, from piles. Besides being caused by undigested food, cramp sometimes apparently depends on the irritating action of acrid fluids upon the mucous membrane. In the hysterical, they are apt to arise from very slight causes, on account of the extreme muscular mobility observed in such persons.

Cramp in the stomach occurs comparatively seldom in the morning—the chief causes that bring it on not being then in operation. More frequently it happens in the afternoon, or at night, when it is perhaps favoured by the state of exhaustion of the muscular fibres of the stomach, which may be supposed to occur after the digestion of the principal meal

* Op. cit. p. 228. † P. 229.

of the day. It is, at all events, certain that protracted muscular exertion tends to produce cramp; as we often see exemplified in the legs, after much walking or dancing; and in the fingers, after long practising at the piano. Irksome postures often excite an attack, and many patients report that cramp of the stomach is most apt to seize them in the act of stepping into bed, especially if they manage it so awkwardly as to twist or strain themselves. When the paroxysm has subsided, the sternal region, or epigastrium, is often left sore to the touch. In general this tenderness soon passes off, but in severe cases it may remain for a day or two.

(128.) It will be observed that many who suffer from cramps in the stomach are liable to them elsewhere also, as in the legs, feet, or hands. In twenty-six cases of cramp of the stomach, this coincidence was observed fifteen times.

Gouty persons, as is well known, usually suffer from indigestion, and are consequently liable to the spasmodic disorder just described. The latter, however, although agonizing, is not dangerous, and should be distinguished from that highly perilous seizure generally called "cramp" or gout in the stomach.

(129.) *Treatment.*—The diet is to be regulated on general principles, and the more easily digested kinds of food only are to be allowed. Many patients can foretel an attack, if they eat even a few mouthfuls of certain articles, as cucumber, salt beef, lobster, pickled salmon, &c. When cramp arises from substances in the stomach resisting solution, it often suddenly ceases as these escape into the duodenum; but if the disorder continue, and if, on hearing what the patient has recently eaten, there be reason to think that undigested fragments are irritating the mucous membrane, the best plan is to get rid of them by means of an emetic. Nature occasionally anticipates this practice by exciting spontaneous vomiting.

(130.) If cramp be preceded by hot pain along the

sternum or throat, relief will often be obtained from alkalis; of which the best for this purpose is carbonate of ammonia, or sal volatile with the addition of some bicarbonate of soda. But as a general rule, stimulating anti-spasmodics will be found more serviceable, and among these may be recommended a teaspoonful of sulphuric, or Hoffmann's ether, or a table-spoonful of brandy diluted with its own bulk of boiling water. It is often expedient to combine these medicines with anodynes—as tincture of henbane (♏ xxx), and in the worst cases, Battley's sedative solution (♏ xv). Where cramps depend chiefly on muscular irritability, an excellent remedy is from five to ten minims of the tincture of Indian hemp dropped on a bit of sugar, or a teaspoonful of the tinct. camphor. comp.

(131.) Topical applications are seldom of much use, but if it be thought expedient to try them, friction with a teaspoonful of the tincture of aconite, and hot bags of salt or bran to the epigastrium will be found most serviceable. In one case of severe spasm under my care, a succession of cold plates to the pit of the stomach was the only thing that relieved; but this remedial effect of cold is unusual. When the cramp seems chiefly due to muscular irritability from weakness, the practitioner ought to administer vegetable and mineral tonics as soon as the state of the stomach will permit. When cramps of the legs at night are so frequent and severe as to occasion much distress, they may sometimes be entirely prevented by rubbing the legs with a stimulating and anodyne liniment, before going to bed. The linimentum camphoræ compositum, with the addition of some tinct. opii, answers very well. Coldness of the feet favours the occurrence of cramps in them; hence persons liable to the former should wear worsted stockings; and, when confined to the house, promote circulation in the extremities by frequently walking about the room.

(132.) V.—Sharp pains. The frequency with which dyspeptics complain of sharp pain somewhere about the region

of the stomach, has probably been remarked by all practitioners. In 200 cases of indigestion, occurring in my own practice, it was observed 95 times—or almost in a half of the entire number. It differs from the pains hitherto described, in many points, and its relations to the stomach are more changeable and complex. At first sight, indeed, these neuralgic pains appear puzzling in the extreme, because it so frequently happens that things which relieve them at one time aggravate them at another; still, with a little attention, this seeming inconsistency can be explained on fixed pathological principles.

(133.) The seat of the sharp pains alluded to presents great variety. Most commonly some part of the stomach, or its immediate neighbourhood, is affected, but there is, in fact, no spot of the body exempt from neuralgia as a direct consequence of irritation in the gastric mucous membrane. Its comparative frequency in the different regions of the abdomen and chest is, according to my observation, as follows:—

1. A spot just under the left breast, or about the apex of the heart. This part is often the seat of similar pains in other disorders, and, more especially, in those of debility.
2. The left and, less frequently, the right hypochondrium.
3. The pit of the stomach.
4. The right or left side.
5. The umbilical region.

On most occasions, the pain is obviously dependent on reflex action (95), and many circumstances suggest that the part generally engaged is the peritoneum, or some other fibrous membrane. First, it may be remarked that the pain is sharp and stitch-like: a character peculiarly belonging to serous membranes. In the next place, the pain, after being felt at one point, as in the left hypochondrium, often travels slowly and without break in some other direction;

for example, towards the umbilicus or side. This course certainly agrees better with the passage of pain along a continuous membrane, like the peritoneum, than to its sudden transition from one organ to another, differing in structure, function, and connexions. Even when the neuralgia, beginning in the situation of the stomach, for example, moves upwards until it fixes itself over some part of the chest, it is still considered and referred to by the patient as the same pain, and is probably seated in the pericardium or pleura.

(134.) In the preceding chapter (107), the reader will find a statement of the various relations borne by neuralgia to indigestion. Of each of these, the sharp pains now being considered occasionally afford an illustration; and therefore, viewed as a series, they approach pure idiopathic neuralgia, on the one hand, and the ordinary dyspeptic pains already described, on the other. In the great majority of cases, however, their position will be found in the third group, that is, among *pains excited by food in the stomach, but also by other causes.* Thus, as sharp pain has not so close a relation to the presence of food in the stomach as gnawing, or aching, and heart-burn, it is less characteristic of dyspepsia than they are, and no single example of the complaint has occurred to me wherein it was the only pain felt. It is also the least trustworthy, as a standard, to estimate the degree of irritation in the mucous membrane, for the dyspepsia may be severe with hardly any sharp pain; or the latter may be urgent, when the indigestion is trifling. As it frequently depends on other causes than indigestion, it is usually less under our control than the true dyspeptic pains; and it comes on suddenly at all times, both when the stomach is empty and when it is full. Hence, although patients frequently observe that by careful dieting alone, they can prevent aching or burning pain at the pit of the stomach after eating, they rarely observe the same thing with respect to these sharp pains.

(135.) All the predisposing causes mentioned elsewhere (101) influence the sharp more than the true dyspeptic pains; hence the former are most frequently observed in persons of a nervous or hysterical diathesis. The difference in the effects which eating produces on these sharp pains is very remarkable. Most commonly it brings them on; but if any predisposing cause connected with general debility happen at the time to be urgent, while the morbid sensibility of the stomach is slight, food imparts temporary tone and vigour to the nervous system, and thereby removes, or at all events suspends, the neuralgia. The aliment acts for the moment as a stimulating antispasmodic (242). In this principle, we have, I believe, the key to explain certain perplexing, and, at first sight, contradictory cases where the neuralgic pain is one day relieved, and the next aggravated by eating, without there being any reason to connect this either with an error in diet or an increase of indigestion.

(136.) Many of the characters usually presented by these sharp pains are shown in the following extracts from cases.

A young woman, a bookfolder, aged 22, labours under well-marked indigestion. After eating rich or heavy food, she suffers from weight and aching at the pit of the stomach, and from *sharp pain* in the left side. The latter, but not the former, is likewise often brought on, and always made worse, by rapid or straining movements, or by flurry and excitement; also before and during the catamenia.

Mrs. W., aged 24, suffers from well-marked indigestion. Among the various pains present she complains of a "stitch" in the abdomen, a little above and to the left of the umbilicus. It is made worse by eating, or by drinking hot fluids; likewise by pressure, rapid movements, or by flurry; it is also aggravated during menstruation. This patient, like most dyspeptics, has her "good and bad days." When the stomach happens to be irritable, nearly every kind of food

brings on all the pains. But even at other times, when she is able, for example, to eat mutton without producing more than some degree of aching at the epigastrium, heavy or rich food soon adds the sharp pain also. By living on articles of very easy digestion, as rice or gruel, she can altogether prevent the aching at the epigastrium, although she still continues liable to irregular attacks of sharp pain. If the latter have come on severely from any other cause than eating, as after any unusual exertion or flurry, its constant effect is to make the stomach irritable, even to the mildest food. The reflected or sympathetic action in this case, therefore, was, as usual, double. The nerves of both parts were functionally unsound, and predisposed to disorder. Hence, when the irritation of the gastric mucous membrane from indigestion was severe, it brought on the sharp pain; and if the latter were urgent, it was sure to excite indigestion.

A delicate woman, aged 40, whose strength has been much reduced by protracted nursing, suffers from dyspepsia. She is liable to aching about the lower end of the breast-bone, and to sharp pain in various parts of the abdomen, but chiefly about the umbilicus. Both are excited by eating any kind of butcher's-meat; but the sharp pain is also apt to set in severely if she be agitated or frightened. The cause, however, which, above all, favours the sharp pain, is exhaustion from abstinence; and on such occasions, a little food of easy digestion often relieves it, even although the regular dyspeptic pains—as aching or heart-burn—be excited in consequence.

(137.) In conclusion, the chief causes of the sharp or neuralgic pain of the abdomen, chest, &c., so often observed in dyspepsia, appear to me to be the following:

1. Irritation of the stomach by food, &c.: it is here *a true dyspeptic pain*. Occasionally, pains are excited in predisposed parts, from the mere contact of food with

the walls of the stomach, *even although there be no dyspepsia.* The gastric mucous membrane, in such cases, merely acts as a part of the general muco-cutaneous envelope of the body, which, under the influence of many common agents quite unirritating to it, is yet apt to cause radiated sensations or effects elsewhere.*

2. These sharp pains are readily excited by various modifications of pressure — as in abrupt or rapid movements, lifting weights, or in severe straining. Acting on the same principle, but less effectively, may be mentioned stooping, deep inspiration, coughing, &c.
3. Certain states of the general system co-operate strongly as predisposing causes. Of these, the principal are, agitation or flurry, nervousness, hysteria, debility, &c. (101).
4. Any local irritation, conjoined with dyspepsia, may co-operate with the stomach in exciting, or, in fact, may be the sole cause of these sharp secondary pains. I may observe that this happens frequently when the liver is functionally disturbed (75), and during the catamenial period, &c.

(138.) *Treatment.*—When sharp pain in the left hypochondrium, or pit of the stomach, is attended with dyspeptic symptoms, it is occasionally mistaken for gastritis; or for inflammation of the peritoneum, when seated in other parts of the abdomen. Cases like the following are not rare in practice.

A young woman, a milliner, lately applied to me on account of indigestion with sharp pain in the left hypochondrium. She stated that she was very liable to violent attacks of the pain in various parts of the abdomen, which were thought to be

* For illustrations, see a paper by the Author, in the Medical Gazette, vol. xxxvi. p. 722.

of an inflammatory nature. During the previous year, therefore, she had been bled, leeched, or cupped over the stomach on various occasions, besides being blistered, and otherwise actively treated. She mentioned that losing blood always relieved her for the time; but that the improvement was only temporary, because the pain speedily returned again, while her strength to bear with it was reduced. When "the inflammation" last made its attack, about four months ago, it fortunately happened for her that she had no time to undergo the usual treatment, as she was unexpectedly sent on urgent business to Brighton, where change of scene and air soon cured the pain as effectually as the lancet had done on former occasions. Be it remarked, however, there was this important difference—that, instead of being left in a weakly state, her health was invigorated by the trip, so that the pain kept away for a long time afterwards, and indeed has never since returned to its old quarters. From the present attack she quickly recovered, in proportion as the state of the stomach and of the nervous system generally improved under a tonic plan of treatment.

From inflammation of the peritoneum these attacks may be distinguished by the expression of the patient's countenance, the position maintained by the body, and by the absence of constitutional disturbance proportioned to the pain; also by the history of the case, by which it generally appears that the pain has come on without having been preceded by the usual causes of peritonitis. Lastly, its true nature may be surmised, from the co-existence of debility, nervousness, or hysteria, and by the effects of pressure and anodynes.

(139.) When pressure is applied to relieve abdominal neuralgia, it ought to be spread over a considerable space by means of a smooth broad compress and bandage. If limited to a few points of the surface only, as when made with the tips of the fingers, it is sure to increase the pain. Hence, I

conceive that pressure is of use, not only by supporting the nerves, and, perhaps, partially benumbing them, but also by fixing the different moveable organs in the abdomen, so as to prevent them from rubbing against each other during respiration and changes of posture. It is probably on this account that many of these pains can be for a few moments stopped, by desiring the patient to hold his breath so as to arrest all abdominal movement.

When the strength permits, much time may often be saved in obstinate cases, by applying six or eight leeches to the painful spot. The relief afforded is usually speedy, but for the most part, temporary only. The practitioner, however, should actively improve this interval, or respite, and, by the use of remedies that give tone to the nervous fibres, prevent as far as possible the chance of a relapse.

(140.) Counter-irritation (239) to the painful part is highly serviceable. Sometimes it seems to dislodge, rather than cure, the pain, which may thus be chased about from one region to another. With each move, however, it usually loses something of its violence, until, at length, it finally ceases. When a local neuralgia—in the side, for example—is cured by a blister, we may infer that the nerves of that region alone were affected; but if the neuralgia should now shift, or break out elsewhere, we may generally infer that the morbid sensibility is more widely diffused, and that corroborant remedies are needed. In cases where the pain, by thus moving about, seemed to elude the action of local remedies, I was led to apply counter-irritation to the spine, immediately above the point whence the painful part derived its nerves; and the result has encouraged me to continue the practice. When a blister is applied to the abdomen, it can act on comparatively few of the scattered nervous fibrils which, in the vertebral canal, are gathered into one cord. But if, on the other hand, it be placed over the spine, most of the nervous fibrils going to the part, are brought under its influence.

As a local remedy, I can highly recommend friction to the part with a drachm of the tincture of aconite root, twice daily. It is best applied by means of a sponge tooth-brush. Occasionally, when the pain is very severe, powerful anodynes—as opium, aconite, hydrocyanic acid, tincture of cannabis indica, &c.,—must be employed; but generally speaking, more good is obtained from stimulating antispasmodics, or a combination of them with anodynes. When the cure is nearly completed, the shower or cold sponge bath, every morning, and other tonic remedies, are most useful in preventing a relapse.

Abdominal neuralgia, whether dependent on dyspepsia, or merely coincident with it (107), often disappears without special treatment, in proportion as the indigestion is checked. Some of these pains are vulgarly ascribed to weakness, and like many other popular opinions, this one is founded on sound observation. As the nerves gain strength they become less susceptible, and the pain to which they were previously liable subsides. There is, in fact, no more certain way of banishing these pains than by bestowing strength—not physical strength, of course—but that tonic power by which the various organs of the body resist the action of disturbing agents.

For some additional remarks on this subject, I beg to refer the reader to the chapter on the general treatment of indigestion.

(141.) VI.—Anomalous pains. I have classed together as anomalous, certain sensations observed in dyspepsia, merely because they cannot be arranged under any of the other groups previously considered; and at p. 86, the reader will find a list of the more common expressions applied to them, which fell under my notice in 200 cases of the complaint. It will be remarked that they belong in reality less to the indigestion than to some accidental morbid diathesis with which it happens to be conjoined. The persons most

liable to them are the weak, the nervous, scrofulous, hysterical, or hypochondriacal; and it will, generally speaking, be observed that all the causes which predispose to sharp pains (137), favour the production of those that pertain to the present group likewise.

The majority of the anomalous sensations alluded to, are referred to the epigastrium, but they are also common about the heart and neck, as well as in the hypogastric and iliac regions. These places correspond in some measure to the course of the chief bloodvessels of the body, and, indeed, it will be noticed that most of the terms used convey the idea of movement.

Most anomalous sensations are quite inexplicable when considered in relation to the causes producing them; for example, in one of my dyspeptic patients, the eating of beef was followed by a distressing feeling of coldness across the chest. Anomalous sensations are sometimes — as in the above example—excited with tolerable regularity by the ingestion of food; thus plainly showing their dependence on gastric irritation: they are then, in fact, true dyspeptic pains. But much more commonly their connexion with the stomach is a very doubtful point, and they continue to harass the patient after that organ has been restored to health.

(142.) M. Barras,* who suffered from severe indigestion, was likewise liable to many anomalous sensations, which he thus describes:—"Sometimes I felt a burning heat, sometimes an icy coldness, or as if a very hot or a very cold air were blowing upon the mucous membrane; on other occasions, it was a creeping sensation, as if some reptile were crawling about in the stomach." Faintness or sinking is almost always referred to the pit of the stomach. When felt before meals, it often takes the place of hunger; or at least, it is the only warning some patients ever receive that

* Sur les Gastralgies, p. 30. Paris, 1829.

the system wants support. Sinking is now and then perceived, not before but after meals, when it is more difficult to explain. Dr. Beaumont, indeed, remarked that a rapid flow of gastric juice in St. Martin's stomach was occasionally attended with the sensation; and if this happen in a healthy person, we may infer that it will be even more likely to occur in a dyspeptic. It may be observed, that blows on the stomach give a "shock" to the system, and produce the feeling of sinking, but, as a case more in point, I may add that the operation of acrid poisons on the mucous membrane of the stomach is also attended with the same sensation. Now, as the action of food which disagrees, is in some respects analogous to that of an acrid poison, so the effects produced by it may be of a similar kind, although less in degree.

As the treatment of these anomalous sensations commonly resolves itself into that of the peculiar diathesis associated with them, it would be out of place in this work to enter upon the subject.

(143.) The following extract, from a severe case of indigestion, is introduced to illustrate the nature and extent of the information obtained by separately considering the different pains felt in the complaint.

Mrs. L——, aged thirty, has complained of indigestion for five or six years. She suffers from various kinds of pain, viz.,—

1. *Weight* at the lower end of the sternum, immediately after eating; it lasts four or five hours; the same sensation also during fasting; in fact, it may be said to be nearly constant.

2. *Dull gnawing pain* at the lower end of the sternum, and at the epigastrium; it comes on immediately after dinner, and lasts for an hour or even longer.

3. *Burning or hot pain* at the lower end of the sternum, or epigastrium, and at the back of the throat; it comes on three or four hours after dinner. It is not felt every day, but chiefly if indigestible things have been eaten.

4. *A "hard drawing pain,"* as the patient describes it, reaching from the pit of the stomach to the back, and occasionally "bending her double:" it is not felt every day. It comes on several hours after eating indigestible food, as cheese or fried meat; it is sometimes also excited about the same time by straining movements of the body. This is the most severe of all her pains, but it lasts only for a few minutes at a time; she sometimes, however, has several paroxysms of it during the digestion of a meal.

5. *Sharp darting pain* in the left hypochondrium, frequently shifting into various parts of the abdomen. It is most irregular in the time of its attack, as it comes on both while fasting and after eating. By abstinence from food, the patient can almost completely prevent the other kinds of pain mentioned, but neither this nor the following—viz.,

6. *Cold sensations* about the epigastrium—"as if a cold hand were placed upon it."

In this one patient, therefore, were observed all the six varieties of pain that have been described in this chapter. From a consideration of the characters and history of each, the following inferences were drawn as to their nature:—

1. Muscular weakness of the stomach, and consequent dragging and distention of it after food. Excessive flatulence during the process of digestion, and while fasting. This was corroborated by the general feebleness of the patient, in which the stomach doubtless partook, by the nearly constant elastic tension and resonance on percussion in the left hypochondrium, and by the frequency of eructation (112).

2. Morbid sensibility of the mucous membrane, and consequent irritation from contact with the newly ingested food (114).

3. Occasional irritation of the gastric mucous membrane from acidity of the fluids towards the end of digestion. This opinion was confirmed by the juvantia; thus the pain was relieved by drinking bland liquids—as water, which

diluted the acid secretions, or by taking alkalis, which neutralized them (119).

4. Liability to cramp of the stomach (125).

5. Liability to neuralgic pains about the stomach, and in various parts of the abdomen (132).

6. Liability to anomalous sensations denoting general nervousness and hysteria (141).

Cases resembling the above, so far, at least, as to present all these different kinds of pain, are by no means of very rare occurrence.

In the last two chapters I have attempted to explain and reduce to order the confused assemblage of aches about the chest and abdomen, observed in severe cases of indigestion, such as we meet with in actual practice. It certainly would have been an easier task to have limited my remarks to the few pains considered specially dyspeptic, but as I have often noticed that the same uneasy sensation might at one time arise from gastric irritation, and at another depend on a different cause, I have thought it the most useful plan to endeavour to give a connected view of the whole subject.

CHAPTER VIII.

TENDERNESS ON PRESSURE.

Frequency of tenderness in indigestion; places where it is chiefly felt—Mode of ascertaining its presence, and the precautions requisite—Treatment.

(144.) In 163 examples of indigestion, tenderness over the region of the stomach, or in its immediate neighbourhood, was present 91 times; or in considerably more than one-half of the number.

The following is the result of my observations on the comparative frequency of tenderness in different situations:—

Epigastrium, or pit of the stomach, in	55 cases.
Over some part of the sternum, generally the lower end	43 „
Left hypochondrium	18 „
Right hypochondrium	14 „
Umbilical region	5 „
Abdomen generally	4 „
Right side	3 „
Left side	2 „
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(145.) The pain and the tenderness in any particular case are by no means always in proportion to each other. Thus the former may be severe, while the latter is slight or altogether wanting; and it sometimes happens that the pain is in one place, and the tenderness in another. The car-

tilages of the false ribs, more especially, are often tender on pressure, although not otherwise painful.

(146.) Tenderness may be ascertained in various ways. Sometimes it is so great that the patient cannot bear the pressure of the ordinary dress—stays or waistcoats, for example. The degree of tenderness, however, is noted with most exactness, if the patient be made to recline on his back on a couch, with the shoulders well raised and the knees drawn up. The abdominal muscles are thus relaxed, and the pressure, instead of being intercepted by them, is transmitted directly to the organs lying underneath. To make the examination with accuracy, requires more care than is usually bestowed upon it. The rude poking sometimes employed only leads to error, as few patients can bear such trials without wincing, and most are glad to admit tenderness or anything else, as the readiest way to put a stop to them. More especially, the examination should be *begun* with gentleness; for persons conscious of soreness about the stomach are often "nervous" from fear, and it is necessary to give them the confidence that they are not to be hurt, before their answers can be trusted. The practitioner should never forget that the object is to ascertain, not what gives pain, but *the degree of pressure that can be borne without exciting it.* Another caution to be kept in mind is, that nervous or irritable patients are often tender all over, so that one might easily fall into the mistake of supposing a particular region morbidly tender, when, in fact, it was not more so than agreed with the general sensibility. To guard against this source of error, the comparative tenderness of different parts of the body ought to be tested. All other things being equal, thin persons are more sensitive than those who are robust or fat, because, in the former, the nerves are easily compressed against the bones, or other hard textures. When the stomach is being examined, the patient should be requested to inspire deeply, and then to hold his breath for a

few instants. By this manœuvre the organ is brought well downwards into the abdomen, and is at the same time fixed in its position. Pressure should now be made under the margins of the ribs on the left side, and directed obliquely upwards, by which the stomach is compressed between the fingers and the diaphragm. It is hardly necessary to caution the young practitioner against mistaking for a sign of indigestion, the tenderness of the muscles of the abdomen and chest, often produced in bilious patients by retching or vomiting.

