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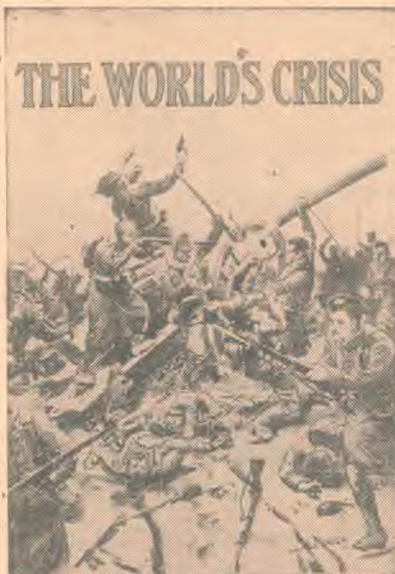
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REFRESHMENT FOR ALL.



# GENERAL ARTICLES

## The Superlative in Foods

BY A. W. HERR, M.D.



THOSE of you who have studied Latin, remember the opening lines in the first book of Cæsar, that "all Gaul is divided into three parts." So all nature is divisible into three parts; namely, mineral, vegetable, and animal. All nature belongs to the organic or the inorganic world.

Can you tell what makes the physical difference between one and the other? Can you tell the essential difference between a stone, a man, and a turnip? One of the chief characteristics is this,—that the man is possessor of a stomach, and the turnip possesses none. The turnip, not having a stomach, must needs ever stay fixed to one spot with its nose in the feeding trough, the earth. The man, possessing a stomach, can get along on two or three meals a day, and therefore is not compelled to stay attached to one spot, fearing that if he leaves it an hour, he will starve to death.

Man can leave his feeding trough, and being also possessed of the power of locomotion, can traverse forest, field, and stream in quest of food. Having this universal range in which to gather food, he can eat whatsoever his soul lusts for, whatever his eyes desire and his appetite craves. And the strange edibles that man has brought together to satiate his appetite are astounding, and are legion.

### Nature's Elaborate Menu

Having such a variety from which to select, he needs some method to determine what is best to eat, some method of analysis

whereby he can select the "good, better, best," and reject the "bad, worse, worst," and eventually learn the Scriptural injunction, "Eat ye that which is good."

All foodstuffs are composed of carbonaceous elements—that is, foods rich in carbon, an element which, by its combustion, produces heat and force in the body; of nitrogenous elements — foods rich in nitrogen, which goes to repair the loss occasioned by tissue waste in the body; and of mineral salts, which are necessary in the construction of bone and nervous tissue in particular.

All foods are further classified as starches, proteids, and fats, with mineral salts and water. And the product that contains these elements in proper proportion and in an assimilable form is considered a perfect food. What are they? Nature, in her laboratory, has produced such an abundance, her menu is so elaborate, that seemingly it renders the question somewhat difficult to answer; and unless we succeed in discovering some rule by which to judge, we shall be inclined to follow the advice often giving, to "eat what you like, and what agrees with you." However, in eating anything and everything, we are in danger of selecting foods that are innutritious, or lacking in some food element, and of making wrong combinations.

### Milk Chiefly Intended for Babes

For the infant, milk — mother's milk — is a perfect food. Milk contains the sixteen elements entering into the composition of the body, and supplies them to the body in proper proportion. It contains an abundance of lime and phosphorus, just those elements essential to bone formation. Hence Dame

Nature kindly furnishes mother's milk for the sustenance and growth of the infant; and for the infant, milk is a perfect food.

But milk is not a perfect food for the adult, chiefly because of this same abundance of bone-producing materials. A too free use of milk by the adult leads to calcification of the arteries, and a clogging of the glands of the body with lime salts. Again, milk, when taken alone, as the infant takes it, will not ferment as when taken with vegetables, the manner in which the adult usually employs milk. Originally milk was intended for babes, while stronger foods were intended for men.

#### The Sunlight Rule

But we set out to discover, if possible, a rule by which we could determine the good-better-best class of foods. In attempting to answer the question, "What rule of food selection shall we adopt?" let us consider how nature proceeds in the production of her food. She takes the plant or the tree fully formed, and through its roots, supplies moisture, nitrogen, and mineral salts in solution; through its leaves she gathers oxygen, and carbonic acid gas for the formation of carbon; and through the chemical influences of the bright rays of the sun, she compounds starches, oils, and albumins. Through the prolonged action of the sunlight, these elements are further elaborated. The oils and the albumins are more fully formed; the starches are converted into cane, maple, or fruit sugars; and all are rendered more completely digestible, according to the amount of sunshine received.

And perhaps in these last words is the secret, the rule we are seeking. We know that force and energy are communicated to the world from the sun; and the nearer heaven the food is formed, and the longer it stays there—in other words, the more sunlight absorbed—the nearer does the food approach perfection.

Then here is the rule we propound: Those foods, like those people, that have their

growth the nearest heaven, are the sweetest and the best.

#### Fruit Better Than Vegetables

Of course, it will be understood that there can be no set rule that will be equally applicable to all, under all circumstances. Our diet should be suited to the season, the climate, the occupation, and the physical condition. That which is best for one may not be best for another. The thought here is to present a simple, suggestive rule, subject to exceptions, as all rules are.

Fruits and nuts, which grow upon tree tops bathed in daily sunshine, should be the best of foods. They certainly are better foods than tubers and roots, hid away in the dark, where the chemical rays of the sunlight cannot penetrate to transform the starch of the radish or the turnip into sugars. In the fruit upon the tree tops, there is a quick transformation of starches into sugars.

For the same reason, the fruit on trees is generally better food than vegetables and cereals, which grow just above ground; and cereals, which wave in the breezes, and make obeisance to the sun, are better foods than roots and tubers, which have their growth underground. In the apple, high in the apple tree, the sun's rays are not only cooking the starch, but predigesting it. And have you also noticed the influence of sunlight on berries? Those growing beneath the leaves at the bottom of the bush, away from the direct rays of the sunlight, perhaps are larger and more watery, but they are never sweet.

Nuts also grow in tree tops. But their coating is much thicker than that of the fruit; and while nuts, because they receive the direct rays of the sun, are more nourishing than roots and tubers, they are not so easy of digestion as the fruits. Those nuts—as the butternut, the black walnut, the Brazil nut, or the cocoanut—which have coarse outer and heavy inner coverings, that prevent, to some extent, the free action of the sunlight upon them, are not so digestible as

the almond, the pecan, the beech nut, or the pine nut, which possess much thinner shells.

#### Second-Hand Vegetables and Grains

Starting at the bottom of the scale in our classification of foods, we find that animal foods, which in reality are but the nutriment of vegetables and grains obtained second-hand, are of the least value, because flesh meats are loaded with the waste products remaining in the tissues of the animal at the time of slaughter. It really is not necessary to

animalize our foods in order to render them digestible.

Next in order, and on a higher round of the ladder, are animal products, such as milk, eggs, and cheese. These contain some waste animal matter. Next are the cereals, of which rice, grown in sunny climates, is easier of digestion than are cereals that grow in a colder and cloudier climate. Then come the tubers and the vegetables. Surmounting these are the nuts. And rounding out of the top of the ladder are the luscious fruits.

## A School Experiment in Food Reform

BY W. A. SIBLY, M.A., OXON., IN *Good Health*

THE Editor has asked me to write a short account of the food reform experiment at Wycliffe College (Stonehouse, Glos.) and in complying with his request I think it best to begin at the beginning. My father, who founded the school nearly thirty-five years ago, had been a vegetarian from his youth up, and was therefore naturally prepared to make some special provision for non-flesh eaters. Thus from 1882 to 1905 there were nearly always a few vegetarians in the school, or a few boys, not elsewhere vegetarians, who preferred to dine at the vegetarian table during term, but no attempt was made to increase their numbers except by this special provision and the force of example. In the eighties, indeed, it would have been almost dangerous for a schoolmaster to pose as a champion of a non-carnivorous fare. However, with the new century there came a considerable change in the public attitude toward this question and the movement was growing here when, rather more than ten years ago, my brother (now for nearly two years a consistent vegetarian in the Army) and I returned to share in the work of the school. With young and fairly athletic masters practising and to some extent advocating vegetarianism, the number of boys who abstained from meat steadily increased,

though a parent's written consent was always insisted upon as a preliminary to any change of diet.

