Medical tracts for the times / by James Craig and William Maule.

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MEDICAL TRACTS

FOR

THE TIMES.

BY

JAMES CRAIG, M.B. EDIN., LLANDUDNO,

AUTHOR OF NUMEROUS CONTRIBUTIONS TO MEDICAL JOURNALS, CHIEFLY ON DISEASES OF THE CHEST AND KIDNEYS;

AND

WILLIAM MAULE, M.B., C.M., L.R.C.S.E.,

BIRKDALE.

FIRST SERIES.

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PREFACE.

THE object which the writers of these Tracts have in view is to place within reach of the public, at a moderate price, and in as simple language as is consistent with scientific accuracy, the latest and most generally accepted views on subjects connected with Medicine and Hygiene, in which all are more or less interested.

We take this opportunity to express our obligations to the writers we have quoted.

JAMES CRAIG.

WILLIAM MAULE.

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MEDICAL TRACTS FOR THE TIMES.

CHAPTER I.

DIGESTION.

DIGESTION is the process carried on in the mouth, stomach, and intestinal canal, by which so much of the food as is adapted for the support of the body and repair of the tissues, is separated from the remainder, and converted into a condition suitable for absorption. The process is partly mechanical and partly chemical. The mechanical part of digestion consists in the mastication of the food in the mouth by the teeth aided by the tongue and cheeks; the deglutition or swallowing of the masticated food; the churning and peristaltic movements it is subjected to in the stomach; its passage along the intestinal canal; and the discharge of the refuse or non-nutritious residue from the body.

The chemical part of the process comprises the changes the food undergoes under the influence of the digestive juices in the mouth, the stomach, and the intestinal canal.

Almost all articles of diet are rendered more suitable for food by being cooked; some, indeed, are not in a fit state to be digested until they are cooked. Cooking renders the food more palatable and more easily masticated, and at the same time tends to destroy any noxious germs that may be present.

Salivary Digestion.

The food, while in the mouth, besides being converted into a pulp by the process of mastication, is chemically acted on by the saliva, the ptyalin of which has the power of converting the starchy constituents into *dextrin* and a form of sugar.* No part of the digestive process is of more importance than the slow and thorough chewing of the food. Many children and even adults habitually bolt their food in an imperfectly masticated condition, the result being vomiting of food, pains in the stomach, and other symptoms of dyspepsia. I believe, moreover, that this pernicious habit, when long indulged in, often leads to ulcer of the stomach, especially when the unchewed lumps are retained in that organ owing to its mucous membrane being rendered insensitive by the administration of opium or other sedative. The first case of gastric ulcer which came under the writer's notice was that of a schoolboy, who used to boast that he never wasted more than five minutes over a meal. The majority of cases of gastric ulcer which I have had under my care have been those of persons who have either been long addicted to hurrying over meals, or who, from the nature of their employment, have been liable to repeated interruptions while eating, which induces bolting of a mouthful of imperfectly chewed food. These facts should be borne in mind by those who are addicted to snatching a hurried meal, either at a luncheon bar, or during the few minutes a train halts at a railway station. Fortunately, however, on some lines, railway travellers have no longer to choose between starving and imperilling their digestion by gulping down a few mouthfuls in a

* Ptyalin acts only very feebly and slowly on raw starch, requiring two to three hours to digest it, while upon boiled starch it acts rapidly. Hence the necessity for boiling thoroughly all starchy foods.—*(Stirling.)*

race against time, the custom of luncheon baskets handed in at one station and taken out at another having obviated this.

Saliva has to a small extent the power of emulsionizing fat. It moistens dry food and also assists in forming the "bolus." When the food is thoroughly mixed with saliva, the mucin of that secretion facilitates deglutition. In the stomach, saliva carries on the digestion of the starchy constituents of the food until its action is checked by the flow of gastric juice.

Gastric Digestion.

When the food reaches the stomach, a large amount of its fluid constituents is at once absorbed into the system by the vessels of that organ. The presence of food in the stomach excites it to muscular contraction, stimulates its mucous lining, and thus promotes the flow of gastric juice, the pepsin and hydrochloric acid of which act on the *proteids* of the food and convert them into *peptones*, or, in other words, fit them for absorption. *Proteids* comprise albumin, fibrin, casein, and other less important alimentary principles. White of egg consists for the most part of albumin. Fibrin is found largely in the blood. *Casein* is the chief *proteid* in milk.

The gastric juice has no power of digesting starch, sugar, or gums. There is still some doubt whether or not fats are acted upon in the stomach. Cash and Ogata state that a small amount of fat is broken up in the stomach into glycerine and fatty acids. Fats are retained a long time in the stomach, and hinder the action of the gastric juice on *proteids*. The fat of vegetables has a greater hindering action on digestion than animal fat. Fats, whether animal or vegetable, impede digestion more when eaten warm than when eaten cold. When taken in large quantity, fats often cause unpleasant eructations toward the end

of digestion, the fluids or gases belched up having the taste of the fat eaten, only made sour and disagreeable.

Milk is coagulated in the stomach owing to precipitation of its casein. The abnormal formation of wind, from which some dyspeptics suffer, which causes them to belch after eating, is generated in their stomachs owing to the normal acidity of its contents being neutralized, when butyric acid fermentation is apt to occur; hence this condition is best treated by such substances as ginger, ammonia, or chloroform, which promote the secretion of the acid gastric juice. The most important part of the digestive process carried on in the stomach is, however, the conversion of *proteids* into *peptones*. How essential this part of digestion is will be evident, when it is considered that these alimentary principles are indispensable for the support and renewal of the living tissues, as well as for supplying to the secretions the active properties they possess.

Observers have been able to watch the actual process of digestion as carried on in the stomach through openings, resulting from accident or surgical interference. The process has also been closely imitated in the laboratory. Both kinds of observations have given interesting and useful results, and enabled us to determine the time occupied by the gastric juice in digesting the various articles of food, and also the influence exercised by different beverages in assisting or impeding digestion.

Some of the more instructive of these results may be mentioned. In the classical case of St Martin, Dr Beaumont found that "the rapidity of digestion varied according as the food was more minutely divided, whereby the extent of surface with which the gastric fluid can come in contact with it was proportionally increased. Dr Beaumont found that liquid substances were for the most part absorbed by the vessels of the stomach at once, and any solid matters suspended in them,

as in soup, were concentrated into a thicker material before the gastric juice operated upon them. The same observer states that solid matters are affected so rapidly during health, that a full meal, consisting of animal and vegetable substances, may be converted into chyme in about an hour, and the stomach left empty in two hours and a half. Dr Beaumont found that among the substances most quickly digested were rice and tripe, both of which were digested in one hour. Eggs, salmon, trout, apples, and venison were digested in one hour and a half; tapioca, barley, milk, liver, and fish, in two hours; turkey, lamb, and pork, in two hours and a half. Beef, mutton, and fowls, required from three to three and a half hours, and these were more digestible than veal." The reader will distinguish those of Dr Beaumont's observations, which are of practical importance, from those which a more accurate knowledge of the digestive process proves to be of little practical value.

The following six pages contain a summary of the more important results arrived at by the researches of Professor Fraser of Edinburgh, Sir William Roberts of Manchester, and others, into the influence exercised on digestion by the beverages in common use. The experiments were conducted in the laboratory, different kinds of food being mixed in vessels with artificially prepared digestive juices, and the mixture kept at the average temperature of food in the stomach, and shaken up occasionally to simulate the movements the food is subjected to in that organ.

Alcohol.

Alcohol, in the form of brandy, whisky, or gin, hastens both salivary and peptic digestion, except when taken in excess. It acts by promoting the flow of the saliva and the gastric juice, and also by increasing the muscular movements of the stomach. In the laboratory experiments, however, when these beverages

could neither increase the amount of the digestive juices nor augment the movements the food is submitted to, they were found, except when only a very small quantity was added, to slightly retard both salivary and peptic digestion; and when the digestive mixture contained fifty per cent. of these beverages, almost no digestion took place.

Wines and malt liquors retard salivary digestion in proportion to their degree of acidity; when, however, wines are rendered neutral or alkaline by the addition of an aerated water, they have no impeding effect on salivary digestion.

Wines and malt liquors hinder peptic digestion more than the amount of alcohol they contain would account for. When a large quantity of either was added to the digestive mixture, it exercised a marked impeding effect on the rapidity of digestion; in smaller amount, however, it retarded digestion so little that we may conclude that the hindering effect of wines or malt liquors, when they are taken in moderate quantity, is more than counterbalanced by their increasing the flow of gastric juice and stimulating the stomach to increased muscular action. When taken in excess, however, they delay gastric digestion. Sparkling wines hinder digestion less than still wines. When of good quality, sparkling wines, even when taken in large amount, in most cases assist and promote digestion. Most of us know from experience that a liberal supply of champagne will enable us to digest with ease and comfort a dinner which, if eaten on teetotal principles, would give rise to great discomfort, and probably sickness. It is also well known that a good stiff whisky and soda will set the digestive process agoing when a meal has lain for some time undigested in the stomach, owing to our having eaten not wisely but too well. It may, however, be mentioned that some people prefer to treat this condition by the free imbibition of pure water as hot as it can be drunk.

It may then be stated that alcohol, when taken in moderation, increases the appetite, and favours digestion; but when indulged in too freely, impairs the appetite and hinders digestion.