(147.) Tenderness from indigestion rarely requires any special treatment. On some occasions, a plaster containing equal parts of the emplastra belladonnæ, hydrarg., and opii, will be found very efficacious. When tenderness is deeply seated, blisters, sinapisms, and other modes of counter-irritation should be adopted.

CHAPTER IX.

CEPHALALGIA, OR HEADACHE IN INDIGESTION.

Bilious, gastric, and gastro-bilious headache—Tenderness of the scalp—Sympathetic affections of the nerves of seeing, hearing, taste, and secretion—Giddiness—Treatment of headache.

(148.) Among the different organs that occasionally sympathize with the stomach, none do so more frequently than the head; thus, in 200 cases of indigestion, headache was observed to be a troublesome symptom 166 times. The period in each case when it begins to be prominent, varies according to circumstances. If, for example, the complaint be ushered in with repeated and severe irritation of the gastric mucous membrane from "fits of indigestion" (61), or if the predisposition to secondary pain be great from nervousness, debility, &c. (101), headache is always a distressing symptom, even from the beginning. It may likewise be remarked, that in London, a large number of dyspeptic cases are complicated with bilious disorder, which, on its own account, as it were, often adds headache to the list of symptoms at an early period. On the other hand, when indigestion creeps on slowly during habitual indulgence in an over-rich and ample diet (66), patients, although harassed with other signs of the complaint, may escape headache for a long time. In old-standing cases, where the morbid sympathetic connexion between the head and stomach has been drawn very close, the slightest dietetic error excites violent

cephalalgia. To these rules, however, there are many exceptions, which can only be explained by idiosyncrasy. Thus, there will be found some patients with slight indigestion, who are martyrs to headache; and others who, although they have suffered long from the former complaint, remain exempt from the latter.

The best plan of treating the subject of this chapter will be to resolve the mixed headache observed in numerous cases of dyspepsia into its elements, and describe—1st, The bilious headache; 2ndly, the pure gastric; and, lastly, the gastro-bilious headache.

(149.) BILIOUS HEADACHE. The intense headache of bilious fever often apparently depends on determination of blood, which latter state may be inferred from flushing of the face, throbbing of the temples, and occasional tendency to delirium. But, on the other hand, in most instances, the pallid countenance of the patient and various circumstances besides show that the cerebral circulation is unexcited, or even more languid than natural. In these last cases, therefore, the headache may be viewed as secondary pain in the nerves about the head, caused by primary irritation in the liver.

Bilious headache presents various degrees of intensity. When violent, it is described by the patient as racking or splitting, and is sometimes attended with drowsiness, confusion of ideas, or even delirium, especially on first awaking from sleep. The tongue is foul and thickly coated, the skin burning, and the general fever considerable. I remember being once called to a case of so alarming an appearance, that the practitioner in attendance thought he had to treat inflammation of the brain. But it turned out to be nothing more than bilious fever (78), with the head-symptoms running higher than usual.

Differing from the above in the absence of fever, there is what is commonly called "a sick or bilious headache." This

affection is often periodical. The intervals are, at first, of considerable length, and the attack is violent, but, in many cases, the former have a tendency to shorten, and the latter to be less urgent. In the end, many persons become habitually bilious, and suffer from almost daily headache.

(150.) As indigestion and biliousness are often conjoined in the same individual, and as either may excite headache independently of the other, it is important to inquire if there be any intrinsic marks by which each may be known, so as to enable us accurately to apply our remedies to the right organ. Frequently, it must be confessed, these marks are wholly wanting, and the practitioner must form his opinion of the nature of the headache from collateral signs. But, at other times, there are certain characters which, if not diagnostic, at least point strongly to the liver as the organ primarily affected.

A bilious origin is probable when the pain is limited to one or both eyeballs. It is usually of a hot and burning character; or it may be dull and heavy, or sharp; in a few cases it is likened to sand in the eyes, or to the pricking of "pins and needles." The eyes are often kept partially shut, because it distresses the patient to look even at a moderately bright light. Some say their eyes are stiff, so that it is irksome to move them about or open them fully. Many complain of an inability to look upwards, and, in severe cases, there may be partial ptosis, or loss of power to elevate the eyelids. The sight is often affected, sometimes merely with giddiness (163) or mistiness; or the patient may be liable to temporary attacks of partial or complete blindness in one or both eyes. Needlewomen—an exceedingly bilious class—not unfrequently state that they are at times deprived of the power to continue working, from sudden dimness of sight.

The forehead just over the eyes, and towards the root of the nose, is especially liable to suffer in bilious disorder. A very characteristic spot is immediately behind the ear, or

over the insertion of the cervical muscles into the occipital bone. The pain may even extend lower down, where, losing the name of headache, I have more than once seen it mistaken for what is called "a crick" in the neck, which is usually the effect of exposure to cold. After persons so affected had in vain bathed the feet, taken James's powder, and other remedies for colds, they were at once cured when the liver was unloaded by a dose of calomel. If from this last situation the aching pass a little farther downwards, it reaches the upper dorsal region, which, the reader will recollect, is one of the most common and best known seats of pain in disorder of the liver (86).

(151.) The bilious origin of a headache may likewise be suspected when the patient awakes with it, or when it comes on early in the morning (88). In bad cases, the head can hardly be raised from the pillow; but more frequently it is on getting out of bed and beginning to dress that the headache is first felt; and it is often attended with so much dizziness, that the things in the room seem to move round. The patient, feeling as if about to fall, is glad to catch hold of something for support, and, in the worst cases, he is fairly driven back to bed again; or while striving against headache, dizziness, nausea, and prostration, he is suddenly seized with retching, or vomiting of frothy bilious fluids (207).

In numerous instances, breakfast relieves the headache, either by mixing with and diluting the bile that has found its way into the stomach, or by draining off the excess accumulated in the liver (89). Next to the morning, bilious headache occurs most frequently in the evening, especially if a sedentary occupation have been followed during the day: the great preventive in such cases is exercise.

(152.) GASTRIC HEADACHE may sometimes depend more or less on determination of blood—as after a "fit of indigestion;" but much more frequently it is due to sympathy between the head and stomach; the latter being, of course,

the organ primarily affected. It is distinguished from bilious headache by its close dependence on the presence of food in the stomach; hence it seldom occurs early in the morning, and, with rare exceptions (154), it is brought on, but never relieved, by eating. In the worst cases, it begins to harass the patient immediately after the food has been swallowed; in less severe examples, it does not come on until a later period of digestion; and as it often ceases soon after that process has been completed, it may be said, in unmixed chronic indigestion, to correspond pretty nearly to the time during which the food remains in the stomach. But in "fits of indigestion," especially in persons already dyspeptic (63), the headache may continue for several days, on account of the persistence of the inflammation excited in the mucous membrane. As bilious headache is often cut short by a discharge of bile, or by retching, so the gastric variety is frequently relieved by the vomiting of undigested food or acrid fluids. The direct effect of gastric irritation in causing headache was very distinctly observed in a case lately under my care, in which the smallest quantity of anything stimulating—as brandy or pepper—taken into the stomach, instantly excited pain at the epigastrium, and headache, *without giddiness or sickness.* Dyspeptics sometimes remark, that "the head and stomach always suffer together;" nevertheless, except after a fit of indigestion, the pure gastric headache is comparatively seldom met with in practice, on account of the frequent combination of dyspepsia with some other disease which modifies or alters it.

(153.) GASTRO-BILIOUS HEADACHE. The headache most commonly observed as a symptom of the indigestion which occurs in London, has a double sympathetic origin in the stomach and liver, and may be fitly termed gastro-bilious. In its general character, it approximates to the one or other of the forms just described, according to the disorder that happens to be predominant at the time. On some days, therefore, it

commences in the morning; on others, not until after dinner; or, if both the liver and stomach be much disturbed in function, the headache which began in the morning from biliousness, is protracted throughout the day from gastric irritation after eating. When patients with chronic indigestion assert that they are never free from headache, it will generally be found to be caused and kept up in the way described. On the same principle may be explained why gastro-bilious headache is made sometimes better and sometimes worse by eating. If bilious congestion be at the moment predominant, a slight repast may unload the liver, and so cure the headache (88, 89); on the other hand, if the headache depend more immediately on morbid sensibility of the stomach, eating will certainly aggravate it. By attention to these points, we are often able to reconcile the discrepant accounts given by patients respecting the effects of eating on their complaints. For example, in a case of indigestion, of which the notes are before me, the headache was nearly constant, forming the most distressing symptom, and the one from which the patient was most anxious to be relieved. On asking what influence eating had on the headache, she merely stated that it had no particular effect; or, rather, that the headache was sometimes made better and sometimes worse by it. But, on further inquiry, it appeared that she generally awoke in the morning with a headache, which often passed off, provided she were able to eat her breakfast. On those mornings, however, when, from nausea, she was unable to swallow anything, the headache invariably increased, until the bitter contents of the stomach were discharged by vomiting. But although the morning headache had thus subsided, dinner always caused it to begin anew. The explanation of these opposite effects was, that the bland food taken at breakfast did not irritate the stomach, while it relieved the headache by draining off the bile; on the other hand, the heavier meal taken at dinner time brought the headache back

again in the afternoon, by irritating the gastric mucous membrane. Cases of a similar kind are by no means rare in practice.

(154.) If any advantage could accrue from multiplying descriptions of the varieties of headache met with in indigestion, it might be done almost without end, because new features are necessarily impressed on it by every morbid state of the general system which may happen to co-exist, as well as by numerous local disorders. For example, hysteria, anæmia, or debility, modifies dyspeptic headache; and, moreover, as indigestion tends to impoverish the blood, it follows that the headache, in old-standing cases, will generally assume some of the characters of the two last-named states. Debility causes the headache to be less regular in the time of its attack, and often gives it the peculiarity of being worse before eating—that is, when the weakness is at its height. I lately attended a patient with well-marked dyspepsia, whose constitution was extremely feeble and reduced. Her chief complaint was headache, from which, from one cause or other, she was seldom free; there was no bilious complication. She stated that, after eating, all her aches were generally increased; nor did she obtain any quiet until she had vomited. But, on the other hand, it *sometimes* happened that a little mild food stayed on the stomach, and was digested, by which she both felt herself strengthened, and the headache relieved. The same kind of action may be observed in respect to most secondary pains. Cephalalgia from *indigestion with debility* is especially apt to be attended with swimming or lightness in the head, which is made worse when the erect posture is suddenly assumed. Lying in bed, keeping the head steady, and avoiding all quick, abrupt movements, are more or less prophylactic. At other times, it is attended with throbbing, or beating of the bloodvessels about the head, which sensation is probably of the same nature as that observed after hæmorrhage.

(155.) Eating, also, sometimes allays the headache that follows a slight fit of indigestion *in a previously healthy stomach* (61). In such cases, the nerves have not as yet acquired morbid sensibility from daily irritation, and the headache, in fact, arises partly from collapse after an over-excited state of the cerebral circulation, and partly from erythema of the stomach. Hence, eating does good by imparting power to the one, and relieving the other by the flow of gastric juice solicited from the mucous membrane (39).

(156.) In the following table, I have attempted to group together, according to their most frequent meaning, the terms which, in my own practice, have been used by patients to describe their headache. It need hardly be added, that classifications of this kind are intended as approximative merely.

Terms commonly applied to all kinds of headache, and, therefore, not distinctive of any :—

Weight: heaviness.
Confusion, dull aching, or gnawing pain in the head.
Sharp, acute, darting, or plunging pain.

Expressions generally indicating a bilious origin :—

A racking, or splitting headache.
Sensation of burning, especially in the eyes.
Drooping of the eyelids, and pain in opening them, especially in looking upwards.
Stiffness of the eyeballs.
Severe pain on raising the head from the pillow in the morning.
As if the head were moving, or opening.
A sensation as if the head were compressed in a vice: as of a tight band round the head.
Acute pain limited to one spot, or to one side of the head, or referred to one eye only.

Expressions often denoting hysteria, nervousness, or debility:—

Not an aching headache so much as sharp pain referred to a single spot.

A sensation of rawness, or scraping in the scalp.

Coldness.

A sensation of beating, hammering, or throbbing about the head.

Distressing humming, or noise in the ears.

Tingling, trickling, and many anomalous terms.

The combination of biliousness with hysteria often produces that intense pain limited to a single spot of the head, to which the term clavus hystericus has been applied.

(157.) Like secondary pains elsewhere, dyspeptic headache is often attended with, or leaves behind it, tenderness of the part affected. Sometimes the soreness is excessive, although the headache be slight or altogether absent; occasionally the tenderness affects one side, or a single spot of the scalp only; and in a few instances it is limited to one or both eyeballs, on which even the least pressure cannot be borne. With regard to the most frequent seat of the primary irritation producing this sympathetic tenderness, I have often verified the opinion expressed by Dr. Paris, in his excellent treatise on Diet. At page 230, he observes—"There sometimes occurs a soreness of the scalp, with shooting pains, which are produced by the slightest touch. This affection, I believe, generally depends on some derangement of the biliary system." With tenderness may be conjoined swelling of the scalp or face; for which, however, the tumidness left after vomiting or retching must not be mistaken.

(158.) The sympathetic effects of gastric irritation, or biliousness on the nerves about the head, are not limited to those of common sensation. When thrown on the *optic nerve*, they exalt, diminish, or pervert its function. Thus, sparks

are occasionally seen, or the "flickering of something like brightly polished metal"—"as quicksilver" or muscæ volitantes—these last are little black specks before the eyes, generally appearing to move upwards. At other times, the patient's sight is dim, or he feels as if there were a "film or mist" before his eyes. Dyspeptics are sometimes affected with diplopia, or double vision. Not long ago, I had a gentleman under my care for indigestion with bilious disorder, to whom all objects appeared green—as in jaundice—although both the skin and the eyes were perfectly free from green or yellow suffusion.

(159.) The retina or optic nerve, being intended only to receive impressions which excite the consciousness of seeing, is nearly or quite incapable of feeling common pain. Hence, if the nerve be torn or otherwise irritated, the sensation of light is alone produced; and we also know that if pressure be made on the eyeball, an image is immediately seen, even although the experiment be tried in the dark. For the same reason, therefore, when irritation in dyspepsia is reflected from the gastric upon the optic nerves, perversions of vision, such as those described, can alone be produced. On the other hand, when the optic nerve is the part primarily affected, it occasionally excites, in its turn, secondary effects elsewhere; and if these fall on nerves of common sensation, (as is most frequently the case), ordinary pain will, by the same rule, be the result. For example, all know that if a bright light be allowed to fall even upon a *healthy* retina—as when we look at the sun—pain is excited in the nerves of common sensation about the eyes; and if the retina be *morbidly impressionable*, as is often the case in dyspepsia, a comparatively feeble light suffices to produce the same effect, and excite headache. As all sympathies, moreover, are mutual, the optic nerve may, under these circumstances, reflect back irritation on the stomach, just as in the former instance it received it from that organ, and the effect will be

an aggravation of the dyspeptic symptoms. For the reasons above stated, persons liable to dyspeptic, or bilious headache, dizziness, or other disorder of the sight, should avoid occupations that require a close straining of the eyes, and rooms where there is a strong glare, especially at night. A lamp, in which the excess of red and yellow rays is corrected by a pale blue shade, will be found to yield the mildest and least irritating light. During the late rage for camphine lamps, many soon found out that the pleasure of having so brilliant a light was somewhat marred by the headache it frequently excited; and it appeared to me that, of those whose eyes were otherwise sound, the bilious and dyspeptic were the most annoyed by it.

(160.) More rarely the *acoustic nerve* is affected, and the patient suffers from noise in the ears, compared by some to the shrill singing of a kettle; by others, to the roaring of a waterfall. Sometimes there is merely intolerance of sound, which causes no annoyance so long as the patient is kept quiet, but is very distressing if he happen to be where much noise is made. At other times, the sensibility of the nerve, instead of being heightened, is blunted, and dyspeptics grow somewhat deaf; just as in the previous instance it was observed that the sight occasionally became dim.

(161.) Sometimes the *sense of Taste* is impaired, and patients complain that their food is without flavour: occasionally there is a constant disagreeable taste in the mouth, especially if the dyspepsia be complicated with bilious disorder. In these last cases, however, it generally depends on vitiated secretions in the mouth, rather than on secondary irritation of the gustatory nerves. The nerves of secretion in this part of the body are often evidently affected, both in dyspepsia and in biliousness, as is shown by frequent lachrymation, as well as by an excessive flow of the saliva (189).

Before quitting the subject of uneasy sensations about the head, arising from indigestion and biliousness, I have to

make a few more remarks on giddiness, or dizziness,—a symptom occasionally so prominent as to form the patient's chief suffering, and to claim, therefore, the first care of the practitioner.

(162.) GIDDINESS sometimes makes its attacks with great regularity after eating, and is obviously due to primary irritation in the mucous membrane of the stomach. Thus, I had a patient under my care, who invariably suffered from giddiness and dimness of sight for a quarter of an hour or twenty minutes after eating anything that disagreed with him. Giddiness may, perhaps, be produced on some occasions merely by the sudden and copious secretion of gastric juice naturally taking place when food comes in contact with the mucous membrane. Dr. Beaumont expressly states that St. Martin was often seized with vertigo from this cause.* In a few instances, I have observed that giddiness was relieved by profuse lachrymation.

Giddiness is often an exceedingly obstinate complaint to treat, and long baffles all the practitioner's remedies. This want of success sometimes arises from forgetting that giddiness may be associated with dyspepsia, not so much as an effect of irritation in the stomach, as of disorder in some other organ, or of the general system. In such cases, it is obvious we shall in vain quiet the former, if we do not at the same time correct the morbid state accidentally co-existent. This leads me briefly to notice some of the disorders likely to cause giddiness, when they are associated with indigestion.

(163.) As a sympathetic symptom, giddiness has its origin in the liver oftener than in any other organ. It usually attends the "sick-headache" (149); or it may be conjoined with other bilious signs, without headache. Vertigo, so caused, usually subsides as the day advances; but in severe cases,

* Op. cit. p. 174.

it may return at intervals, especially towards evening. Sometimes it comes on suddenly and intensely during a meal; not, however, as a direct effect of the contact of food with the mucous membrane, but from the regurgitation of a quantity of bile into the stomach (207). The slightest shaking of the head is apt, in certain cases, to produce giddiness. Not long ago, I had a bilious patient under my care, who for this reason, when the attack came on, never rose from her chair or moved about in the room without first steadying the head between her hands.

(164.) Giddiness is likewise a sign of uterine irritation, as may often be remarked in amenorrhœa and menorrhagia. At other times, giddiness seems merely to be the effect of the debility so common in indigestion. We then observe that fatiguing exertions, or turning abruptly round while walking, or suddenly assuming the erect posture, are all apt to induce it. In giddiness from plethora, the erect posture, on the contrary, relieves the patient; if, therefore, it be necessary for him to recline on a couch, the head and shoulders should be well raised. Lastly, giddiness appears sometimes due to pressure by a distended and flatulent stomach on the lungs, heart, and large vessels of the chest, in consequence of which, resistance is offered to the free return of the blood from the head.

Treatment.—There is, perhaps, no single dyspeptic symptom that causes greater suffering than headache, or of which patients are more anxious to be relieved. Many apply on account of headache solely, without suspecting that it depends on a disordered stomach; and others, although aware of this, know also that the radical cure of their complaint is likely to occupy a considerable time, and they would, therefore, feel grateful if some palliative could be devised meanwhile to lessen present suffering.

(165.) The headache following a debauch in eating and drinking seldom requires any special treatment, provided

the stomach were previously in a sound state. The erythema of the mucous membrane (61) subsides within forty-eight hours, and with it the symptomatic headache. In slight cases, if the headache be attended with collapse and debility, a little food or a dose of sal volatile in some aromatic infusion often does good (155).

(166.) After gross dietetic errors in persons whose stomach is already in a morbid state, the headache is apt to last for several days, and to be accompanied with various febrile symptoms. The gastric mucous membrane is, in fact, acutely inflamed, and should there be nothing to contra-indicate it, the best treatment is to apply six or ten leeches to the epigastrium. When the headache has persisted for a considerable period, it may bring on determination of blood, and it may then be advisable to cup or leech the nape of the neck, or to apply leeches to the feet, and afterwards promote bleeding and revulsion by hot pediluvia.

(167.) In violent gastric and bilious headache, and in those where there is throbbing, cold applications, as bags of ice are extremely useful, and at the same time, grateful to the patient; or the forehead may be occasionally moistened with a lotion containing one part of acetic ether diluted with four parts of water: either alone, to produce the full refrigerant effect, or combined with some anodyne, as tincture of aconite.

As the primary irritation in the stomach arises from food acting on morbidly sensitive nerves, it is always necessary to remove the exciting cause, as far as practicable, by enjoining a spare and bland diet (255). The undue sensibility of the stomach, as well as the predisposition to secondary pain in the nerves of the head, ought likewise to be temporarily blunted by anodynes. Of these, the extract of belladonna (gr. $\frac{1}{6}$ to $\frac{1}{4}$), or of henbane (gr. iij.), with ipecacuanha (gr. $\frac{1}{2}$), made into a pill with confection of roses, and given thrice daily, is the most useful.

(168.) In London, and probably in all large towns, the most frequent cause of headache is bilious congestion (79), to relieve which no remedy equals an emetic, as it strikes at the root of the disorder by thoroughly unloading the liver. This plan of treatment is nearly always admissible, for it is a mistake to suppose that an occasional emetic permanently weakens the stomach even of a dyspeptic. An emetic, however, is now an unfashionable remedy, and, what may be fairly allowed to have more weight, it is certainly a most disagreeable one. When, therefore, from this or any other reason, it cannot be given, our next best plan is to excite brisk action of the bowels, and thus drain off from the liver the suppressed or pent-up bile. At the same time, patients should be warned that drastic purgatives attain the proposed end only by the irritation they produce, first in the stomach, and then in the duodenum and bowels, and that this excitement cannot fail to do mischief in cases of dyspepsia. Not only do drastic purgatives cause more irritation than an emetic, but they also unload the liver less effectually. The action of the latter is soon over, and one of its chief advantages is that it obviates the necessity for giving large quantities of strong physic. All purgative medicines do not seem equally efficacious in procuring the downward evacuation of the bile. The best are calomel (gr. iv. to vi.), compound extract of colocynth (gr. x.), compound powder of jalap (ʒss.), and sulphate of manganese (gr. x.), in half a tumblerful of water. When this last medicine does not produce sickness, it may be given for several days in succession without inconvenience, as its cholagogue power is great in comparison to its drastic properties.