In 1909 I assumed control of Springfield, the smallest boarding house in the school, with accomodation for twenty-five boys. From that date onward more than half of those in that house were vegetarians at least in term time, and for the last five years all have abstained entirely while at school from flesh, fish, and fowl. For the past twelve months, also, I have ceased to provide these foods for the kitchen staff. There has been no real difficulty in the pursuit of this policy, and the pressure on the accomodation available is usually very great. In proof of this, and as showing that the mercenary part of me has no cause to respond to the Editor's invitation, I may say that, to the best of my belief, there are even in these uncertain times no unfilled vacancies at Springfield before the latter part of 1917, while new boys are already booked for 1918 and 1919. Most of these new boys in recent years have been life vegetarians, or else practically such, and my experience goes to show not only that it would be possible to fill a considerably larger vegetarian boarding house at Wycliffe (for there are usually about twenty vegetarians, of a sort at least, at another house in the school) but also, and this is far more

important, that *other schools and schoolmasters can profitably make a somewhat similar venture.* As long as the general educational and athletic facilities are sufficiently satisfactory, and the moral tone of a school is good, all that is needed to make such a dietetic venture a success is a certain amount of personal interest and enthusiasm, coupled with a clear knowledge of the general principles of food reform and food values in the case of someone possessing authority. For the benefit of any other schoolmasters who feel inclined to make the experiment I will offer one or two practical observations, and briefly indicate some of the results so far achieved. I hope, however, that any who read this article will be satisfied with what I say here, for in these days of war few Englishmen who are worth their salt have any time for extra-ordinary correspondence.

If a schoolmaster or parent expects to make a really *great* reduction in expenses by the introduction of vegetarian diet into his school or family, I should advise him to think twice. It is true that some staple vegetarian foods, such as cheese and nuts and dates, not to mention good bread, are decidedly cheaper than meat, even at the best (or worst) of times, but neither children nor parents like to feel that they are being economised upon, and people always scent danger, though perhaps without reason, in philanthropy which saves the pocket too. It is also wise, if one wishes to win converts, to make the new way of living as reasonably attractive as possible, and liberality and variety always attract. Further, in the case at any rate of growing boys and girls between twelve and nineteen years of age, the risk of under-feeding is more real than that of over-feeding, and in the attempt to develop big, strong bodies, firm muscles, and real stamina of brain, it is wise to provide both proteins and fats with a free hand. Wholesale buying is a great secret of obtaining goods both fresh and cheap, and yesterday, for example, I ordered for the second time in a

month a 56-lb Cheddar truckle from a Somersetshire farm, and also paid for nearly a quarter of a ton of new brazils.

If one does not stint in foods which are popular and essential, it is possible to assert oneself more freely in other directions. For example, practically every doctor would agree that children are better without tea and coffee and condiments, such as vinegar and possibly pepper. Thus I have banished them for many years from my house, and set an example in abstinence myself.

Despite this and other acts of autocracy, boys on the whole thoroughly enjoy the non-flesh regime. Give them for breakfast a cup of cocoa or milk, a plate of porridge or some other cereal preparation, bread and butter and nuts in plenty, with dates, bananas or fresh fruit in moderation, let them have for lunch either a cold dinner, (which the younger ones generally prefer) of biscuits and bread, salad or fruits, cheese, honey, nuts, etc, or an ordinary cooked dinner in which some nourishing vegetarian dish such as omelette, nut cutlets, macaroni cheese, Welsh rarebit, proteid soup, etc, takes the place of meat, and in which cheese is also provided for use with vegetables and bread, follow this with an ordinary tea, in which nut fruit cakes, salad, etc, often appear instead of jam, and cocoa or milk replaces tea itself, and there will be little risk of the failure of your experiment, either as regards popularity or results. In a few cases, however, care is needed to see that boys do not eat so much fruit that they have no room for more nourishing foods.

In the school of which I write there are over 170 boys, of whom 50 are vegetarians during term-time at least. The physical measurements of all of these are taken each term, and are tabulated and kept, while the athletic and intellectual record of each house is here for all who run to read. On the average and in the mass vegetarians need never fear the results of comparison with their fellows. In the matter of freedom from infectious diseases, I am, I confess, un-



able definitely to support the claim, advanced in certain quarters, that vegetarians are not so susceptible to infection. Sometimes I think this seems to be the case, but then maybe measles comes along and incontinently destroys my hopes and theories. But as far as general health and success in sports and scholarship are concerned, the food reformers on the whole more than hold their own. With smaller numbers they cannot hope always to carry everything before them, and occasionally their representatives get well beaten, but in proof of my general statement I will give the following facts. The last three years I have worked out the figures of the average increase in weight in the house which is wholly vegetarian, and also those in a larger house where all take the ordinary helpings of meat. The average yearly increase in the former has been  $12\frac{1}{2}$  lb. and in the latter  $9\frac{1}{4}$  lb. Turning to athletics, I find that in the senior cross-country race in 1912 the vegetarians claimed five out of the first seven home, the winner being a life vegetarian, that in 1913 a vegetarian again won and that we got four out of the first places, that in 1914 a vegetarian was also first, and that although one meat-eater, who has been an exceptional cross-country runner ever since he entered his teens, was first in 1915 and 1916, yet that last year the vegetarians claimed four out of the first six places and this year five out of the first six. In football again I find that, although the normal proportion from the vegetarian house in the first eleven should be 12 per cent, during the last three years it has been 33 per cent. Turning to the question of scholarship I find that in the last three years two-thirds of the boys who got honours in the Cambridge Local Examinations (to be precise, sixteen in twenty-four) have been members of the vegetarian house, though here again the normal proportion would be three out of every twenty-four.

As they stand the facts given above seem incontestable. A champion of carnivorousness in a recent school debate acknowledged, indeed,

that these figures were "absolutely unassailable," and went on to claim that the experiment was to some extent an unequal one. He said that care should be taken to prevent the vegetarians getting in other ways more than the amount of nourishment that they lost in meat, and that the same regard for physical laws which made the vegetarians careful in the matter of food made them careful in other respects also. To a certain degree I agree that there is force in this line of argument. A completely vegetarian house at school has certain advantages. It possesses an *esprit de corps* which leads to the boys trying for athletic and scholastic success even if they do not always obtain it, and in a sense its members regard themselves as missionaries of a new order, or at least as called upon to justify to others, both their practice and belief. The boys who come from vegetarian homes usually possess an inheritance of free thought (using that phrase in its best sense) and an intellectual outlook which is deeper and wider than that found in many quarters.

If any parents or schoolmasters who read these words believe in the practice of vegetarianism and in the humane ideal, and desire that their children shall grow up to share these, and to advocate them too, may I suggest that the only safe ground for an abiding practice is a deep belief. Teach those whose lives are yours for shaping the practical and hygienic and national and economic arguments for vegetarianism by all means. Lest they develop into lop-sided faddists or little pigs, cultivate in them also the saving sense of humour, and the power to see life steadily and to see it whole, but don't stop there. For even more important is it, as they grow to manhood or to womanhood, that we should teach them to hate all cruelty, to love all beauty, to put the things of the spirit always first, that we should make them conscious co-workers in a cause, and then the children shall indeed be better than their fathers, and the coming race can take care of itself.

