# GOOD HEALTH

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## PSEUDO MIND-CURE.

BY J. H. KELLOGG, M. D.

MILTON must have been thinking of mind-cure when he said: —

"The mind is its own place, and in itself
Can make a heaven of hell, a hell of heaven."

He did not, however, claim that the mind can set a broken leg or make an arm grow out from the shoulder. In putting these words into the mouth of the fallen Satan, the great poet simply recognized the tremendous power of mind over mind, and over matter in so far as the latter is influenced by the will and the emotions. Recent experiments have shown that the will can control the body to a marvelous degree. If the attention be fixed and kept upon a particular part of the body, there will be a rise of temperature in that part. This has been proved by the use of a delicate thermometer. If one think intently about his hand, for instance, the thermometer will show a slightly higher temperature in that hand. An English physician succeeded in bringing on an attack of gout in his foot, simply by persistently thinking of it and willing it.

A sound will should have almost absolute control over a sound body. There are some remarkable instances of will-power exercised upon the body. Some time ago there was a man in England who could control his heart-beat by his will. He did this a great many times in the presence of physicians. He tried the experiment, however, once too often, and stopped his heart-beat for so long a time that he was not able to recover it again, and died. The writer knows a lady who, when she pleases, has an intermittent pulse in one hand and a regular pulse in the other. She seems to control her breath in some peculiar way that influences the heart to produce this phenomenon.

In like manner, great emotion, excessive joy or fear, produces a wonderful effect upon the body. From the story of the ancient Grecian mother who died of joy when she learned that both her sons had been crowned victors in the Olympic games, to contemporary newspaper accounts of people who have been frightened to death by the news of great catastrophes, — from that early time to this, human history is full of instances that show the fatal effect of excessive emotion. John Hunter, the great English physician and anatomist, was one day working in the museum of which he was curator, and saw a servant let fall a vase or glass jar containing a valuable specimen which he had prepared. Dr. Hunter was so enraged to see the work of months lying crushed upon the floor that he swore a terrible oath and dropped dead. This

examples the effect that excessive anger may produce upon the body.

The physical effect of fear is used by the courts of India as a test for discovering criminals. The suspected persons accused of theft or some other crime are brought before the judge. He orders a handful of dry rice put into their mouths, and makes them chew it for five minutes. Their mouths are then examined, and the man who has a dry mouth is the thief. This is a perfectly scientific method of detection; for the culprit's fear that he is going to be found out so paralyzes the salivary glands that they cannot make saliva, and not being able to secrete saliva, he cannot moisten the rice.

In the same way one's appetite disappears under the influence of bad news or sudden fright. Despair, gloom, and despondency prevent digestion, because they prevent the activity of the glands which make saliva and gastric juice. Many a public speaker has found himself paralyzed with stage fright because of the influence which fear, agitation, or nervous dread exerts upon the glands which secrete saliva and moisten the mouth.

These characteristics and faculties of the mind are well known. The difficulty is that, like a candidate for office, the mind is victimized and misrepresented by those who claim to be its most ardent supporters. Noisy voices arrogate to it functions and powers inharmonious and impossible, while officious hands heap upon it burdens belonging to other natural agencies.

In these days a great deal is said about mind-cure. There is this kind of mind-cure and that kind of mind-cure and another kind of mind-cure, until the mind might be supposed to have as many phases as a caterpillar has legs. But the different mind-cures may be summed up in two classes — the true and the false. There is a true and there is a false mind-cure. The false could not exist were there not a true. It may further be affirmed as a safe principle that a false mind-cure may cure a false disease, but never a real one. If a man thinks that he has cancer of the stomach when he has not, he may become really sick with a false disease, and may be cured by a false mind-cure; one false idea may dislodge another. But if the man has an actual cancer in his stomach, the false mind-cure can do him no good. Real disease cannot be cured by any false remedy.

It is true that there are many people whose maladies seem to be relieved by mental science treatment, and by various maneuvers of mind-curists. If the disease is a real one, however, this relief is temporary and fallacious. The disease that was "cured" one week may reappear the next, in the same or another form. If the victim is credulous enough to keep him from employing rational remedies, he may die notwithstanding the mind-cure.