(169.) The headache observed in some dyspeptics, may be either entirely excited, or aggravated by uterine irritation. I have the notes of several cases of indigestion before me wherein the patients were not liable to headache at all, except just before the monthly periods (101). The same fact

may be remarked in menorrhagia, and in other diseases of the uterus attended with irritation. If amenorrhœa be conjoined with dyspepsia, the headache will probably be worst at the time when the catamenia ought to appear, which is often marked by what is called a molimen, or effort of nature to bring on the secretion, denoted by feverishness and an increase in the uneasy sensations usually felt—namely, pain in the back, abdomen, &c. The application of from two to six leeches to the groin, at this particular period, often causes the discharge actually to appear, and in other cases proves so good a substitute for it, as to relieve nature, and cut short the headache. Warm stupes across the abdomen ought also to be perseveringly employed.

(170.) When headache is complicated with plethora, or determination of blood to the head, leeching, or cupping at the nape of the neck, may be necessary. The excess of blood, however, is often local only; or, on the contrary, the absolute quantity of it in the body may even be below the healthy standard. In such cases, it may be of consequence to avoid depletion, and it will generally be found that the lost balance in the circulation may be corrected by dry-cupping and blisters, or other modes of counter-irritation applied to the epigastrium, together with sinapisms to the legs, and hot pediluvia.

Gastric irritation would often be unable to cause headache, were it not aided by the exalted nervous impressionability that attends anæmia, or weakness. As palliative remedies in these cases, draughts containing Hoffmann's ether, sal volatile, or the spir. ammon. fœtid. in camphor mixture, are likely to be useful. It is, of course, highly important to allay the gastric irritability as speedily as possible, in order that the practitioner may proceed to strengthen the patient, by allowing a nourishing diet, and administering corroborant remedies.

(171.) It will sometimes be observed that headache persists after every apparent cause for it has been removed, and

baffles all attempts at cure. In this respect, headache agrees with other secondary pains, and the explanation seems to be, that frequent irritation has, at length, produced excessive local impressionability. So long as this state remains, any slight and passing irritation in the body may be sufficient to excite headache; nor is the liability to it lost until the nerves have regained that healthiness of tone which enables them to resist trifling causes of disturbance (101).

(172.) In the two preceding chapters, the chief kinds of pain observed in indigestion have been considered, and I now invite the attention of my reader to the different discharges that take place from the stomach. Under this head may be grouped, eructation, pyrosis, and rumination, signifying respectively the upward expulsion of air, liquids, or solid food; and to these may be added vomiting. Air escapes most readily, liquids next, and solids with greatest difficulty — a circumstance arising partly from the different positions they occupy in the stomach. Air being lightest, collects at the upper part of the cavity close to the cardiac orifice; hence, if the latter relax for an instant, the air, urged by the contraction of the stomach and abdominal muscles, is naturally the first to pass off. Liquids are also apt to gravitate in the same direction, and being more mobile than solid food, they more readily enter the gullet. Dyspeptics often complain of "a rising in the throat," although nothing passes into the mouth. It is not attended with any conscious muscular effort, and seems caused by the passage of a little fluid, or softened food, for a certain distance up the gullet, from relaxation of the cardiac orifice, aided only by the tonic contraction of the stomach, and, perhaps, by what have been called the rhythmic movements of the œsophagus. It excites a feeling of distention, or stoppage, and after continuing for a short time, it subsides, and the fluid again descends into the stomach. It appears to me that, in the same way, the globus hystericus is often due to the arrest of air in the gullet.

CHAPTER X.

ERUCTATION AND FLATULENCE.

Frequency of flatulence in indigestion—Source and nature of the air—Symptoms—Flatulence promoted by want of tonic pressure in the stomach and bowels—Pseudo-eructation—Constipation from air in the cœcum—Treatment.

(173.) ALTHOUGH belching of wind implies that the air usually contained in the stomach has somewhat exceeded its proper amount, still, if occasional only, it is hardly to be regarded as a departure from health. But in dyspepsia, it passes far beyond this point, and as, at the same time, much flatus is pent up in the stomach, it produces considerable distress. Flatulence is rarely altogether absent in indigestion; and, in 200 cases, it was a very troublesome symptom 166 times.

(174.) The gas eructed from the stomach is derived from several sources. Part of it is swallowed with the saliva—a fluid remarkable for entangling globules of air; the rest is secreted by the vessels of the mucous membrane, or results from changes in the food produced by indigestion. Eructation is often preceded by a rumbling noise, caused by the shifting of flatus from one part of the intestinal canal to another; hence it is probable that air sometimes enters the stomach from the duodenum, or upper end of the bowels. The nature of the gases found in the stomach has been already mentioned (31).

(175.) Flatulence belongs more especially to the advanced

periods of digestion and to fasting, and in bad cases is attended with anxiety, tightness, or distention at the epigastrium, or lower sternal region. Sometimes the fulness of the stomach provokes nausea, or retching (202); at other times, it impedes the descent of the diaphragm, and excites palpitation of the heart, difficult breathing, or a sense of impending suffocation (229). In passing through the mouth, the air occasionally leaves a bad taste upon the palate, from holding a little watery vapour impregnated with the matters that happen to be in the stomach. Thus, sometimes the taste is sour, and denotes acidity; or rancid, when fatty substances disagree; or bitter, when the stomach contains bile. All these points afford the practitioner useful hints as to the nature of the indigestion.

(176.) Want of tonicity, or contractile power in the walls of the stomach and bowels seems to promote flatulence, which therefore usually causes much distress to the feeble and cachectic. One of the worst cases of flatulence I ever saw was in a phthisical patient, who for a long period had taken acetate of lead to check diarrhœa. Although the quantity of air that escaped was enormous, the abdomen remained swollen and tympanitic, apparently because the intestines had lost their tonicity, or been partially paralysed from the poisonous influence of the lead. Hysteria is also remarkable for the quantity of wind extricated in the bowels, and persons affected with it sometimes continue to belch for hours together. The suddenness with which the air accumulates in these cases is wonderful, for the abdomen occasionally becomes distended like a drum in the short period occupied by its examination. Now and then, however, hysterical flatulence is partly fictitious. In the Medical Gazette for 1843, there is a paper by the author on Pseudo-eructation, which shows that belching of wind is sometimes unintentionally imitated so exactly as to deceive the practitioner. In an example there recorded, the patient, a nervous and hysterical woman, about

the middle period of life, was subject to attacks of flatulence, and had become impressed with the idea that "wind" was diffused all over her body. Accordingly, when any part of it was squeezed, she fancied the contained air was dislodged, and she thereupon began to make strong efforts to expel it. On watching her, it was observed, 1st, that much air was evidently eructed in the usual way; 2ndly, that, during the strong but irregular action of the muscles of the throat, much air was swallowed into the stomach; and, lastly, that the sound of eructation was often imitated exactly, although unintentionally, without the discharge of any wind at all. The chief point of distinction between the true and the false sound is, that the latter can be produced only when the *mouth is shut.* Thus, in the case just noticed, a violent paroxysm could be instantly stopped merely by making the patient keep her mouth open.

(177.) Gaseous fluids are apt to collect in the cœcum, producing an elastic resonant swelling in the right iliac fossa. One common effect of this over-distention is loss of power in the gut to propel its contents, and hence springs one of the most obstinate kinds of constipation seen in practice. I may mention that galvanism, or blisters over the right iliac region, and shampooing the abdomen, with the administration of occasional mercurials and warm purgatives, are the best remedies for these cases.

(178.) The medicines given to relieve flatulence comprise a variety of carminatives, stimulants, and stimulating antispasmodics, which operate by exciting the muscular fibres of the stomach and bowels to propel their contents, and by overcoming any spasmodic resistance offered by the cardiac orifice. As the cure proceeds, these palliative remedies may be combined with, or changed for, tonics, as infusion of cascarilla, rhubarb, or the mineral acids. Exercise promotes the healthy contraction of the bowels, and, on the contrary, sedentary or relaxing occupations tend to flatulence.

Flatulence often appears to be almost idiopathic, or independent of dyspepsia; at least, there are some who, although they digest perfectly well, are yet annoyed by incessant inodorous eructations. This affection is extremely difficult to cure; the more especially as it is rarely of a nature to induce those subject to it to change in any important respect their mode of living, or to persevere in the use of remedies likely to relieve it. The most effectual plan of treatment consists in occasional minute doses of mercury, to modify the secretory action of the stomach, and the subsequent administration of the mineral acids.

CHAPTER XI.

PYROSIS OR WATER-BRASH.

Its comparative frequency in dyspepsia—Varieties of pyrosis—Source and nature of the fluids discharged—Painful sensations attending it—Salivation—False pyrosis—Treatment.

Pyrosis is one of those terms which in the lapse of time have changed their original meaning. Introduced by Sauvages into his Nosology, about seventy years ago, it was described as a "sensation of heat in the stomach and œsophagus, without acute fever;" but no mention is made of any fluid discharge. Cullen, remarking the frequency of the latter, defined pyrosis as a "sensation of heat, with the discharge of abundance of watery fluid." Finally, the last has come to be considered the characteristic symptom; for most practitioners now regard "the discharge of watery fluid" as pyrosis, whether attended with painful sensations or not. Although we must admit that this last definition is not quite in accordance with the derivation of the word, still it has, nevertheless, the great merit of practical convenience; for when thus understood, pyrosis bears the same relation to liquids as eructation and rumination do to air and solids.

(179.) There is some difference of opinion as to whether pyrosis be invariably conjoined with indigestion. Cullen was the first in this country to describe an independent form of it under the name of pyrosis idiopathica, or water-brash;

but his views on this point have not been generally adopted. Even Cullen himself could not advance a step in his account of it without mentioning *dyspeptic symptoms*, thereby inculcating the very connexion he intended to disprove. The nearest approach to pyrosis idiopathica is where the discharge is so prominent a sign as to engross the patient's whole attention, or where it has obstinately persisted, after nearly every other trace of indigestion has been removed.

Pyrosis is not a common complaint in early youth, because dyspepsia, of which it is a symptom, is not then frequent (6). It affects the female more than the male sex. Women are especially liable to it during pregnancy; in the later months, it may be partly ascribed to mechanical pressure upon the stomach by the enlarged uterus; but at an earlier period it depends on that strong sympathy between the uterus and stomach, of which sickness after conception is a familiar example. Sauvages notices the case of a woman whose pregnancy was always first revealed to her by attacks of water-brash.

(180.) In 200 cases of indigestion, I observed pyrosis present 143 times. The quantity of fluid ejected varies from one or two tea-spoonfuls at a time, to half a tea-cupful; but as the act is frequently repeated, it sometimes amounts to above a pint in the twenty-four hours. The appearance of the fluid discharged offers great variety. It is usually like gum-water, or mixed with much thick mucus, and, as patients call it, "phlegmy." It may be of different shades of grey, yellow, or yellowish-green, from admixture with bile. Sometimes it is tinged dark-red or brown by the colouring matter of the blood. But I have never seen it black,—a circumstance I would hardly have mentioned, were it not that the complaint, in some districts, is called the "black waters." Occasionally, patients describe the discharge as glairy, or like white of egg.

(181.) Being unable, in the present state of our knowledge,

to connect particular kinds of the discharge with special pathological states of the mucous membrane, the following arrangement may be recommended on account of its practical convenience. The comparative frequency with which I have observed the different kinds of pyrosis is shown at the same time.

There was	Acid pyrosis in . . .	71 cases.
„	Insipid	57 „
„	Bitter	56 „
„	Salt	13 „

(182.) Many theories have been formed respecting the source of the fluid in pyrosis. Thus Cullen referred it to spasm of the capillaries; Dr. Mason Good, to inactivity of the absorbents; while others have ascribed it to regurgitation of the pancreatic fluid, &c. But in nearly every instance where it is not directly swallowed, it may be regarded as the effect of morbid secretion in the stomach, caused by dyspeptic irritation. In the course of his experiments, Dr. Beaumont often observed that St. Martin's stomach was "full of fluids," although the previous meal had not included liquids of any kind. He remarked that this usually happened when the food was not being digested with healthy rapidity; more especially towards the end of the process. If chymification had been brisk previously, this over-dilution of the gastric juice checked it, nor was it actively renewed until much of the water had disappeared. In St. Martin's case, the excess of liquid was probably absorbed, or it may have escaped by the duodenum; but in dyspepsia, it is apt, when favoured by relaxation of the cardiac orifice, to be propelled into the mouth, and it then constitutes pyrosis.

(183.) The fluid thus brought up is not pure gastric juice, which seems never to be secreted in excess. Dr. Beaumont frequently terms it "acrid," and it probably consists of deteriorated gastric juice mixed with water exhaled from the mucous membrane, and other products of faulty digestion.

According to the best authorities, the acids are the hydrochloric, acetic, lactic, butyric, and others developed from fat. Of these, the two last are the most irritating to the coats of the stomach. The hydrochloric acid is for the most part derived directly from the food; the others chiefly result from chemical changes in the saccharine, farinaceous, and oily constituents of it.

(184.) As a general rule, the fluid is more acid the later the period of digestion at which it is ejected (197). Indigestible substances, therefore, which protract chymification, give rise to the most irritating discharges. Sometimes the fluid sets the teeth on edge, and the throat feels excoriated by its acrimony. If it drop on black clothes, it turns them red; if on a floor containing carbonate of lime, it effervesces. Acid pyrosis happens more rarely in the morning or during fasting. It generally feels hot in the mouth.

The insipid and saltish varieties chiefly belong to the period of fasting, or to the early stages of digestion. Many patients term the discharge sweet or brackish; a few from north of the Tweed call it "wersh," an expression exactly translated by other patients into "a sickly, faint, or weak taste." Both the insipid and salt kinds often cause a sensation of coldness in the mouth.

(185.) The bitter variety of pyrosis depends on an admixture of bile with some of the fluids just described. It may occur at any period of the day, but chiefly comes on after dinner or in the morning—the time when bilious symptoms of every kind are worst. If the discharge contain much bile, the patient describes it as thick, oily, and intensely bitter, with the characteristic yellow, or yellowish-green colour. In 56 cases of bilious pyrosis, it was described as "oily" 28 times, or exactly in a half of them. If the bile be in small quantity, it merely imparts its bitter taste, without giving the discharge an oily consistence. When mixed with acid fluids, the taste is often difficult to define. Some

patients are still able to distinguish its constituents accurately, as they call it "bitter-sour;" others term it "coppery" or "cankery."

(186.) Occasionally the discharge is described as "thick and oily," but not bitter. It consists, in short, of fat, which having been liquefied by the heat of the stomach, is rejected in consequence of the irritation it excites. It is at once recognised, both by its taste, by congealing when cold, and flaming up when spurted into the fire. In several cases under my care, the discharge was termed oily-acid: it occurred towards the end of digestion, and was a mixture of acrid fluids and melted fat.

(187.) The same patient is often liable to pyrosis of different kinds. Thus it may be insipid at one period of the day, and sour at another, or after eating. On other occasions, the pyrosis that was bilious after eating, gradually changes into sour as digestion advances, until at last it sets the teeth on edge. The following case is remarkable for exhibiting all the four kinds of pyrosis just mentioned, in the same individual.

Margaret H——, aged 19, of robust constitution, is the eldest of a large family in reduced circumstances, and in consequence has to undergo much anxiety and fatigue. She suffers from most of the ordinary signs of indigestion, as weight and gnawing at the epigastrium; also from burning pain along the sternum, and in the throat. Among other symptoms is pyrosis. Before breakfast, it is usually bitter, but sometimes insipid or salt. During digestion, the discharge is generally acid; but after eating certain articles, as potatoes, about a tea-cupful of clear, hot, insipid water comes off her stomach. In the course of treatment, the bitter discharge disappeared first, then the acid, and lastly, the insipid variety.

(188.) Very often *no pain* is felt, although the discharge is *highly acrid;* at other times the *pain is great*, although the

discharge *is insipid or salt.* There is, in fact, but little connexion between them, for the pain seems to depend rather on the degree to which morbid sensibility has been developed in the stomach, than on the acrimony of the discharge. Numerous observations of Dr. Beaumont go to prove this. Thus, in the casual excesses committed by St. Martin, no pain was felt, although the stomach was "full of acrid fluids." In like manner, many with healthy stomachs may have remarked, that when sickness supervenes during digestion, no pain is felt in the region of the stomach, although the ejecta may be so acrid as to set the teeth on edge. Some patients state that the discharge gushes into the mouth without previous warning; but more frequently it is preceded by uneasiness of some kind, or, as I have often heard persons who were expecting the discharge express it, "the stomach keeps growling." In most cases, it brings little or no relief to any pain that may be present; in some, the relief is transient, and the pain returns when the fluid has had time to recollect.

(189.) *Ptyalism* is by no means rare in dyspepsia, and the saliva sometimes flows into the mouth so suddenly as to lead the patient to think it comes up from the stomach, or "off the chest." This excitement of the salivary glands may be the effect of irritation spreading from the mouth along the ducts, or, as seems more probable, of sympathy between these and the disordered stomach. The ptyalism, or false pyrosis, as it might be called, is often very apparent in the morning, when the pillow is stained and soaked through with saliva that has run from the mouth during the night. The distinguishing mark between the two affections is, that in true pyrosis, the fluid appears in sudden *gushes;* whereas in ptyalism, it only *streams* from the mouth. I have never found this symptom difficult to cure, as it has always subsided along with the dyspepsia on which it depended. An astringent wash for the mouth, composed of tincture of kino

(ʒ i.), in lime water and rose water (āā ʒ iv.), is a very useful and pleasant remedy.

(190.) *Treatment.*—As pyrosis is seldom if ever an idiopathic disease, but merely a sign of indigestion (179), it will generally be found to disappear in proportion as the cure of the latter progresses. Sometimes, however, either from its prominence, or its obstinacy, pyrosis claims the practitioner's special attention, and I shall now point out the remedies that have appeared to me to be the most useful in controlling it.

When the pain attending the discharge depends on acidity, it ceases as soon as the latter has been neutralized. For this purpose, twenty to thirty grains of the bicarbonate of potass or soda, or half a tea-spoonful of sal volatile may be taken in a little water. Where there is exhaustion, the ammonia is to be preferred, on account of its stimulating properties, which rouse for a time the power of the stomach and general system. If with acidity there be constipation, the carbonate of magnesia (ϑ i.) or two table-spoonfuls of Dinneford's solution is the most suitable, for it not only neutralizes the acid, but acts afterwards as an aperient. When scrofulous persons show a tendency to acidity, Carrara water, or lime water is very useful; and as an antacid in gouty subjects, the benzoate of ammonia (gr. x.) combined with small doses of potash, may be given. As the base of gouty concretions is soda, it may be as well to avoid frequent doses of that alkali, although I am not aware of any harm having ever been traced to its use, or of any good having ever resulted in that complaint from ceasing to take it.

(191.) When alkalies have been given for some time, they begin to lose their effect, so that the relief they afford is very transient. This happens partly from the enormous quantity of acid the stomach habitually produces in such cases, and partly because the fluids irritate from other bad properties besides acidity. Under these circumstances, our

only resource is to exhibit anodynes to palliate present pain; while, during the intervals, every effort should be made to obtain a radical cure by arresting the secretion of the fluid itself.

(192.) Among anodynes, opium is the most serviceable in pyrosis, not so much from its power in quieting pain as in checking secretion. For the first purpose, indeed, it is seldom used, because a full dose of it is attended with inconveniences from which other medicines of the same class, as hydrocyanic acid, are free. But to check secretion, a small dose of opium only is required (gr. $\frac{1}{4}$—$\frac{1}{6}$; ter quotidie); and it may therefore be continued for several days consecutively, the practitioner taking care to counteract the tendency to constipation arising from its use by occasional mild laxatives. Many cases of pyrosis *unattended with pain* are nevertheless cured by anodynes, because the latter allay the irritation on which the morbid secretion in the stomach depends. Several striking examples of this important practical fact are given in Dr. Elliotson's pamphlet on Hydrocyanic acid.* The following case occurred to Dr. Prout:—A young man suffered from dyspepsia brought on by the sedentary nature of his employment. The discharge from the stomach and salivary glands amounted to several pints in the twenty-four hours; but there was no pain whatever in the region of the stomach. The complaint was completely cured as soon as the gastric irritation had been subdued by means of the prussic acid.

For the purpose of stopping the excessive secretion of fluid in pyrosis, anodynes are usually combined with astringents; thus the pulvis kino comp. has been long and justly a favourite remedy. Respecting the use of this medicine, Dr. Pemberton has made the following remark:† "I prefer the kino to every other astringent, because unless there is

* London, 1820; p. 43.

† Treatise on Diseases of the Abdominal Viscera, p. 112. London, 1807.

a diarrhœa, it appears to have no tendency to confine the bowels. In this drug, therefore, you have a medicine which exerts its powers to restrain the discharge of the glands when they are secreting too much, without exerting any such powers over them when they are acting naturally." Gallic acid (gr. v.) is also a very useful remedy, and may be given twice or thrice daily. The powdered gall-nut (gr. v.), which usually contains a mixture of gallic and tannic acids, acts with greater energy; but on account of the presence of the latter acid, is more apt to form insoluble compounds with the gastric juice and other matters found in the stomach. According to some observers, it appears that the acetate of lead likewise precipitates the active principle of the gastric juice;* hence, for this as well as for other reasons (176) it ought to be used sparingly as an astringent in dyspeptic disorders. In irritable states of the stomach, it has appeared to me that the decoction of Algaravilla (249) was better borne than any other astringent.

(193.) The mineral acids, being astringent tonics, are especially suited to relieve obstinate pyrosis in feeble individuals. Sometimes the sulphuric, sometimes the nitro-muriatic acid succeeds best; nor can the one best adapted for each particular case be always determined beforehand. If there be much debility, however, the former should be first tried; and the latter, if bilious disorder be conjoined with indigestion (90). It is perfectly consistent practice to prescribe *regular doses of acids* and *occasional doses of alkalis* for the same patient, each medicine fulfilling a separate purpose. Alkalis are merely palliative, and relieve only when the irritating fluid that *has been* poured out is of an acid nature; on the other hand, the mineral acids strike at the root of the pyrosis, and produce a radical cure by *checking the secretion of the fluid itself*, in consequence of their tonic and astringent effects upon the vessels of the mucous

* Blondlot, Traité Analytique de la Digestion, p. 367.

membrane. The mineral acids, therefore, should be given, like other tonics, when the stomach is empty; while alkalies are of little use unless administered towards the end of digestion, at the moment when the acid fluids are irritating the gastric nerves. If taken with care in this manner, the one does not interfere with the action of the other. When pyrosis is obstinate, counter-irritation to the epigastrium, as by means of a blister, is often highly useful. It operates by relieving congestion of the mucous membrane, and imparting tone to the secreting vessels (239).