When taken persistently in excess, alcohol injures the mucous lining and the secreting tubules of the stomach; and, after absorption, it causes textural degeneration, affecting more especially the liver, the kidneys, and the nervous system. Alcohol does not enable people to do more work, but when taken after fatigue, it has a reviving effect, creates a feeling of warmth, and tends to promote sleep. The most suitable time, therefore, to take alcohol is after the day's duties are finished, and a short time before retiring to rest, and only a limited amount should be drunk. The sugar and extractive matters found in port wine, porter, and the heavier ales, endow these beverages with nourishing, fattening, and strengthening properties, which spirits—such as brandy, whisky, or gin—do not possess. The combination of alcohol with sugar and extractive matters, which is present in these drinks, renders them, however, liable to produce gout. Alcohol is easily digested, and, after assimilation, is readily combustible. It thus affords warmth, and consequently vital force, to the body, without necessitating waste of the animal tissues. Owing to these properties, alcohol, given frequently in small, well-diluted doses, often prolongs life in sick people, when more substantial forms of nourishment prove unsuitable, by imposing too great a strain on the organs of digestion and assimilation.

Tea, Coffee, and Cocoa.

Tea, coffee, and cocoa markedly impede peptic digestion, and when infusions of equal strength are used, their inhibitory action is about equal. Tea also hinders the digestion of the starchy constituents of the food by the saliva. This

may, however, be prevented by not drinking the tea infusion until after the meal is eaten. The Chinese live to a great extent on rice, which contains about 80 per cent. of starch; they are also great tea-drinkers; but I observed that they always ate their rice first, and then drank the tea as an after-food beverage. This habit must be the result of experience, as the Chinese I saw eating were of the coolie class, and of course were not aware of the inhibitory action of the tannin found in tea on starch digestion. The common practice of adding a little bicarbonate of soda to tea while it is being infused prevents it having an inhibitory action on starch digestion. The impeding action of tea on either salivary or peptic digestion is not influenced by the length of time the tea is infused: the same quantity of tea hinders digestion as much when infused three minutes as when infused for an hour. Infusing tea for a long time, however, destroys its flavour, partly by dissipating the volatile oil which gives tea its characteristic aroma, and partly by bringing into solution a bitter extractive substance, which is soluble only after prolonged boiling. It must also be remembered by tea-drinkers, that although boiling tea does not intensify its inhibitory action on digestion, it imbues it with properties which render it more likely to induce palpitation and nervousness. The inhibitory action of tea on salivary digestion depends solely on the tannin present in the tea, but this ingredient accounts for only about one half of the impeding action of tea on peptic digestion. Although, when taken along with food, tea delays digestion, yet, when taken after eating by people who secrete a fair amount of gastric juice, it promotes and facilitates digestion, and obviates or removes the drowsiness which often accompanies this process. Tea drinking, however, either with or after meals, is contra-indicated in

the case of people who are feeble, anæmic, and secrete an insufficient amount of gastric juice—that is, by many of the habitual drinkers of strong tea infusions. These persons are markedly benefited by giving up this habit, and taking a mixture containing pepsin and hydrochloric acid, with or soon after meals. If people who secrete only a limited amount of gastric juice will persist in tea-drinking, they should infuse tea leaves for two or three minutes, and give the tannin-laden infusion to the servants, and again infuse the same leaves, and drink the product of the second infusion: unfortunately, those persons usually reverse this order, and drink the tannin-laden infusion themselves. Tea is of little nutritive value. It is, however, a light agreeable beverage, and has a reviving and exhilarating influence. Students are much addicted to tea-drinking, as they find it clears the mind, facilitates its working, and dissipates the inclination to sleep. Coffee possesses most of the properties of tea. It is, however, more heating and stimulating than tea, and should not be used by persons who are subject to bilious attacks, congestive headaches, or piles. It is, however, often taken with advantage in place of tea by persons of a constipated habit, owing to the *caffein* which is found in it increasing the peristaltic movements of the intestines. Coffee drinking relieves sensations of hunger and fatigue. Cocoa differs from tea and coffee in containing a considerable amount of nutritious matter in the form of nitrogenous and fatty constituents. Cocoa is less stimulating than tea or coffee, and does not so often give rise to palpitation or nervous symptoms. It may therefore be taken when either tea or coffee would prove hurtful.

The experiments recently conducted by Dr V. E. Nyeshel of St Petersburg showed that in healthy people the hindering action of tea on the chemical part of gastric digestion was counterbalanced by its stimulating effects so long as only a

moderate amount of tea was taken, but when more than three tumblerfuls of tea was drunk, digestion was distinctly retarded. Dr Nyeshel gave people with good digestive powers a meal sometimes with, at other times without, tea, and a few hours afterwards employed the stomach pump, and was thus enabled to observe the progress digestion had made in the stomach.

Beef-Tea and Soups.

Sir William Roberts found that the saline ingredients in beef-tea and soups cause these beverages to impede peptic digestion as carried on in vessels in the laboratory. Taking a little soup, however, at the commencement of dinner promotes digestion, owing to its being rapidly absorbed by the vessels of the stomach, and thus affording nourishment to the gastric follicles, and stimulating the stomach to increased glandular and muscular action. But were a large quantity of soup to be taken before dinner, only part of it would be absorbed, and the remaining portion would hinder the digestive process.

Milk.

The saline ingredients in milk cause it to hinder peptic digestion. In some forms of acid dyspepsia, milk proves to be a most unsuitable article of diet, being vomited, after severe suffering, in firm, indigestible curdled lumps, while such food as raw meat is digested with comparative comfort. The reader will see that the explanation of this is, that in such cases the raw meat affords employment for the excess of acid gastric juice, and in this way tends to neutralize the acid condition of the contents of the stomach, while milk, from its containing a certain proportion of lactic acid, intensifies the acidity. Milk, however, is readily digested in the duodenum by the pancreatic and intestinal juices, and as it contains all

the elements necessary for the growth and maintenance of the body, it forms a suitable dietary in cases in which peptic digestion is suspended or markedly deficient. In the more aggravated cases, when the stomach fails entirely to perform its duties, milk probably flows through it without being acted upon in any way. In milder cases, a tumblerful of cold sour milk after meals proves useful, owing to the lactic acid assisting the chemical part of the digestive process. *Casein* is, of all *proteids*, the most easily digested by the gastric juice of a new-born child; infants should, therefore, be fed solely on milk. The *diastatic* ferment is not developed in the pancreas and submaxillary glands of children until they reach the age of two months. Hence, it is not advisable to give starchy food to infants (*Landois* and *Stirling*). Persons predisposed to consumption and invalids derive much benefit from drinking milk warm from the cow. Milk mixed with soda water forms a pleasant and nutritious drink for fever patients, and is often retained in cases of gastric irritation, when plain milk is vomited. Weakly, emaciated people derive great benefit from taking the following mixture in the morning while dressing :—

A well switched egg,
Half a pint of new milk,
Half a teaspoonful of powdered sugar,
A few grains of grated nutmeg,
Two teaspoonfuls of old Jamaica rum.
Switch well together.

In cases in which both peptic and pancreatic digestion are decidedly impaired, milk or other nutritious food may be *peptonised*, *i.e.*, artificially digested by being submitted to the action of prepared extract of pancreas. "Peptonised milk gruel yielded Roberts the most satisfactory results, as a complete and highly nutritious food for weak digestion. Make a thick gruel from any farinaceous food, *e.g.*, oatmeal, and while

still hot add to it an equal volume of cold milk, when the mixture will have a temperature of 52° C. (125° F.) To each pint of this mixture, add two or three teaspoonfuls of liquor pancreaticus and twenty grains of bicarbonate of soda. It is kept warm for two hours under a 'cosey.' It is then boiled for a few minutes and strained. The bitterness of the digested milk is almost completely covered by the sugar produced during the process."—(*Landois.*)

Salt meat is more difficult of digestion than fresh. By the process of salting, meat is deprived of a certain amount of its nutritive value, and is also chemically acted upon in such a way as to render it unfit for continued use for a long period, the prolonged and exclusive use of salted provisions giving rise to scurvy and anæmia. Salt, however, when taken in small quantity as a food accessory, assists digestion, gives tone to the stomach and intestines, prevents worms lodging in the bowel, and after absorption imparts tone and nourishment to the system. It must, however, be remembered that salt markedly delays peptic digestion, as carried on in vessels in the laboratory. Milk and beef tea, as already stated, owe their hindering powers on peptic digestion to their saline constituents, so that were an excessive amount of salt taken it would impede gastric digestion. Salt, however, increases the activity of ptyalin, and thus promotes salivary digestion.

The amount of food eaten has a decided influence on gastric digestion. To ensure rapid and easy digestion, only enough food should be taken at one time to moderately fill the stomach without distending it. People with good appetites should cease eating before they feel satisfied. Food should be eaten as nearly as possible at the same time every day; many people seem to think that, so long as they swallow a sufficient quantity of food within the twenty-four hours, it does

not much matter when or at what intervals they eat; this is a great mistake; irregularity in eating meals often lays the foundation of lifelong indigestion. The habit of eating between meals should not be indulged in. Many injudicious parents allow their children to eat at all times. I have already mentioned the risks attendant on the pernicious habit of bolting food. Mothers should superintend their children's meals, and see that their food is properly cooked, eaten at regular times, and slowly and thoroughly chewed. Parents should, moreover, pay strict attention to the condition of their children's teeth, which should be brushed thoroughly clean every morning. The teeth should always be brushed after taking any acid or iron mixture. How often one meets young people, even in the higher ranks of life, whose teeth are already decayed, and encrusted with tartar. Every person who wishes to keep his digestion in order should consult his dentist every few months.