A woman who lived in Michigan suffered from indigestion and thought she had spasms in her stomach. She arranged to take "absent treatments" of a mind-cure doctor in Chicago. Every day, precisely at three o'clock in the afternoon, the physician was to sit in his office and think of her case and administer treatment for it. She was to sit in her room at the same time and think with him. The treatment was to last exactly fifteen minutes. The woman claimed that in less than five minutes after the first treatment began, she could feel something wriggling and twisting in her stomach just as if an animal were crawling about. She was convinced that the treatments were doing her good because of these peculiar sensations. The interesting feature of this case was the fact that three o'clock arrives in the town where she lived almost


By MARY HENRY ROSSITER

If you ever have a sorrow,
May it come in stormy March,
When the winds from winter borrow
Fierce emotion, bitter breath,
Chilling touches from the fingers
Of the ministers of death.

Never, never have a sorrow
In the lovely days of spring,
When the winds from summer borrow
And the atmosphere is rife
With the fragrance of beginnings,
And the joyousness of life.

Any time to cling to sorrow
Dims the glory of the soul;
But if e'er your heart is stricken,
May the spring-time make it whole.

thirty minutes before it reaches Chicago, so that this mind-cure was experienced at least fifteen minutes before the doctor began his treatment. The woman had not thought of this difference in time. It is needless to say that a cure was not effected. The woman's trouble was due to incorrect habits in diet, and could not be cured by mental exercise.

Another woman who had a badly dilated stomach and who was very melancholy and hypochondriacal in consequence, went to a mind-curist. The mind-curist sat down with her back toward the patient, and they sat in that position for half an hour while the doctor was supposed to be focusing her therapeutic mind upon the patient's malady. While thus engaged one day, the patient broke into a vigorous laugh, saying, "What perfect nonsense this is!" "Why do you say that?" asked the doctor. "Why," said the patient, "here you are pretending to cure me when you cannot cure yourself." "But I am perfectly well," said the doctor. "Ah, but," said the other, "did n't I see you just now loosen your shoe to ease your corns? First cure your own corns." Of course the mind-cure doctor could do no more toward curing her patient; she considered her perfectly faithless and a hopeless case, but the woman afterward recovered with proper treatment.

Any remedy which undertakes to cure a malady without a change in the habits which produced it is a false remedy. The doctor who claims that one can be cured of a disease while still violating the laws of health is maligning nature.

It is absurd to say to a man who is making a garbage-box of his stomach, "You need pay no attention to diet. All you must do is to believe. Believe that the disorder is simply a bad idea, a morbid notion. Dismiss that notion from your mind, and you will be well." The theory expressed in the following rhyme may be fascinating, but it is also false: —

> "Think health, and health will find you
> As certain as the day.
> Disease will lag behind you
> And lose you on the way."

If thinking health would only make us well, we need never be sick. But we must do something besides think health; we must live health; we must conform to the conditions of health. This kind of mind-cure is quite as sensible as that suggested by a magazine parody on the foregoing verses: —

> "Think bread when you are hungry,
> And shortly you 'll be fed.
> Think rest when you are weary,
> And you 'll find yourself in bed."

The latter of these theories is just as reasonable as the former. If one can change the conditions of his system simply by thinking,— if simply by thinking, he can remove a wart from his face or a corn from his toe or cause a dislocated shoulder to replace itself,— then he might just as well think himself fed when he is hungry or in bed when he is weary.

There is, however, a certain class of moral maladies which require a mental cure. The great majority of chronic invalids are sick because they think they are sick. They imagine that they have diseases which they have not. All that is necessary to cure a man of such a malady is to substitute a different belief. It may be a true belief or merely a subterfuge, but if this can be done, the man will be well. A great many instances might be given of people who have been cured of maladies which they did not have.

At the time of the Charleston earthquake there was a woman in the city who had lain in bed for eight or nine years with paralysis. When she felt the earth trembling and the building shaking, she jumped out of bed and ran out of the

house. There have been several such cases of paralysis at the Sanitarium. One woman who had not walked for three years was frightened by an alarm of fire, a false alarm given for mischief, and she sprung out of bed and rushed down-stairs. When she realized what she had done, she ran about crying, "O, I 'm killed, I 'm killed." But her imaginary disease had been effectually frightened out of her, and she has been able to walk ever since. Another young woman was brought here who was so paralyzed that she was unable to move any part of her body except the great toe, which she could move a very little. This young woman's paralysis was purely imaginary. She was soon convinced that she could stand on her feet. She was then compelled to walk. This was sixteen or seventeen years ago, and she has had no return of the difficulty.