## Modern Science and the Mosaic Code

THE following excerpt from the *Southern Cross* will be of interest to all our readers. It shows again, if other proof were necessary, that Israel's real leader was possessed of more than mortal wisdom. We quote:—

"The Mosaic code of health (says the medical correspondent of the *Times*) has interested sociologists in all ages. All kinds of values have been ascribed to its commands, and also, as was bound to occur, value of any sort has been denied. But as time passes the code continues to receive fuller justification; indeed, we seem to be approaching by way of scientific observation the same principles of public health as were given to the people of Israel by their leader. The latest scientific support for the Mosaic code is perhaps not a very great matter, but it is immensely interesting. In the last issue of the *British Journal of Surgery* there ap-

pears a paper describing the appearances of certain blood cells in malignant disease (cancer). The author is a well-known observer. Certain peculiarities of the cells of the blood were noted by him in cancer cases, and it then occurred to him that these changes might also be produced by taking certain articles of diet. He carried out various tests, and the following is his conclusion:—

"It was found that one can reproduce the blood-picture of carcinoma (cancer) in respect to the nuclear pseudopods by partaking of certain articles of food—notably pork, and to a less extent other red meats.' He adds: 'Incidentally these observations suggests the physiological reason for the dietary imposed upon the Hebrew race. Gen. 9: 4; Lev. 11.'

"The passage in Leviticus runs: 'And the swine, though he divide the hoof and be cloven-footed, yet he cheweth not the cud; he is unclean to you.'"

## The Napoleon of Waterloo

By JAMES FREDERIC ROGERS, M. D.

A DISCUSSION of the Battle of Waterloo always leads the critic sooner or later to the question of Napoleon's physical condition as affecting its outcome. No one appreciates the significance of this matter more than the experienced military man. One of the greatest of these, Frederic, noted early in his career that "an army goes on its belly," and he was doubtless as fully aware that the effectiveness of his troops in battle depended, to a large degree, on his own state of nutrition and bodily well being.

Military movements may be outlined at ease, in a quiet room, but plans, once made, cannot be executed at convenience. Moreover, battles seldom go according to program; the position and possible movements of the enemy are never certainly foreseen, and besides, the failure of subordinates to carry out orders may defeat the best-laid plans of the

finest military genius. Only by his personal presence can this genius determine the opportune time to strike, detect his own misconstructions as to the whereabouts and purposes of the enemy, and correct the blunders of his own lieutenants.

But the mere presence of the commanding officer is insufficient. He must be alert, clear of head, with nothing to hint of postponement or laxity of effort for the sake of personal convenience. A toothache will warp the judgment of the best of thinkers, and might cause fatal procrastination on the part of a commanding officer. A dysentery will depress a saint, and render any man incapable of prolonged effort; a diarrhetic general may fail where in health he would have triumphed.

True, there have been generals who were not in the sanest bodily state,—the "hunch-

back" Duke of Luxemburg was one, and "that asthmatic skeleton," the Prince of Orange, another,—but your Cæsars and Alexanders, your Condes and Turennes, your Washingtons and Lees, were better put together. Besides, your feebler general usually founds his reputation upon the good deeds of his subordinate officers. Napoleon leaned less upon his staff, perhaps, than any other commander, and in the Hundred Days he had fewer capable marshals than in his earlier campaigns. Alas, too many of those devoted men had become food for cannon!

Napoleon's sun had reached its zenith in 1805, ten years before Waterloo. The Napoleon of Austerlitz was thirty-six years of age. He was suffused, soul and body, with the potent elixir of success, than which nothing helps more to heighten all the bodily functions, and marshal them into that harmony of action which we name health. The outer man showed the effect, for the little artillery officer of Toulon. "remarkable only for his extreme thinness and sickly look," had "just rounded to a fulness which indicated abounding health and vigor." No other man has ever displayed such bodily powers. He knew no fatigue, he recovered so much more promptly than those about him that they alone showed its effects. "It would require constitutions of iron," complained one of his cabinet, "to go through what we do." His councils lasted sometimes for ten hours at a stretch, and beyond the power of some of his ministers to stand the strain. He could work with Napoleonic force continuously for eighteen hours. He said of himself, "I am conscious of no limit to the work I can get through."

Was the Napoleon of Waterloo the Napoleon of Marengo and Austerlitz? Could the Napoleon of 1815 sit in the saddle from morning to night for five days, and go without sleep for a hundred and twenty-four hours at a stretch? Ten years had passed. During this time Napoleon was emperor. This in itself is significant. As a striving youth, and as the ambitious general of the

armies of the republic, he had been temperate, to asceticism. As emperor, arrived at a superlative pinnacle of fame, he was subject to influences which tend insidiously toward the cultivation of bodily comfort and ease. When one cannot afford luxury, and when ambition to attain some object is paramount, the desire for present comfort may be obliterated, and it is easy to live in Spartan simplicity. When laurels are won, it is difficult not to fall "out of training" and to be dominated more and more by sloth, the appetites, and by what were previously considered but trifling bodily weaknesses.

With all his phenomenal powers of endurance, Napoleon's apparent indifference to the discomforts of the camp, and his steely hardness against the horrors of the battle field, were but the veneer laid on by necessity and ambition. He was, at the core, extremely sensitive to sensory influences. He was nauseated by tobacco, and used snuff only to trifle with in moments of nervousness. The slightest bad odor and some much-used perfumes were intolerable. He used cologne constantly, and had aloewood burned frequently to sweeten his apartments. He was uncommonly sensitive to air contaminated by human presence. He suffered from cold; his bed was warmed for him the year round, and he often had a fire in his rooms in July. He even blanched at the remembrance of the touch of blood upon his fingers. A lesser man might have taken to the use of narcotics of some sort to benumb his hyperesthesia. Napoleon would do nothing which consciously weakened his mental powers; but the stoical veneer was wearing off under the new conditions, and a fairly Oriental appreciation of luxury was asserting itself more and more.

Napoleon was very temperate in his use of wines, and never intemperate (according to the general habits of his age, and of our own age, for that matter) in meats. He never, save perhaps in the Russian campaign, allowed himself to spend more than a few minutes at the table, though he managed to

stoke his fires with great rapidity; but, as emperor, he was eating more, and allowed himself to be interested in fancy and fattening dishes. His intake of food was overbalancing his muscular work, and he was, in consequence, becoming obese. But obesity, in turn, makes activity less easy, and often adds its burden to other ailments. Napoleon was insidiously beset by these, in the form of hemorrhoids (which he himself had "cured" and forgotten during the activity of the Egyptian campaign), and later, of an annoying though not serious bladder complaint. Both affections always seem trifling when considered objectively, but may be of tremendous concern to their possessor. They also conduced to bodily inactivity, and for their relief the emperor spent hours in steaming hot baths, a practice which did not conduce to general vigor.

Up to 1807 Napoleon was yet in matchless health. But by 1810 he had begun to speak of his health as only "fair" or as "pretty good." That he even contemplated his bodily state meant that it was not what it had been.

The Napoleon of Austerlitz had achieved a long and increasingly brilliant series of triumphs. The Napoleon of Waterloo had met defeat at Aspern in 1809, had been crushed between Moscow and the Beresina, and the mental depression of these losses was no antidote to the enfeebling tendencies of the imperial habits.

In the soul-cramping confines of Elba the vitality of the Titan had still lets of stimulus, but though the Napoleon of Elba was not the Napoleon who led the troops upon the bridge of Lodi, he was still Napoleon, and the English ambassador, Sir Neil Clark, remarked, "I have never seen a man with so much activity and restless perseverance; he appears to take pleasure in perpetual motion, and in seeing those who accompany him sink under fatigue." His activity was not, however, so continuous as in former years, and it was noticed by those who knew him inti-

mately that he fell occasionally "into a state of inactivity never known before," that he took less exercise and spent more hours in bed, and that he was becoming "very stout, and his cheeks puffy." One of his cabinet ministers observed that the emperor could not stand prolonged work as formerly.