People require more heat-giving food, such as fats, oatmeal, and pea soup, in cold than in warm weather. Persons living in large cities eat more animal food than those who reside in the country. English people consume more than double the amount of animal food eaten by either the Germans or French. More food is required when taking plenty of exercise than when leading a sedentary life. Some people are so constituted that they require an amount of food to maintain an average standard of health, that would give rise to obesity and disease in others. Persons belonging to the latter class have good digestive and assimilative powers; their blood is consequently rich in nutritious matter; they look strong and healthy; they are, however, liable to suffer from diseases the result of over nutrition, such as gout, rheumatism, congestive headaches, and hæmorrhages; they often rapidly succumb when attacked by an acute disease, such as pneumonia, rheu-

matic fever, or small pox; hence the popular belief that these diseases are the more virulent, the healthier the person. The explanation is that the excrementitious cells and organs of the ruddy, well-nourished person are already over taxed, and in some cases clogged with refuse matter; hence, they are unable to eliminate the morbid products, the result of the acute disease. There are other people whom no amount of food seems to fatten; they look pale, thin, and worn; they are subject to diseases, the result of defective nutrition, such as consumption and anæmia.

The process of digestion is also influenced by the state of the mind: strong mental emotions, *e.g.*, grief, anger, or disappointment, frequently give rise to indigestion. The old adage, "Laugh and grow fat," is founded on true medical principles; a happy frame of mind being essential to easy digestion. Every one knows that a meal eaten when talking to agreeable companions is quickly and easily digested. Taking violent exercise immediately after a meal hinders digestion. In illustration of this last remark, it may be mentioned that the experiment was tried of giving two dogs a hearty meal; one was immediately taken out coursing, while the other was allowed to rest in the kennel. Two hours after the meal both animals were killed, and the stomachs of both examined; while the food in the stomach of the one which had been allowed to rest was found to be almost entirely digested, scarcely any progress had been made towards the digestion of the food in the stomach of the other. The same law holds good as regards headwork. Men, therefore, who have to work with their brains, should, if possible, allow a reasonable interval to elapse after eating before commencing work. The after dinner cigar affords a good excuse for this wholesome practice.

The experiments of Rutherford and others show that indulging in mental or physical work while digestion is being

carried on retards that process by exhausting the nervous stimulus, which is essential both for the muscular movements of the stomach, and for the secretion of gastric juice. Rutherford found that if the nerves of supply to the stomach, the *vagi*, were divided during digestion, the gastric mucous membrane became pale,* and, consequently, the secretion of gastric juice was interfered with; and although the movements of the stomach were not abolished, they were markedly diminished.

The normal temperature of the stomach is about 99° Fah., and this temperature must be maintained in order that digestion may be properly carried out; this being so, it scarcely requires to be stated that the custom of eating ices or iced creams after dinner, or any full meal, is one which must necessarily retard digestion, more especially in persons with defective vitality who suffer from a chilly sensation shortly after a full meal, owing to the drain on the nervous power consequent on digestion. Those persons should be particularly careful to keep up their temperature after a meal by wearing warm clothing, especially over the stomach. In this country most healthy adults take four meals daily, allowing about four hours to intervene between each meal. Breakfast should be taken soon after rising and before starting for the morning walk. Many persons remain so long in bed that they have only time before beginning their day's work to dress hurriedly and swallow a few mouthfuls of food, which they wash down with copious draughts of tea or coffee, while they read their letters or the morning paper. Yet these people seem surprised when their digestion becomes disordered. As already stated, the solid part of the breakfast should first be slowly eaten, and the tea or coffee drunk afterwards; the mind,

* During digestion the mucous membrane of the stomach becomes red, and its circulation active, so that the venous blood becomes brighter.

meanwhile, should not be occupied with anything more taxing than light talk. This method may not at first be so agreeable to those who have been long accustomed to the usual plan, but if they will only continue it, they will soon prefer it, and also greatly aid their digestion. The last substantial meal should be eaten about three hours before going to bed, so as to allow digestion to be nearly completed before retiring. It is, however, more advisable to take a little food, such as a piece of well-browned dry toast and a glass of whisky well diluted with water, than to go to bed feeling hungry. The alcohol in the whisky tends to promote sleep. Tea and coffee, on the other hand, as already mentioned, have a stimulating influence, and should therefore never be taken late at night unless it is desirable to keep awake. People when hungry or tired are very likely to contract contagious, infectious, or other diseases. Every one, therefore, who is compelled to expose himself to contagion should go fore-armed by taking a substantial meal.

The food acts in two ways: first, by giving strength and tone to the system, it renders infection from any disease less probable; second, by causing a flow of gastric juice, the germs of such diseases as cholera, typhoid fever, and dysentery, which affect more especially the intestinal mucous membrane, are destroyed by the acidity of that secretion, whereas during fasting, or after the imbibition of water, the mucous membrane of the stomach is neutral or alkaline, and the germs of the above mentioned diseases pass through the stomach unharmed. Water drinking in the morning while fasting, which is advised as a preventive of constipation (see concerning constipation), must not therefore be had recourse to during an epidemic of cholera, typhoid fever, or dysentery.

JAMES CRAIG.

(To be continued.)

CHAPTER II.

WATER DRINKING.

Water undergoes no chemical change in the system, and hence of itself is of no nutritive value. Water, however, is absolutely necessary for the occurrence of the chemical and molecular changes which constitute life. The fluid part of the secretions consists of water, which thus forms the medium whereby the food is dissolved, digested, and enabled to enter the system, and the effete products to leave the body. When we consider that not less than three-fourths by weight of the human body is composed of fluid, which is constantly being excreted by the kidneys, the skin, the alimentary canal, and the lungs, to the extent of from 80 to 100 ounces daily, and that an ordinary diet of solid food contains only about 25 ounces of water, it is evident that, to preserve the body in its normal condition, this must be supplemented by the imbibition of a considerable amount of fluid. It must, however, be remembered that the ingested fluid has to fulfil the duties both of a solvent and a diluent, and must not, therefore, be too highly loaded with solid matter, so that it may be readily utilized for the purposes for which it was taken, without unduly adding to the work to be performed by the organs of excretion. To repeat, the parts played by fluids in the removal of excrementitious substances from the system are, first, the solution of the effete products which are present in a solid form; second, the

dilution of these products to an extent sufficient to enable the kidneys to effectively remove them from the system without being themselves injured thereby.

The proper quantity of fluid for a healthy adult to take daily, in addition to that contained in the different articles of solid food, is commonly stated at about 70 ounces, but this amount varies with the nature of the diet, the size of the body, the exercise taken, the constitution and habits of the person, and the weather. It is, however, highly important that a correct estimate should be formed of the quantity of diluents appropriate for different individuals, both in health and sickness, as taking either an excessive or deficient amount of fluid will, if persisted in, give rise to serious consequences. Some people are so constituted that, were they to drink even considerably less than 70 ounces of water daily, they would in a short time suffer from the usual effects of excessive water-drinking—viz., a too watery condition of the blood, debility, languor, and diseases the result of defective nutrition. The water in such cases acts by washing the nutritious substances out of the system before they have been utilized for the purposes of the animal economy. And further, by keeping the blood in a highly dilute condition, it is difficult for the tissues and organs to select material from it for their support. Drinking a large amount of water is contra-indicated in many consumptive cases (especially in the hæmorrhagic form), in diabetes insipidus, and in some forms of diabetes mellitus.

A more frequent cause of disease, however, is the habit of drinking an insufficient amount of diluents, or drinking chiefly fluids which contain an excessive amount of solid ingredients, such as full-bodied wines. The ingestion of an insufficient amount of diluents gives rise to the retention of excrementitious substances in the system, which are deposited in the tissues in

a solid form, thereby causing degeneration of organs and structures, and originating such diseases as gout and rheumatic arthritis. Organic disease of the kidneys is also frequently established, owing to the effete products being presented to these organs for elimination in a too highly concentrated condition. Stout, florid people of a gouty tendency, and persons who suffer from gravel,—uric acid,* oxalate of lime, or other form,—should take a considerable amount of water. Once or twice a year they should thoroughly wash out their tissues, and purge the secreting cells and tubules of the kidneys, by drinking daily for about three weeks four or five pints of pure water, or a judiciously selected mildly alkaline mineral water. Were this advice carried out, many of the cases of sudden death from apoplexy and acute diseases that are occurring daily would be prevented.

Some cases of albuminuria are greatly benefited by the free use of diluents, which not only diminish the amount of albumin in a given volume of urine, but also lessen the actual loss of albumin from the system.† Increased water drinking is of service in nearly all forms of chronic renal disease, as it augments the discharge of solid ingredients by the urine, and also presents them for excretion in a highly dilute condition, thereby assisting the impaired renal cells in removing the organic and inorganic excremental substances from the system. The liberal use of drinking water proves beneficial in cases of piles, congestive headaches, many chronic skin diseases, and, indeed, in all diseases due to the retention of

* For the benefits arising from water-drinking in gout and gravel, see notes by the writer in the "British Medical Journal" of 2d January 1886, on *the treatment of uric acid diathesis.*

† *Vide* communications by the writer on Regular Intermittent Albuminuria, "Lancet," October 1885. Influence of Arterial Tension on Albuminuria, "British Medical Journal," 13th February 1886.

effete products in the system. It is more frequently necessary to urge on people of sedentary habits than on those who lead an active life the necessity of water-drinking. This arises from the fact that an active life in the open air accelerates tissue change, promotes oxidation of the effete products, and hinders their deposition in the interstices of the tissues, the result being that the blood is highly charged with excrementitious matter, which creates thirst, while a sedentary life gives rise to directly opposite conditions. Stout, full-blooded people, with good appetites, who eat a considerable amount of food, require to drink more water than thin, small people with poor appetites.

Water has, as might be expected, opposite effects on different people, producing obesity in some, and rendering others thin and emaciated. It may be laid down as a general law, that those people whom water-drinking strengthens and energizes, may with safety drink freely, while those on whom it has an opposite effect should drink only a limited amount.