Unquestionably, many people keep themselves sick by magnifying their maladies, by fixing their minds upon the diseases of their bodies. A man imagines that his liver is torpid, and he keeps thinking about it until his liver actually is torpid. If one thinks that his stomach is disordered and is constantly expecting bad symptoms, these symptoms are almost sure to follow. The writer knew a gentleman who used to go to his physician an hour after breakfast complaining that his breakfast lay like a stone in his stomach and would not digest. An hour afterward he said that his breakfast was in another place; an hour later it was lying like a lump of lead somewhere else, and thus he actually followed his breakfast through all the windings and twistings of his stomach and through all the convolutions of his intestines. He kept his eye upon it, and the consequence was that it did not digest; the poor man was in such a disordered state of mind that it could not digest.

Just as one way of thinking makes disease worse, so another way of thinking makes it better. Faith is a powerful element in any kind of mind-cure. Years ago, Dr. George M. Beard, a prominent neurologist of New York City, conducted a series of experiments in what he called "mental therapeutics," with very interesting results. The doctor was a picturesque man with a prodigious nose and penetrating black eyes. He had a tall, commanding figure, and would assume a very pompous air when patients came in. His first remark was, "Do you want to get well?" "Of course I do; I want to be cured, or I would n't be here." "Sit right down; we 'll cure you; we do miracles here,— think no more of curing a person than we would of eating our dinner." He had two brass knobs which he called magnets, for a battery; one of these he put into the window, and the other he kept ready for use. He then made the patient sit down, saying, "You see this instrument? This is a powerful magnet. That instrument in the window is also a powerful magnet. Now the magnetism passes from this instrument to the one in the window. I shall place this magnet to your head, and when I do so, the magnetism will pass through your head, extract the disease, and carry it over to the other magnet, and in this way your disease will be carried off to the other magnet, and out of the window." So he would apply the brass knob to the patient's head, if the pain was there. To one lady who had a terrible pain in her head, he kept saying, "Do you feel it? Do you feel it? Do you feel it? Do you feel it in the great toe of your left foot? Do you feel it in your thumb on your right hand?" "Yes," she said, "I feel the electricity flashing all through me." Her hair was standing on end and her eyes were bulging. She became wonderfully aroused and impressed. All at once the doctor said, "Where 's your pain?"

She looked around the room and over at the window, as if she thought the pain had gone out there, and said that there was no pain,— the pain was gone. This was a striking result, and there was nothing used but the brass knobs.

These treatments, or experiments, went on in this manner for weeks and weeks with marvelous results. The doctor had the patients followed to their homes, and found that they had really been cured of their pain, sleeplessness, neuralgia, or whatever the trouble might be. One day he exclaimed, "Is n't this horrible on materia medica? Patients are getting well faster by this than by the regular treatment." Of course the doctor did not try to cure broken limbs and similar troubles in that way. The cases he treated were cured simply by an appeal to faith and imagination. So far as he was concerned, the mind-cure was false; but so far as the patient's will was concerned, it was genuine, because there was an exercise of faith; and the exercise of faith, even though it be an exercise of faith in a false object, is always of service.

No doubt the fetish of the East African, and the various amulets worn in the East, the rites and ceremonies performed by the Mohammedans and the Tartars and the physicians in Persia, are found to be helpful remedies. The Tartar physician visits his patient, and if he does not have in his bag the remedy which he wishes to administer for that disease, he writes the name of the remedy on a little slip, rolls it up, and makes the patient swallow it, with the belief on the part of the patient that the demon inside will recognize it as a sort of written notice that the medicine that will kill him is coming, and that he would better leave before it arrives. The patient swallows that pill with the greatest satisfaction and faith in the remedy, and if he is cured, it is because of his faith.

A man in St. Louis, in cholera time, had a bottle of what he supposed to be cholera medicine placed near his bed so that it would be handy to reach in the night in case he should need it. In the night he supposed that he had an attack, used the bottle, rubbing some of the contents upon his stomach, and was immediately relieved. He went to sleep and slept soundly. In the morning, to his consternation, he found that he had been applying the contents of an ink bottle to his stomach, instead of the cholera mixture. Which was caused by faith, the disease or the cure?

Patients addicted to the use of morphine and who thought that they could not possibly sleep without a narcotic, have been cured by the substitution of pills that looked like morphia pills, but were made of soda. In five minutes after taking a dose of these soda pills the patient would go to sleep supposing that he had taken a narcotic. Upon the same principle, patients may be put to sleep or cured of excruciating pain by a hypodermic injection of pure water.