It was this Napoleon, just escaped from captivity, who began the campaign of Waterloo. He got through an immense amount of work in those fateful days. He was Napoleon, but he was not the Napoleon he had been, for he showed evident fatigue. He was not ill, though his local ailments had become more domineering, but he was out of training—some years out of training. On June 12 he rode seventy miles in his carriage. On the fifteenth he sat on his horse for nearly eighteen hours, though he dozed during an interval of rest. On the morrow he showed great weariness, and he did not ride abroad until two-thirty; nor had he fully recovered by the seventeenth.

This was not the Napoleon whose mind and body Chaptal had declared "were incapable of fatigue."

Critics say that the Battle of Waterloo was planned by Napoleon with consummate skill, but most of them find that in carrying out his plans the emperor was dilatory in movement and was lacking in the old unerring insight into events. It is certain that he did not enter personally into the combat, as at Lutzen and elsewhere, though perhaps the bravery of his troops made this unnecessary. There was much besides to account for his defeat; but that Napoleon's decline in physical endurance and, therefore, in keenness of mental vision and in ability to manage detail, finally wrought his ruin, can hardly be questioned. He was, in body and spirit, as he had remarked to Constant, prematurely old—a hypersensitive, plethoric, fatigued, though still Napoleonic being.

Mental depression and chagrin magnified bodily weariness, and the Napoleon swept hurriedly along through the night with the

harried fragments of the defeated army seemed pitiable enough in his exhaustion to those who could find pity for him who had been so pitiless,—for him who, possessed of the most extraordinary powers of body and mind, had fallen through the selfish abuse of those superhuman gifts.

No matter what errors of technique may be found by the students of military science to account for Napoleon's failure in his last

campaign, the student of physiology sees ample reason in the decline of his physical power to account for the imperfect working out of the most perfect plans. His own successes and the excess of ease and luxury which followed, had done their share, with the combined military powers of Europe and the exhaustion of his own country, to accomplish the downfall of a being who, after a hundred years, is still the most marvelous of men.

## Foods Should Be Relished

BY G. H. HEALD, M. D.

**N**OT infrequently letters come to the Questions and Answers department in which the writers complain of indigestion, constipation, coated tongue, and a whole gamut of symptoms indicating food poisoning. In many of these cases the correspondent volunteers the information that he (or she) does not use meat, tea, or coffee, and has been trying for years to live up to all the light on health reform.

The fact is, the questioners have failed in some of the essentials of health reform; for one who has indigestion, constipation, and a host of other disagreeable and life-shortening symptoms is *not* living health reform in the spirit, though he may be following it in the letter. He may be conscientious; he may be careful to regulate his conduct according to the best light he has; but he is violating some physiological law. The proper adjustment of our bodies to our surroundings tends healthward; and when the tendency is the other way, there is a reason for it.

One physiological law, which we have been very slow to learn, is that *good digestion depends upon relish*. This has been worked out carefully on dogs and other animals, and also on human beings. It has been shown that the use of monotonous foods, foods that do not give pleasure in the eating of them, foods that are swallowed

simply because they contain the required amount of protein, fat, carbohydrate, and salts, do not stimulate an adequate flow of digestive juice, and digestion is therefore slower and more imperfect. Moreover, the thick and ropy saliva deposits a substance which becomes tartar on the teeth and fur on the tongue. The tartar in the course of time causes the teeth to loosen, and the septic mouth contaminates all the food that enters it. The coated tongue being unable to taste food, the condition goes from bad to worse, for even savory foods can no longer adequately stimulate the salivary and other digestive glands.

A prominent dentist who is also a physician and surgeon has made an extended study of this subject. He first learned that the quality and quantity of the salivary secretion depend on the kind of food eaten. Certain of the foods, as the acid fruits, increase the secretion of saliva. Later he learned that the secretions of the stomach, pancreas, and liver are similarly affected. In other words, he learned that "what is best for the mouth is best for the remainder of the alimentary tract;" and that "the mouth is the most important part of the whole canal." If digestion is right in that part of the canal over which we have control, it will be right the rest of the way. If digestion is wrong, the cause is largely in the mouth. This simplifies the problem; and makes it more hopeful

Digestion is largely controlled by a "reflex arc," consisting of nerves carrying sensations, such as taste, to the brain, and other nerves carrying secretory and other impulses from the brain to the glands and other structures of the alimentary tract. This doctor found that by severing one part of this arc, the pneumogastric nerve, below the heart, so as to prevent the messages from the brain reaching the stomach and other abdominal organs, the stomach dilated, the food remained in it undigested, fermenting and decomposing, and finally caused death through blood poisoning. He believes that a milder but more prolonged effect of a similar nature is produced in the human subject by blocking up the other end of the arc, that is, by diminishing the taste perception, first by a habitual diet of a non-stimulating character (that is, not stimulating the salivary glands to activity), and secondly by the formation of a coating on the tongue which prevents the tasting of even foods with marked flavours.

In order to test this theory, he fed animals on boiled and neutralized foods (neutralized with carbonate of soda). If the experiment was begun early enough, the animal died before it was six months old. Development was retarded in a marked degree in all cases. Starch and lime in excess were excreted from the bowels. The salivary glands did not develop properly. After death nearly all the animals showed a markedly diseased condi-

tion of the stomach. According to the doctor, all that had been done in this case was to take the normal taste out of the food; but according to recent studies the vitamins may have been destroyed by the soda and heat.

In another series of experiments, the doctor showed that the poisons from the germs of the human mouth may cause increased blood pressure in animals, and he thinks this may account for a large proportion of the high pressure symptoms—cold feet, pale complexion, headache, and constipation—which occur in human beings with bad teeth. By feeding rabbits with a culture from the germs of decayed teeth, he caused illness, with loss of appetite and constipation.

"Whether or not we grant that these experiments are conclusive, we must admit that bad mouth conditions in the human are nearly always accompanied with bad conditions elsewhere. A normal saliva is one of the best preventives of bad mouth conditions; a proper diet is the best assurance of a normal salivary secretion; and a diet that is insipid, tasteless, unappetizing, is not a proper diet.

Fletcher was not so far off when he taught that the function of the mouth is to taste and enjoy food, not to bolt food. There is a much larger proportion of dyspeptics among those who do not care what their food tastes like than there is among those who are particular as to the taste of their food.



# MOTHER AND CHILD

## The Treatment of Some Common Ailments of Children

By J. EPSTEIN, M. D.

Dr. Epstein's article in the May, 1916, *Medical Times*, which was intended primarily for physicians, contains some excellent instruction for mothers. The following abbreviation of the article omits instruction that would not be best for mothers to follow without medical advice.

Mothers often treat their little ones without having the advice of a physician. If some call the physician too often, for trivial ailments which they should be able to attend to themselves, some go to the other extreme, and run the risk of saving the expense of the physician's visit when such a visit might mean the saving of baby's life. Baby ailments are rapid in their progress, and the little one, apparently in the best of health, is suddenly down with a serious or dangerous malady. *In case of doubt call the doctor.*

### Acute Tonsillitis



THIS is the most frequent disease in children, and because of its frequency it is looked upon as a mild and trivial affection which requires for its treatment a little calomel and a bottle of iron mixture.

While in the majority of cases there are no complications or sequelæ, tonsillitis is an important link in the chain of trouble which begins with the tonsils and ends with a crippled heart.

The general treatment of tonsillitis is that of any other acute infectious disease. The little patient should be put to bed and kept there on a liquid diet till the temperature subsides. The bowels should be kept open with a mild laxative. . . .