It may be mentioned that the latest suggestion for the treatment of obesity is to put the patient on a diet consisting almost wholly of lean meat and cod fish, and allow him to drink nothing but water at a temperature of 130° to 150° Fahr., this simple beverage to be taken freely on an empty stomach, but not less than one hour before meals. This proposal is theoretically sound, although it is doubtful whether hot water, after being absorbed into the system, possesses either greater solvent or diluent properties than cold water. This treatment, however, should never be put in practice, except under the immediate supervision of a physician. Many people are carrying on their daily duties, and enjoying a fair share of health, who have kidneys quite incapable of excreting a large amount of the waste products of animal food, even when the excrementitious material is presented to them in a dilute

condition, and these, unfortunately, are often the persons whose life is rendered a burden by excess of fat, and who are, therefore, most likely to give the proposal a trial. Under medical supervision, however, satisfactory results will probably be obtained in suitable cases. Since the above was written, a physican has published in a medical journal the following letter, which gives the result of this treatment in his own case. The letter is reprinted by permission :—

"THE CARNIVOROUS DIET.

"SIR,—On Friday, January 8th, I read the account of Dr Salisbury's treatment in the 'Pall Mall Gazette,' and determined to try the effect of it in my own case. Seven years ago, I weighed 11 st. 12 lbs. (height, 5 ft. 9 in.), and when I trained for my college-boat I always lost 5 lbs. A month ago, I weighed 14 st., so I was at least 2 st. above my weight. If any of my lean brethren wish to know how I felt, let them put on a topcoat, with 2 st. of shot stowed away in the pockets, and wear it for a single day. When my friends congratulated me on my aldermanic appearance, their compliments were as gall and wormwood to my soul. If they had felt as I did, that the hills of life were growing steeper, and that the pleasure of living was contracting in a daily narrowing circle, they would have condoled with instead of congratulated me.

For the last six weeks I have lived on lean meat and hot water, or its equivalent, and yesterday I weighed 13 st. I have taken a pint of hot water (130° Fahr.) at 7 A.M., a pint of 'schoolroom tea,' with a squeeze of lemon in it, at 11.30 A.M., the same at 3.30 or 4 P.M., and a pint of hot water (130° Fahr.), at 10 P.M., a pound of beefsteak at 8.30 A.M., a pound and a quarter at 1.30 P.M., and a pound at 6.30 P.M. This has been hot, but preferably cold, and has been varied with hare, chicken, &c.

The result is this. I am a stone less in weight, I am six inches less in girth, my gouty 'heirlooms,' in the shape of 'hereditary deposits,' have disappeared, my flatulent indigestion has vanished, my mental and bodily activity have doubled; I spoke on Thursday for an hour with less effort than I did in December for ten minutes, I sleep for seven hours without moving, I can wear gloves and shoes a size smaller, I have lost my tendency to catch cold, my muscles are daily hardening, my kidneys are doing their duty nobly, my figure is altering so rapidly that my tailor is in despair, but I am triumphant."

Although no reader of these notes is likely to follow the example of an invalid I recently heard of, who, in order to get full value for his money, drank every morning a tumblerful of each spring at a well-known health resort, where, I believe, there are five different kinds of mineral water, still, a word of warning against the drinking of mineral waters without first consulting a physcian may not be amiss, especially as some people have the idea that, as these waters are not dispensed by a pharmaceutical chemist, they are comparatively harmless. This is a great mistake, serious consequences frequently following their injudicious use. The medicinal employment of pure water, or of a mineral water, requires as accurate and extensive a knowledge of physiology and pathology as the use of any drug in the pharmacopœia.

JAMES CRAIG.

CHAPTER III.

CONSTIPATION.

CONSTIPATION is that condition in which refuse products of the body are unduly retained therein, owing to the bowel being imperfectly evacuated, or evacuated only at infrequent and irregular intervals.

Persistent constipation sometimes causes the complexion to become sallow and muddy, and dark rings appear below the eyes. The extremities, especially the feet, are often cold. Headache, giddiness, and flushing of the face are common symptoms. The person frequently feels depressed, drowsy, and listless; is irritable and easily tired; and often becomes thin and anæmic. The tongue is often coated with a dirty white fur. A disagreeable breath is one of the most frequent, and at least to others, if not to the patient, one of the most unpleasant symptoms of constipation. Most people, when in health and subsisting on a liberal supply of mixed diet, and taking a fair amount of exercise, find it necessary for their comfort that their bowels should be relieved once daily. Those persons who cannot afford the time to be ill, who have daily duties to perform, which necessitate their being always at their best, pay as strict attention to their daily alvine evacuation, as to the regular eating of their food. Other people are so careless about their health, that they allow themselves to become constipated for months. In one case

cited by Dr Johnston of Washington, the patient had not a single motion for the long period of eight months.

Constipation is sometimes due to local causes, such as mechanical obstruction of the intestinal canal, arising from disease of its coats, or an ovarian or other tumour pressing on its walls. The constipation of pregnancy comes under this head.

More frequently however, constipation arises from general causes, of which I will now proceed to treat.

Errors of diet.—Constipation may arise from the food being so highly nutritious, that being almost entirely absorbed, it leaves little or no residuum to stimulate the intestines to glandular and muscular action. The treatment indicated in such cases is to add to the dietary some food containing particles of an indigestible nature. This is the reason why fruits and vegetables are so useful. The best fruits are prunes or figs, a few of which eaten after breakfast will often prove effective. Vegetables may be used either in the form of soup, or, after the Continental fashion, as a separate course; or may be eaten with animal food. It must, however, be remembered, that in some cases vegetables are contra-indicated owing to their causing indigestion, distension of the abdomen, and flatulence. The substitution of brown for white bread will often prove beneficial, the action in this case being due to the particles of bran or wheat-husk which furnish the necessary stimulus. Oatmeal, eaten in the form of porridge or oatcakes, is highly useful in relieving habitual constipation. Aperients are very seldom had recourse to by Scotch ploughmen, who live largely on porridge. Amongst beverages, claret, especially the cheaper kinds, and strong tea, tend to cause constipation, and must therefore be avoided.

In some instances, constipation is due to a deficiency of fluid in the system. In such cases, a free use of water, or

of an aperient mineral water, is of the greatest advantage. The time-honoured habit of drinking a tumblerful of cold water on getting out of bed is one which may with advantage be adopted by all who are troubled with sluggish action of the bowels.

Constipation is sometimes due to an insufficient supply of food, or to eating substances, such as nuts or cheese, which contain too large a proportion of indigestible matter, cheese being most indigestible when unripe or deficient in fatty constituents. Constipation frequently arises from inattention to the call of nature to relieve the bowels, or from allowing too short a time for the performance of this function. Many people can trace an obstinate attack of constipation to something having interfered with their usual habit; *e.g.*, starting on a railway journey, or having to keep an appointment at the time they usually evacuated the bowels. The fæces, when allowed to remain in the intestine, form hard scybalous lumps, which, gradually accumulating, lead to irregular dilatation of the bowel, thickening of its walls, and impairment of its functions. Sometimes, however, we meet with people who are in fairly good health although they have been constipated for weeks; in these cases, the sensibility of the nerves of the rectum and colon has become deadened by the continued pressure of the fæces, and, consequently, the accumulation gives rise to but little discomfort. The longer, however, the muscular coat of the bowel is allowed to remain inactive, the more difficult it becomes to restore tone to it, so that, although these cases are caused simply by neglect, they often prove most intractable. The treatment must, in the first place, be directed to the removal of the accumulation in the bowel: this is best accomplished by the use of enemata of water at the temperature of 100° Fah., alone or combined with soap, castor oil, or

turpentine. Two pints of warm water should be slowly introduced and retained in the bowel for fifteen minutes; the abdomen should meanwhile be gently kneaded along the course of the colon to assist the fluid in breaking down the hardened mass. The fæcal accumulation being removed, further treatment should be of a preventive nature. Attention should be paid to the diet. The patient should persist in going to stool every day at the same time, although he may not have the least call to do so, and even should the result be unsuccessful. A suitable routine for such people to adopt is to drink a tumblerful of cold water on rising, breakfast on hot coffee and brown bread, with the usual accessories; a preliminary plate of porridge and milk often aids the treatment; should the patient be a smoker, the after breakfast cigar is very serviceable, owing to the nicotin in the tobacco promoting the peristaltic movements of the intestines. Daily friction and massage of the abdominal walls should be employed in obstinate cases.

Although chronic constipation is very difficult to cure, still in most cases, if the patient carry out the above instructions, the bowel after a time recovers its tone, the nerves of the rectum and colon regain their sensibility, and the habit of having a stool at the same time every day becomes established.

Sedentary habits account for a considerable number of cases of constipation. When a healthy man, who has led an active life, meets with an accident which necessitates his remaining in bed, his intestines are not moved about; in consequence of this, his intestinal glands do not pour out their secretions so freely, the almost invariable result being that he becomes constipated. For the same reasons the student, the author, and the indolent, are liable to suffer from sluggish action of the bowels. The treatment consists in first removing the

cause. Those persons who have developed lazy habits should break through them by taking daily exercise on horseback or on foot. The student should at times stand or walk about when reading. Massage and friction over the course of the colon for fifteen minutes twice daily, and when at stool, form good substitutes for, or additions to exercise. A cold water compress kept constantly applied to the abdomen, and wetted every three or four hours often yields satisfactory results. Electricity has proved of service in some cases.

Constipation, when due to pregnancy, is generally relieved in a satisfactory manner by taking a tablespoonful of castor oil at bedtime.