Acid pyrosis (184) has the clearest relation to disorder in the digestive process, and is most under control; the insipid and salt varieties are less manageable, and the indications for curing them are obscure. When the chief cause of indigestion lies in derangement of the secretions of the stomach, much good is often obtained from small or alterative doses of mercurials. My usual plan is to give one on alternate nights, for three times; and the two preparations I have most faith in are calomel and the hydrarg. sulphuretum, cum sulphure or Æthiops mineral. Of the former, the dose should not exceed half a grain; of the latter, about six grains may be given. If the bowels be constipated, an aperient should be taken in the morning; if otherwise, it is best not to interfere with the action of the mercury. The treatment of bilious pyrosis (185) resolves itself—first, into removing its bitter element; and secondly, into curing the pyrosis—whether acid, salt, or tasteless—that is left behind. The bilious admixture is sometimes due to gastric irritation solely, but oftener to duodenal or hepatic disturbance. The nature of the latter and the remedies required are to be determined in accordance with suggestions contained in various parts of this work.*

(194.) Medicines can palliate, even in the worst cases; but in order to effect a lasting cure, careful rules of diet

* See chapters on Biliousness (75), Headache, and Vomiting.

must be enforced. In particular, fat, fried, or cured meat, pastry, nuts, cucumbers, pickles, and malt liquors are to be eschewed. Moreover, all articles of food which, although generally wholesome and digestible, are yet found by patients to "turn to acid or water, or to ferment," as they express it, are to be avoided. Among the things in common use most apt to excite pyrosis, may be mentioned oatmeal, potatoes, fish, and tea. As a general rule, a vegetable diet is more *acid-producing* than one chiefly composed of the easily digested kinds of animal food; hence many patients remark that they are more troubled with acidity when they live on slops—farinaceous articles—than when they make use of a full meat diet. When bilious pyrosis occurs the first thing in the morning, it is often prevented by taking a little food before getting out of bed (89). Many patients find that exercise or constrained postures are sure to bring on an attack; hence clerks are extremely apt to suffer therefrom when closely confined to the desk (8).

CHAPTER XII.

RUMINATION: A "RISING" OF FOOD INTO THE MOUTH, FROM INDIGESTION.

Dyspeptic rumination different from that observed in the lower animals—Opinions respecting it—Horny excrescences on the skin—Cases to illustrate the subject of rumination—Treatment.

(195.) RUMINATION holds the same place with respect to solid food as eructation and pyrosis do to air and liquids; and it hardly seems necessary to add that it is quite different from "chewing the cud," or rumination as observed in the lower animals. Human food is not of a kind requiring to undergo the latter process, and, consequently, man is not furnished with the appropriate organs for performing it. When, therefore, solid matters regurgitate into the mouth, it is always a sign of disease, although in rare cases it may occur so regularly from long custom, and interfere so little with the patient's health, as almost to appear natural. But originally, a very different meaning was attached to "human rumination," as the term was first applied in the belief that the process was identical in man and in brutes. Thus, before Peyer published his Merycologia,* the inquiries of physicians seem to have been chiefly undertaken with the view of discovering additional marks by which the presumed affinity between them might be drawn closer. Some thought there was a similarity of structure in the

* Basle, 1685.

stomach; and in the work alluded to, we read of a practitioner predicting this in the case of a Benedictine monk, who ruminated. As might have been expected, however, the opinion turned out to be wrong; for Peyer tells us, that when the body was examined after death, no disease could be detected except "a fleshy state of the gullet." The poor monk died of starvation. "Marcore obiit, propterea quod tantâ aviditate cibus regerebatur in os, ut ventriculus, et consequenter jecur fame et cibi indigentiâ quasi perpetuo laboraret."* Judging from these and other details, the case seems to me less like an example of human rumination than of œsophageal stricture, which sometimes presents appearances that might mislead a hasty observer. The food, in fact, is swallowed, but cannot pass beyond the obstructed part of the tube, where, by dint of repeated efforts of deglutition, it is retained for a few seconds, after which most of it rises up again into the mouth.

A short time before Peyer's work, Professor Bartholinus, of Copenhagen, put the climax to these theories by boldly asserting that human ruminators not only chew the cud, but have horns on their heads:—"ruminantes bestiis affines feré cornua habent." Peyer gravely corrects this mistake, and points out both that ruminators are without horns, and that those who have horns do not ruminate. The excrescences formed upon the skin, to which the term *horn* has been applied, result from disease of the sebaceous glands. The morbid secretion contained in them first dries and hardens, and being subsequently pushed like a wedge through the dilated sebaceous aperture, the callous mass continues to increase in size, by the addition of fresh layers to its base.†

(196.) I here subjoin a series of three cases intended to illustrate the subject of rumination, and its connexion with

* Merycologia, p. 64.

† Erasmus Wilson, in Med. Chir. Transactions, vol. ix. p. 59.

dyspepsia. In the first, the rumination is slight and the indigestion well marked; in the second, both affections are prominent; and in the third, the rumination is well marked, while the dyspepsia is slight. The cases are given in an abridged form.

John L., coach-trimmer, aged 27. Regular and careful in his habits. Has been subject to indigestion and low spirits for five years.

Pain. Weight and aching (112) at the epigastrium, immediately after eating most kinds of food, but especially butcher's meat: it lasts for about half-an-hour.

Occasional burning hot pain (119) at the lower end of the sternum, coming on about two hours after dinner.

Sharp pains (132) darting through the right and left hypochondria, at irregular times.

Occasional headache and giddiness during digestion.

Eructation and pyrosis during digestion.

Rumination.—About five minutes after eating animal food, morsels of it begin to return into the mouth; and this continues at intervals for about an hour, or longer. At first, the meat has the same taste as when it was swallowed; afterwards, it gradually turns so sour as to set the teeth on edge. Pork, bacon, and cheese always come up of a bitter taste; fat is ejected "quite pure," and congeals when cold. There is little rumination after arrow-root, gruel, or Irish moss; there is more after fish, but most after butcher's meat. The act is like a slow hiccup, and occurs without uneasiness. Has been liable to it for three years.

The rumination, as well as the other dyspeptic signs, was cured in a month. The case was treated on ordinary principles.

After eight months, this patient re-applied to me. The indigestion had, in a great measure, returned, but without any rumination. The cure was again easily accomplished.

Mr. A., upholsterer, aged 33. Regular, but sedentary in

his habits, used to be much troubled with indigestion about fourteen years ago: the present attack has lasted four months, and he ascribes it to confinement in his counting-house. The ordinary symptoms of indigestion are well marked, but present nothing unusual except—

Rumination.—Frequent, especially when sedentary. It occurs regularly during digestion. Bits of salted meat, skin, or gristle, come up of the same colour and taste as when swallowed. With respect to other articles of food, vegetables generally, and potatoes in particular, are apt to disagree and return. When he eats pastry, it "rises" in half-an-hour "as a fat, hot, and bitter matter." Of butcher's meat, mutton agrees best. These things are ejected, not by vomiting, but by what he calls "hiccup," and he often assists it by pressing with his hands over the abdomen.

In proportion as the general indigestion was relieved, the rumination subsided; and the cure was complete in about twenty-two days.

Mr. V., bookbinder, aged 50. Active and regular in his habits. Has had what he calls "a weak stomach" since childhood.

The symptoms of indigestion are few and unimportant, consisting chiefly of occasional heartburn and pyrosis.

(197.) *Rumination.*—Has been subject to it ever since he can recollect. It commences a quarter of an hour after dinner, and continues at intervals for about four hours. At first, the ejecta taste sweet, or as when they were swallowed; in about an hour and a half, they begin to turn acid, and gradually get more so as digestion advances. Indigestible things come up more certainly and for a longer time than articles of easy solution. For example, bits of lobster, shrimps, pieces of skin, the rind of oranges, or walnuts "will not stay down," as he expresses it, but are repeatedly returned into the mouth, until he spits them out. Gruel causes acid pyrosis; and it is remarkable that the

quantity of fluid brought up is sometimes three times as much as the gruel swallowed (182). He cannot take wine or malt liquors. If he drink more than a pint of *any fluid* at one time, it is instantly rejected by the stomach (202).

All examples of rumination are to be regarded as cases of dyspepsia, and managed on general principles. In a slight degree, it will be found to be by no means a very rare affection when the stomach is irritable, but, for the most part, it disappears as the cure progresses, without requiring special treatment. It will, I believe, never prove obstinate, except when the stomach has acquired, in the course of many years, *an inveterate habit* of rejecting solid food.

CHAPTER XIII.

NAUSEA, RETCHING, AND VOMITING.

Their frequency in dyspepsia—Mechanism of the act—Circumstances that facilitate, or retard vomiting: position and state of distention of the stomach; idiosyncrasy; habit — Symptoms that attend vomiting — Nausea depends on nervous irritability rather than on the vascular condition in the stomach—Sickness from bilious congestion and regurgitation—Diagnosis—Treatment.

(198.) VOMITING is a much more violent expulsive effort than those hitherto considered; and is, besides, attended with nausea. The matters brought up are no longer of one kind only, as in eructation, pyrosis, or rumination, but consist of whatever may happen to be the contents of the stomach at the time. Its frequency as a symptom in 200 cases of indigestion, was as follows:

Cases where vomiting was present	73
Cases where vomiting was either very rare, or altogether absent	127

(199.) The first or preliminary step in vomiting is voluntary, and consists in deep inspiration, by which the lungs are distended, and the stomach pushed down into a favourable position. This act is not essential, but it facilitates the subsequent discharge so much, that it is made almost intuitively whenever the patient can do so. Sometimes, however, it happens, from the force and suddenness with which the abdominal muscles begin to contract, that the

patient is, as it were, taken off his guard, and deep inspiration is hindered, or prevented; and on these occasions, as the stomach has not been brought into a favourable position, the vomiting is comparatively difficult.

When the lungs have been filled, the next step is the firm closure of the windpipe, to fix the diaphragm, and prevent the air from escaping during the strong vomitive efforts about to follow. Any active co-operation of the diaphragm—synchronous with the contraction of the abdominal muscles, and while matters are passing from the gullet—cannot be given, because, as Dr. M. Hall has remarked, that would imply inspiration and opening of the windpipe, during which these matters would inevitably be sucked into the lungs, and the patient's life endangered. Lastly, when the different organs have thus been disposed to the greatest advantage, the abdominal muscles are thrown into strong spasmodic action; not a mere jerk, as in eructation, &c., but a severe, prolonged strain. At this moment, the stomach is placed between the abdominal muscles and the diaphragm; and it is obvious that if the latter were not fixed, the stomach would be pushed up under the ribs, where it would be, comparatively speaking, beyond the reach of pressure. But so long as the air in the lungs is prevented from escaping by the firm closure of the windpipe, the diaphragm forms an unyielding barrier across the lower outlet of the chest, against which the stomach is compressed or flattened by the abdominal muscles, whereby its contents are squeezed into the gullet. During a paroxysm of vomiting, however, the rima glottidis occasionally opens, and as a little air is unavoidably forced out each time, the lungs are at length brought to a state of complete expiration. The stomach consequently recedes under the ribs, where it can no longer be compressed, except by the most severe straining. The obvious and very simple remedy would be to inspire, and thus bring the stomach down again into its former favourable position;

but so long as the abdominal contractions continue, they baffle every effort to do so, by preventing the descent of the diaphragm. If during a moment's quiet, the patient succeed in again filling the lungs, the agony immediately ceases. To facilitate vomiting, therefore, persons should be directed to inspire deeply, and then to hold their breath as much as possible.

(200.) For obvious reasons, it is difficult to assign with accuracy the part taken by the stomach in vomiting. With inconsiderate zeal, experimenters have tried to come at the fact by ripping up the belly of different animals, and then observing the effect of emetics on that organ. But, as might have been foreseen, the results of these vivisections have satisfied no one, on account of the extreme violence inseparable from their performance. It is to be regretted that Dr. Beaumont did not make some direct observations on this point, as he was placed in peculiarly favourable circumstances for so doing. Dr. B., however, and others also, have proved beyond a doubt the active contraction of the stomach during digestion, as well as the cramp-like energy with which it grasps substances irritating its lining membrane (127). Hence it is fair to conclude that the stomach does not remain passive at a time when nature is employing all the means at her disposal to empty it. Müller, indeed, affirms that the contractions of the stomach can be distinctly felt by individuals during the act of vomiting.

(201.) The cardiac aperture of the gullet acts as a sphincter, and prevents the escape of matters from the stomach, when the latter is compressed during muscular exertions. Were it not for this tonic closure, it is obvious that its contents would stream into the mouth whenever the cardiac orifice happened to be the depending part; as, for example, when tumblers, reversing the natural position of the body, stand on the crown of their head for the amusement of the public. Unless, therefore, an open or yielding state of this

entrance into the stomach coincide with the vomitive effort, there will be no escape of matters, but only *retching*. The same part which the cardiac orifice acts to the stomach, is performed to the lungs by the rima glottidis, or opening of the windpipe. The latter shuts in their contents, nor can any air pass out so long as this aperture is closed, even although the lungs be subjected to violent compression. It may, however, be remarked, that as the passage into the stomach is only required occasionally, its usual state is to be shut; while, on the other hand, as a free entrance into the lungs nearly at all times is indispensable, the rima glottidis is naturally open. It is, in fact, only when food is actually passing over the top of the windpipe that the latter closes; and were it not so, it is obvious that the food would be sucked into the lungs along with the air, and extreme danger would arise. Fortunately, this accident occurs very seldom, as there is an almost unerring consent between these parts. Not only is this co-operation observed in ordinary breathing and eating, but even during the most violent spasmodic contractions of the pectoral and abdominal muscles, these apertures may be said to regulate whether the force of the effort is to be expended in emptying the stomach or the lungs—in vomiting or in coughing. When the gullet is shut and the windpipe open, coughing and expectoration ensue; if the windpipe be closed and the gullet open, there will be eructation, pyrosis, rumination, or vomiting; when the entrance both to the stomach and lungs is closed, the patient can only retch.

(202.) Some persons vomit easily and with little pain; others dread an emetic, from the suffering it occasions, and there are a few who cannot vomit at all. But making every allowance for this natural difference, there are various circumstances which greatly promote vomiting, and of these the principal is distention of the stomach itself. Distention, indeed, appears to be the chief stimulus to contraction in all

the hollow muscles, as the bladder, the heart, and the bowels; nor does the nature of the distending agent seem to signify. Hysterical persons, as is well known, are liable to accumulations of air in the stomach, which often produce nausea and vomiting, with an abundant discharge of flatus. The power of emptying the stomach at will possessed by some depends on the same principle; for although unable voluntarily to produce the series of spasmodic efforts that constitute vomiting, they can gulp down air, which, by stretching out the stomach, at last provokes retching. It was in this manner that M. Gosse, of Geneva, operated, who by bringing up from his own stomach various articles of food at different periods after eating them, was enabled to make many valuable observations respecting their comparative digestibility. The conclusions at which he thus arrived were, on the whole, very accurate, and most of them have since been confirmed by Dr. Beaumont (18). If the stomach be dilated with food of the blandest kind, or even with water, the same effect follows. Besides causing sickness, distention facilitates vomiting by giving volume to the stomach; hence, it is customary to encourage those who have taken an emetic to drink plenty of tepid water. The use of the latter is not merely "to wash out" the stomach, as is often thought, but to assist vomiting by distending it, and making it a fairer object for the abdominal muscles to contract upon. For this purpose, however, one or two tumblerfuls of water suffice, for it should be recollected that immoderate distention must tend to paralyse the stomach, or, at least, to weaken its contractile power; it is, therefore, quite possible for the old family recipe on these occasions, "the more water the better," to be acted on to an injurious degree.

(203.) When efforts to vomit are made while the stomach is empty and contracted on itself, the pressure mainly falls upon adjacent organs; among which, *the liver*, both from its size and situation, comes in for a principal share, and conse-

quently, the bile is squeezed out of it. Thus, all who have taken emetics, or been sea-sick, must have observed that bitter or bilious vomiting chiefly occurs towards the end of the paroxysm. This fact is of much practical importance, since, to a certain extent, it gives the medical attendant the power of clearing out *the stomach*, or *the liver*, at his option. If he wish to limit the action of an emetic to the stomach, he ought to encourage drinking; but if the object be to empty an engorged liver, the emetic should be given when the patient is fasting, and very little water should be allowed.

(204.) Vomiting, like rumination and some other faulty acts, sometimes becomes easy through habit. Not long ago, I had a dyspeptic under my care, who, to relieve himself from what was by no means a severe pain at the pit of the stomach, used to provoke sickness, by tickling the throat with his finger. After one or two trials, he succeeded in bringing up the remains of his dinner, with scarcely any nausea or suffering. Similar cases are not uncommon.

(205.) Nausea is accompanied with a feeling of deep prostration. The countenance is pale and sunken, the pulse feeble, and the patient trembles all over; or there may be merely quivering of the lower lip, or twitching of the muscles of the face. But during vomiting, these symptoms pass off; the pulse becomes firmer than before, and the face flushes from severe straining. The subsequent effects are languor, and sometimes chills, or even shivering. Not unfrequently, if the efforts have been severe, the face remains tumid, or the eyes suffused; in other cases, there is no swelling, but the eyes continue for a while full and brilliant: a fact not unknown to ladies, if it be true that some have submitted to an emetic in the morning to gain a triumph at night.

(206.) Sickness and vomiting usually attend erythema of the mucous membrane supervening on gross intemperance (62); at the same time they seem to have no necessary depen-

dence on the degree of vascularity in the stomach. Thus Andral* observes, that where, after fever, the stomach was found reddest, there had seldom been any vomiting; and the following remarkable case, on the other hand, exhibits intense vomiting without increased vascularity:—"A young woman, who had suffered much mental distress, was seized with constant spasmodic vomiting. In spite of every variety of treatment, she died at the end of a month. On inspection after death, the entire gastro-intestinal apparatus was found in a state of the most perfect health." † It appears to me, that in most chronic examples of indigestion, sickness and vomiting are to be ascribed to a morbid state of the nerves rather than of the circulation. When vomiting supervenes soon after eating, it denotes extreme irritability of the stomach; if, on the contrary, it come on at a later period, it is more indicative of weak digestion. Thus, many patients digest well, provided they can retain their food for about an hour after eating it; others feel no inconvenience at the beginning of digestion, but are apt to vomit at a later period, if the things eaten be of difficult solution. In the first case, therefore, the texture and quantity of the food, in the second, its solubility in the gastric juice, must be chiefly regarded. Some feel squeamish after eating, but they do not turn sick, until, to the irritation arising from crude food coming into contact with a morbidly sensible stomach, has been added that resulting from the action of acrid fluids. The practical application of these principles in regulating the diet of dyspeptics is so obvious as to require no further illustration.

The matters ejected soon after eating consist of the recently swallowed food, on which, as yet, so little change has been produced, that its flavour may often be distinguished. As digestion advances, the morsels begin to be

* Clinique. Fièvres. † Roux, Journal de Médecine, 1821.

softened or loosed in texture, and to taste sour from the acid fluids of the stomach with which they are saturated (26, 184, 196, 197).

(207.) Bilious congestion of the liver and regurgitation of bile into the stomach are common causes of nausea and vomiting, especially in females who follow sedentary, in-door occupations. Such persons usually feel squeamish on rising from bed in the morning, and this sensation may continue to increase until retching or vomiting supervenes. If there be bilious congestion alone (87, 88), the quantity of matters discharged from the stomach is small in proportion to the violence of the straining, and consists chiefly of tough frothy mucus, tinged, perhaps, with bile, or tasting somewhat bitter; or there may be merely excessive retching, without vomiting, but often attended with an abundant flow of "clear water," or saliva, which is suddenly poured out into the mouth in consequence of the nausea. Many patients suffer in this way almost daily, and it will often be remarked that they are *as much relieved by retching as if they had vomited.* The strong pressure caused by the straining unloads the congested liver, which is the object essentially required; and provided this be thoroughly accomplished, it signifies little whether the bile be subsequently discharged upwards, through the stomach, or downwards, through the bowels. When a large quantity of bile is thus forced from the liver into the intestine, diarrhœa is frequently excited. Most commonly, however, *regurgitation* is conjoined with bilious congestion, in which case the sickness is always more severe, and usually conjoined with intense giddiness; the ejecta, also, are more abundant, and consist of frothy fluids mixed with bitter matters, or of pure bile alone. The colour of the bile is sometimes green, oftener yellow, or, as patients describe it, like yolk of egg; from which it may be inferred, that the chief part of it has been squeezed from the hepatic ducts rather than from the gall bladder. Sickness from regurgitation is seldom felt

so long as the patient lies quiet in bed; it generally comes on when he begins to dress, because the passage of the bile from the liver is then favoured by the erect posture, and by muscular action. At other periods of the day, regurgitation of bile usually happens from the spreading, or reflection of irritation from the stomach upon the liver and duodenum. Thus Dr. Beaumont remarked that when St. Martin's stomach had been disordered from any cause, it contained an unusual quantity of bile, although there was no reason whatever in his case to suspect disease in the liver or duodenum. The same fact was equally obvious in a patient under my care, who suffered from the usual signs of dyspepsia, among which was gnawing pain at the pit of the stomach. To relieve this, he sometimes took a little brandy. But although the pain was thereby checked, he was quickly seized with giddiness, intense sickness, and vomiting; and the matters ejected even *from the beginning* consisted of pure bile. In the following case, vomiting, both from congestion and regurgitation, was distinctly observed:—Mrs. M., a middle-aged lady, with slight dyspepsia, is liable to frequent retching, and occasionally to vomiting of frothy bilious fluids in the morning; after this, the sickness passes off. She also states, that sometimes on sitting down to dinner with a good appetite, she is suddenly and, as it seems to her, unaccountably seized with intense sickness and giddiness as soon as she has eaten a few mouthfuls. To use her own words, she is compelled to lay down knife and fork, and catch hold of her chair to prevent herself from falling. To this sensation vomiting almost instantly succeeds—the ejecta consisting of bile mixed with the recently swallowed food. The effects of a gush of bile into the stomach may likewise be often perceived, about the time when an emetic ceases to operate. After full vomiting, the nausea may subside, and the patient begin to think his suffering is over, when suddenly he turns "deadly sick," and with severe straining he brings

up a cupful or more of pure bile. It appears as if abundance of that fluid, in consequence of the compression exerted on the liver during the previous retching, had flowed into the duodenum, whence it is suddenly regurgitated into the stomach by anti-peristaltic action, quite unassisted by any muscular effort of which the patient is conscious. The yellow tinge which sometimes suffuses the skin of bilious persons exposed to a hot sun, or during dinner, may probably be explained on the same principle—namely, slight regurgitation of bile into the stomach, with absorption of a portion of its colouring matter.

Table showing the comparative frequency of different varieties of vomiting in seventy-three cases of indigestion wherein that symptom occurred:—

Vomiting of undigested food alone	in	38 cases.
Bilious vomiting alone	„	9 „
Vomiting both of food and bile .	„	26 „

The peculiar idiosyncrasy of individuals has much influence in producing vomiting; and it is often impossible to explain, on any other principle, why it should be absent in some severe cases of indigestion, and a distressing and almost daily symptom in others where the dyspepsia is slight. Several remarkable illustrations of the extent to which disease may be developed in the stomach without ever having been attended with vomiting are to be found in Dr. Abercrombie's Pathological Researches.

(208.) When young children are brought up in close, ill-ventilated rooms, and fed on coarse, heavy food, they are very liable to attacks of vomiting lasting for several days, during which a large quantity of bile is discharged. But if, at this period of life, vomiting set in severely, while it is neither controlled by suitable diet, nor referable to the state of the liver, it is always a grave symptom, suggesting the speedy supervention of some serious eruptive disorder or hydrocephalus.

It is well known that a paroxysm of coughing sometimes ends in retching or vomiting. This may be caused either by the sticking of viscid matters about the top of the windpipe, or by the force with which the air is driven from the lungs against the rim of the glottis and pharynx — it is as if these parts had been irritated with a feather. The series of muscular efforts that produce coughing and vomiting are nearly allied (201), and the former is readily converted into the latter.