Cold wet compresses to the neck are very useful, and should always be applied, care being taken to see that they are properly placed under the angles of the jaw over the tonsillar region, and changed every two or three hours. A spray or gargle with a dilute solution of hydrogen peroxide, followed by a dilute solution of liquor antisepticus alkalinus, does much good. To prevent repeated attacks of acute tonsillitis, the mouth and throat should be kept in a healthy condition

by proper attention to the teeth and by the daily use of some pleasant alkaline antiseptic gargle and mouth wash.<sup>1</sup>

### Acute Cervical Lymphadenitis (Enlarged Glands of the Neck)

Affection of the glands of the neck may be traced to a primary source of infection on the scalp, face, nose, throat, pharynx, tonsils, or mouth. . . .

As a local application to the cervical glands a cold wet compress of plain water, properly applied and changed three or four times a day, does more good than any ointment, and is cleanly and has no disagreeable odor. . . . Tuberculous lymphadenitis and enlarged glands due to some systemic disease must be treated according to the underlying disease.

### Poor Appetite

Mothers frequently complain that their children do not eat enough. In the majority of cases these children look well nourished, and the poor appetite is only an imagination of an over-anxious mother. Some children suffer from anorexia [loss of appetite], and look poorly nourished. In these cases a

<sup>1</sup> The most useful gargle is hot water, to which may be added baking soda, borax, or even common salt, which have cleansing and stimulating or soothing properties.

general physical examination for some gastro-intestinal disease or some chronic ailment should be made. If the physical examination proves negative, the trouble is usually with the management of the child, who eats what he wants and when he wants, but does not take sufficient wholesome food. The best treatment for such children is a proper and regular diet.

#### Acute Diarrhea

Diarrhea is a symptom of some disturbance in the normal functions of the digestive canal. It may be due to—

1. Intestinal infection.
2. Intestinal intoxication.
3. Intestinal indigestion.
4. Intestinal overload.

In cases of intestinal infection and intoxication, the children are usually very ill, and require individual study and special treatment. The majority of diarrhea patients coming to the physician are ill as the result of intestinal indigestion or overload. Intestinal indigestion is caused by improper food or feeding. The children are slightly ill, have a poor appetite and general indisposition, the bowels move frequently, and there is abdominal pain and slight fever.

The treatment in these cases consists mainly in the correction of the dietetic errors. In breast fed infants nursing should be at longer intervals, while in bottle fed infants the milk modification should be low in sugar, or protein milk should be given. Partial starvation in the beginning of treatment, and a mild laxative with little or no other medication, is beneficial. . . .

The simplest cases are those which suffer from what I call intestinal overload. These children are perfectly healthy in every way except that their bowels move too often. They receive proper food and proper feeding, but too much of it, so that their intestinal tube is constantly overloaded, and the diarrhea is nature's method of ridding the intestines of the surplus. The treatment consists in limiting the intake of food.

In all cases of prolonged or excessive diarrhea the body is drained of water and alkaline salts, the children become dehydrated ["dried up"] and subject to acidosis [acid intoxication]. It is therefore important in these cases, whatever the condition and the line of treatment may be, to give plenty of water and some sodium bicarbonate. The water improves the circulation and aids in the elimination of toxins, and the sodium bicarbonate prevents or neutralizes acid intoxication.

#### Chronic Constipation

In the majority of cases, chronic constipation is the result of insufficient food or of food that is too poor in those elements which leave a sufficient residue to stimulate peristalsis, or it may be due to irregular habits in bowel movement.

The rational treatment of this chronic ailment is not the constant use of medicines. If the infant is breast-fed, and the milk cannot be improved in quality and quantity, complementary bottle feeding should be given. . . . In older children constipation may be relieved by regular meals three or four times a day with a liberal supply of whole wheat bread, well cooked green vegetables, and raw or cooked fruit. Plenty of water should be taken between meals. An active outdoor life and sufficient exercise should be insisted upon. . . .

#### Acute and Chronic Bronchitis ("Colds")

Acute bronchitis is usually very mild, and little therapeutic attention is given to it, but mild neglected cases frequently lead to broncho-pneumonia. . . .

The treatment of acute bronchitis should be on the general plan of the acute infectious diseases. The child should be kept warm and in bed in a well-ventilated but not cold room, on a liquid or very light diet. Since there is no specific medicine for the bronchial inflammation, the indications are to keep the skin, kidneys, and gastro-intestinal tract in a proper physiologic condition [by bathing, free water drinking, and the use of laxative.



food]. A warm bath or a mustard foot bath or a mustard compress to the chest, followed by the application to the body of one or two hot water bottles, will stimulate the skin and cause an increased peripheral circulation and increased glandular activity. An active peripheral [skin] circulation re-

lieves internal congestion and reduces the temperature. Plenty of warm water should be given during the first stage of the disease. to relieve the irritation along the trachea and bronchi. Steam inhalation may be given several times a day. A mild laxative should be given.

## Morbid Fears

### The Need of Great Care with Children's Minds

BY JAMES HALL

**P**ROBABLY one of the worst afflictions of humanity is morbid fear—the unreasonable dread of many things quite commonplace, or the many torturing ideas that are merely products of the imagination. The number of people of both sexes and all ages who suffer from this ailment is much greater than is commonly supposed by those of more fortunate temperament.

It is but natural, of course, for all of us to beware of real dangers and risks, but I refer to people who are preyed upon by exaggerated and needless fears: some are nervous in the common ordeals of life; others have an irresistible dread of many things in which their reason tells them there is no cause for anxiety; while others are victims to all sorts of foolish imaginations at times. People who suffer from such unfavourable conditions have to endure much unhappiness, and, unfortunately, are often treated with ridicule; whereas it would be more just to extend all possible help to them.

This ailment, known as a form of nervousness, is largely due to a weakened state of the nervous system, often caused or intensified by a low condition of health, for it is found that nearly all very nervous people are also suffering from a more or less weakened vitality, though many of these may not be aware of physical weakness until they are put to the test. All may be quite assured that by building up vital power, thus toning up the nervous system, great improvement will immediately result. These

haunting fears are caused in many cases by the mind having been filled with exaggerated and vivid impressions during early childhood, and by the reaction of mind and body upon each other. The trouble becomes more difficult to shake off as the years advance.

I know that the nervousness of many grown-up people is due largely to their having been told ghost stories in childhood, or having been given vivid accounts of disasters at the age when they were governed more by their emotions than by their powers of reason. We are all endowed not only with a reasoning mind by which we think and learn, but also with a subjective mind, known as instinct, which is some beneficent provision of nature acting throughout all nature for the preservation of all life.

The following well-known examples will show what is meant: An infant will take food almost immediately after birth; children are drawn instinctively to a man who is kindly disposed towards them; a man coming suddenly to an obstruction in the dark will stop instantly, even before his reasoning mind has had time to act.

The protective mind (or instinct) is capable of receiving impressions, especially during childhood, when the store of knowledge and the powers of reason are very small, and consequently such impressions often remain implanted in the mind throughout life.

If a sensitive child be told all the sensational details of a shipwreck, his mind is apt to be filled with a dread of the sea; so

that even in the years of his manhood he may suffer an irresistible feeling of nervousness whenever on a sea voyage. Also there is no doubt that the fear that so many people have of the darkness at night time is due to their having been told ghost stories in childhood. That there are many such cases as these I know from personal experience, and there is no doubt that it is a very grave error to fill the minds of children with sensation, thus tampering with their normal instincts.

Most certainly it is necessary to warn children against the many dangers that exist in life, but it is best to appeal to their reason and to teach them intelligently, so that they may go through life free from needless fears. Thus they will be better and brighter and happier than they would be otherwise.