Another common cause of constipation is abuse of purgatives. Many people allow their bowels to get into such a condition, that they are never moved except with the aid of an aperient. To effect a cure in these cases, the pernicious habit of taking a persuasive every night or every second night must be abandoned. Instead of exhausting the torpid bowel with purgatives, people who suffer from constipation should take an intestinal tonic, such as nux vomica or belladonna, combined with some preparation of iron, and a mild aperient, such as the compound rhubarb pill. The following is a suitable pill for an adult :—

℞ Extract nux vomica, . gr. ½
Extract belladonnæ, . gr. ¼
Ferri sulphas, . . gr. ½
Pil rhei co. . . . grs. iii.
M. et ft. pil.

Sig.—Take one pill every night at bedtime, and a drink of cold water in the morning.

Or a trial may be made of the fluid extract of cascara sagrada, twenty drops thrice daily, gradually lessened, being a suitable

dose for an adult, paying attention at the same time to diet, habit, and exercise.

Constipation is sometimes due to the person becoming anæmic: a course of iron and arsenic is found to be of great service in such cases. Mental influences, such as too prolonged study, are believed by some to cause constipation, but it must be remembered that prolonged study necessitates sedentary habits, which are probably the cause of the sluggish action of the bowels.

JAMES CRAIG.

CHAPTER IV.

DIARRHŒA.

DIARRHŒA is that condition in which there are frequent calls to evacuate the bowels, ranging from a simple looseness, accompanied by painless fluid evacuations, to the most violent watery purging, attended by straining and griping.

The irritated or inflamed condition of the intestinal mucous membrane causes a large quantity of serum to drain out of the system during an attack of diarrhœa. Dr Tschernoff's analyses of the stools of both healthy and diseased persons show that the blood-vessels and *villi* of the intestines only imperfectly absorb the nutritive constituents of the food while diarrhœa is present, and as he found that the proportion of fat in the dried fæces was greatly increased, more especially in the fæces of infants, both during an attack of diarrhœa, and also for some weeks after its cessation, we may conclude that diarrhœa more or less seriously injures the intestinal *villi*.

Dr Tschernoff found that limiting the quantity of fat in the food did not diminish the proportion of fat in the stools; this proves that the body is deprived of a certain amount of its own fat during an attack of diarrhœa.

Many cases of Asiatic cholera originate in a simple diarrhœa. The two diseases differ as widely as an ordinary cold and consumption, but as the inflamed mucous membrane of the lungs in a common cold forms a suitable habitat for the *bacillus* of consumption, so the irritated and congested mucous mem-

brane of the intestinal tract in diarrhœa forms a fitting nidus for the organism, or whatever may be the exciting cause, of cholera. Some information regarding the causes, methods of preventing, and treatment of diarrhœa is, therefore, of the utmost importance to every one, more especially with cholera prevalent on the continent, and sporadic cases in our midst.

Diarrhœa is a symptom present in so many diseases, and arises from so many pathological conditions, that it is only practicable in this pamphlet to note its more common causes, and to offer a few suggestions for its prevention and treatment.

Dietetic Errors.—Eating or drinking food or fluids in excess, or foods or drinks containing improper ingredients, are among the most common causes of diarrhœa. For example, summer diarrhœa is frequently originated by eating sour decaying fruits and vegetables, or drinking water contaminated with sewage matter. The recent epidemic of diarrhœa in Hull was found to be due to the latter cause. Eating unsound shell-fish, as oysters, grown in certain places, gives rise to diarrhœa, accompanied with abdominal pains, almost equalling in severity the cramps of cholera. The diarrhœa in such cases is an effort to wash the noxious substances out of the system, and should, therefore, be encouraged. This is best accomplished by a bland aperient, as castor oil, which may be administered as follows to an adult :—

Castor oil, one table spoonful.
Glycerine, one table spoonful.
Laudanum, ten drops.
Oil of cinnamon, one drop.

This combination is almost tasteless, and is the most suitable aperient to employ when the person is free from nausea. But should there be an inclination to vomit, a saline aperient, as seidlitz powder, should be substituted for the castor oil. In

some cases even the seidlitz powder is rejected, when a second dose should be administered in five minutes. Warm applications should be applied to the abdomen to relieve the pain. In urgent cases, very hot turpentine stupes, changed every five minutes, are the most effective. In milder cases, a hot linseed meal poultice, sprinkled over with mustard, will suffice. The diarrhœa due to the following causes should also be looked upon as salutary, and encouraged :—The diarrhœa consequent on suppression or diminution of the functions of the kidneys or skin ; diarrhœa due to an excess of bile, or bile of an irritating nature, being poured into the duodenum ; the diarrhœa due to the retention of fæces—see Chap. III., Constipation. Should the diarrhœa from any of the preceding causes continue after the bowels have been freely purged of the offending matter, this will indicate that the irritation has been of sufficient intensity to excite inflammation of the intestinal mucous membrane, and recourse should then be had to opiates and astringents, combined with absolute rest in the recumbent posture, and bland demulcent food, which should always be eaten cold.

Drinking a large quantity of cold water when the body is heated often gives rise to diarrhœa, accompanied with severe griping pains. Diarrhœa of a similar nature is frequently caused by the stomach and intestines becoming irritated and inflamed by cold, owing to the abdomen being insufficiently protected. The diarrhœa arising from chills, sleeping in a damp bed, or sitting with cold wet feet, or living in a damp house, is also of this character. No aperient is necessary in such cases. Fifteen drops each of laudanum and elixir of vitriol given in a wine glassful of water (to an adult) every half hour until three doses are taken, combined with hot applications to the abdomen, check the diarrhœa, and relieve the pain. The prophylactic treatment in such cases is import-

ant. The exciting causes must be avoided. A change from a damp, low dwelling to a house that is well ventilated and exposed to the sun is imperative, and people when heated must be careful not to drink cold water. A flannel bandage should be worn over the abdomen. It should also be remembered that every organ is in the condition most likely to contract disease when its physiological activity is greatest. The stomach and intestines should therefore be more than usually protected from cold while digesting food. In treating chronic diarrhœa, more especially that form common in children after weaning, good results are obtained by putting the child on a diet consisting only of raw animal food, as mutton, chicken, veal, or game. The raw meat should be beaten into a pulp, or the juice may be pressed out of the meat and used. This food should be given, to commence with, only in small quantities. The drink should consist only of water containing white of egg. In some cases it is necessary to combine this dietary with opiates and astringents. When, however, the stools are of the colour and consistence of muddy water, or greenish and slimy, small doses of mercury in the form of grey powder, or a dilute solution of the bichloride, yield the best results.*

Other remedies in common use, and of great service in the treatment of diarrhœa, are bismuth, chalk, dilute mineral acids, ipecacuanha, creasote, and chlorodyne. When the diarrhœa is accompanied with much straining at stool, recourse should be had to sedative enemas, such as—

Laudanum, 20 drops.
Solution of starch, two ounces.

* Half a grain of grey powder, with two grains of rhubarb powder, every two hours is a suitable dose for a child of two years, and may be continued for two days.

Asiatic Cholera.

As Asiatic cholera has already been mentioned in this annotation, a few words regarding its causation and prevention may not be out of place. The exciting cause of cholera is still undetermined. Dr Koch, after carefully investigating the subject in India, Egypt, and the south of Europe, came to the conclusion that the disease was due to, and propagated by, germs, or what he called comma-shaped bacilli, which probably reached the mucous membrane of the bowel by getting mixed with the food or drink. The physicians sent to India by the English Government to investigate the subject, after careful and prolonged observations, condemned the German Doctor's theory. Many physicians, however, both in this country and on the continent, still believe that the germ described by Dr Koch is the cause of cholera. Let the cause be what it may, all are agreed that the cholera poison is spread by being thrown off from the bodies of the infected by the stools or the vomited matter and entering the systems of others by becoming mixed with their drinking water or food : the preventive treatment is therefore the same whichever theory is adopted.

During a cholera epidemic all the exciting causes of diarrhœa should be scrupulously avoided. The diet should consist of plain thoroughly cooked food. Green vegetables and fruits, when unripe, or commencing to decay, should not be eaten. Meat, and more particularly fish, when high, should be avoided. Neither ices nor iced drinks should be taken. Drinking water should be boiled and filtered. Five drops of elixir of vitriol may be added to each tumblerful of filtered water. Milk, from its being sometimes diluted with water, which may contain sewage matter, is a probable vehicle for the cholera poison, and must therefore be looked upon with suspicion, unless its

purity is beyond doubt; in any case, boiling the milk is a useful precaution to adopt. Malt liquors should be avoided, or taken sparingly, and only by those who have been long accustomed to their use. Ardent spirits, as whisky or brandy, when taken in moderation, are harmless. The body should be protected from chills by warm clothing. The flannel belt, known in India as the cholera belt, should be worn over the abdomen day and night. Excessive mental or bodily fatigue, and, in fact, excessess of all kinds, should be avoided. Every one should endeavour to keep himself in the perfect condition of a Derby winner. Should diarrhœa arise, the person ought at once to go to bed, and take thirty drops of laudanum and five drops of elixir of vitriol in a table spoonful of water—the dose to be repeated in an hour if the symptoms are not relieved; the above is the dose for an adult. Should there be nausea or vomiting, the laudanum and elixir of vitriol may be given in an effervescing drink; for example, a seidlitz powder. Turpentine stupes, or a hot linseed meal poultice, sprinkled over with mustard, should be applied to the abdomen. The temperature of the extremities should be maintained by the external application of warmth. The reader will observe that, contrary to the advice given in most text-books, I have recommended that several alterations should be made in the dietary while cholera is prevalent. I suspect that people were advised during past epidemics not to alter their diet or habits, in order, as far as possible, to allay the morbid fear with which ignorant and superstitious persons regarded cholera.