With regard to the diagnosis in these cases, it may be observed, that when vomiting occurs after dinner only, it is probably of a dyspeptic nature; but if it come on the first thing in the morning, or if the patient assert that it happens after breakfast only, and not after dinner which is the heaviest meal of the day, it is almost certainly bilious. Again, if he be sick at both periods, the liver and stomach are most probably involved together.

(209.) *Treatment.*—When sickness depends on bilious congestion, the effects of eating vary according to circumstances. If the congestion be slight, the food may speedily produce a cure by draining the bile from the liver (89); but if the congestion be great, and conjoined with much gastric, or duodenal irritation, the bile brought down is both very abundant and apt to regurgitate into the stomach, where it increases the sickness, and soon produces vomiting. Some patients accordingly report that eating relieves them; others, that it makes them worse; or the same patient may find that food sometimes relieves and sometimes aggravates his sickness, according to the varying condition of the stomach, liver, and duodenum. In all these cases, however, an early breakfast is to be recommended, since it either removes the squeamishness altogether, or, at all events, shortens the patient's suffering by exciting retching or vomiting.

When vomiting attends erythema (61), it soon subsides, provided the mucous membrane were previously healthy;

but if the erythema has been excited in a chronic case of indigestion (63), it may require the application of ten or a dozen leeches to the pit of the stomach. Anodynes are very useful in allaying sickness, whether it be dependent on inflammation or on morbid nervous sensibility; of these the best are the hydrocyanic acid (♏ ij. Scheele), or Battley's sedative solution (♏ x.), in a little camphor mixture. Effervescing salines are often beneficial, as the carbonic acid disengaged has a sedative or quieting action on the mucous membrane. Creasote has been strongly recommended, and it sometimes succeeds where anodynes fail; its operation, however, is very uncertain. When vomiting is less the effect of dyspepsia than of hysteria, nervousness, or other disorder attended with general weakness, stimulating antispasmodic draughts should be given. If nausea, from biliousness, hang long about a patient, an emetic of ipecacuanha is by far the shortest way of putting an end to his discomfort. The remedy should be taken while fasting, and very little water should be drunk, for the purpose of throwing the chief pressure of the vomiting upon the liver (203). As soon as that organ has been thoroughly unloaded, the patient is relieved. Cholagogue purgatives are also highly useful, although slower in their operation; of these I may here mention calomel (gr. vi.), rhubarb (℈ i.), and the sulphate of manganese (gr. x.)

CHAPTER XIV.

THE APPETITE.—THIRST.

Loss of appetite with activity of the digestive function—Keen appetite coinciding with extreme gastric irritability—The sensation of hunger mainly dependent on the state of the nerves—Appetite appeased by small fragments of food; also by narcotics, emotion, and exhaustion—Sensation of faintness sometimes takes the place of appetite—State of the appetite in indigestion and biliousness—Thirst.

(210.) WANT of appetite, although a most common sign of indigestion, may likewise, as is well known, arise from very many causes unconnected with that complaint. Strong mental emotion, for example—whether agreeable or distressing—instantly extinguishes it; and even a *slight* degree of excitement, or pain, has similar effects in nervous and irritable individuals. Hence, when the appetite is bad, it does not always follow that the power to digest is lowered in the same proportion; since it will be occasionally observed, that persons digest very fairly, although from want of all desire for food, they require to force themselves to eat. On the other hand, it now and then occurs that the appetite is good, or even craving, although the patient suffers from severe indigestion or organic disease. To show how serious the latter may be without blunting the feeling of hunger, I may allude to a case now under my care, in which the patient—a married woman, aged 50—is affected with cancerous ulceration of the pylorus. Occasionally, there is vomiting of

blood; and, generally speaking, the pain after eating all kinds of food is extreme. Notwithstanding these severe symptoms, her appetite has continued good throughout, and on one occasion she begged me to discontinue giving her tonic medicines, on account of their producing a keen desire for food, which she durst not gratify.

(211.) Some physiologists maintain that the appetite closely adjusts itself to the wants of the system. Thus, they observe, it is sharpest when exercise has quickened secretion and excretion, and thereby produced a large waste of materials in the economy. On the other hand, when these processes are retarded by inactivity, or confinement in ill-ventilated rooms, the waste is less, and the appetite is weak in proportion. So, likewise, in diabetes, where the loss of materials is great, the appetite and the power to digest become enormously augmented. Many facts, however, show that appetite is usually, if not always, dependent on the state of the nerves. Beaumont mentions, that even when St. Martin was "quite hungry," the feeling could be instantly stopped by dropping *two drachms* of lean beef into the stomach. It need hardly be observed that so small a quantity of food could not repair or make good the loss sustained by the system during a long fast; but it supplied, for the moment, their customary stimulus to the nerves, and thus lulled the pain of hunger. The same fact is shown by the action of narcotics, which destroy appetite, although they contain no nourishment at all; and a similar effect is produced by strong mental emotion. Besides, it is well known that when fasting is prolonged beyond a certain point, the appetite, which may have previously been very keen, begins to subside; and very fortunately so, for if it *continued* to sharpen by abstinence, much mischief would inevitably result. It is no doubt true, that the longer fasting is protracted, the greater are the wants of the economy; but fasting likewise causes exhaustion, by which the digestive vigour of the

stomach is depressed. If, therefore, the appetite increased equally with the wants of the system, it would follow that the desire for food would augment in proportion as the power to digest it diminished. Practitioners are aware that a fit of indigestion is never so likely to happen as when a person, in a state of exhaustion, eats a hearty meal.

(212.) In some patients, a sensation of "sinking at the pit of the stomach" apparently supersedes, or is a substitute for, appetite: they never feel hungry, but are faint for want of food, and eat on purpose to relieve this uneasiness. Dyspeptics occasionally perceive the "sinking" *only after* meals, and being then naturally apt to consider it as a sign that more support is needed, they force themselves to eat, although their appetite has been satisfied. The consequences usually are, that while the sinking is not relieved, the indigestion is made worse. Some patients declare "their food does them no good:" that is to say, they never perceive the agreeable sensation of fulness and restored strength which ought to follow a meal.

(213.) The appetite may be disordered either because it is morbidly increased, diminished, or perverted. In 200 cases of indigestion, it was

Natural in	62
Bad	122
Capricious	11
Craving	5

In the five examples of craving appetite, there was nothing to account for so unusual a departure from the general rule. In particular, there were no signs of worms in the bowels, or of any complaint likely to have produced this sign independently of dyspepsia.

(214.) That condition in which an appetite for wholesome food is replaced by a craving for indigestible substances is called pica. On most occasions, the desire is for insipid bodies—as chalk, cinders, sealing-wax, &c. This perverted

taste, however, ought not to be considered a sign of indigestion, but of hysteria or chlorosis. I may here just hint at a state of the appetite common in dyspepsia, which, if not perverted, may at least be called very unfortunate. I allude to those patients who never can fancy any kind of food except what is rich or hurtful to delicate stomachs; and to others who cannot enjoy a meal unless they have it at an unseasonable hour—as at supper-time.

(215.) The appetite is often good at one period of the day and bad at another; thus, slight biliousness is sometimes announced by this one symptom alone. Persons so affected complain that they have *no appetite for breakfast*—there may even be *loathing* at food at that time—although *at twelve or one o'clock* they are, perhaps, ravenous, and not only eat a good luncheon, but are again ready at the hour appointed to do full justice to their dinner. If these persons—being accustomed to a town-life—go to the country and take morning exercise in the open air, they quickly become changed beings; and, in particular, the appetite grows keen for breakfast. Thus, many who dine well anywhere, can eat a hearty breakfast only in the country. There is no cause which so frequently checks the appetite in the morning as biliousness, and the rationale has been explained in a previous chapter (88).

Patients do not always make the distinction between a *bad appetite* and the *dread of eating*, although the point is often of practical importance. The latter usually implies great morbid sensibility of the mucous membrane, with which mere loss of appetite has no necessary connexion. Many patients are in the distressing predicament of frequently feeling hungry and faint for want of food; but no sooner do they relieve this by eating, than the various pains of indigestion begin to torment them; it is only exchanging one misery for another.

(216.) There is seldom much THIRST in dyspepsia, unless

inflammation or vascular excitement be conjoined. After a "fit of indigestion," thirst is almost always urgent, and cool liquids are both grateful to the patient, and useful in lowering the temperature, constringing without stimulating the congested vessels, and supplying moisture to the parched mucous membrane of the stomach (61). In chronic dyspepsia associated with biliousness, thirst is often present, and in regular bilious attacks it is rarely absent. As a general rule, whenever thirst is urgent in dyspeptic or bilious complaints, it ought to be fully gratified, the patient merely taking care not to distend the stomach by taking too much fluid at one time.*

* See Chapter on Diet—Drinks, Malt Liquors, Wines, and Spirits.

CHAPTER XV.

THE APPEARANCES PRESENTED BY THE TONGUE—THE STATE OF THE BOWELS—THE URINE.

The information derived from inspecting the tongue usually over-rated—Various appearances presented by it in dyspepsia.

The state of the bowels after a fit of indigestion; in chronic dyspepsia—Constipation from want of intestinal secretions; from flatulence, from torpor—Constipation and diarrhœa alternating and mutually causing each other—Constipation from want of bile: abuse of calomel—Relaxation of the bowels in dyspepsia—Treatment.

The state of the urine in indigestion: oxalate of lime diathesis.

(217.) The importance of the state of the tongue as a sign of indigestion rests on the presumed fact that it is merely a sample of the general state of the alimentary mucous membrane. Disorder in the one is thus believed to depict itself upon the other: if, for example, the tongue be red, the stomach is held to be congested or inflamed; and if the former be coated or furred, the condition of the latter is supposed to match. Although far from wishing to decry the practice of always inspecting the tongue, I am yet strongly of opinion that its importance as a sign in dyspepsia, and, indeed, in disease generally, is over-rated. Patients more especially fall into this error; many apparently consider their whole case stamped upon the tongue, and its inspection to be the grand object of the physician's visit. Nevertheless, in most examples of indigestion, it will be found that its appearance has, in fact, less relation to the stomach and bowels than to the general system. In some dyspeptics,

the tongue is nearly always clean, unless when feverishness happens to be present.

(218.) In inspecting the tongue, the following points are chiefly to be regarded:—

1. Dryness, or moistness.
2. Its coating; that is, the deposit upon its surface from mucus, saliva, or blood-exudation, &c; or from a morbid condition of the epithelial layer.
3. The state of its circulation.
4. Its general appearance and consistence.

A dry tongue is never present in simple dyspepsia, unless the latter be conjoined with feverishness, as after a "fit of indigestion."

A foul or loaded tongue sometimes indicates torpor of the stomach and a vitiated state of its secretions; but it is oftener produced by disorder or inspissation of the fluids in the mouth, from local causes, or general fever. Thus, a thick clay-coloured coating on the tongue is common in smokers, from the action of the hot tobacco fumes upon the mucous membrane. The coating is thickest on the centre and towards the root of the tongue, where the epithelial scales are most freely shed, and the supply of mucus is very abundant. Moreover, as the tongue is, at this place, broad and comparatively fixed, a deposit collects more readily there than on the tip or sides, which are being constantly rubbed and cleaned against the teeth and walls of the mouth. When the coating is thick, the fungiform papillæ are concealed; but as it begins to get thinner, they show themselves through the crust, giving it the appearance of a grey ground speckled with dots varying in colour from pale to bright red, according to the state of their circulation. The tongue sometimes presents two longitudinal frothy stripes, corresponding to the spaces left between the canine tooth on either side of the upper jaw and the incisor next to it, in consequence of this part of the tongue not re-

ceiving the same cleansing as the rest. So, likewise, if the incisors on one side of the jaw be lost, there is often a frothy patch on the corresponding side of the tongue.

(219.) The colour of the tongue in dyspepsia presents every variety of shade between pale and bright red. Its most frequent condition in those cases that have fallen under my observation has been more or less frothy in the centre, but red and clean at the tip and edges. With this appearance of the tongue every kind of indigestion occasionally coincides; nor does it seem to me to be in the least degree characteristic of any peculiar state of the gastric mucous membrane. In some instances, and more especially in nervous persons, the tongue is pale while lying flaccid in the mouth, but florid when protruded, because its fibres, in contracting, squeeze the blood from the interior towards the surface. A smooth, shining, macerated, or "sodden" appearance of the tongue is not uncommon in dyspepsia, especially if conjoined with hysteria, or great nervousness. These last complaints, moreover, are often revealed by the physical appearance of the tongue, which, partaking in the general mobility of the muscular system, is constantly changing in size from the alternate contraction and relaxation of its fibres. The rapidity, also, with which it is darted out of the mouth when the patient is desired to show it, more resembles a spasmodic jerk than a voluntary act; and it is then suddenly retracted, almost before there has been time for the practitioner to catch a glimpse of it. Such persons are unable, without a strong effort, to control the glossal muscles, so as to keep the tongue steadily protruded. A furred, coated, or dry state of the tongue is more frequently seen in engorgement of the liver than in dyspepsia; probably on account of the fever so often accompanying the former. Sometimes the coating is tinged yellow, from admixture with the bile pigment. Acting on the doubtful postulate referred to at the beginning of this chapter—namely, that a foul tongue be-

tokens a foul stomach, many practitioners administer active purgatives on these occasions, for several days in succession, by way of "clearing out" the stomach. The result of the practice, it must be confessed, is usually quite satisfactory, although it appears to me that the theory of its operation is erroneous. There is, in fact, but little evidence to show that a loaded tongue is characteristic of a loaded stomach; and even admitting that the stomach were coated with viscid secretion, it is by no means probable that a course of irritating purgatives would relieve the state of congestion or inflammation of the mucous membrane, on which the formation of tough and viscid mucus is, so far as is yet proved, generally dependent (61). On the other hand, as has been mentioned, the coated state of the tongue just described is very frequently associated with an engorged liver, to cure which these active purgatives are most fit and efficacious remedies (90). Such I conceive to be the rationale of the success of this practice in nearly every instance. A large, smooth, and *lobulated* condition of the tongue is likewise very distinctive of bilious disorder, only it is not often present.

(220.) THE STATE OF THE BOWELS.—The usual effect of a fit of indigestion is constipation, which is due to the locking up of the secretions of the canal, in consequence of the attending fever. When undigested substances slip through the pylorus, they sometimes pass along the entire canal without exciting the least irritation. This happens more especially with smooth pieces of metal, as coins and pins, also with cherry-stones, husks of fruit, and bits of waxy potato. At other times, the undigested matters irritate the mucous membrane, unused to the contact of crude substances, and produce diarrhœa by causing an excessive discharge of fluids, with inordinate peristaltic action of the bowels. In most cases of chronic dyspepsia, however, it may be remarked that the bowels are habitually somewhat constipated from defective secretion, in consequence of the slight

feverishness which usually follows eating. There are, besides, various circumstances commonly in operation among dyspeptics which have a constipating tendency; of these the chief are sedentary occupations, want of exercise, muscular weakness, and deficient nervous energy. Torpor not unfrequently alternates with relaxation; the bowels gradually get loaded with matters, which at length excite irritation and diarrhœa; subsequently, in consequence of over-stimulation and fever, the bowels again become constipated. Indigestible morsels, as bits of cucumber or lobster, occasionally remain for several days in the intestinal canal before they are expelled; and Dr. Johnson states that he has known many examples where substances eaten three or four months before, have come away in little round balls enveloped with layers of inspissated mucus. Fragments may thus lodge in the canal even although there be diarrhœa, for, in consequence of the surrounding swelling, they get impacted in the substance of the mucous membrane, and are thus prevented from slipping onwards when urged by the peristaltic movements of the gut.

(221.) Constipation sometimes results from general weakness, in which the alimentary canal participates: this happens chiefly in old-standing cases, or where indigestion has arisen under influences tending to exhaust the vigour of the body (9, 10, 70). Flatulence is likewise a common cause of constipation from over-stretching the bowels and weakening their contractile power. A good daily pill, in such cases, is composed of three grains of rhubarb, one of capsicum, or ginger, and one minim of ol. carui. When, in irritable states of the stomach, the colon has become distended with solid and gaseous matters from loss of tone in its walls, it is better to prescribe a turpentine enema occasionally, than to have recourse to large and repeated doses of drastic purgatives (177). Some persons, from a very blameable inattention to the state of the bowels, allow the regular periods for

evacuation to pass over without heed, and so produce habitual constipation. Among the bad consequences of this custom are frequent headache, with a large and tumid state of the belly; the skin also acquires an unhealthy look, being dusky, clammy, or even greasy, and the odour of the transpiration is rank and offensive. The skin, in short, is compelled to take on itself part of the duty of excretion, which the alimentary canal no longer sufficiently performs.

(222.) A plan frequently effectual in relieving habitual constipation consists in drinking a tumbler of cold water upon an empty stomach, the first thing in the morning. Persons who, for years, have been obliged to take laxative medicines almost every other day, have sometimes, by adopting this simple expedient, been enabled to discontinue the practice altogether. Cold water, so drunk, possesses a laxative power, and may likewise, from its temperature, act as a tonic, and invigorate the vermicular contractions of the bowels. Oatmeal, also, in the shape of porridge or gruel, generally helps to remove habitual constipation. It owes its laxative properties to the action of the "seeds," or insoluble branny particles, upon the mucous membrane. If, however, the constipation be joined with dyspepsia, oatmeal is seldom admissible, on account of its tendency to promote acidity (194, 197). In obstinate cases, connected with defective nervous energy, the daily use of electricity is often extremely useful: the current ought to be made to pass through the abdomen in different directions. Friction over the bowels, or kneading them with the hands is, when perseveringly employed, a very important means of rousing the peristaltic action of the canal. Gentle exercise is also extremely useful; but if violent, it tends to constipation, by inspissating the internal secretions in consequence of increased cutaneous transpiration.

(223.) If constipation occur from want of bile—the natural laxative of the bowels—means must be adopted to obtain a

more abundant flow. The principal cholagogues have been particularly noticed elsewhere (90, 168). Of late years, it has been customary to give the inspissated ox-gall—fel bovinum inspissatum—as a substitute for bile; and the practice is good, provided the patient be not suffering from retention or *non-excretion of bile from the blood.* In this last case, the remedy would be clearly misapplied, as the object then is, not to procure a substitute for bile in the bowels, but to promote its elimination from the blood.

(224.) Many persons do themselves much harm by resorting to calomel on every occasion of apparent want of bile in the stools, even although there be no material amount of constipation at the time. They have been told that when the evacuations are light in colour, the bile is deficient in quantity, and, on this very simple but erroneous principle, their custom is to take two or three grains of calomel whenever the colour of the evacuations is lighter than what they fancy to be the healthy standard. The darkening of the matters discharged from the bowels, moreover, which uniformly ensues after they have taken their dose, seems to them a proof that the practice is correct. It cannot be too carefully explained to such persons that colour alone is not a good criterion to judge by in this particular case, because the quantity of bile excreted may be sufficient for all purposes required by the economy at the time, although insufficient to give a dark tinge to the evacuations (77). When, therefore, an apparent deficiency of bile is observed in the evacuations, there is another and all-important question to be resolved—viz., is the liver suffering? Is the blood acting deleteriously from being charged with the constituents of the bile,—from being inadequately depurated? (77, 81). This point cannot be established by the mere inspection of the stools, but only by detecting the different symptoms indicating bilious disorder, which have been fully noticed elsewhere (83—89, 149). On the other hand, when the "calomel plan" is followed, the

liver gets rest neither night nor day. In compliance with an erroneous theory, it is first urged beyond its natural power, and then, when as a consequence of this it has become exhausted, it is again goaded into over-action. Congestion of the liver, or that derangement of its nutritive function, during which albumino-fibrinous fluids are effused around its vessels, is not unlikely to happen in these circumstances; and the frequent excitement of the absorbents by mercury is, of all plans, the one most calculated to promote subsequent shrinking of the liver, with dropsy and the other diseases apt to follow in its train (51, 52). In diarrhœa from bilious congestion, or rather from a bilious flux (88), the first evacuations from the bowels are often almost black, but by degrees the green tinge becomes perceptible, and the colour of a lighter hue.

(225.) Less frequently, in dyspepsia, the bowels are habitually relaxed. Sometimes, from excessive irritability in the intestinal nerves, and proneness to radiated action (101, 102), the ingestion of every kind of food into the stomach excites inordinate peristaltic action throughout the whole canal, or, at all events, in the colon, so that the patient is speedily constrained to empty it. When this occurs within a few minutes after eating, it constitutes the disease termed lientery. Patients thus affected are in the habit of remarking that "their food runs through them;" but although the symptoms naturally suggest this inference, the evacuations seldom contain the food last taken, but only the contents of the lower bowels. In a healthy state of the canal, the same impulse is perceived, but only in a salutary degree, which is, moreover, much influenced by custom. Thus, after eating the morning meal, there is the same quickening of the peristaltic action of the bowels which tends to their relief; and of this circumstance advantage should be taken in treating obstinate, habitual constipation.

(226.) The treatment of diarrhœa requires much judg-

ment, since, in different cases, remedies exactly opposite in their nature are indicated. If it be wished to rid the canal of deleterious substances exciting disorder in it, brisk and oily purgatives are needed; if, on the contrary, our object be to lessen morbid sensibility, and thus enable the bowels to bear with, or tolerate the contact of the food, sedatives and anodynes are required. When diarrhœa is connected with an acid condition of the fluids in the primæ viæ, the chalk mixture and lime water are highly useful. In cases where diarrhœa is kept up by excessive watery secretion from the intestinal canal, astringents united with opium—as the pulv. kino comp. (gr. x.)—are to be administered. In many cases of painful or irritable diarrhœa unattended with indigestion, I have obtained great service from the following draught:—

℞ Ol. oliv. ʒiv.
Liq. potass. ♏xii.
Tinct. hyoscy. ʒss. (vel. opii, &c.)
Tinct. cardam. co. ʒij.
Aq. menth. pip. ʒvi.
Fiat haustus.

(227.) THE STATE OF THE URINE.—I have very often examined the urine of dyspeptic patients, with reference to quantity, specific gravity, colour, sediments, acidity, alkalinity, and coagulability, but with regard to all these points, in a large majority of cases, it will not be found habitually to offer anything different from what is observed in a state of health. In "fits of indigestion," however, or during the slight feverishness so apt to arise from trifling dietetic errors in the dyspeptic, or even after persons with vigorous digesting powers have taken a too-full meal, the urine often deposits a copious sediment of lithic acid, or lithate of ammonia, of various shades of white, yellow, brown, or red. The latter salt appears as the urine cools, and re-dissolves if the fluid be again heated. On slighter occasions, the

urine merely becomes concentrated, or scanty, scalding, and high-coloured, but without forming any deposit. In some cases, the urine is cloudy from a slight catarrhal change, or thickening in the mucus of the passages. If alkalis be exhibited when the urine is too acid, the fault is for the most part quickly corrected; and hence the common opinion that this particular condition is dependent on acidity of the primæ viæ. It will, however, be remarked, that although an excess of acid fluids in the stomach is of daily occurrence in most dyspeptic cases, the sediments alluded to are comparatively seldom present. Even in gout, in which there is almost constant acidity of the primæ viæ, the urine usually remains quite clear, except during, or rather towards the end of a fit, when the deposit may be viewed as the ordinary effect of fever. On the whole, the state of the urine informs us of the condition of the general system, or of the kidneys, rather than of the stomach; and pathologists have, perhaps, somewhat exaggerated the direct connexion between these two organs. In severe fits of indigestion, Bequerel found that the urine occasionally became albuminous; the change, however, was only temporary, and did not last more than a single day.*

(228.) In an interesting chapter on the oxalic acid diathesis,† Dr. Prout has described a peculiar form of disorder, which, with many common signs of indigestion, is characterized by great general irritability and mental sensitiveness. The proximate cause is stated to be either "the non-assimilation of oxalic acid taken along with the food, or the mal-assimilation of saccharine elements." The chief articles of food in this country that contain oxalic acid are the rhubarb plant and the sorrel; but they are comparatively little used. Dr. Prout states that he has repeatedly seen cases where sugar has produced the oxalic acid form of dyspepsia, as well

* Simon's Animal Chemistry, by Dr. Day, vol. ii. p 270.