Those of us who are grown up, and are still handicapped by morbid fears, may rest assured of great improvement by following the right method of treatment. It is proved that by studying and practising physical culture and increasing the strength of the body, the condition of the mind and spirits will improve correspondingly, until confidence and courage are restored or greatly increased. Also great help is to be gained by seeking cheerful company, and by adhering with self-discipline to a system of good habits and interesting hobbies that will make for mental culture.

By following these rules, improvement will certainly result, and our lives will become more satisfying to ourselves and a greater blessing to others.

## Avoid Stimulants

THE *Popular Science News* gives the following sensible advice in regard to the use of stimulants:—

"All of the so-called strengthening preparations which enable a man to accomplish more work when he is under their influence do this, not by adding units of force to his body, but by utilising those units of force which have already been obtained and stored away as reserve force by the digestion of his food. Kola, cocoa, chocolate, coffee, tea, and similar substances, while they temporarily cause nervous work to seem lighter, do so only by adding to the units of force which a man ought to spend in his daily life those units which he should most sacredly preserve as his reserve fund. The condition of the individual who uses these articles when tired and exhausted, with the object of accomplishing more work

than his fatigued system could otherwise endure, is similar to that of a banker, who, under the pressure of financial difficulties, draws upon his capital and reserve funds to supplement the use of those moneys which he can properly employ in carrying on his business. The result in both instances is the same. In a greater or less time the banker or the patient, as the case may be, finds that he is a pecuniary or nervous bankrupt."

We are glad to see people awaking to the fact that tea and coffee are harmful stimulants. It should also be known that flesh meats belong to this class, as well as vinegar, pepper, mustard, etc. Give them all a wide berth, and adopt a simple, mild, nutritious diet that will nourish and build up the body without taxing too heavily the digestive powers.—*Selected.*



# HEALTHFUL COOKERY

## Macaroni: Its Manufacture, and Recipes for Cooking It

BY GEORGE E. CORNFORTH



MACARONI is made from a granular meal, called semolina, which is ground from hard, semitranslucent varieties of wheat, rich in gluten, such as durum wheat. In the making of the semolina the bran of the wheat is removed and, by sifting, some of the starch part of the wheat is eliminated, so that semolina is richer in gluten, the protein part of the wheat, its tissue-building food principle, than flour made from the same wheat. This semolina is mixed to a dough with water. This dough is thoroughly kneaded, then it is put into a strong steam-jacketed cylinder into one end of which a die is fixed which is pierced with holes about one-fourth inch in diameter when macaroni is to be made, smaller when spaghetti or vermicelli is to be made. In the larger holes a pin is fixed, attached to the side of the hole, so that as the dough passes through the hole it is formed into a hollow tube. The tube is split at one side as it starts through the hole, but comes together before it reaches the end of the hole, and remains so, making a perfect tube. The dough is forced through these holes under hydraulic pressure. The next part of the process is the drying. This is done either by hanging the macaroni on rods or by laying it on trays in heated apartments through which currents of air are driven. The drying process takes from three to six days, according to the atmospheric conditions, the method used, and the quality the macaroni is to be. The drying must be done as quickly as is consistent with the production of the high-

est quality. If the macaroni is dried too quickly, it will crack or break.

By the drying process the macaroni is made as dry as the semolina was before it was made into macaroni, therefore the macaroni has the same high food value in protein and carbohydrate that the semolina has, but it is just as "impoverished" a food in cellulose and mineral elements as white flour or white bread or white rice, and, like other wheat products, it is deficient in fat; therefore there is need of combining with it other foods that supply the lacking elements. Milk and eggs furnish some of the elements lacking in macaroni. The tomato sauce so often served with it supplies mineral elements. The cheese with which macaroni is perhaps most often prepared is rather lacking in mineral elements.

And macaroni, in all the ways in which it is served, is lacking in bulk or cellulose.

A few years ago the best macaroni was made only in Italy or other parts of Europe. But at the present time the best macaroni in the world is made in the United States, especially when sanitary methods of manufacture are considered. The durum wheat is grown in that country now, and the most scientific and sanitary methods of manufacture are used there.

The best macaroni is smooth and elastic, has a creamy colour, and looks somewhat translucent. It breaks with a smooth, glassy fracture, and does not split when broken. The inferior quality that contains colouring matter is rough, has a floury instead of glassy appearance, and splits on breaking.

## Recipes

The method of cooking macaroni is similar to the method of boiling rice. Macaroni should not be washed or soaked. Washing or soaking softens the outside of the macaroni so that it sticks together, making a pasty mass, while well-cooked macaroni is slippery, every piece being whole and separate. If it seems necessary to clean macaroni, it may be whipped with a dry cloth, but, really, macaroni should be as clean when it comes to you as when it is made, and should require no cleaning. The macaroni should be broken into inch-length pieces, or the ready-cut macaroni may be used, which is more convenient and needs no breaking. The macaroni should be put to cook in actively boiling salted water, using two quarts of water and three teaspoonfuls of salt to each cup of macaroni, and boiled rapidly from twenty minutes to one hour, according to the age and size of the macaroni, stirring it occasionally so that it will not stick to the bottom of the saucepan. When done, the macaroni is soft enough to be easily mashed between the thumb and finger. The whole should then be poured into a colander to drain off the water, and cold water should be run through it to prevent the tubes from sticking to one another.

For those who like it, garlic makes an enjoyable flavouring for macaroni.

While the following recipes call for macaroni, there are a great many different shapes and sizes which have different names. Some of the names are: Spaghetti, vermicelli, macaroncelli, rigatoni, ziti, fettuce. The smaller kinds, like vermicelli, and those shaped like seeds, stars, letters, rice, shells, and rings of various small sizes, are best adapted for use in soups. Most of the other kinds could be substituted for the plain macaroni in the recipes.

## Macaroni with Cream Sauce

- $\frac{3}{4}$  cup macaroni
- 1 quart water
- $1\frac{1}{2}$  teaspoonfuls salt

Cook the macaroni in the boiling salted water according to the general directions given. Prepare the cream sauce as follows:—

- 2 cups milk, or part cream
- 4 tablespoonfuls flour
- $\frac{3}{4}$  teaspoonful salt
- $\frac{1}{2}$  clove garlic, cut fine, if desired

Put the flour into a small bowl, and with a batter whip stir it smooth with three tablespoonfuls of the milk. Heat the remainder of the milk, to which the garlic has been added, to boiling, in a double boiler, then stir the flour mixture into it. Allow it to cook ten minutes. Add the salt. Then stir the cooked macaroni into the sauce. Allow it to stand over the stove long enough to reheat the macaroni.

## Macaroni with Egg Sauce

Make this like the macaroni with cream sauce, adding one or two hard-boiled eggs, chopped, to the sauce.

## Baked Macaroni with Eggs

Put the cooked macaroni in alternate layers with sliced hard-boiled eggs into a small baking dish, spreading some of the cream sauce over each layer. Sprinkle the top with zwieback crumbs. Bake till it begins to boil up through.

## Macaroni au Gratin

- $\frac{3}{4}$  cup macaroni
- 1 cup sour cream
- $\frac{1}{4}$  clove garlic, cut fine
- $\frac{1}{2}$  teaspoonful salt
- 1 egg yolk or one whole egg

Cook the macaroni according to the general directions. Beat together the egg yolk, salt, sour cream, and garlic, and mix it with the macaroni after it is cooked and drained. Put it into a small baking dish. Sprinkle with zwieback crumbs and bake till set.

If a larger quantity is to be made, one egg is sufficient for four times this recipe.

## Macaroni au Gratin (with Cottage Cheese)

- $\frac{3}{4}$  cup macaroni
- $\frac{1}{2}$  cup creamy cottage cheese
- 1 cup milk
- 1 tablespoonful vegetable oil
- $1\frac{1}{2}$  teaspoonfuls salt
- 1 egg
- $\frac{3}{4}$  clove of garlic

Cook the macaroni according to the directions. Stir the cottage cheese smooth with the milk. Break the egg into a bowl. Beat the egg with a batter whip, then beat the oil into

it drop by drop, so as to make an emulsion of the oil. Then stir into it the milk-and-cheese mixture, the salt, and the garlic. Now mix this with the cooked and drained macaroni. Pour it into a baking dish. Sprinkle with crumbs, and bake till set.