Some years ago, Dr. Jennings started out to practise medicine with bread pills; for three years he gave nothing but bread pills, and his practise was very successful. At the end of this time he published the fact that he had been treating all classes of patients and all sorts of maladies with nothing but bread pills, and that he had had better success by this treatment than he had ever had before. He had been one of the most successful physicians in Connecticut, but the moment that announcement was made, his practise began to go down, and it continued to do so, until it was practically nothing. People object to having their weaknesses exposed.

The cures effected by mesmerists and hypnotists, with no exercise of faith or will on the part of the patient, are not genuine mind-cures, because the mind is

no better afterward. At the hospital Sal Pétrière in Paris, a number of years ago, a man used to be brought in who was so paralyzed that he could not feel hot irons and other hot things placed in his hands, or pins thrust into his flesh. Professor Charcot would make a few passes before this man's eyes, put him into a hypnotic state, and then tell him that he was not paralyzed. He could now feel the hot irons and the prick of the pins. But as soon as he returned to his normal condition, the paralysis was there again.

A sound will in a sound body is an ideal combination; but a sound will in a weak body can do wonders toward a cure. A man of the writer's acquaintance was so sick that no one thought he could get well. His pulse was about one hundred and twenty a minute and his temperature was 103° F. He was expectorating all the time. He had a cavity in his left lung, and it seemed that he must die of consumption in a few weeks. He was emaciated almost to a skeleton. His face was deathly pale; his breath was short; he could not speak more than three words without stopping. His case certainly seemed hopeless. The physician told him that he had only one chance in a hundred of getting well. The next day he came to the physician and said: "I am not going to die; I did n't come here to die; I came here to get well, and I propose to do so. You said I had one chance in a hundred of getting well, and I 'll take that chance. All I ask of you is to tell me what to do, and I 'll do it; you make the prescription, and I 'll do the rest." His faith in his ability to get well was so strong that he could not be turned away. The physician gave him directions: "Take plenty of fresh air; take good deep breaths, expand your lungs." He had a stoop, but was told that he must correct it. He took a cane and started out, putting his hands behind his back, taking deep breaths all the time as he walked. He ate just what he was told to eat, and nothing else. He followed directions thoroughly. He went about the work of getting well just as methodically as a man would work if he were going to dig gold in the Klondike, after he had struck a rich placer. In consequence of pursuing this course he recovered his health. He gained twenty pounds in flesh. His cheeks were rosy, his pulse and temperature normal, and his cough nearly gone. He ceased to expectorate. He went home, and for years afterward wrote letters to the doctor signing his name, "George Smith, E. C.," explaining in a postscript that "E. C." meant "ex-consumptive." That was a mind-cure of the highest order. This man got well because he *would* get well.

That is the way we ought to feel. Instead of lying down and letting disease get its foot on our necks and trample us to death, we ought to assert our wills and have the determination that we will conquer, that we will not die, but that we will be master. Disease is not larger than a man, when it first begins. Why should we not conquer it? Why should we not rise above it? Why should we not assert our liberty, and determine that we will live as long as God wants us to live?

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THERE doth not live
Any so poor but he may give,
Any so rich but may receive.

Withhold the very meag'rest dole
Hands can bestow, in part or whole,
And we may stint a starving soul.

—*Margaret J. Preston.*

# THE PROGRESS OF LACING.

BY M. H. R.

"HYGIENIC lacing" is the latest invention in dress designed to hoodwink nature. In a recent newspaper article on fashions, "another boon" is offered to "the stout women who suffer from a surplus of hips, and who have too much conscience or too hearty appetites to lace." They are advised "to give ear to the new theory of lacing their corsets, by which the too solid flesh may be held in abeyance, and yet no harm done physically." It is further stated that "the dressmakers have got this new device from a physician." The writer then proceeds to give an elaborate description of an intricate process of lacing,—of drawing one lacing this way and the other that, until a remarkable and complicated zigzag rewards the effort. The conclusion is as follows: "When so laced up, put on the corsets, hook them, and see what will happen. Simply pull on the top and bottom ends of the laces that are not zigzagged through, and the corset will first draw in to fit about waist and ribs comfortably and without pressure. At top and bottom, though, where, over the bust and hips, the edges of stays always project and add greatly to the girth, the edges will draw in perfectly tight and flat. No discomfort will be felt, and so lacing her stays a woman can reduce her hip and bust measure a matter of three to five inches. In doing this the flesh is not rolled up under her chin or thrust out in ungainly lumps, but, because the stay is easy at the waist-line and over the ribs, the surplus fat is gracefully readjusted."