† Nature and Treatment of Stomach and Urinary Diseases. London, 1843.

as concretions of oxalate of lime. In calculous disorders generally, the patient should avoid raw or brown sugar, on account of the phosphate of lime contained in it: the same objection, however, does not apply to refined sugar. Dr. Golding Bird regards the "oxalate of lime" urine as a species of azoturia, in which a portion of urea is converted into oxalic acid, and Liebig's theory appears only a modification of this, as, according to it, the oxalic acid results from the oxidation of uric acid. It seems to me that the stomach has been more blamed for the presence of this salt in the urine than in fairness it deserves. From late researches, it appears that oxalic acid is often found as a constituent of urine in a great variety of acute and chronic diseases having no special reference to the state of the gastric mucous membrane; and in dyspepsia, the blood, so far as is yet known, does not offer a nearer relation to oxalic acid than blood produced when digestion is perfect. That fluid always contains the elements of oxalic acid—carbon, oxygen, and hydrogen—and primâ facie, it would appear that the kidneys are alone in fault, if, in performing their secretive function, these elements are combined abnormally. The diagnostic marks of the oxalic acid diathesis are extremely obscure; but the acid itself, or rather the oxalate of lime, when present, may be detected in the urine in very distinct octohedral crystals. For the most part, the symptoms are nervous and asthenic in their character; hence the remedies applicable in the treatment are chiefly of a strengthening kind.

When indigestion is combined with hepatic disorder, the bile-pigment often appears in the urine; the latter consequently assumes various shades of green, yellow, reddish and brownish green. The presence of the bile-pigment may be more accurately ascertained by the addition of nitric acid, by which the colour is changed successively from green to violet, red, and yellow.

CHAPTER XVI.

DYSPEPTIC PALPITATION AND DYSPNŒA. HYPOCHONDRIASIS.

Cough, palpitation, and dyspnœa from pressure by a distended stomach—From reflected irritation, or "sympathy"—Tendency to syncope from indigestion — Lethargy — Coma — Watchfulness — Disturbed sleep—Low spirits—Hypochondriasis.

(229.) Cough, palpitation, and breathlessness are occasionally the most troublesome sympathetic effects of indigestion; and none are more calculated to alarm the patient; because, as they frequently persist for years in spite of various kinds of treatment, they at length lead him to suspect organic disease of the lungs or heart. The secret of the want of success in managing these cases usually is, that the remedies are applied to the wrong organ—to the part sympathetically, but not to the part primarily affected. The symptoms just mentioned are produced in different ways, as—

1st. Mechanically, or from pressure. If, as often happens towards the end of digestion, or during fasting, the stomach be distended by flatus, it impedes the descent of the diaphragm, and by thus cramping the play of the lungs and heart, excites dyspnœa, cough, or palpitation. The cause just specified necessarily acts with most effect when the patient is in a recumbent posture, for then the diaphragm and viscera no longer gravitate downwards *from* the chest, but tend to press *upwards* upon it.

2nd. The complaint termed "stomach cough" arises from

sympathy, or from irritation radiated from the gastric mucous membrane upon the lungs. The cough is usually short, dry, and hacking, and when the stethescope is applied, catarrhal râles are either absent, or only occasional. When bronchial catarrh and indigestion co-exist independently of each other, a mutual re-action between them will usually be observed; thus, when the dyspepsia is aggravated, so is the cough; and if, from cold or any other cause, the latter increase, so does the indigestion. Lastly, if the lungs be in an unsound state and liable to congestion, breathlessness may be produced by the increased flow of blood setting in towards them, from the stimulating effect of food upon the circulation.

Spasmodic asthma is sometimes excited by a fit of indigestion, or by the mere contact of certain articles of food with the mucous membrane of the stomach. I lately saw a young gentleman who was subject to distressing paroxysms of this kind after eating suet-pudding.

In 200 cases of indigestion that fell under my notice, dyspnœa occurred 91 times. This table sufficiently shows the frequency of the symptom, although it is defective in not distinguishing the different causes that produced it. I may here mention, however, that sometimes there was merely an extreme proneness to breathlessness on slight exertion; on other occasions, it seemed mainly due to flatulent distention; while in a third and numerous class, it could be directly ascribed to the contact of food with the morbidly sensitive mucous membrane of the stomach.

With regard to palliative remedies in "stomach cough," or dyspnœa arising from reflex irritation, it may be stated that the inhalation of warm vapour medicated with tincture of hyoscyamus, or of opium, is very useful—the more so as it does not interfere with the treatment that may be required by the stomach itself. In a good many instances, I have observed that much advantage was derived from smoking stramonium or thornapple.

(230.) Irritation of the mucous membrane in dyspepsia is frequently radiated upon the heart so as to excite palpitation. Thus, in 200 cases, it was a troublesome symptom 116 times. In a few rare instances, on the contrary, it causes a depression in the action of that organ, or a tendency to syncope. The following example of this affection came lately to my knowledge. A gentleman, aged 56, has been long liable to severe indigestion. After eating anything that particularly disagrees with him, the pulse, which usually beats firmly about eighty times in the minute, falls to sixty, or even to fifty-four, and becomes extremely weak. The action of the heart corresponds, and gives one the idea of dilatation with thinning of its walls. To this I shall add another but much more severe example of the same kind, where the failure of the heart's action was so complete as almost to terminate in death. One evening, I was hurriedly called to see a middle-aged man, who was the beadle of a church in the neighbourhood. His wife stated that he had been long a martyr to indigestion, although he had never before suffered from an attack similar to the present. The day being Sunday, his fare had consisted of a large allowance of salted pork, with greens, plum-pudding, and porter, and about five hours afterwards, he suddenly fell down speechless. In a quarter of an hour, I found him lying in bed, quite sensible, but pallid and sunken, nor could I detect any pulsation either at the wrist or heart, so that for a period of half-an-hour, it seemed as if every instant were to be his last. By assiduously administering brandy, ammonia, and musk, and applying a large sinapism over the epigastrium, and friction with the warm blankets in which he lay, he gradually rallied, and the next day he was almost well.

(231.) Many of the effects of gastric irritation reflected on the nerves about the head have been already noticed elsewhere (158). In continuation of the subject, it may be observed, that a full meal, as is well known, tends to drowsi-

ness; some persons, indeed, become lethargic, and keep themselves awake only by dint of constant effort. This last state may be viewed merely as a minor degree of the apoplectic coma alluded to by Dr. Paris, which sometimes seizes patients in bed, after they have eaten a heavy and indigestible dinner. Dr. Paris ascribes such cases to "sympathy of the brain with an oppressed stomach,"—an opinion in which I entirely coincide; although, very probably, the effect is sometimes promoted by partial obstruction to the return of the blood from the head, or by imperfect arterialization, in consequence of pressure exerted by the distended stomach upon the lungs.

At other times, when gastric irritation is reflected on the brain, it causes distressing excitement, or perversion of its function. To this kind belong watchfulness in bed at night, with mental perturbation from frightful images or spectra, and from vague, undefined apprehensions scarcely endurable. The reasoning even of a strong intellect is hardly sufficient to dispel these fantasies, so vividly are they conjured up through the working of the gastric nerves upon the brain. More than one instance, indeed, has come to my knowledge which prompts the inference that suicide is not rarely committed during these moments, when the mind has thus been fairly unhinged, or goaded beyond its strength to bear. During the day-time, too, the dyspeptic is sadly harassed by low spirits, or by some form of hypochondriasis; from which he cannot be set free except by curing the morbid sensibility of his stomach. Even where the stomach is tolerably sound, it is remarkable how frequently low spirits may be traced to over-feeding. Hence, on many occasions, I have been able to restore its wonted cheerfulness to the mind merely by enjoining a more abstemious diet; and I believe there is no such common cause of depressed spirits as excessive eating and drinking, even although these may not be carried so far as to produce anything like ordinary indigestion.

(232.) It is seldom that special indications can be derived

from the state of the pulse in dyspepsia. Thus, it will be observed, that except during the feverishness attending a "fit of indigestion," or erythema, the pulse is more influenced by the general strength and constitutional peculiarities of the patient, or by co-existing disease, than by the condition of the stomach.

CHAPTER XVII.

THE STATE OF THE SKIN IN INDIGESTION.

State of the skin in indigestion—Flushing of the face—Heats alternating with Chills—A clammy or harsh skin.

(233.) The strong sympathy between the skin and the stomach has been long known even to persons out of the profession; hence various eruptions are popularly, and with justice, ascribed to gastric disorder. In a "fit of indigestion," the entire surface of the body is hot and parched, in consequence of the attending fever, and in chronic dyspepsia, without feverishness, the skin is extremely liable to flushes, often alternating with chills, during the progress of digestion: in rare cases, the patient complains of chills only. The "heats" are chiefly referred to the face, palms of the hands, and epigastrium; the "chills" are either general, or mostly felt in the limbs and back. Nothing shows the "nervous" or sympathetic origin of the "burning of the hands" more distinctly than the suddenness with which it occurs after eating. Two or three minutes suffice for the palms of the hands to grow quite hot, and they remain so until digestion is finished. I had a patient under my care, whose hands used often to become red as well as hot, and, according to her own report, sometimes swollen. A feeling of burning in the palms of the hands is a common symptom in irritation of other mucous membranes also;—thus it is seldom absent

in phthisis. The constant flushing of the face after eating is a cause of much annoyance to dyspeptics, and it tends eventually to produce coarseness of the complexion, with tortuous dilated veins and blotches (50). Sometimes both the flushing and heat are partial, or limited to one side of the face; or the heat may affect one side of the scalp, or the occiput only. *Partial* heats about the head ought always to lead the practitioner's attention to the state of the liver, which will generally be found on such occasions to be disordered.

Perspiration frequently attends flushing, or hot fits; and if this be followed by a chill, the moisture is condensed—cold and clammy—upon the skin. Occasionally the skin is not altered in temperature, but is dry and harsh. In these cases, much good may be expected from the use of the warm or vapour bath.

(234.) Patients liable to flushing should be enjoined to eat slowly and moderately, and to abstain from stimulating meat or drink, as well as from exercise after a meal. When there is a tendency to chillness, the shower-bath—if it can be borne—or the cold sponge-bath every morning, is highly serviceable in producing a glow of heat upon the surface, and in diminishing the general sensitiveness of the skin.

CHAPTER XVIII.

ON PSEUDO-DYSPEPSIA.

Mimoses, or imitation-diseases—Nature of pseudo-dyspepsia—Examples of the complaint—Hysterical vomiting—Treatment.

THE following remarks are intended to fix more clearly the limits of indigestion, by withdrawing from it a class of cases often regarded merely as unusual varieties of that complaint.

It has been long known to practitioners that many diseases are imitated, as it were, by other morbid states, which, although differing essentially from the former both in gravity and in the treatment required, do yet offer to superficial observers the same general features. In illustration, I may allude to various kinds of inflammation which have their imitators, or mimoses, as Dr. Marshall Hall has called them; of which fact the peritoneum, the pleura, the joints, &c., occasionally afford examples. Nor are these mimoses limited to *painful* complaints only; for both epilepsy and palsy are sometimes counterfeited by attacks, which, although to a non-professional observer as alarming in appearance as if they were truly epileptic or paralytic, are comparatively devoid of danger. Among other disorders, bronchitis, croup, and flatulence occur to me at the moment as being often imitated. It seems scarcely necessary to observe that the term imitation refers to the disease, and by no means to the patient, who, of course, is not aware that there is anything

counterfeit in his case. This subject merits careful investigation, not merely as a matter of curious inquiry, but as one of high practical importance.

It may be observed that the term pseudo-disease, or mimosis, is far from unobjectionable as a name for the cases now being considered, because, although they accidentally resemble other and more serious disorders, they are not the less on that account real diseases in themselves, and often of a very distressing character. When their exact nature is mistaken by the medical attendant, it usually happens both that the remedies employed are more severe than what the case demands, and that the friends of the patient are made to suffer much needless alarm. The diseases here alluded to—the mimoses—are the mine which the quack works easily and with success. There is undoubtedly a strong propensity in the mind to magnify dangers incurred, and this observation applies to disease not less than to other things: hence, one person expatiates on the perils of a crisis in sickness happily passed through with as much zest as another on the dangers of a voyage. With this tendency, the notions, or at all events the interests, of the quack chime in admirably; accordingly, with him and his patients, there *never are any imitations.* The mimosis without danger passes for the formidable, or generally fatal complaint which it resembles, —consequently wonderful cures abound. He can point to a hundred instances of disease against which the greatest physicians must admit they seldom can contend, wherein he triumphs nearly every day, and a host of grateful and right-minded patients are ready to back his assertions out and out. Who can feel surprised that quackery should prosper, and where is the remedy for it to be found, except in seeking to elevate the attainments, both scientific and moral, of all permitted to practise in the profession?

In true dyspepsia, the primary irritation is seated in, and limited to, the stomach; the functional properties of its

nerves have been gradually changed, and they *have acquired an inherent morbid sensibility*. Hence the effects of different kinds of food on it are tolerably regular and uniform: food which is heavy, producing more inconvenience than what is "light;" acrid matters more pain than those that are bland, &c. In pseudo-dyspepsia, the nerves have *not acquired inherent morbid sensibility* from repeated irritation, but are only temporarily disordered in their functions, either through irritation reflected on them from a distant organ, or from the predominance of some morbid state, which increases the impressionability of the whole nervous system in general, and, it may be, of the stomach in particular (101). To illustrate the first of these modes of action, I may refer to the vomiting that occurs after burns, compound fractures, or during the passage of calculi from the kidneys, &c., also to what happens when patients declare that they are "sick with pain." A lady, aged 40, is troubled with occasional neuralgia of the left side; and her stomach, although it generally performs its function tolerably well, must yet be called delicate. If the pain come on slightly, it takes away all desire for food; if more severely, it excites so much gastric irritability, that everything she eats is vomited. These cases are mentioned merely to illustrate a mode of operation, as there is little chance of their ever being mistaken for indigestion. Most commonly, pseudo-dyspepsia is owing to the predominance of an hysterical state of the constitution; and as this varies in urgency from day to day, the irritability of the stomach alters in proportion (103). In no point, therefore, does the "imitation" contrast more with true indigestion than in the unsteadiness of the effects produced by food. At one time, when the gastric irritability is urgent, the blandest food, as rice or arrow-root, excites pain or vomiting; while on the following day, perhaps the heaviest articles of diet, as hard-boiled eggs, stewed eels, &c., are easily borne by the stomach and digested with comfort. The irritability of true indiges-

tion is slowly acquired (45); that of pseudo-dyspepsia may become intense quite suddenly, and often ceases in the same manner, without requiring those energetic remedies which *inherent* disease to that extent in the stomach would have rendered necessary. There is another characteristic point to which I may allude. In pseudo-dyspepsia, the patient seldom suffers much in general health, although the symptoms are most violent; in cases of true dyspepsia, even with far milder symptoms, the constitution and general health are more seriously affected (102).

Examples in illustration of the preceding remarks are common in practice. I shall here quote one of nervous vomiting, by Andral.* "I think we may conclude from these facts, that in the present state of the science, the expression *nervous vomiting* deserves to be retained, as signifying a real morbid state, in which the gastric symptoms that occur have their source, not in the stomach itself, which is not materially altered, but in the brain, whose texture or action is decidedly modified. One of the most striking instances of these nervous vomitings is that recorded by M. Louyer Villermay; the subject was a woman, who, in consequence of a disappointment in love, was attacked alternately with globus hystericus, dyspnœa, and palpitation; she uttered involuntary cries, and at last was seized with vomitings, which were treated in vain by the antiphlogistic method (diet, emollient drinks, leeching). She was at last cured by the vinum absinthii, and the first food she digested was hard-boiled eggs and salad."

Cases of hysterical vomiting, such as the above, are of course not likely to be mistaken for mere indigestion; but it is different where the irritability shows itself more in the sensory nerves. The following may be taken as an example—

Mrs. L., 21 years of age, of fair complexion, and nervous temperament. Catamenia regular. Strength not impaired.

* Pathological Anatomy, by Drs. Townsend and West, vol. ii. p. 234. London, 1831.

Has been ill about six weeks, during which time she has complained of—

Sharp pain at the pit of the stomach, also towards the left side of the abdomen. It generally comes on immediately after eating, and lasts for an uncertain period.

Spasmodic cramp-like sensations about the epigastrium, at uncertain times; the pain "bends her double."

Tenderness at the epigastrium, over the lower end of the sternum, and in the left side of the abdomen generally. Subsequently it shifted about to various other parts of the same cavity.

Frequent frontal headache.

Nausea generally every day after eating, but no vomiting.

On the fourth day of the treatment, however, she was attacked with vomiting; "nothing would remain on her stomach." After continuing for two days, it ceased, and did not subsequently return. She justly ascribed the vomiting to distressing mental excitement.

Appetite changeable. *Tongue* red at tip and edges, slightly coated in the centre.

No thirst. The state of the *bowels natural.*

The treatment was at first anodyne, then tonic. In sixteen days she was cured.

Although M. Villermay's case is merely one of hysterical vomiting, I have nevertheless introduced it here, for the purpose of making a remark on the treatment employed, which applies to all examples of pseudo-dyspepsia. It was observed that leeches and the antiphlogistic treatment were tried without success, and, as a general rule, the abstraction of blood in every way ought especially to be avoided in pseudo-dyspepsia. The essence of the disease, or, at all events, a principal feature in it, is *weakness*, not physical, but organic; and the treatment obviously indicated is, first to quiet the pain, vomiting, or other prominent disturbance, and then to strengthen, or, in other words, place the nerves beyond the

reach of trifling causes of disorder. Notwithstanding the violence of the symptoms, the first food M. Villermay's patient was able to digest was hard-boiled eggs and salad. Now, daily experience shows that these things are with difficulty mastered by weak stomachs; and Dr. Beaumont found that while boiled rice was digested in one hour, hard-boiled eggs required three and a half for their solution. Symptoms of this kind are very characteristic of pseudo-dyspepsia, and at once disclose the nature of the case. Nearly the same thing occurred in my patient. During the two days referred to in the report, she vomited everything, even arrow-root; and yet shortly afterwards, when I was carefully enjoining the lightest and blandest diet, it came out that she had dined the day before, very comfortably, on stewed eels.

If a case presenting urgent symptoms be inflammatory, or even truly dyspeptic, there is little fear of the patient's asking for indigestible articles of food, as he knows too well the penalty he must pay for eating them. The mere request itself is a strong indication of the real nature of the case, and the practitioner will rarely err if he allow the patient, for once at least, to choose his own dinner. It will generally be found that the irritability of the gastric nerves has subsided, and therefore, that articles of difficult digestion like those above-mentioned will now be well borne by a stomach in which, the day before, a little rice excited violent disturbance. This intuitive perception by which patients can judge of the degree of power possessed by their stomach is very remarkable, and I can only compare it to what one sometimes observes in patients recovering from broken legs or arms. Such persons can often tell when the cure is sufficiently advanced to allow of their using the member, even before a single splint has been removed, and, consequently, before they have had an opportunity of testing experimentally the firmness of the bony union.

CHAPTER XIX.

THE GENERAL TREATMENT OF INDIGESTION.

Difficulty of treating indigestion—Gastritis and erythema—Treatment of congestion — Counter-irritation — Disordered sensibility—Stimulants, tonics, and anodynes—Disorder in the secretions—Muscular debility—tonics, astringents—Remedies against co-existing diseases.

(235.) WANT of success in treating disease may be ascribed to two causes,—one being the difficulty of recognising what is wrong—namely, of diagnosis; the other, the inadequacy of remedies to fulfil the purposes required. In dyspepsia, however, the difficulty mainly springs from the first of these causes alone, since if the nature of each case be clearly understood, the therapeutic means at the practitioner's disposal never fail when they are skilfully used. Hence, the discovery of new remedies is of less moment in this disease than in many others—as gout, or scrofula, for example—although, at the same time, much good may reasonably be expected from increased precision in the principles on which old remedies are to be employed. One source of vacillating and unsteady practice in indigestion lies in the perplexing number of symptoms often present, of which almost every organ and system of the body supplies its share. Of the manner in which these intricate complications are produced, I have already given some account in a previous chapter, to which I now beg to refer the reader (59). In all complex

cases, and these constitute the majority observed in practice, it is essential, therefore, that the physician should arrange the various signs in groups according to their import—a task which habitual attendance on the sick alone makes easy,—and having ascertained the elements of which the case is composed, he ought next to consider their relative urgency, and the order in which it is most expedient to deal with them. It is seldom a satisfactory plan to attempt by lengthy prescriptions to meet every indication at once; and in the end, much time will be saved if the practitioner concentrate his efforts on each element of the disease in succession.

(236.) During the treatment of indigestion, it constantly happens that certain signs—as headache, nausea, or pyrosis—become predominant and distressing, and for awhile constitute the patient's chief suffering. The special remedies called for on these occasions have been already mentioned in the chapters wherein these different symptoms were considered. It now, therefore, only remains for me to give an outline of the general principles of treatment with which the employment of the special remedies alluded to must be made to harmonize; and to add a few remarks on some medicines of repute, the virtues of which I have had numerous opportunities of testing in the course of this inquiry.

If the reader turn to the third chapter of this book, he will find an account of the proximate cause of the symptoms of indigestion, the removal of which forms the main object of the treatment. The morbid states there mentioned are disorders of the circulation, of the sensibility, of the muscular or churning power, and, lastly, of the secreting apparatus of the stomach.

(237.) I. Disorder of the circulation. Of the treatment of *acute idiopathic gastritis*—the disease always described in systematic works, but hardly, if ever seen, I need say little. If such a case were to occur, the symptoms would

probably resemble those of poisoning by acrid substances, and the treatment would be bleeding—both general and local—in proportion to the strength of the patient, followed by counter-irritation.

On the other hand, erythema, or acute superficial inflammation of the mucous membrane, is a very common disorder. It happens in previously sound stomachs, after every debauch (61), and after even slight dietetic errors in those already dyspeptic (63). In the first of these cases, it is seldom that any treatment beyond temporary abstinence is required. In the course of twenty-four hours, the heat and dryness of the skin, the parched feeling of the mouth, the thirst, headache, sickness, and general prostration subside, and the patient feels well again. A blue pill, followed by a saline aperient, is, however, generally advisable, because, from the preceding feverishness, the secretions are more or less locked up, thickened, or otherwise disordered.