From the above it will be gathered that the two things we should endeavour to accomplish are, first, to prevent the cholera poison gaining admission into the system; second, to keep the intestinal mucous membrane in a healthy condition, and thereby prevent the cholera poison finding a suitable

growing ground, should it by chance reach the intestines. It is unnecessary to state that if we are successful in our first endeavour, we cannot be attacked by cholera. The following are two of the many facts which lead us to believe that if the alimentary tract is in a thoroughly healthy condition, the cholera poison will pass through the bowel without giving rise to the disease: first, in every epidemic only a few of those who drink water, supposed to contain the cholera poison, are attacked by the disease; second, the late Dr Balfour of Bombay drank with impunity a quantity of water from a suspected tank, which had been examined by competent observers, and found to contain a large number of the germs which are believed by Dr Koch and his followers to be the exciting cause of cholera.

A few hints may be given regarding the general sanitary measures to be adopted in the event of a threatened outbreak of cholera. This disease is always most prevalent amongst the inhabitants of low-lying, badly-drained, and imperfectly-ventilated places; the prevention, therefore, consists in so far as possible removing those conditions. The strictest attention should be given to drainage and sanitary arrangements, both within and outside the house; the water closets and sewage pipes should be carefully examined, and, if necessary, put in order. (For the dangers attendant on breathing air impregnated with sewage gases, see an article by the writer in the "British Medical Journal" of January 1886, on infectious sore throat.) People should shun all public meetings held in places which are over-crowded and badly-ventilated; as already stated, the milk and water supply should be carefully examined. Extreme care must be exercised in the removal of the *dejecta* of cholera patients; the stools and vomit should at once be thoroughly disinfected, and afterwards either buried in a deep hole, or disposed of in such a manner as to prevent them

gaining access to any well or river from which drinking water is obtained. The room in which a cholera patient has been, and all bedding he has used, should be thoroughly disinfected; this purifies the atmosphere, which in badly ventilated rooms may sometimes hold some of the cholera poison in suspension, and in this way spread the disease. Suitable disinfectants are, one part of carbolic acid to twenty of water, Condy's fluid, sulphur dioxide and chlorine.

I think, then, it may be stated, that if strict attention is given to above advice, no one need fear that he will be attacked by cholera, even should he be compelled to live in an infected district.

But should any one be attacked by cholera, he should, besides carrying out above instructions, at once send for his physician. As yet, no one has discovered a specific for this disease. The writer, after considerable experience, is of opinion, however, that cholera patients when seen early and treated carefully and energetically, generally recover. The treatment of a case of cholera is, however, no simple matter. If the physician is determined to overcome the disease, he must remain with his patient and be ready to treat energetically each symptom as it arises. The Doctor should have two fairly intelligent assistants to carry out his instructions. The writer has found it necessary to remain fourteen hours with one cholera patient.

Should cholera reach our shores this season, it would be impossible for every one attacked to secure the attendance of a physician during the whole course of the disease. The guardians of the health of our large seaport towns, where we may expect the disease first to obtain a footing, should therefore bestir themselves, and, besides attending to the sanitary arrangements of the town, pay physicians to instruct a staff of volunteer nurses, male and female, how to treat this disease.

JAMES CRAIG.

CHAPTER V.

HÆMORRHOIDS OR PILES.

PILES constitute a very common and troublesome ailment, and one which, from delicacy or ignorance, is frequently overlooked in its early stage when it is most amenable to treatment. When fully formed it is a disease requiring constant care, and it is well that the subjects of it should know what measures to adopt.

Piles consist of small tumours situated near, or within, the opening of the lower bowel. When inside, they are called *internal piles;* and when outside, *external piles.* A pile, whether external or internal, consists essentially, in the first instance, of a dilated condition of the veins of the part, and in this state the tumour is soft and compressible; but after a time the tissues around these veins, and the coats of the veins themselves, become swollen and infiltrated with new tissue.

Sometimes the mucous membrane of the whole circumference of the lower part of the rectum is in an extremely vascular and sensitive condition, but without the formation of a distinct tumour.

Internal piles may be, and often are, distinct and pendulous. They vary in size from a pea to a walnut, and their most frequent point of origin is from one to two inches from the external orifice. They consist principally of dilated veins, and become firm if the blood coagulates in these veins.

External piles, on the other hand, are not so vascular as

internal piles, and are covered by cutaneous or muco-cutaneous tissue. They may be soft and loose, or tense and tumid. Before becoming distinct tumours, external hæmorrhoids often exist as, or originate from, longitudinal folds of skin which radiate from the opening of the bowel. When small and recent, tumours of the external kind do not, as a rule, give rise to much inconvenience, but frequently there is heat, itching, and a sensation of fulness after defæcation. When large and inflamed, acute suffering, as deep-seated throbbing pain in the tumour itself and in the thigh, may be the result.

Usually the first symptom to attract attention in internal piles is bleeding, and it is easy to distinguish such hæmorrhage from what might come from a higher part of the bowel, as the latter is dark in colour and intimately mixed with the fæces; whereas the former is generally in a fluid condition, of a bright colour and more frequently only staining or coating the stools instead of being intimately mixed with them. This loss of blood may be periodical, as every month, or at intervals of two, three, or six months. It usually continues a few days. The bleeding varies greatly in quantity. At first, perhaps, a few drops falling after the passage of a motion, or the fæces may be more or less stained with blood, or the bleeding may amount to several ounces. When moderate in amount hæmorrhage from piles often gives relief and is seldom injurious, unless too long continued; but when profuse, it may give rise to paleness, palpitation, headache, faintness, or even still more alarming symptoms. In many cases it is of advantage in preventing disease from falling on more important structures. It has been looked upon as, and in many cases is, a safeguard from apoplexy and congestions of other organs, particularly in full blooded people who live too well. At the change of life in females this bleeding is also considered critical.

Hæmorrhage, I have said, usually first attracts attention in internal piles, but they are generally attended also by a feeling of heat, itching, or smarting about the opening of the bowel, and a sensation as of a foreign body in the lower bowel. These sensations are much increased after a motion, when there is also frequently a sickening feeling which arises from the pile being grasped in the orifice of the bowel. This feeling of discomfort and bearing down is much increased if the person stand or walk much after having been to stool, or if the bowels are constipated. In addition to the above symptoms, there is usually a secretion of thin mucous moisture from the parts, and this is often sufficient to soil the linen. The bowel is now apt to be prolapsed.

Before enumerating the causes of piles, it is well to state, that in the rectum there is an intricate network of veins where the blood is apt to circulate slowly, and where the circulation is influenced by derangements of the liver and of the intestines. These veins also having no support during straining at stool are thus apt to become distended.

It will be found that the principal causes of piles act by retarding the circulation of blood through these veins.

Indolent habits, with a sedentary life, are perhaps the most frequent cause of piles, and especially when combined with a luxurious mode of living. Intemperance in food and drink, residence in a warm and relaxing climate, and the use of warm soft beds are strong pre-disposing causes. Again, sitting on cold stones or damp cushions often excites this disease. The habitual use of purgatives of a particular kind, such as aloes and rhubarb, is not uncommonly followed by piles, but this may in part be due to the state of the bowels, for which these medicines are taken. Various deranged conditions of the bowels and genito-urinary system contribute to the causation

of piles. They are also apt to be induced by much straining at stool, as this causes an engorgement of the veins of the rectum. But far the most frequent of the direct exciting causes of piles is certainly retardation to the return of venous blood through the liver and certain of the mesenteric veins, which are the veins in connection with the bowels. These obstructions may be due to disease of the heart, liver, constipation of the bowels, pressure of abdominal tumours, or an enlarged womb.

This disease is frequently met with in young men between eighteen and twenty years of age, more especially if they are of a relaxed and languid habit of body, and of sedentary habits. The liability then diminishes, to increase again after middle age, when it becomes more marked. It is more frequent in the early period of life among males than females.

The treatment of piles is to be carried out on the principle of avoiding everything which tends to their production. The local treatment of the disease is important in many cases, but removal of some distant cause is often of itself sufficient to cure the disease. The constitutional treatment of piles must necessarily vary. In most cases where the patient is about middle age and of a full habit of body, with perhaps sluggish bowels or liver, such a person should be restricted to diet unfavourable to the making of blood, the use of stimulants should be avoided, and the quantity of animal food taken should be small.

Again, when piles occur in a person of a debilitated condition most benefit will be obtained, as is obvious, by getting the system into better condition by means of tonics and nourishing diet, the bowels to be regulated by mild aperients, which are always beneficial in piles, but particularly when the liver is congested. Strong purgatives are to be avoided. The best aperients are confection of senna, sulphur, and castor oil. One of these should be taken regularly two or three times

a week at bedtime, in as small a quantity as to keep the bowels free. Perhaps equal parts of sulphur and cream of tartar, with twice as much confection of senna, mixed with a little syrup, of which a dessert spoonful to be taken every other night, is as good a combination as can be desired. When the lower bowel is in a relaxed state, or when the constitution is debilitated, equal parts of confection of senna and black pepper will be found useful. When the liver is deranged, taraxacum or podophyllin are necessary, and in relaxed constitutions, ten drops of nitro-hydrochloric acid with bark three times a day. Pulv. glycyrrhizæ co., will also be found useful as a laxative. Hamamelis, in five drop doses, will act as an astringent and arrest hæmorrhage.

The local treatment of this disease is also of importance. Lavements of soap and water, or thin gruel, will be useful, but sometimes they cause irritation and make matters worse. In persons of a full habit of body, a tepid lavement will usually be found most agreeable; but in relaxed constitutions, cold will have more effect. The parts should be sponged night and morning with cold water. An astringent injection, such as a solution of alum, may be used. Gall ointment with opium is well known to be followed by benefit. After every motion the parts should be well washed with carbolic soap and water.

When piles become inflamed, the person should remain in bed and have leeches applied around the opening of the bowel, but not upon the tumours; or warm hip baths, poultices, or poppy fomentations, assiduously applied, may be used instead. The diet should now be spare, consisting principally of milk. Sometimes in this inflammatory condition cold applications containing sugar of lead and laudanum are more grateful and give speedy relief.