#### Spaghetti with Tomato Sauce

- ½ cup spaghetti
- 1 pint canned tomatoes
- 1 small onion, sliced
- 2 tablespoonfuls vegetable oil
- 2½ tablespoonfuls flour
- 1 teaspoonful salt
- ½ teaspoonful thyme
- ½ clove garlic
- ½ bay leaf

Cook the macaroni according to directions. Simmer the tomato, onion, garlic, bay leaf, and oil together for half an hour. Stir the flour smooth with a little cold water, and stir it into the boiling sauce. Allow it to boil five minutes. Rub the sauce through a fine strainer. Add the salt and thyme. If the tomato has boiled away enough to make the sauce too thick, add water to make the sauce of the proper consistency. When the macaroni is cooked and drained, stir it into the tomato sauce and heat the macaroni and sauce together.

#### Saged Macaroni

- ½ cup macaroni
- 2 tablespoonfuls nut butter
- 2 cups hot water
- 2½ tablespoonfuls flour
- ¾ teaspoonful salt
- 1 to 1½ teaspoonfuls sage

Cook the macaroni according to directions. Put the nut butter into a small saucepan. With a batter whip stir a little of the hot water into it and stir till it is smooth, then stir in a little more hot water and stir till smooth. Continue stirring in water till all the water is stirred in and the whole is perfectly smooth. Put it on the stove and heat to boiling, watching it carefully, because it is very likely to boil over as soon as it begins to boil. Stir the flour smooth with two tablespoonfuls cold water, and stir it into the sauce as soon as it begins to boil. Allow it to cook slowly for five minutes. Add the salt and sage. When the macaroni is cooked and drained, stir it into the sauce and heat together.

#### Macaroni Baked with Olives

- ¾ cup macaroni
- 1½ cups water

- ½ cup tomatoes
- 1 tablespoonful oil
- 1 bay leaf
- ¼ teaspoonful thyme
- 1 small onion, cut fine
- 1 tablespoonful browned flour
- 1 teaspoonful salt
- 2 tablespoonfuls white flour
- ½ cup sliced olives

To make the browned flour, sift one pint of flour into a baking pan. Set it into the oven, and stir it frequently until it is of a dark brown color, about the shade of the shell of a chestnut. Sift this browned flour, put it into a glass jar, and keep it for use as needed.

Cook the macaroni according to the directions.

Cook together the water, oil, bay leaf, onion, and browned flour for one-half hour. Then stir the white flour smooth with two tablespoonfuls of cold water, and stir it into the sauce. Let it cook five minutes. Then rub the sauce through a strainer fine enough to remove the tomato seeds. Add the salt, thyme, and olives. When the macaroni is cooked and drained, stir it into the sauce. Put all into a baking pan, sprinkle with crumbs, and bake till well heated through.

#### Macaroni with Nut Tomato Gravy

- ½ cup macaroni
- ¼ cup strained tomato
- 1¾ cups water
- 2 tablespoonfuls nut butter
- 2 tablespoonful flour
- ¾ teaspoonful salt

Put the nut butter into a saucepan, and with a batter whip stir the water into it, adding the water a little at a time and stirring it smooth as the water is added. Then stir in the strained tomato. Heat it to boiling. Stir the flour smooth with two tablespoonfuls cold water, and stir it into the boiling sauce. Simmer five minutes. Add the salt. Stir the cooked and drained macaroni into the sauce, and reheat.

The Russian army in the eastern theatre made a brilliant advance on the Galician front, pressing their lines well into that land which has been the scene of much of the heavy fighting in the East since the beginning of the war, and capturing over 150,000 prisoners, both German and Austrian. The Austrian army has had to fall back rapidly on new positions, and if the Russians are able to press the advantage it may not be long till the old advance battle line in Galicia is reached.

# DISEASES AND THEIR TREATMENT

## The Nature, Cause, and Treatment of Constipation

BY G. H. HEALD, M. D.

Many regions have their local health problems—the prevention of malaria, typhoid, pellagra, hookworm infection, plague, etc.—to be solved by an efficient public health administration. Constipation is an ever-present malady, not confined to any locality. It is not an infection. It is not a public health problem. It is emphatically a problem for each individual to solve for himself. The purpose of this article is to give information regarding the most approved methods of combating constipation.

### The Digestive Tube



WHEN food is eaten, it enters, not the body proper, but a tube about thirty feet long, which passes through the body. This tube, known as the alimentary canal, or alimentary tract, is a device in which the food may be finely divided, and by means of certain "juices" changed chemically into substances fit for absorption into the blood stream. In the wall of this tube are grinders (the teeth) for reducing the food, and glands for producing the juices necessary to lubricate the food for its onward passage, and to digest it, or prepare it for absorption.

The wall of the tube is also provided with a mechanism—muscular and nervous—for propelling the food along the tube and for expelling from the body the residue that is not utilized. It is this propulsive function which is disturbed in constipation, and with which we are concerned in the present study, though there may be other changes, such as the alteration of the bowel secretions.

The digestive tube in man is about thirty feet long. The only part under control of the will is the first portion—the mouth and the upper part of the throat. Until the food is swallowed, it is under voluntary control. After that, the action of the tube is entirely automatic. If we desire to control the func-

tions of the tube, we must do so at the mouth, making a proper selection of food, and preparing it by thorough mastication before swallowing it. There is a limited control of the tube at the exit;—that is, when there is a call to relieve the bowels one may refuse to answer the call, and by muscular effort may delay the action, or one may sometimes hasten action by muscular effort; but this exercise of voluntary control, if too freely exercised, may result in harm, as will be explained later.

The tube varies in size, the largest expansion being the stomach, which follows next in order after the comparatively short throat, or esophagus. From the stomach the flow is through a small and very contorted tube somewhat more than twenty feet in length, called the small intestine. At a point near the right groin the small intestine empties into the large intestine, or colon, which is divided into three portions,—the ascending colon, extending upward to a point near the lower border of the ribs; the transverse colon, reaching across to the left side; and the descending colon, passing down to a point near the left groin. Next there is a convoluted or S-shaped portion, known as the sigmoid flexure of the colon, and finally a straight portion known as the rectum, ending in the orifice known as the anus.

There are in this passage several con-

stricted portions, or sphincters,—one at the entrance of the stomach, another at the outlet of the stomach, and a third at the anal orifice. Then there is a valve, the ileocecal valve, at the junction of the small intestine and the colon, which permits the contents to flow forward but not backward.

Through its entire length the tube has muscular fibers in its wall, whose function it is, by causing wormlike contractions of the tube, to churn and mix the food, and propel it forward. In constipation there may be a tightening of the sphincter muscles, or more frequently a weakening of the propulsive muscles, or what amounts to the same thing, a lack of sensitiveness of the nervous mechanism controlling the muscles.

#### What Is Constipation?

Constipation is an abnormality in the intestinal discharges, characterized by infrequency, dryness, and lessened quantity. Just what amount of variation constitutes constipation is a difficult point to decide, for persons who appear to be in perfect health vary within somewhat wide limits. Some persons consider themselves constipated and complain of ill effects if they fail to have two or three abundant movements a day. Others seem to be in good health who have movements at intervals of one, two, or three days; and cases have been recorded where movements were at intervals of two weeks or more, without apparent ill effects. But ordinarily one who does not have daily movements at approximately the same time of day is considered to be constipated. There are, of course, great variations in the degree of constipation.