(238.) But when erythema arises in a stomach already dyspeptic, it is apt to persist for many days, unless controlled by careful treatment. The nature and the signs of this morbid state have been pointed out elsewhere (63); in this place, therefore, I shall merely mention that the chief characteristic is the sudden supervention of acute symptoms in a chronic case, after a slight dietetic error, or other cause of disorder; as well as the conversion of some of the previously existing signs—as headache—from *occasional or periodic into constant*. In severe cases, from five to fifteen leeches may be applied to the pit of the stomach; or instead of leeches, cupping may be used; but if, from debility, it be desirable to abstain from the abstraction of blood altogether, dry-cupping repeatedly and extensively employed over the upper part of the abdomen is generally sufficient when combined with other means. I have never found it requisite to resort to venesection. In all cases of erythema, or determination towards the stomach, the greatest benefit is to be derived

from the direct application of cold to the mucous membrane, in the form of iced water, a little of which may be sipped at short intervals. It is extremely refreshing to the feverish patient, while it lowers the vascular excitement of the stomach, and constringes and strengthens the bloodvessels. It is given with most effect while fasting; and, on account of its action on the gastric juice, it ought not to be taken along with the food (27). Such, I believe, are the only forms of "gastritis" which the practitioner is likely to encounter in the treatment of indigestion.

(239.) Enough has been said in the chapter on morbid anatomy to show that congestion forms an almost constant element of dyspepsia: hence no remedies so seldom fail in doing good as those calculated to relieve that state. In treating congestion, our main reliance must be placed on counter-irritation.

Among the vast number of counter-irritants in common use, there are three, to one or other of which I give the preference, according to the severity of the case. When the congestion is slight, none act better than mustard plasters; if more severe, Granville's counter-irritating fluid may be applied, so as to produce slight vesication; and in the worst cases, I believe, after many comparative trials, that blisters are the most effectual. Dry cupping, extensively and repeatedly employed over the gastric region, is also an excellent, although a troublesome remedy: the application of Granville's fluid to the skin, previously made turgid and red by dry cupping, is still more efficacious. Setons and tartar emetic ointment have been strongly recommended; but without denying their power, I am yet of opinion that the advantage of this plan is not commensurate with its severity; —both are apt to produce violent constitutional disturbance and subsequent exhaustion in weak persons, while their efficacy in relieving congestion does not surpass that of a blister occasionally repeated. It seems to me that the good

wrought by counter-irritation is very much in proportion to the vascular impulse or "determination" with which it is attended; while, on the other hand, the establishment of mere passive congestion in a part, even although attended with a discharge, has little derivative power, because, in fact, the general circulation is soon adjusted to it. It becomes a drain upon the system, but not a drain upon any particular part of it. On this principle I explain the superiority which I believe blisters have over setons or issues. The latter are at first, no doubt, attended with intense inflammation; but after a time this subsides, and the resulting raw surface sooner or later shows what is called "weak action," or congestion. The circulation through it is frequently even less active than in sound parts, as may be inferred from the dilated, tortuous, and dark appearance of its vessels. But, by using milder counter-irritants, determination of blood, with increased circulation, may be excited over a large extent of surface, maintained there for a considerable time, and renewed at intervals when necessary. It seems to me an error to suppose that the power of a counter-irritant is in proportion to its severity. I observe that "flying blisters," as they are called—that is, the application of blisters for two or three hours only, so as to redden, but not vesicate the skin, is a favourite mode of counter-irritation with Dr. Graves, of Dublin, and I am inclined to explain its superior efficacy on the principle just mentioned.

Rubefacient liniments are also serviceable. The various forms ordered in the Pharmacopœia—both single and combined, and strengthened with liquor ammoniæ fortis, tincture of capsicum, &c.—may be employed. Sometimes one, sometimes another answers best in each particular case, although there is probably little real difference in their mode of action. Frictions with croton oil possess no special advantage, while they are liable to the inconvenience of occasionally disordering the bowels.

(240.) The well known virtue of nitrate of silver, internally administered, in removing morbid irritability of the stomach, led me to expect that its external application would prove a highly appropriate counter-irritant in dyspeptic congestion. Accordingly, I have often rubbed it on the epigastrium, but I must confess I have been disappointed with its effects. The blackening of the skin produced by it, although only temporary, is considered by some as a strong objection.

(241.) As congestion of the stomach is not revealed by direct signs, but is rather to be inferred from the known existence of irritation there (38), so the effect of derivatives in removing it can only be estimated by the relief afforded to the general symptoms. When congestion has once been established in a part, it is prone to recur insidiously, and from the slightest causes (42); hence, some form of counter-irritation should be employed at intervals during the treatment of every case, where the progress made towards recovery is slow.

The shower-bath, and sponging the body with cold water, are tonic to the bloodvessels generally, but they are here recommended for their power of preserving in a healthy state capillaries that were previously congested, rather than as expedient remedies at the beginning of the treatment in cases of indigestion.

II. Disordered sensibility (45). To quiet the morbid irritability of the stomach and pain after eating is the first point that claims the practitioner's attention, *provided there be no inflammation.*

(242.) For the purpose of subduing pain, three classes of medicines are in daily use—viz., stimulants, tonics, and anodynes; and I shall briefly advert to the principle on which each acts, before proceeding to mention the special remedies I have found most useful. Stimulants, or stimulating antispasmodics, as ether or sal-volatile, give for a time tone to the nerves, or, at all events, temporarily suspend their

morbid sensibility. While they yet continue acting, the cause that excited the pain often disappears, so that when their operation on the system has ended, the pain is found to be cured. The second class—corroborants—differs from the first, in imparting tone slowly; hence it requires a course of the medicine to bestow on the nerves the same power of resisting painful impressions obtained from stimulants all at once. But to counterbalance this, the effect is more lasting, and it is not apt to be followed by reaction or increased sensibility, as happens when stimulants have been employed. Anodynes relieve on a different principle: they do not impart strength to resist disturbing agents, but they both deaden the impressionability of the nervous fibrils, and blunt the power of perception in the brain. Hence they are used against inflammatory pains, or those which an allowable dose of stimulants cannot control; also in chronic cases, to palliate and gain time, until the practitioner can adopt more strengthening remedies. But in dyspepsia, where all causes of excitement and congestion of the stomach are to be avoided, the class of stimulating anti-spasmodics ought to be rejected, particularly at the beginning of the treatment. When the cure is far advanced, this objection to their use is partially removed, and they may then be exhibited to relieve hysterical or other pains connected with debility.

(243.) In treating morbid sensibility of the stomach, I have made a tolerably extensive trial of opium, Indian hemp, lactucarium, conium, belladonna, hyoscyamus, aconite, and hydrocyanic acid, and the result is, that unless in special cases, I now rarely use any of them except the three last. Of the whole class, opium is the worst suited to the complaint, on account of its constipating qualities, its tendency to check secretion, and the unpleasant narcotism produced in most persons by doses sufficient to allay pain. The tincture of the cannabis sativa, or Indian hemp, has been lately recommended as a substitute for opium in dyspepsia; but although

it sometimes acts well, I must yet own it has proved an uncertain remedy in my hands. Provided there be no acidity, from five to ten drops may be conveniently administered on a bit of sugar.

I have found the extract of belladonna extremely useful in certain *asthenic* cases, where the violence of the headache was quite out of proportion to the slightness of the gastric irritation. I can recommend this remedy with some degree of confidence, as I have often seen it rapidly remove cephalalgia after every other means I could think of had failed. I usually prescribe it as a pill, in quarter or half grain doses, every three hours. If no good be got after two grains have been taken, the medicine ought to be laid aside as not suited to that particular case. Effervescing draughts, although exceedingly well adapted to allay an accidental attack of irritability in a previously healthy stomach, ought to be sparingly used in dyspepsia, on account of the distention they produce.

On the whole, I believe that, of the more powerful anodynes, none will be found so generally to agree with patients as henbane. It is a safe medicine, the salutary action of which is rarely marred by idiosyncrasy; it neither constipates nor locks up the secretions; and, in short, its use may be persevered in for a considerable time without exciting any inconvenience whatever. From ten to thirty minims may be given thrice daily.

(245.) In worse cases, or where hyoscyamus is insufficient to relieve the morbid sensibility, we have a most valuable resource in aconite. During the last six years, I have given it in a large number of cases, and it has seldom failed. At the beginning of the treatment, it ought to be exhibited in the simplest form: from five to eight minims of the tincture of the root may be given in a little mucilage, or decoction of quince seeds. Dr. Fleming states that aconite is also antiphlogistic in its action.

The hydrocyanic acid is well known as one of the most powerful among anodynes. In severe cases, if the aconite fail or disagree, it may be resorted to. Anodynes are exhibited in dyspepsia either to subdue pain or to prevent vomiting; but, with the exception of hydrocyanic acid, they are more efficacious in fulfilling the first than the second of these indications. To ward off vomiting, no plan is so successful as reducing the bulk of the food taken at one time (209). The best period to administer anodynes is a quarter of an hour before the pain is expected; and during their employment, none but the lightest articles of diet should be allowed.

The nitrate of silver was highly recommended by the late Dr. Johnson. In pure dyspeptic pains, it has always appeared to me inferior to small doses of the anodynes above mentioned, although it certainly has the advantage of possessing tonic as well as sedative virtues. That well-tried and old-fashioned remedy, the tris-nitrate of bismuth, is, with few exceptions, equally potent, and it succeeds in a much larger range of cases.

From observing the good effects of aconite externally applied in ordinary cases of neuralgia, I was led to employ it in morbid sensibility of the stomach, in which I have found it extremely useful. A teaspoonful of the tincture of the root may be rubbed over the epigastrium twice a-day, by means of a sponge tooth-brush; besides redness, it often causes tingling or numbness.

(246.) Certain modes of counter-irritation, in addition to their anti-congestive or "revulsive" effect, exert a tonic influence upon the nerves themselves. Hence, many pains are relieved by the application of a blister, even although there be no reason to suppose they were caused by, or dependent on, vascular congestion. On this ground, blistering ought not to be omitted in cases where dyspeptic pain is obstinate. The use of the warm bath, at a temperature of 95°, every second or third day, or of warm pediluvia, is

almost always serviceable in morbid sensibility of the stomach.

(247.) III. Morbid secretion in the stomach (48). After inflammation has been subdued, morbid sensibility soothed, and those plans put in train, which, although slow in their operation, are yet calculated to relieve congestion, the next indication usually is to improve the secretions. But as a vitiated state of the fluids in the stomach frequently depends on vascular or nervous irritation (44, 192), the preliminary treatment just alluded to will often be found of itself sufficient to bring the secretions into order. Sometimes, however, either from long habit or other causes, the stomach still continues to pour out morbid fluids.

The fluids observed in the healthy stomach are noticed in the chapter on Physiology (23 to 34).

An account of the nature of the fluids discharged from the stomach in indigestion, and of the remedies required, will be found in the chapters on Eructation, Pyrosis, and Vomiting. I may here mention, that after frequent trials of the infusion of the leaves of the diosma crenata, or buchu, I am inclined to think that it fully merits the encomiums of those who have recommended it.* It has been long a favourite remedy in catarrhal conditions of the urinary passages; and it appears to me to be also extremely serviceable in disordered states of the gastric secretions, especially when chronic, and not attended with much irritability. Its salutary action is often promoted by occasional alterative doses of mercury (193). The dose of the infusion is a wineglassful, three times a day.

(248.) IV. Muscular debility (47). To impart strength to the muscular fibres of the stomach is always a work of time, and the remedies required are, from their nature, seldom admissible until the more urgent indications already men-

* Dr. M'Dowell. Transactions of King and Queen's Col. Phys., Dublin. 1824.

tioned have been at least partially fulfilled. This part of the treatment comprises the exhibition of tonics, the use of chalybeate waters, suitable exercise in a pure air, and, in short, attention to all the hygienic means likely to invigorate the health.

Of tonics, those derived from the vegetable kingdom are best adapted to the treatment of indigestion. A great variety are in daily use, but the infusions of quassia, calumbo, chiretta, gentian, and cascarilla answer every purpose. The first of these is the least, the last is the most, stimulating; but except where this point of difference in their properties can be made available, it is rarely possible to foretel which will succeed best in any particular case. When the one selected does not agree well with the stomach, another may be substituted in its place; but there is no necessity for discontinuing the kind of remedy, provided the practitioner feel satisfied as to the indication to be fulfilled. Mineral tonics —with the exception of the mineral acids—are seldom suited for dyspeptics. The sulphuric, nitric, and muriatic acids, or a combination of these, are of great service, both as tonics and astringents. Some additional remarks on their employment in pyrosis or acidity will be found elsewhere (193.)

(249.) As a highly useful astringent-tonic, I may here mention the decoction of algaravilla, a plant brought from South America, but hitherto used only in the arts.* The part imported into this country "consists of pods bruised and agglutinated more or less with the extractive exudation of the seeds and husks." The infusion or decoction contains much tannin, with a large quantity of mucilaginous matter. Its medicinal qualities are those of an astringent and demulcent; it is soft to the taste and easily borne by the stomach; hence in dyspepsia it may be given earlier in the treatment than most other remedies of the

* Dr. Ure's Supplement to Dict. of Arts, second edition, p. 5.

same class. As a general rule, the use of the vegetable astringents should be sparing when digestion is weak, on account of the tannin they contain (192); but, on the other hand, they are often extremely useful in discharges from the stomach or bowels, where the dyspepsia is slight. The algaravilla is peculiarly fitted for exhibition against diarrhœa in children. The decoction is made by boiling an ounce of the substance in twenty-five ounces of water for a quarter of an hour, and straining when cold. The dose for an adult is two or three tablespoonfuls, thrice daily.

(250.) The proper time for taking tonics is a quarter of an hour before eating, as they then prepare the stomach for the healthy digestion of the meal about to follow. Vegetable astringents should be given at the same times, for the reason that they are then less likely to spoil the gastric juice than if they were administered during digestion.

On commencing this part of the treatment, it is well to combine the tonic with a small dose of some anodyne. But if the tonic, thus guarded, excite pain, or the slightest degree of feverishness, the practitioner may infer that it has been administered prematurely, and he must fall back on some of the earlier indications already mentioned (237, 239, 242).

(251.) The last step in the treatment consists in the combination of the remedies previously mentioned in this chapter, with others specially calculated to control any morbid diathesis or chronic disease that may accidentally co-exist with the dyspepsia (59). For this purpose, tonics may be combined with anti-scrofulous medicines, as iodine —itself an excellent tonic in such cases,—or with anti-hysteric medicines, as the tinctures of valerian, assafœtida, castoreum, &c. I have frequently exhibited the valerianate of zinc (gr. i.) with this view, but I have never found it of much efficacy; it is, moreover, extremely apt to disagree with the stomach. Creasote (mi.) is another remedy which has lately been much in vogue. In the early part of the

treatment it is too stimulating; but at a more advanced period, especially if the dyspepsia be complicated with hysteria, or cachexia, it is sometimes serviceable. In the same class of cases, or where there is neuralgia, or great debility, I can highly recommend the wood-spirit — the pyroxilic spirit of Dr. Pereira. When wood is submitted to destructive distillation, three products are obtained—viz., pyroxilic spirit, impure acetic or pyroligneous acid, and tar. I have exhibited the wood spirit in about eighty cases, and in most instances I have found it of signal service. It acts as an anti-spasmodic, and apparently also as an alterative and tonic. The following formula answers very well:—

℞ Spir. pyroxilici, ʒss. ad ʒi.
Mist. camphoræ,
Aq. menth. pip. āā ʒiij. M.

Cujus mist. sumantur cochl. duo ampla bis terve quotidie.

In other cases, the pyroxilic spirit may be combined with any of the vegetable tonics. In dyspepsia complicated with chlorosis, amenorrhœa, anæmia, &c., steel should be administered towards the end of the treatment. It ought to be given in a soluble form; and so far as my experience goes, I have found the ferri-potassio tartras (gr. v.—xv.) more easily borne than any other preparation.

CHAPTER XX.

THE DIET.

Diet in gastritis and in extreme irritability of the stomach; in convalescence from disease: the diet suited to indigestion of various degrees of severity—Use and abuse of wine—The interval that should elapse between meals—Remarks on luncheons and suppers—Notes on the digestibility of various articles of diet, and on different modes of preparing food, arranged alphabetically.

(252.) The regulation of the diet in indigestion is, in some respects, even more important than the medicinal treatment: thus many cases require for their cure nothing beyond a suitable regimen, while, without it, drugs will be of no avail. The obstacles which here oppose the practitioner do not usually arise from any difficulty in selecting a proper diet, but rather from the difficulty of getting patients to adhere to it faithfully. When habits of indulgence in eating and drinking have taken fast hold, they are not easily relinquished, and the progress of the cure is every now and then interrupted by some slight outbreak or dietetic error. The most difficult class of persons to deal with, however, are unquestionably those who profess to know the peculiar nature of their stomach, and all that agrees and disagrees with it; although the perverseness with which individuals so circumstanced blame the wrong thing has grown into a jest.

(253.) Dyspeptics are often unreasonable as to what may be in fairness expected from medicine. They are ready to

follow prescriptions exactly, provided the customary good dinner is to be their reward; and their object in consulting the physician seems less for the purpose of being cured of indigestion, than of being enabled to continue their luxurious mode of life. They are ingenious in finding excuses for indulging in a favourite dish; thus, if they have, on the remonstrance of their attendant, abandoned some article accused of producing acidity or flatulence, they are apt, if the promised good effects do not almost immediately ensue, to make a handle of the circumstance, and to argue that, as abstaining from the kind of food in question does no good, so there can be no harm in again returning to it.

The subject of diet cannot be sufficiently brought within the limits of this treatise, and I would refer those who wish to study it more fully, to the admirable works of Drs. Paris and Pereira, to whom I am indebted for much contained in this chapter.

(254.) I. DIET IN GASTRITIS, OR IN EXCESSIVE IRRITABILITY OF THE STOMACH. In such cases, food excites disturbance, either because it is of too stimulating a kind, or because it irritates the mucous membrane, from its mechanical or chemical properties. In erythema of the stomach, it must also be borne in mind that the secretion of gastric juice is scanty or suppressed (44); hence the quantity of food allowed at one time should be very small.

The diet ought, therefore, to consist of such articles as arrow-root, sago, gruel, panada, or Irish moss. The temperature should be cold, or tepid, but never hot (27).

When the stomach is extremely irritable, quantity is even of more importance than quality. Not unfrequently, patients assert that "nothing will remain on their stomach;" but in most cases this will be found to arise merely from their taking too much at one time—not too much in regard to the wants of the system, or to moderation, but in relation to the power of "tolerance" in the stomach. The quantity that

can be borne by the stomach must be ascertained by careful experiment and kept within, even although in bad cases this may not exceed two or three teaspoonfuls at a time. Examples of such extreme irritability, it is true, are rare in indigestion, but common after accidents, or operations, or towards the end of many fatal diseases.

(255.) II. In severe indigestion, where, nevertheless, morbid sensibility is no longer urgent, the diet may be selected from the following articles:—Milk, eggs, lightly boiled or whipped up in chicken-broth or beef-tea, plainly dressed sweetbread or tripe, fresh calf's-foot jelly, &c. A little coffee in the morning with milk; bread; turnips, if good, and a potato, if mealy—both plain boiled, and not mashed with butter.

During the early period of convalescence from febrile disorders, the muscular energy is more weakened than that on which secretion depends. Now as the stomach consists both of a muscular and a secreting part (21, 22), the former participates in the general debility, while the latter—like the liver or kidneys—probably resumes its function with full activity as soon as the feverishness has subsided. These considerations at once suggest the proper diet in such cases. The enfeebled condition of the patient demands nutritious food, and the stomach is for the most part able to digest it, provided only its muscular or churning power be lightly tasked. Hence, strong decoctions of lean meat, in small quantities at a time, are obviously the best suited to fulfil this indication. For the manner in which fluid food is disposed of by the stomach, the reader is referred to the 30th paragraph.

(256.) III. A third plan of diet adapted for convalescent dyspeptics, and for those who habitually have what is called "a delicate stomach," comprises the more soluble kinds of solid animal food, namely, white fish, as whiting, sole, and haddock—boiled and eaten without butter. Salmon, turbot, &c. (see Fish), being less digestible, are to be avoided.

Mutton, boiled or roasted; chicken and some kinds of game (see Game) may be allowed. Beef is, generally speaking, of rather difficult digestion. Veal, pork, waterfowl, stewed and fried meat, sauces, likewise all raw vegetables, salads, and pickles, should be avoided.

Lastly, when the dyspeptic is able to manage with comfort the diet just mentioned, he may next, with due discretion, select his food according to his taste. The notes appended to this chapter will serve to guide him as to the comparative digestibility of the articles in common use.

There is no one dietetic point in which grievous errors are more frequently made than in respect to wine; and as these appear to arise, in most instances, from mistaken ideas as to its action on the animal economy, a few words explanatory of the principles according to which it ought to be granted or withheld, may prove of service. Wine is *stimulating*, but *not nutritious;* hence, it contains nothing really strengthening to the body, although, when administered with judgment, it answers a good purpose of its own totally independent of any nourishing virtue. *In certain cases*, it *quickens* the nerves, if I may be permitted to use that expression; or more technically, it bestows temporary tone and vigour on the nerves and bloodvessels of the stomach, in consequence of which they are enabled to perform their functions with more energy than they would have done without it. The wine is not aliment in itself, but it qualifies the stomach to act with power on other substances capable of affording it. Is wine, then, good for all stomachs? or which are the *certain cases* alluded to wherein this beneficial operation may be expected?

When the stomach is sound, no stimulation beyond that of plain, wholesome food is required (26), and when wine is taken under these circumstances, all that can be said is, that the vigour of the mucous membrane protects it against injury; but, on the other hand, the function of digestion by no means derives any advantage therefrom.

When wine has been habitually taken in moderation, the

stomach gets accustomed to the artificial stimulus, so that sometimes it will not work well without it. This state may at last become natural from habit, and the individual may continue all his life to drink wine without suffering from indigestion; more frequently, however, the strength of the stomach is eventually impaired.

But it is chiefly where the stomach is weak, although not perhaps dyspeptic, that most advantage is to be derived from the medicinal use of wine. If much wine or spirits (which in their action on the mucous membrane may be considered as concentrated wine,) be taken, various evils arise. Thus the lining membrane of the stomach is over-stimulated or inflamed (40, 61), and the gastric juice deteriorated, or even the secretion of it arrested (44). Hence, the point in prescribing wine is, to give enough to impart a beneficial stimulus without producing any of the bad effects mentioned. To fix this quantity absolutely is of course impossible; and it must always be left to the judgment of the practitioner to allow for difference of constitution or previous habits: but, at the same time, I am satisfied, from the careful observation of many cases, that the "useful" allowance will be found to lie between a half and a whole wine-glassful at luncheon and dinner, diluted with about twice its bulk of water. Patients usually, and, it must be admitted, very naturally plead "debility" as a reason for increasing the quantity: they argue, the greater the weakness, the more wine is required; but the inference is altogether wrong. When the point of healthful excitement has been attained by the slight impulse afforded by the wine, every drop beyond that tends to mischief. The patient, it is true, may experience the fleeting sensations of comfort that arise from the use of stimulants, but the stomach pays the penalty. It is a far safer, and a much more truthful dietetic axiom that the weaker the individual and the stomach may be, the more easily is the latter disordered, and the greater is the effect which stimulants exert on the

mucous membrane. Increasing the *quantity of food* always strengthens the patient, *provided he be able to digest it;* but increasing the *quantity of wine* imparts no real vigour, and the moment the healthy limit is passed, the spirit in the wine tends to paralyze the functional activity of the stomach, and prevents it from digesting food so well as it would have done had it been left to its own resources.