WILLIAM MAULE.

CHAPTER VI.

NEURALGIA.

NEURALGIA is characterised by the occurrence of pain in one or more nerves. The pain generally comes on in paroxysms of varying intensity. These paroxysms may return every few seconds, or daily, or every other day, or at longer intervals. These intervals may be regular or irregular, but generally the former, as at a stated time, during the twenty-four hours. The constitutional disturbance is not in proportion to the severity of the pain. The pulse may be slow and feeble. Unless the pain is very severe, or long continued, there is not usually redness or swelling of the part. The skin may be paler or redder, colder or warmer, than usual. In some cases the part is very sensitive to touch, whilst in others pressure gives relief. The pain in neuralgia is generally on one side of the body only, but it may extend to contiguous, or even distant, nerves. It is usually worse after fatigue; but, again, severe muscular exercise sometimes allays it. Once the disease has occurred, it is apt to return from the slightest cause. A nervous temperament is favourable to its production.

In the large majority of cases, neuralgia depends on some derangement of the constitution, as general debility, or a depraved condition of the blood arising from any cause, such as illness, or want of proper nourishment. Debility, with bloodlessness or chlorosis, is one of the strongest predisposing

causes of neuralgia. Anything which tends to weaken the nervous system, such as over-study, worry, or sometimes excessive bodily fatigue, favours the occurrence of neuralgia. Those who work amongst certain metals, such as lead, copper, and mercury, are also prone to suffer from this among other ailments, as the system becomes affected by these metals. Neuralgia is a common accompaniment of gout, rheumatism, syphilis, and malaria.

It is frequently difficult to ascertain the cause of an attack of neuralgia, as the seat of irritation is often at a distance from the seat of pain, for pressure in the course of a nerve will cause pain at the end of that nerve, and pressure at the end of a nerve may cause pain to be felt in another nerve, as is illustrated by painful sensations in certain fingers when the outside of the elbow is struck in a particular way, or when pain is complained of on the inside of the knee-joint in cases of hip-joint disease. Among the local causes of neuralgia, irritation of nerves from pressure is common. This pressure may arise from inflammation of parts around the nerve, from dead bone, when the pain is often relieved by change of position, from pressure on the nerve passing through a bony canal, either from changes in the nerve itself or in the bone, from tumours, aneurisms, or foreign bodies introduced from without. The irritation of a nerve from pressure is also observed after sitting too long in a particular position, or hanging the arm over the back of a chair. Inflammation in the sheath of the nerve often arises from cold. Changes in the nutrition of the nerve also induce neuralgia. Peripheral irritations are also frequent causes of this complaint. Such irritations may arise from any part, but particularly from the womb, stomach, and teeth. The periphery of a nerve may be irritated by excessive functional effort, as is observed after

reading small print, when the nerves of vision become irritated, and headache, or pain in the eyeballs, is the result. Exposure to cold and wet, but especially to cold draughts of air, is a familiar cause of this disease.

Neuralgia is most common in females, and after middle age. A nervous constitution has a good deal to do with its development, but in most cases it will be found that the general health is below par.

In the treatment of neuralgia, the cause must be found and removed. When the general health is at fault, it must be corrected, otherwise relief will only be temporary. When the person is pale and debilitated, some preparation of iron is indicated. Five grains of the citrate of iron, or citrate of iron and quinine, may be taken three times a day in a wine glassful of water after food. Five grain doses of the carbonate of iron are also beneficial. The diet should be nourishing, and cod liver oil, if assimilated, will do good. The state of the stomach and alimentary canal should be attended to. If the constitution is of a gouty type, then alkaline waters and colchicum should be taken. The diet should consist of nutritious and easily digested food, containing a due proportion of animal and vegetable matters, but not much sugar, tea, or coffee. Pastry is to be avoided. Abundance of pure water should be taken to flush the system, and sedentary habits avoided. A Turkish bath should be taken occasionally, and a tepid daily. Hot water drinking is also beneficial.

In those of a rheumatic habit of body, fifteen grains of chloride of ammonium, with one drachm of tinct. guaiaci ammoniata, at night, will do good, especially in young people. For elderly people, five grains of carbonate of potash, and the same quantity of iodide of potassium, with half a drachm of tinct. guaiaci ammoniata, are to be given two or three times a day.

Four grain doses of salicylate of soda three times a day in water may be used. Guaiacum and sulphur also do good to a rheumatic constitution. Flannel should be worn next the skin.

In malarial cases, large doses of quinine, with three-drop doses of Fowler's solution, are to be taken. Such cases are specially characterized by their periodicity.

The local treatment of neuralgia will be given under the different forms.

"Tic Douloureux" is a name applied to neuralgia affecting the nerves of the face. It is very common in this region, probably from the surface being much exposed, and also from decayed teeth irritating or exposing the terminal twigs of nerves. The pain is sometimes very severe, the face becoming swollen, and the eyes bloodshot. The paroxysms of pain may come on gradually or suddenly, and may be re-excited by the slightest causes, as a current of air blowing over the face, or a sudden jar or shake of the bed, or even by having the attention directed to the part. The movements of the muscles in speaking or eating often aggravate it. During the height of the paroxysms, the muscles of the face may be thrown into spasmodic contractions. This affection is common in those who are broken down in health, or advanced in years. In those of a rheumatic constitution, the pain may change to other parts of the body, to return again to the face. In many cases the stomach is at fault.

In the treatment of facial neuralgia, the general rules previously given should be attended to. If the bowels are constipated, a saline aperient, such as magnesia, is best. Croton chloral hydrate, in three-grain doses, every four hours, acts on these nerves specially. It may be taken in water, or in the form of pills. When the pain arises from decayed teeth,

gelsemium should be tried. Fifteen drops of the tincture, with half an ounce of dill water, every five hours, or a pill of the following composition may be taken every four hours :— Gelsemii, one grain ; croton chloral hydrate, three grains ; camphor monobromide, two grains. One or two teaspoonfuls of Tonga three times a day is of use when the pain is above the eyes or in the temples. In such cases it produces excellent results. In cases where there is no definite point of maximum severity of the pain, twenty-five grains of chloride of ammonium may be taken every four hours for one day. When malaria is the cause, quinine should be taken, and if it causes unpleasant headache, ten drops of hydrobromic acid should be added to each dose.

Of the local applications, liniments of belladonna, chloroform, and aconite, are much used. Veratria ointment is also greatly praised. These should not be applied on a broken surface, as they are liable to be absorbed, nor too near the eye, as they may excite unpleasant irritation. Dry heat, by means of flannels, or moist heat, with flannels wrung out of hot water, and used thus, or with laudanum sprinkled on the surface, will often give relief. The application of mustard, or sometimes a blister, is beneficial when other means fail. Cold, instead of heat, is sometimes to be used. Of all local applications, most benefit has been produced by electricity, which should only be used by experienced persons. Preventive treatment should be adopted by all liable to this neuralgia. They should avoid everything which tends to lower the general health, warm clothing should be worn, and the stomach and bowels regulated.

"SCIATICA" is the term applied to neuralgia of the sciatic nerve. This is a very large nerve, which lies in the deeper parts of the hip, and back of the thigh, its branches extending

to the foot. When the pain is about the hip, it is sometimes called "*hip gout*," or "*rheumatism*." The pain is oftenest in the back of the thigh, but it may be also in the back of the leg and foot. Sometimes this pain is very persistent, and may cause paralysis, lameness, cramps, and even wasting of the muscles.

It may arise from exposure to cold draughts, or sitting too long in a certain position. Irritation of the nerve within the pelvis from overloaded bowels, disordered kidneys, or disease of the spine, may be the cause. Gout and rhuematism are common causes of this neuralgia. Unlike "tic douloureux," sciatica is more common in males than females.

The general principles of treatment given under neuralgia should be carried out. The outward applications recommended for neuralgia of the face should be applied, but mustard applications, or a large bran poultice, often do more good. Turpentine has been much recommended. A blister applied to the point of greatest pain will often produce more permanent benefit. In rheumatic cases, five grains of iodide of potassium, with bark, is to be taken three times a day, and the limb covered with flannel, on which precipitated sulphur has been freely sprinkled, and the whole kept in position by means of a flannel bandage. Warm, Turkish, or electric baths, are also to be taken.

Neuralgia sometimes affects the front of the thigh and leg, or upper surface of the foot, and sometimes this may be traced to irritation of the bladder or other part of the genito-urinary system, or to the rectum, as from piles.

"INTERCOSTAL NEURALGIA" has its seat in the nerves which lie between the ribs. Three points of these nerves are apt to be affected : *first*, near to the spine ; *second*, near to the breast-bone ; *third*, midway between these two points. It is more

common in females than males, and its favourite locality is a little outside the *left* breast. The pain may shoot along the nerve from back to front, or *vice versa.* This neuralgia is common in anæmic girls. Sometimes it is followed by an eruption of clear vesicles, known as "shingles." These also follow the course of the nerve, and when they occur in old people, the pain may continue a considerable time after the eruption has disappeared.

The breast itself may be the seat of pain, and be tender to the slightest touch, the pain shooting up to the shoulder, or down to the thigh.

The general treatment of neuralgia should be followed, and five drops of tincture of nux vomica should be taken three times a day in a tea spoonful of water. One tea spoonful of Easton's syrup in a wine glassful of water twice a day is a good nerve tonic.

WILLIAM MAULE.

CHAPTER VII.

HEADACHES.

HEADACHES may be divided into various classes according to their causes.