Sometimes constipation is manifested not by infrequency, but by variation in quantity or quality of the discharge, being small in amount or impacted, or both, and movements being accompanied by more or less distress.

Again, there is a type of constipation which is detected only by giving the patient charcoal or some other pigment with the meal. In such cases it may be demonstrated

that although the movements occur at proper intervals, and are soft and voluminous, yet too much time elapses between the ingestion of the food and the discharge of the residue. This latent constipation, of which the patient may have no knowledge, may be a contributing cause of auto-intoxication, with its multifarious symptoms.

There is a great difference in the minds of medical men regarding what constitutes constipation. For instance, one author defines chronic constipation as "a condition of the bowels from which fecal movements occur only when provoked by stimulation through medication or ememata." And there are multitudes who suffer from that form of constipation. But some authorities believe that this does not include all cases of constipation by any means. For instance, one manual states that "the normal man or woman should find no difficulty in having complete movements regularly two or three times a day by merely living a reasonable life, being careful especially to avoid overfatigue, to include sufficient bulk in the food, to take regular exercise, including, in particular, breathing exercise, and to maintain an erect carriage," the inference being that those who do not have movements so frequently are to that extent constipated; and that this is no small matter is further attested: "The injury which comes from the retention of the body's waste products is of the greatest importance. The intestinal contents become dangerous by being too long retained, as putrefying fecal matter contains poisons which are harmful to the body. Abnormal conditions of the intestines are largely responsible for the common headache malady, and for a generally lowered resistance, resulting in colds and even more serious ailments." And the tendency of late has been to attach increasing importance to the influence of intestinal poisons on the health.

#### The Nature of Constipation

When the bowel is functioning properly certain secretions are thrown into the tube,

and the muscular layers of the intestinal wall cause the food to move slowly onward. In the small intestine the contents are fluid, but in the large intestine absorption gradually abstracts the fluid, and the consistency of the mass increases.

In constipation there may be a lack of balance between secretion and absorption, so that the bowel contents become abnormally dry, but ordinarily this dryness is the result of prolonged stay in the tube, and is secondary to sluggish movement. There may be feebleness of the musculature of the intestinal wall, but more likely there is a lack of sensitiveness to stimulation. This insensitiveness is usually caused by the use of artificial stimulants, such as cathartic drugs, though frequent enemas may have the same result. It is a principle governing all functions of the body, that if they are performed under artificial stimulation, the body comes to depend on stimulation and refuses to act without it. This principle is so well understood that it needs only to be referred to. It is as easy to form a cathartic habit or an enema habit as it is to form a tobacco habit or a liquor habit.

Another condition present in constipation is insensitiveness of the lower bowel or rectum. Normally when the fecal matter reaches the end of the intestine, it causes a feeling of uneasiness that almost compels one to seek relief; but if one in the performance of his social obligations or his tasks resists the impulse, the uneasiness finally ceases. This method of disarranging nature's mechanism may be repeated until one can easily resist the impulse, and gradually the bowel becomes quite insensitive and fails to register the presence of fecal matter. Meantime the automatic mechanism which aids in the expulsion of the feces has become enfeebled, and every bowel movement necessitates a voluntary and strained effort. Perhaps the presence of fecal matter for long periods, with the effort to hold it back, has overdeveloped the sphincter muscle—the ring muscle at the end of the passage which prevents in-

voluntary discharge—until it requires violent straining to force the hardened masses past the obstruction.

Another condition often present in cases of constipation is feebleness of the abdominal muscles—the muscles which have to do with the voluntary effort of expelling the feces. This is part of a general muscular inefficiency, the result of neglect to take physical exercise.

## CURRENT COMMENT

### One Day—One Diet The Latest Innovation

**D**R. CORNWELL ROUND, of London, has suggested a new system of diet which, from theoretical reasons, he believes avoids some of the pitfalls of other dietetic systems.

He notes that some dietists advise a low protein diet with ample carbohydrate, stating that an excess of protein favors the formation of *uric acid*. Other dietists advise a low carbohydrate diet with ample protein, on the theory that an excess of carbohydrate causes *hyperpyremia*. The symptoms by uric acid hyperpyremia he finds very much alike. He comments:—

"And as many of the cases cured by either low protein or by low carbohydrate diet appear to be very much of the same nature, opposite causes are alleged to produce a like effect. This is unthinkable. Therefore the effect, namely, good health, cannot be due to causes wherein the dietetic systems differ, but to a hitherto unrecognized cause wherein they agree. The eating of *only one diet at a time* is such a cause common to both dietetic systems."

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As extremes of the two systems, he mentions the potato-and-butter dietary and the lean-meat dietary, both of which, according to their advocates, seem to produce good results.

Time will not be taken now to go further into his argument, except to state that when gastric secretion is favourable for protein digestion, starch digestion must cease. Dr. Round's suggestion is that we simplify matters by giving to the stomach proteins on one day and carbohydrates on another day. He suggests three protein days in a week, the other days being carbohydrate days.

This is certainly revolutionary; for have we not been taught from time immemorial that if we eat egg we should eat bread with it? Now we do not know that the body lives "from hand to mouth," that is, without a margin of nutrition sufficient to last a day or two.

If such is the case, we have in Dr. Round's suggestion the advantage of a very much simplified dietary.

The doctor allows fats, greens, and fruits with either the proteins or the carbohydrates, and he advises against the use of dried beans, peas, lentils, oatmeal, and possibly of nuts, as containing too much of both protein and starch.

He offers a modification of his plan, namely, "one meal—one mixture," in which he has protein at one meal and carbohydrate at the next. This might be a better method, especially where one can live on two meals a day. A suggestive plan for any one wishing to try the method is as follows:—

For breakfast: Cereal with fruit juice or thick cream, fruits, bread and butter, olives, etc. Or potatoes may be used, but best not with fruits.

For dinner: Milk or eggs, or both, with green beans, cauliflower, cabbage, olives, and nuts. No bread, cake, or pastry of any kind. This meal would be best taken from three to five in the afternoon.

In case one desired to try a strictly vegetarian regime, the menu might be nuts and olives, together with such green vegetables as are in season; or else nuts, olives, and fruits.

It should be understood that this entire suggestion is based on theory, and has not had the backing of experience. Some who have not met with success with other dietetic schemes may find in this suggestion something they can use to advantage.

One thing is probable: on such a dietetic regime one will probably not eat too much; and that in many cases might be a decided advantage.—*American Life and Health*

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### To Our Readers

We are anxious to know just what, of the many articles presented from month to month during the year 1916, has appealed most strongly to our readers. That we may be able to ascertain from your view-point the real facts in this respect we have decided to offer our subscribers a two year's subscription to this magazine and a copy of the volume "Health for the Million," for the best written statement, not exceeding 150 words in length, which will incorporate your analysis of what has been most helpful to you in HERALD OF HEALTH. Please write on one side of the paper. Be brief and to the point. If you have suggestions to make, make them as terse as possible.

All papers must be in our hands by December 15th, 1916. The January number will announce the results. Address Herald of Health, Managing Editor, 17 Abbott Road, Lucknow.

The editorial in the September number of HERALD OF HEALTH should have borne the initial of the Managing Editor. Owing to heavy work in other lines the editor has been compelled to drop out for a few months. We hope, however, to have his regular contribution commencing with the December issue.

Dr. Oscar Riddle, of the Carnegie Institute, has found that by dosing hens with urotropin, eggs are automatically preserved. The urotropin is deposited in the egg, where it changes into formalin, a preservative that prevents decay. Extend the principle, and in a few years we shall be eating medicated eggs.

Dr. D. H. Kress says regarding means of getting rid of the tobacco evil, "Reform must be made by fathers and teachers, who say in all their habits of life to those who look to them as examples, 'Follow me.' When this is done our educational and legislative efforts will be consistent, and will appeal to the youth."

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