The same article advertises also a new kind of corset, made of suede. A thicker undressed skin is used than that employed for gloves, but all the soft, pliable warmth of a *gant de suede* is promised. "The especial virtue of the skin corset" is considered to be that "it always gives a little to the figure every time it is assumed, and thereby conveys fresh and pleasing outlines."

FIG. 1.

To read an article like this at the close of the nineteenth century is rather discouraging to an optimist. He derives a little comfort from the examination of some old cuts, recently republished by a French medical journal, which, although, like all caricatures, an exaggeration of the reality, yet seem to show that women a hundred years ago treated their bodies

FIG. 2.

worse than they do now. Further comparison, however, indicates that the improvement by no means keeps pace with the general progress of reform. Most women of the present generation have heard their grandmothers tell stories of women of their acquaintance who tied their corset strings to the bedpost in order "to get a better purchase on them." Such a device would really consume less energy and be more effective than the method employed in our first illustration. The third picture, although a caricature as to methods, is hardly an exaggeration of the result desired by women to-day; while the second one represents a figure that every one of us has seen. The fourth and fifth pictures are probably works of the imagination only, but doubtless these contrivances would also have materialized but for the advent of the dress reformer. It is comforting to notice that in those early days the men who laced were ridiculed as well as the women. Nowadays it is sometimes whispered that a certain man wears stays, but it is woman's wickedness and folly that are held up to public view.

Not long ago a member of the French Chamber of Deputies amused that body by suggesting a tax on corsets to meet the deficiency in the budget. It was not at all a bad idea, for late statistics show that Paris alone sells 1,200,000 corsets every year. The French physicians, like those of other nations, in general oppose the corset, and the French schools for girls teach the dangers of wearing it; but thus far it has been impossible to make any impression in this respect upon the minds of the French women. In Paris it is considered almost immoral not to wear stays, and a French woman on the streets uncorseted would be an object of grave suspicion. The Parisians are beginning to get used to seeing American women who are not laced, but it is the fact that they are foreigners that saves their reputation. So long as Paris sets the fashion for American society, we are not likely to make rapid improvement.

Like the doctor who invented "hygienic lacing," other physicians have suggested a "hygienic corset," a "health corset,"

FIG. 3. FROM AN ENGRAVING MADE IN 1791.

or some other device to compromise with nature.

A lady recently asked Dr. J. H. Kellogg if a woman could ever wear a corset with safety. He answered, "Yes, I saw

FIG. 4.

a woman the other day wearing a corset, and it did not seem to be hurting her. She was a wooden woman in a show window. I think we may venture to affirm that corset wearing will not injure her a particle. If a woman is made of wood, or cast iron, or steel, she can wear a corset with safety; but if she is made of flesh and blood, with soft and yielding skin and muscles, she cannot wear any close-fitting clothing without serious consequences."

The aboriginal woman had a natural figure. The civilized woman is deformed. It is a perverted taste which admires a figure like that of the fashion plate, rather than that of the untaught Oriental. So far as theory and public opinion are concerned, there has been great advancement in recent years. It remains to bring the practise up to the preaching, so that both may move forward to the perfect standard of dress reform.

## Interviewing Father Time.

"Interviewing Father Time," is the subject of an allegorical sketch by Dr. David H. Reeder, in *Carter's Monthly* for December, 1897. "Father Time" is represented as highly indignant over the popular representations of his personality. "Why, do you know," he cries to the reporter, "that is all a lie about my carrying a scythe and killing people!" The reporter being properly subdued, he continues: —

"I said in the first place that you people were all fools you are so constituted that almost any one of you could live to be a hundred, or even two hundred years old, as you call it, but the trouble is that you keep rushing around and bumping yourself here and falling there, eating this and

FIG. 5.

eating that, when a little common sense would teach you that such a perfect machine as man is, should be properly cared for and properly nourished. Death and I are not friends at all; he and I don't even speak, but even he is not such a bad fellow as people seem to

think. He does not, as popularly supposed, keep stalking around watching for a chance to chop them off with that old scythe, but, like me, he just stands and waits, and the fools all run into his arms sooner or later. The sooner ones hate the sight of him and want me to save them, but I show them that they themselves are the only ones who can be of any service, and tell them just to turn around and walk the other way (not run), and quit worrying, and live decent, practical, helpful, cheerful lives, and I will guarantee they can stay with me as long as they desire; and when they get tired of my company, they will calmly and peacefully pass on to Death, and find that he is the easiest enemy they ever had to overcome; and in the strength of a happy life full of pleasant experiences they will pass through the struggle victoriously, and into another and more beautiful life, where I am not permitted even to appear."