SICK-HEADACHE, or *brow-ache*, as it is sometimes called, is a combination of neuralgia and headache, limited to one side of the head and brow, and often attended with sickness, although the alimentary canal has probably only a small share in its production. In the morning the subject of it feels depressed and heavy, and the headache rapidly increases. The attack may begin with giddiness, disturbed sight, chilliness, and disinclination for food. There is often a nasty taste in the mouth. The eyes are congested, and very sensitive to light as the ears are to sound. A play of colours, or dark spots, are sometimes seen in front of the eyes. The face and side of the head are often flushed, but may be unnaturally pale. The pain may radiate into the throat. The person feels very depressed and easily disturbed. The attack generally lasts a few hours and then gradually subsides, but it may continue for days. It terminates, as a rule, with nausea and bilious vomiting. A slight pain may remain above the eye.

Sick-headache is commonest in females about the age of fourteen or sixteen. It tends to cease or diminish as age advances. A nervous temperament and a hereditary predisposition to the disease has much to do with its production,

but many cases are due simply to an impoverished condition of the blood. Some cases are attributed to errors of diet, and others to exposure to the rays of the sun. Those who have been exposed to the malarial poison, are liable to this as to other kinds of neuralgia. Many cases cannot be traced to any definite cause, but everything which weakens the system tends to aggravate or produce the disease.

At the commencement of an attack the sufferer should retire to rest in a dark quiet room, and lie down on the side in which the pain is. The feet should be kept warm, and a tight bandage applied round the head. A cup of strong tea, coffee, or half a teaspoonful of spirit of hartshorn, often gives relief. Ten or fifteen grains of guarana powder in a cupful of water every two hours, is one of the best remedies for reducing or warding off an attack. It acts much in the same way as strong tea. Large doses of bromide of potassium sometimes give speedy relief. No food should be taken during the height of the attack. When one side of the face is flushed, pressure with the fingers may be tried on the large artery of the neck of that side, so as to lessen the quantity of blood going to the brain ; but, if there be unnatural paleness on the painful side, then the pressure should be applied to the opposite side, so as to increase the flow of blood in the pale side.

During the intervals of the attack the diet should be generous, but oily and fatty articles in excess should be avoided. When there are indications of bloodlessness, preparations of iron alone, or combined with four-drop doses of Fowler's solution of arsenic, are indicated. Ten grains of the citrate of iron, in a wine glassful of water, three times a day, after food, or five grains of the carbonate of iron, are simple preparations. The general treatment recommended under neuralgia should be followed ; but here, in addition, five-grain doses of bromide

of potassium, three times a day for a fortnight, will be useful in diminishing the excitability of the nervous system.

CONGESTIVE HEADACHES are due to too much blood in the brain. There is generally a feeling of fulness, weight, and throbbing in the head. These headaches occur mostly in full-blooded people. Perhaps, at the time of occurrence, some discharge has been stopped, such as diarrhœa, or bleeding from some part, as the nose, or piles. It may follow the disappearance of some skin disease, or the healing of a sore. Constipation and derangement of the liver very often cause it. Quarrymen, when working with dynamite, have been known to suffer from headache of this nature.

The most satisfactory treatment consists in regulating the diet, a spare diet being best. Sufficient exercise should be taken daily, and mild aperients used, if necessary, to keep the bowels regular. Bathing the feet in warm water alone, or with mustard added to it, may give relief during the attack; but sitting in a few inches of warm water is more effectual in withdrawing blood from the head. Habitual discharges should be encouraged.

THE ANÆMIC HEADACHE depends on too little blood in the brain, and is thus produced by the opposite cause from the last. The seat of the greatest intensity of the pain is generally at the top of the head, but not uncommonly in both sides of the forehead. Probably, most headaches in an exhausted state of the body are of this type, such as those due to overwork, want of sleep, railway travelling, and such causes. It is most common in those who are delicate, and show a want of blood. It is frequently observed after exhausting illnesses, such as fevers and diarrhœa. Benefit, as a rule, occurs when the person lies down, as then more blood flows to the head. It is apt to be increased by fasting. Frequently, the subjects of anæmic headache complain of giddiness.

The treatment should consist of those measures calculated to improve the condition of the system. The cautious inhalation of one or two drops of nitrite of amyl gives speedy, but only temporary, relief. Tonics and nourishing diet, with preparations of iron, are to be taken.

TOXIC HEADACHES are due to poisons or other deleterious matters in the blood. Such headaches are common, and are observed after the immoderate use of tea, coffee, tobacco, and alcohol. Sitting in close rooms, where the air is vitiated, is a well known cause. This kind of headache often accompanies gout and diseases of the kidneys, in which impurities are allowed to circulate in the blood, instead of being thrown off. Workers in lead are also subject to it.

As to treatment, it will generally be found that removal of the cause is soon followed by relief.

RHEUMATIC HEADACHES occur in persons of the rheumatic temperament. The pain, or rather tenderness, is usually located in the scalp. The bulbs of the hairs even seem very sensitive.

The treatment should be on the lines given under rheumatic neuralgia. See Chap. VI., Neuralgia.

SYMPATHETIC HEADACHES arise from a great variety of causes, which are often obscure. This kind of headache may arise from derangement of almost any organ of the body, but most frequently from the womb, liver, stomach, or bowels. Many interesting cases have been traced to affections of the teeth, ears, and eyes.

ORGANIC HEADACHES are due to changes in the substance of the brain, as from tumours, or other new formations, but their recognition and treatment are too complex to be entered on here.

WILLIAM MAULE.

CHAPTER VIII.

CONVULSIONS OF CHILDREN.

Convulsions consist in spasmodic contractions of the muscles of any part of the body. In their mode of commencement they vary much, as well as in their extent and severity. They may be slight and limited to any one part of the body, they may affect both sides of the body simultaneously, or be confined to one side only. Convulsions frequently come on without any warning, and from very slight causes. The child may utter a cry and then become unconscious; but as a rule convulsions are preceded by some signs of nervous disturbance, such as restlessness, slight twitchings of the muscles, or grinding of the teeth. During the attack the face is frequently pale at first, and after a little becomes flushed. The features are distorted when the face is affected. The walls of the chest are fixed, and the respiration is suspended. The fingers and toes are successively extended and flexed, the thumb being bent towards the palm of the hand and covered by the fingers. The head is pulled to one or other side, or drawn backwards, or bent forwards. The eyes are the seat of rolling and jerking movements, the eyeballs being generally drawn up under the upper eyelids. The tongue may be thrust out of the mouth and bitten by the teeth. The urine and fæces may be expelled by the strong contractions of the muscles of the walls of the abdomen. Such a fit generally lasts one or two minutes and

terminates by the child taking a deep breath, which is followed by relaxation of the muscles. A fit may be repeated over and over again during half an hour, hours, or even days.

There is a form of partial convulsions, which consists of spasms of the muscles of the throat or chest, accompanied by rolling movements of the eyeballs, or the eyeball is turned up under the upper eyelid, the breathing is a little embarrassed, and there is slight twitching of the muscles of the face, which may be a little flushed. Such attacks occur in children a few days old, and are spoken of as "inward fits," or "inward spasms."

An ordinary attack of convulsions may be expected to return if the child does not sleep soundly after the first fit, but is restless, grinds its teeth, or has slight twitchings of the muscles now and again. Danger is to be apprehended during an attack of convulsions when there is squinting of one or both eyes, or when the breathing is much interfered with, and too little air entering the lungs, as is indicated by blueness of the face, lips, and nails.

Convulsions which are purely reflex, as those arising from teething or worms, are not very fatal, except in very young children, and the same applies to those which precede an attack of any fever, such as measles, or scarlatina, or inflammation. But there is more danger when convulsions occur towards the termination of an attack of measles, or scarlatina, or whooping cough, when this latter is accompanied by inflammation or collapse of lung structure.

Recovery is seldom complete after an attack of convulsions if squinting remains, or if the child belongs to a nervous family, or if the attacks are frequent, or if followed by more than mere temporary weakness of the muscles.

Convulsions in children may indicate the commencement of

a variety of conditions, such as epilepsy, St Vitus' dance, hysteria, measles, scarlet fever, small-pox, or inflammation in some part of the body, as in the kidney, after an attack of scarlatina.

The causes of convulsions are various, but indigestion is by far the most common in children. An impoverished state of the blood arising from any cause, such as diarrhœa or want of proper food, not unfrequently leads to fits. Among other causes may be mentioned teething, worms, mental agitation as from fright, irritation of the skin as from dress, pins, or some times from the application of mustard. Attacks may arise from there being too little blood in the brain, and, on the other hand, they may be excited by too much blood in the brain. In treating an attack of infantile convulsions, the first thing to be done is to loosen the dress of the child, so as to admit air freely to the skin. At the same time let a bath of a temperature not higher than the natural heat of the body be prepared. The child is then to be placed in this bath for ten or fifteen minutes with cold water cloths applied to the head; but, if it be a very young child, or one which has been exhausted by some previous illness, such as diarrhœa, then the bath should be continued only for two or three minutes and cold water should not be applied to the head, as there is in this case probably too little blood in the brain already. If indigestion is the cause, then an emetic will be most effectual. For an infant, a few drops of aromatic spirit of ammonia, or a drop of anise oil on sugar, will correct any stomach derangement. Should the child have been suffering from an exhausting disease, or have been insufficiently nourished, then the temperature of the body should be kept to the natural heat by means of warm flannels placed about the chest, back, and belly; but it is not to be kept warmer than the natural tem-

perature of the body. In these exhausted cases a little brandy and egg mixture, or port wine, may be indicated from time to time.

In all cases when the fit is over the child should be put to bed, or into a large cot, in a loose dress, and should only have light bed-covering. The bowels should then be unloaded by means of a large enema of soap and water, and if the child vomits much, a teaspoonful of ipecacuanha wine will do good.

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