(257.) There is some difference of opinion respecting the interval that ought to elapse between meals. Dr. Abercrombie* remarks, that "if the healthy period be four or five hours, the dyspeptic should probably allow six or seven;" and the principle here implied, that persons with weak stomachs should eat less frequently than those with strong, has been adopted by others. My own experience leads me to quite an opposite conclusion—namely, that the weaker the digestion, the oftener ought small quantities of nourishment to be taken. The rule of "little and often" is not more applicable to children, than it is to the dyspeptic, or the aged, although for a somewhat different reason. It is true that persons with strong powers of digestion are able to do many things, if not with advantage, at least with impunity. They can digest a meal every four or five hours, as Dr. Abercrombie suggests; or if anything occur to deprive them of their luncheon, they can go on from breakfast till dinner time, eight or nine hours, without exhaustion, and then eat heartily without inconvenience. But when a dyspeptic attempts to follow this plan, the result is different. His want of appetite does not keep off faintness, flatulent distention, &c.; he feels sleepy and indisposed for, or incapable of, exertion, and when at last he sits down to dinner, he is certain to suffer from indigestion more severely than usual. As age creeps on, the necessity for frequent nourishment increases; hence old men are especially apt to injure themselves by an unwise perseverance in rules of diet

* On Diseases of the Stomach, p. 72.

long acted on with advantage. For thirty or forty years, perhaps, they have done without luncheon, and enjoyed the best of health, and they cannot see why they should now leave off a plan that has suited them so well. An objection often made on such occasions is, that luncheon spoils the appetite for dinner. But this is usually the effect of habit only; hence, if a fair trial be given for a week or two, persons will find that they can manage a luncheon—a biscuit, a sandwich, or a mutton chop, &c.—and a moderate dinner perfectly well. It is never desirable, when the stomach is weak, that a hearty meal should be eaten after a long fast, and therefore, if the interposition of a luncheon in the middle of the day check a too keen appetite for dinner, it is so much the better. By this plan, the absolute quantity of food consumed in the course of the twenty-four hours need not be altered, the only difference is, that less is eaten at one time; the system thereby is better supported, and the stomach less oppressed.

(258.) Physiological observation suggests that the stomach should be replenished every four or five hours during the day; the night being the period when, in common with most other parts of the body, it has its interval of rest. Proceeding on this ground, I would say that if the breakfast be at half-past eight or nine o'clock, a slight repast should be taken at one or half-past one; the dinner may be at half-past six or seven. The distribution of meals adopted by certain classes—viz., dinner at two and supper about half-past seven o'clock, is still better, because the tone of the stomach is more vigorous at mid-day than in the evening. This fact may be inferred from the circumstance that many dyspeptics who can eat meat early in the day, are sure to have a fit of indigestion if they do so at night. Tea or coffee, provided it produces neither watchfulness, heart-burn, nor other bad effect, may follow the dinner; although, in a dietetic point of view, the custom must be considered useless, if not hurtful. As a

general rule, minute directions respecting diet should, where possible, be addressed to those who have the arrangement of the patient's meals; and discussions on the digestibility of the various dishes served to him should be avoided. A man who judges and fears every morsel he swallows, does not give himself a fair chance of digesting it with comfort.

(259.) The following short notes on the digestibility of various articles of diet in common use, and on the mode of cooking them, may, it is hoped, serve as a guide to those whose delicacy of stomach compels them to be attentive to these points. For the sake of easy reference, the notes are arranged in alphabetical order.

Almonds, *Sweet*, contain much oil which is digested with difficulty; the brown rind or pellicle is totally insoluble; hence, they should be blanched before being eaten. *Bitter* almonds—except in small quantity—are poisonous: articles flavoured by them, as noyeau, should be avoided.

Apples.—Beaumont's experiments go to prove that they are not of difficult digestion in healthy stomachs; they are nevertheless very apt to disagree when the stomach is weak. Roasting or boiling makes them more wholesome.

Boiling.—Light-boiling is an unobjectionable mode of cooking. Blondlot observes, that as meat thus loses some of its constituent parts, it becomes porous and easily permeable to the gastric juice. On the other hand, if boiling be long continued, it hardens the albuminous and fibrinous constituents of the food, and increases the difficulty of digesting them. Long continued boiling alters the nature of animal jelly (contained in soups, &c.), rendering it ropy, and incapable of congealing when cold: it is then readily putrescent and apt to disagree.

Brain.—The chief alimentary constituents are albumen and oil. It is heavy, and apt to disagree.

Broiling.—In this process, meat is suddenly exposed to a powerful fire, so that its surface, by being quickly roasted, is "seared up," and retains all the juice. Hence, the outer part is usually over, and the inner part under-done. For a weak stomach, this mode of cooking is not suitable.

Butter.—See Milk.

Cheese is the caseine or curd of milk, mixed with some of the butter or oil: the more of the latter it contains, the richer and heavier it is: cheese is not suited for dyspeptics: when toasted, it is highly indigestible. Devonshire cream is a mixture of soft curd and cream.

Coffee.—*Café au lait* generally agrees better with a weak stomach than

chocolate, cocoa, or tea. It is often considered heating; but perhaps without reason. Dyspeptics should refrain from it at night: those unaccustomed to it are often made watchful, nervous, and apprehensive.

Chocolate and Cocoa both usually contain oily matters: they are apt to produce heart-burn (119), and often disagree with dyspeptics.

Condiments, or Seasoning.—As a general rule, the more stimulating kinds, as mustard and pepper, should be taken in great moderation: dyspeptics of a weak and irritable habit of body should abstain from them altogether. Horse-radish ought to be avoided by dyspeptics, not so much on account of the stimulating principle it contains, which is wholesome of its kind, but on account of its hard and tough texture. Salt appears to be the only condiment which is necessary to maintain health. The quantity consumed by individuals varies extremely; less from mere caprice of taste, as I believe, than in consequence of certain innate wants of the economy, of which a fondness for salt is only the result. It is probably for this reason that the taste for salt in some persons occasionally changes; as they take a great deal of it at one period, and very little at another; and in both instances, as it appears, with equal benefit.

Cucumbers, if boiled, are easily digested; if eaten raw with vinegar and oil, they are most pernicious.

(260.) Drinks.—In severe indigestion, the quantity allowed at one time should be small, to prevent distention (16, 202). For the same reason, lemonade, ginger-beer, and soda-water should be avoided. The safest drinks are toast-and-water, or barley-water. In most delicate states of the stomach, the best beverage during dinner is weak sherry or brandy and water (see page 207; also, Malt Liquors and Spirits).

Eggs.—The chief constituents are albumen and oily globules: the latter, from their state of admixture, or from some other cause, are borne by the stomach more easily than most kinds of fat. If hard-boiled, they become indigestible from the denseness of their texture. To improve the nutritive qualities of chicken-broth, beef-tea, &c., eggs may be whipped up in them.

(261.) Fat or Animal Oil—like sugar and gelatine—consists chiefly of carbon; hence, according to Leibig's views, it is not a true aliment,—that is, it does not serve to build up or repair the various organs, but merely to support respiration, during which the carbon is burnt in the lungs, and then escapes in the form of carbonic acid gas. Animals fed on fat, therefore, soon die of starvation, even although they may appear plump. Its chief constituents are a base (generally glycerin) and an acid, which varies in different kinds of fat. While these remain united, or neutralize each other, they are comparatively innocuous; but if separated, the fatty acid is highly irritating to the stomach. When these acids are set free, they are readily distinguished by their odour, or "rancidity." The circumstances favouring their elimination are exposure to heat and air, and to the action of a dyspeptic stomach. Hence, fat meats are more digestible when perfectly

fresh, than when, by keeping, they have become tainted (12). For this reason, also, melted butter, pastry, fried meat, and all dishes that are *réchauffés*, should be avoided. The fat of bacon is more easily digested than other kinds; which is perhaps owing, as Dr. Combe observes, to some change produced in the curing of it. The only vegetable oil used at table is olive oil, and, when perfectly fresh, it does not seem less digestible than butter, for which, in some countries, it is used as a substitute.

Frying is one of the least wholesome ways of cooking, as some of the fat or butter is burnt by the strong heat that is applied (see Fat). Blondlot observes that the oil closes up the pores of the meat, rendering it less permeable to the gastric juice.

Fish.—Some are easily digested, as whiting, sole, flounder, John Dory, haddock, and plaice; others are less so, as cod and turbot. Some are very indigestible, from the oil they contain, as salmon, trout, eels, herrings, pilchards, and sprats. White-bait is objectionable from the mode of dressing it (see Frying). The cartilaginous parts of skate and the skins of fishes generally are of difficult solution, on account of the hardness or toughness of their texture (see Jelly). The "thin" of the salmon—the muscles of the belly—is heaviest, because it contains more oil than the other parts. Lobsters, crabs, prawns, and shrimps are quite unsuited for weak stomachs; the flesh of the former is made harder and tougher if eaten with vinegar; but if eaten with mustard, or pepper, it is more digestible. With regard to oysters, my own opinion coincides with that of Dr. Pereira. If eaten raw, without vinegar, and well chewed, a few oysters rarely disagree even with a dyspeptic stomach. By scolloping them, they are hardened and mixed with melted butter, whereby they are made much less digestible. Oyster-sauce should be avoided. The "beard" or gills of the oyster ought not to be eaten. The roe of fishes is easily digested; the milt, or soft roe, contains much oil, and often proves hurtful.

Fruits.—Of common kinds, the safest are oranges (see Oranges), grapes, gooseberries, raspberries, strawberries, and currants. The skins and seeds are indigestible. The fruits to be avoided by dyspeptics are pine-apples, apples, pears, and melons, and all fruits preserved in sugar, or dried. Some of the latter are hurtful, from containing a large quantity of sugar—as dates and figs; others, because they are usually swallowed with their skins. Most kinds of nuts are objectionable, from the oil they contain, and from their consistence. Raw chestnuts are very indigestible; they should be first boiled, and then roasted; but even when thus cooked, dyspeptics ought to avoid them.

(262.) Farinaceous or Starchy Articles of Diet—as bread, biscuits, barley-meal, oatmeal, pease-meal, &c.; also rice, maccaroni, and vermicelli. All these are light kinds of food, but, in comparison to butcher's meat, they possess little stimulating or nutritive power. The starch appears to be chiefly converted into sugar by the fluids of

the salivary glands, stomach, and pancreas; and the sugar, if malassimilated, may give rise to acidity. This much at least is certain, that many of the above articles—but especially oatmeal (194, 197)—are strongly acid-producing in the stomach. Pancakes, and all farinaceous dishes that are fried, or made with butter, are objectionable. Farinaceous substances are sometimes interdicted by the more zealous followers of Liebig, for reasons which seem to me as yet far too theoretical to warrant our subjecting patients to so great an inconvenience: I allude to the tendency which starchy matters are supposed to have to produce fat. Within the last three months, I had occasion to visit a gentleman, whose physician had almost debarred him from the use of bread, and other kinds of farinaceous food, on account of his being fatter than was considered desirable. My friend had at length been brought to regard the "staff of life" as, literally, his worst enemy.

Game.—Most kinds are easily digested—as partridge, grouse, pheasant, woodcock, blackcock, hare, and rabbit. Wild ducks and other waterfowl should be avoided by the dyspeptic. When venison is long kept, the fat is apt to acquire deleterious qualities (see Fat.)

Giblets are chiefly the viscera of the goose and duck; the

Gizzards are highly indigestible, from the quantity of tendon contained in them (see Jelly).

Hams, Cured Tongues, &c.—All smoked meats are unsuitable for dyspeptics; also smoked fish, as Finnan haddocks, kippered salmon, bloaters, and red herrings.

Jelly.—*Animal jelly or gelatine* is contained in bones, tendons, cartilage or gristle, and skin. These tissues are digested with great difficulty on account of their dense texture; but the jelly extracted from them by boiling—as in calf's-foot jelly—is, when fresh, easily managed by the stomach. Gelatine enters abundantly into "stock" and into soups, hashes, and sauces. Long exposure to heat and air alters its nature, so that it can no longer form a jelly, but becomes ropy and readily putrescent. Gelatine, like starch, is convertible into a kind of sugar (glycicoll). Substances containing tannin—as tea—should not be taken at the same time with gelatinous food, as an insoluble compound is thereby produced. *Vegetable jelly* is obtained from various kinds of fruit; also, from Irish moss, &c. It is easily digested; and when currant jelly is dissolved in water, it forms a pleasant diaphoretic drink.

Kidneys are usually rendered unsuitable for dyspeptics, on account of the rich sauces in which they are dressed.

Liver.—Most livers contain much fat, and are therefore indigestible. The peculiar flavour depends on the presence of a little biliary matter. The pâté de foie gras is both unwholesome and disgusting, when we consider that the liver thus prepared is in a state of extreme disease.

(263.) Meat—as mutton, beef, lamb, veal, and pork. Of these, mutton is generally the most easily borne by a delicate stomach. Lamb, veal, and

all kinds of young meat, contain much gelatine, and disagree with many dyspeptics. Pork should be avoided. Meat should be well kept, but not high. Keeping softens the fibre, or makes it tender, and readily soluble in the gastric juice; over-keeping leads to the evolution of the volatile fatty acids, which are irritating to the stomach (see Fat). There are several examples on record where mutton has acted as a poison, in consequence, probably, of the development of some fatty acid. The flesh of Scotch or Welsh mutton is more digestible than South-down; it is both more tender in the fibre, and somewhat resembles game in the absence of fat. The heart of many animals is loaded with fat, and is apt to disagree with a dyspeptic stomach.

Milk.—The chief constituents are oil or butter, curd or caseine, and sugar contained in the serum or whey. In recently drawn milk, the oil is suspended so as to form an emulsion, and in this state it is usually well-borne by the stomach. Some kinds of milk lie lighter on the stomach than others; the rule being, the richer the milk is in cream, the more difficult it is to digest. Ass's milk contains little cream, and is much sought for by delicate persons. Its digestibility is, of course, increased when the cream is skimmed off. The whey contains the sugar of milk and the salts, and is a pleasant, cooling drink in febrile disorders. A light diet for infants consists of skim-milk, boiled, and again skimmed, and then mixed with an equal bulk of water: a little refined sugar, or Hard's farinaceous food, may be added.

Malt Liquors.—According to Dr. Ure, the best brown stout contains about 6 per cent. of alcohol. Malt liquors also contain from 4 to 7 per cent. of extractive matter; hence they are slightly nourishing. The brisk kinds hold much carbonic acid, which renders them both grateful to the taste, and sedative in certain cases of gastric irritability. They are not well suited to dyspeptics. They encourage flatulence, as the heat of the stomach extricates and expands the contained gas. The pressure of a stomach so distended may cause palpitation, embarrassed breathing, and congestion about the head. Malt liquors sometimes excite acidity and diarrhœa, especially if vegetables be taken at the same time. The bitter kinds are the most wholesome, and possess tonic qualities. The rich, gummy, or sticky ale, for which some of the Scotch breweries are famous, is both heavy to the stomach and inebriating.

Onions.—When raw, onions are hard, and contain an acrid volatile oil: hence, they readily excite disorder in weak stomachs: by boiling, they are softened, and the volatile oil is dissipated: they are then less objectionable.

Oil.—See Fat.

Oranges are a delicious and, generally speaking, most wholesome fruit: no part, however, should be swallowed but what dissolves in the mouth. Some eat oranges only before, others only after Christmas; the former, in short, prefer them sour, the latter, sweet. In many

cases, this difference in taste probably depends on the dietetic wants, or peculiar digesting powers of different stomachs;—hence, each person may be quite right in his plan, so far as he himself is concerned. There could not be a more complete mistake than to *eat sugar* with oranges by way of preventing acidity. The sugar *covers the taste*, but it does not *neutralize the acid:* on the contrary, sugar is very acid-producing in the stomach; hence, if heart-burn follow, it is less likely to be owing to the sourness of the fruit than to the sugar that was taken to correct it.

Poultry.—Turkey, capon, or chickens, are very digestible; ducks and geese are heavy, from the fat they contain.

Pastry should be scrupulously avoided by those who have a delicate stomach; and eaten in moderation by all who, having a strong stomach, desire to preserve it so.

Potatoes.—The chief alimentary constituents are starch and albumen. By boiling, the albumen coagulates, the starch grains swell, and the cells containing them often break down or separate: potatoes are then said to be "mealy." In this state they are easily digested; but if waxy, the gastric juice does not readily permeate their substance, and they sometimes pass from the bowels almost unchanged. If mashed with butter, they are not suited to the dyspeptic stomach.

Roasting, when skilfully performed, is a very wholesome mode of cooking. If meat be underdone, its fibres are not made tender by the heat; if overdone, they are hardened, and become less digestible.

Salted Meat.—By salting, the fibres of meat are made hard and indigestible.

Salads are apt to excite flatulence and acidity: they should be avoided by the dyspeptic.

Spirits.—Liqueurs of every kind are objectionable, and so are undiluted spirits. Weak brandy or Hollands and water generally agrees better in dyspepsia than wine and water. It is less injurious to take a "dram" after eating, than to eat after taking a "dram." In an empty stomach, the concentrated spirit comes into direct contact with the mucous membrane, and produces irritation, or erythema (61), by which the secretion of gastric juice is checked. But if the stomach be full, the spirit mixes with, and is diluted by, the food and gastric fluids; hence, the irritation does not usually pass beyond moderate excitement, and digestion is vigorous.

Sugar is, according to Liebig, not a true aliment, but only a supporter of respiration. Different stomachs vary more, perhaps, in their power of assimilating sugar than in respect to any other article of diet. In most forms of dyspepsia, sugar, from its convertibility into, and power of producing acid, should be avoided as much as possible. So, likewise, syrups, honey, preserved fruits, &c. Tea without sugar frequently agrees well, when tea with sugar excites heart-burn.

Sweetbread is the thymus gland of the calf; and when plainly dressed, it is a light article of diet.

Tea.—Among its constituents are a peculiar principle called theine, found also in coffee, a volatile oil on which its flavour depends, and a large quantity of tannin, to which tea owes its astringency. In some persons, tea—especially green tea— strongly excites the nerves, producing watchfulness, nervousness, or vague feelings of apprehension. This effect depends, probably, on the volatile oil; but with habit, it diminishes or subsides. Nothing more frequently causes acidity than tea, which may be ascribed partly to the sugar and cream usually taken with it, and partly to the tannin. Tannin is believed to precipitate the pepsine or active principle of the gastric juice, and it also forms an inert, insoluble substance with gelatine (tanno-gelatine). It may be for this reason that many persons can take tea with comfort in the morning who suffer from acidity if they take it after dinner; as comparatively few articles containing gelatine are eaten at breakfast, while, on the other hand, it usually abounds in the stomach after dinner. Tea contains a little nitrogen, and is, therefore, not entirely destitute of nutritive properties; in practice we observe some dyspeptics who literally almost live on tea.

Tripe is easily digested.

Truffles.—The truffle is a species of subterraneous fungus. It is very apt to excite disorder in those whose power of digestion is weak; partly, perhaps, on account of its compact texture. When eaten, it ought to be very carefully chewed.

Vegetables.—As a general rule, all raw vegetables are indigestible. When well boiled, the following are the best suited to a weak stomach. Potatoes, turnips, asparagus, broccoli, cauliflower, carrots, and parsnips. Beet-root is easily digested, but as it contains much sugar, it is likely to favour acidity in persons predisposed. Among the vegetables to be avoided by dyspeptics are turnip-tops, rhubarb, cabbage, artichokes, peas, and beans. The latter, before being eaten, should always be deprived of their husks. Most vegetables become tough and less digestible as they get old. Raw celery should be avoided; also radishes, especially if old.

Vinegar—dilute acetic acid—is less irritating to the stomach than some of the other acids often found there, as the lactic, butyric, &c. Acetic acid does not precipitate albumen in solution. It dissolves protein (the reputed basis of fibrine, albumen, and caseine) in all proportions.* It is probable, therefore, that vinegar is often an useful adjunct to the diet, but the quantity suited to each stomach varies in different individuals.

Wines.—All sweet or luscious wines are to be avoided by the dyspeptic, on account of the sugar they contain. The principal are Tokay, Frontignac, Lisbon, Constantia, Lunel, and Malmsey. Among the dry wines, the least stimulating are claret, Sauterne (a kind of white claret), the wines of the Rhine and Moselle. These usually agree

* Dr. Day's Introduction to Simon's Animal Chemistry, p. 7.

well even with a delicate stomach; and, although some of them may be sour to the taste, they are not "acid-producing." Champagne and all other imperfectly fermented wines are very pernicious; if champagne be dry, it is less apt to disagree than when sweet. Of the strong, dry wines, sherry, port, and Madeira, the first alone should be allowed to the dyspeptic. Port, especially when new, contains a considerable proportion of tannin and extractive; by keeping, it loses strength, and deposits the greater part of the tannin, colouring and extractive matter, and tartar; it is, then, more likely to agree. Port is somewhat constipating, and may be selected, therefore, where there is a tendency to relaxation of the bowels, and avoided in the opposite state. Madeira seldom suits the dyspeptic stomach; it is said to be *slightly* more acid than sherry, or port, but it is certainly *much more* acid-producing. Home-made wines seldom agree with dyspeptics, on account of their being imperfectly fermented; perhaps the least exceptionable is ginger wine. At page 207 the reader will find some remarks on the dietetic use of wine, and its action on the stomach.

In the preceding notes, the comparative digestibility of most common kinds of food has been briefly pointed out. It must be recollected, however, that the cautions and prohibitions therein contained are principally addressed to those who have a dyspeptic, or, at all events, a delicate stomach; because persons with vigorous digesting powers may indulge moderately in all the "good things" placed before them, without being guilty of any indiscretion. There are many, moreover, who, although perhaps slightly dyspeptic, have their "good and bad" days; being able at one time to digest various articles of diet with comfort, which at another would disagree. There are some, again, whose stomachs are weak with reference to food generally, and yet strong in respect to certain kinds of it. There often is, in fact, less caprice in the promptings of taste and appetite than is usually thought, for on many occasions these seem to arise either because the system requires a particular sort of aliment, or because the stomach has a natural or acquired facility in digesting it. But it is seldom that any allowance is made for this circumstance, as each person naturally

judges others by the rule applicable to himself. One man, for example, observes with concern the quantity of *vinegar* his neighbour is consuming, and calculates in his own mind all the mischief likely to arise therefrom; at the very moment when the latter regards the former with exactly the same feeling, on account of the quantity of *sugar* he takes in his food. In many cases, this mutual anxiety is quite thrown away, and were the two afterwards to compare notes, it would be found that each has digested perfectly well. But if the plan had been reversed—if the first had taken the sweets, and the second the acids—both would probably have suffered from gastric disorder. The stomach of the one possessed the power of assimilating sugar; while to the other, acids were wholesome, or perhaps even necessary. In the same way, many who cannot digest fat, have a natural repugnance to it; and the old-fashioned nursery rule, which enacted that "little children should be able to eat everything," bordered upon cruelty.

THE END.

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