When the reporter ventures to inquire what his real mission is then, he says: —

"That is the most sensible question that has ever been asked me in all the ages; many have asked it in a sort of vague, indefinite way, but you, I see, are one who desires knowledge, and I will answer. Take the letters of my name and let each one tell its part in the lives of men. TIME; T for time, I for improvement, M for man, and E for eternity — TIME for IMPROVEMENT to fit MAN for ETERNITY."

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I SMILE to think God's goodness flows
Around our incompleteness;
Round our restlessness, his rest.
— *Mrs. Browning.*

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# MAN'S NATURAL DIET.[1]

BY J. H. KELLOGG, M. D.

ONE of the most interesting features of the intellectual development of the present day is the growing interest in nature and natural methods, and the increasing suspicion that a large share of the evils, physical, mental, and moral, from which civilized man suffers, may be correctly attributed to the artificial conditions imposed by the highly civilized state in which he lives. That civilization, notwithstanding its priceless advantages and blessings, is not an unmixed good, is evidenced by the fact that the human race is clearly deteriorating physically and morally, notwithstanding the marvelous achievements which the last few centuries have witnessed. That we are a dying race the writer has undertaken to show by an array of undisputed facts in a paper entitled "Are We a Dying Race?" [1]

The causes of this physical decadence include many wide departures from those simple customs and habits to which man is by nature adapted. It is the purpose of this series of papers to consider a single one of the numerous questions which arise in the discussion of the perversion of the civilized state; viz., the question of the use of flesh foods, — in other words, What is the natural diet of man, the flesh of animals, or the natural products of the earth? In the discussion of this question, it will be considered from three different standpoints; viz.: —

[1] Read before the Civic-Philanthropic Conference held at Battle Creek, Mich., October 12–17, 1897.

1. Science, or the teachings of nature;
2. History, or the teaching of human experience; and
3. Ethics, or the study of the divine order.

### DOES SCIENCE TEACH THAT MAN IS NATURALLY A FLESH-EATING ANIMAL?

The basis of all study upon this subject, from a scientific standpoint, is the fact that the diet of an animal in its natural state is always found to agree both with its anatomical structure and with its bodily functions.

*The Dietetic Classification of Animals.*— This fact is so strongly recognized by comparative anatomists that animals have been classified according to their dietetic habits into four great classes,— herbivorous, frugivorous, carnivorous, and omnivorous. This classification of course chiefly refers to the higher classes of animals, although it may be applied also to birds, fishes, and other lower orders of animal life. Various other subdivisions have been made, as, gramnivora, or grain-eaters; the rodentia, or gnawers; the ruminants, or cud-chewers; and the edentata. The gramnivora are commonly understood as being included with the frugivora, as most frugivorous animals also eat grain.

In order to ascertain to which of these classes any animal belongs, it is only necessary to make a careful examination of its physical structure. But this presupposes, of course, a knowledge of those peculiarities of structure which are characteristic of the several classes of animals into which the various members of the animal kingdom are subdivided in accordance with their dietetic habits. In order that we may have the necessary facts for such a classification before us, let us briefly enumerate the special characteristics of the several classes: —

*Teeth of Herbivorous Animals.*— This class of animals, represented by the ox, the horse, the sheep, and all other animals which feed upon grass and herbs, have teeth precisely adapted to the mastication of their coarse and bulky food. In the ox, the teeth are — twenty-four molars, six on each side in each jaw, eight incisors, or cutting teeth, all in the lower jaw, the incisors being absent from the upper jaw, in place of which there is simply a horny plate upon which the long incisors of the lower jaw impinge when the jaws are closed.

The structure of the teeth is also peculiar: Instead of being covered with enamel, as in most other classes of animals, they consist of alternate layers of enamel and a soft, bony substance known as dentin. The soft, bony substance lying between the plates of enamel wears away more rapidly than does the enamel, leaving projecting cutting surfaces exactly adapted to the crushing and grinding of grass and herbs.

FIG. 1. TEETH OF CARNIVOROUS ANIMALS.

*Teeth of Carnivorous Animals.*— Carnivorous animals include animals which chew flesh. A special characteristic of the entire class is the canine teeth, of which the animal has four,— two in each jaw, placed upon the sides, with the incisor teeth in front, the saw-shaped molars behind. In the pure carnivora, like the lion, the canine teeth are very long, and, as in all canine animals, are set considerably apart from the other teeth. In the dog they are less prominent. The appearance of these teeth is well shown in the accompanying cut. (Fig 1.) In animals which, like the bear,

feed largely upon vegetables and fruits, the development of the canines is still less prominent than in the dog or wolf.

*Teeth of Frugivorous Animals.*— Animals belonging to this class, which is represented by the chimpanzee, the orang-outang, and the gorilla, subsist wholly upon fruits, grains, and nuts. There are thirty-two teeth in all, sixteen in each jaw — four incisors or cutting teeth, two pointed teeth known as cuspids, one in each jaw, four small molars, known as bicuspids, and six large molars. The cuspids are a little larger than the other teeth, and are separated slightly from the others. In addition to the monkeys, there are numerous tribes of frugivorous animals, bats and kangaroos, and other classes of animals, the teeth of which are essentially similar to those of the higher apes, which we have described. (Fig. 2.)

Fig. 2. Skull of the Chimpanzee. (Frugivorous.)

*Teeth of Omnivorous Animals.*— The teeth of omnivorous animals are peculiarly characteristic. This class of animals, which subsist upon all classes of foods, but which are essentially scavengers in their habits, is best represented by the hog. The most characteristic features of the teeth are the projecting incisors in front, and the long, upward-turned canines, constituting the tusks, which are used both in destroying and tearing to pieces other animals, alive or dead, and in digging out the roots which constitute a part of the dietary of these animals in a wild state. (Fig. 3.)

*Human Teeth.*— It is only necessary to glance at the representation of human teeth presented in Fig. 4 to note the great contrast between the teeth of man and those of the classes of animals which have been mentioned. Two characteristics are peculiar to the human animal,— the dental arch is complete, that is, there is no space left anywhere between the teeth ; and second, the teeth are all practically of equal length. The number of teeth is thirty-two,— in each jaw four incisors, two cuspids, four bicuspids, and six molars.

If now we have ascertained to which class of animals man belongs, as judged by the structure of the teeth, we have only to refer to the foregoing description of the several classes of animals which we have studied to find our question answered. In making this comparison we must divest ourselves of preconceived opinions and prejudices, and for a moment consider man as a fossil animal ; the habits must be ascertained by a comparison of his skeleton with the skeletons of other animals whose habits are known. In comparing the teeth of man with those of the herbivorous animal, we find no resemblance. Compared with those of the purely carnivorous animal, we note the entire absence of teeth resembling the long, sharp teeth of the lion and wolf, capable of service in tearing the flesh of other animals. When compared with the teeth of omnivora, we find still greater disparity

Fig. 3. Skull of a Wild Boar. (Omnivorous.)

as regards the form and general arrangement of teeth in the jaw. But when comparison is made between the teeth of man and those of the frugivora, as represented in the higher apes, we find not only an exceedingly close resemblance, but an absolute identity in number, in form, in grouping, and in arrangement in the jaw,— the only difference in form being that the eye teeth, or cuspids, are, in the ape, a little larger than the other teeth, and are set a little apart from the others, so as to allow of an over-lapping and closing of the jaw. They are quite unlike the canines of the carnivora, however, which are long, sharp, and pointed, and adapted to the tearing of flesh, while the cuspids of the ape have beveled surfaces which, fitting accurately together, are well adapted to cracking nuts and removing the husks of the fruits on which they subsist.

A comparison not only of the teeth but other organs as well, shows that they are


FIG. 4. THE HUMAN SKULL.

characteristic of and adapted to the dietary of the different classes of animals. A brief consideration of these peculiarities and of their bearing upon the question in hand will be found interesting.

*The Extremities.*— Huxley divides all mammals into three classes as regards their extremities, viz., hoofs, claws, and hands. The hoofed animals are either herbivorous or omnivorous. Animals possessed of claws are usually carnivorous. Animals provided with hands, of which the human feet are a modification, are frugivorous, the only exception to the latter rule being found in a few degenerate types of monkeys, which subsist in part upon insects when other food is scarce. So, as before, we find that man belongs to the fruit and grain-eating class. His hands are entirely unprepared for tearing flesh, for which the claws of the carnivora are used, neither do they in any respect resemble the hoofs of the herbivora and the omnivora.

*The Alimentary Canal.*— One of the most interesting comparisons which has been made by comparative anatomists is the length of the alimentary canal. This is very short in the carnivora, and long in the herbivora. When compared to the length of the body in the different classes of animals, the proportion is found to be as follows: In the carnivora, the alimentary canal is three times the length of the body; in the herbivora, as the sheep, thirty times the length of the body; in the monkey, twelve times; in the omnivorous, ten times; in man, as in the frugivora, twelve times. Here, as before, we see that anatomy places man strictly in the frugivorous class. Some writers have made the amusing blunder of making the proportionate length of the alimentary canal in man 1 to 6, instead of 1 to 12, by doubling the height through measuring him while standing erect. This measurement is evidently wrong, for it includes the length of the lower extremities, or hind legs, whereas in other animals the measurement is made from the tip of the nose to the end of the backbone. In omnivorous animals the alimentary canal is shorter than in the apes and in man, thus affiliat-

ing this class more nearly with the carnivora than with the herbivora.

A curious fact has recently been observed by Küttner, as related by him in an article published in *Virchow's Archives*. This author has made very extensive anatomical researches respecting the length of the small intestine in different classes of persons. He finds that in the vegetarian peasants of Russia, the small intestine measures from twenty to twenty-seven feet in length, while among Germans, who use meat in various forms quite freely, the length of the small intestine varies between seventeen and nineteen feet. The author attributes the difference in these two classes of persons to the difference in diet. Of course differences of this sort must be the result of the influence of diet exerted through many generations.

(To be continued.)

## THE BUTTERFLY FAD.

I HAPPENED one night in my travels
To stray into Butterfly Vale,
Where my wondering eyes beheld butterflies
With wings that were wide as a sail.
They lived in such houses of grandeur,
Their days were successions of joys,
And the very last fad these butterflies had
Was making collections of — boys.

There were boys of all sizes and ages
Pinned up on their walls. When I said
'T was a terrible sight to see boys in that plight,
I was answered: "O, well, they are dead.
We catch them alive, but we kill them
With ether — a very nice way.
Just look at this fellow — his hair is so yellow,
And his eyes such a beautiful gray.

"Then there is a droll little darkey,
As black as the clay at our feet,
He sets off that blonde that is pinned just beyond
In a way most artistic and neat.
And now let me show you the latest —
A specimen really select,
A boy with a head that is carroty red
And a face that is funnily specked.

"We cannot decide where to place him.
Those spots bar him out of each class.
We think him a treasure to study at leisure,
And analyze under a glass."
I seemed to grow cold as I listened
To the words that these butterflies spoke.
With fear overcome — I was speechless and dumb,
And then with a start — I awoke!

— *Ella Wheeler Wilcox.*

## A VEGETARIAN AWAY FROM HOME.

BY MARY HENRY ROSSITER.

"YOU must not pump spring water unawares upon a gracious public full of nerves," said Mrs. Browning in "Aurora Leigh." Upon the same principle, the advocate of hygienic living must not pour new theories too suddenly over the heads of his unsuspecting friends.

"What! you don't eat meat? Why! what will you eat then?" cries the terror-stricken hostess, as her eyes hurriedly scan the table, in a vain effort to reconstruct her ideas of a dinner. It may be that her guest mentally echoes the question, "What shall he eat?" but he is kept so busy declining impossible combinations, and trying not to lose his wits under her fire of exclamations and entreaties, that he has very little time to eat anything. This is fortunate, for courtesy compels him to place on his plate an incongruous collection of supposed dainties that would do his stomach almost as much harm as a tender chop. Jelly, pickles, celery, cheese, coffee, pie, are urged upon

him to reward him for his enormous self-sacrifice in denying himself the moist and juicy steak.

If he has been so unfortunate as to tell his hostess beforehand that he is a vegetarian, he is still more embarrassed. She has probably formed her idea of a vegetarian from Webster's Unabridged Dictionary, and supposes it means "one who holds that vegetables constitute the only proper food for man, and who lives solely upon them;" therefore she takes great pains to set before him Irish potatoes, sweet potatoes, stewed corn, squash, and onions. Then celery, pickled peaches, raspberry jam, and warm biscuit are offered to him in quick succession. It is evidently the idea that if he is going to eat nothing but vegetables, he must eat several pounds. The younger members of the family gaze at him in undisguised astonishment. They could not show more interest if he were a two-headed freak from a dime museum.

When questioned as to whether he will have tea or coffee, he meekly asks for a glass of water. It would never do to say, "I don't drink at meals." He is disgraced enough already, and prefers to suffer in silence rather than to be any, more conspicuous.

Perhaps some one, in the very act of swallowing a pink and juicy mouthful, asks him why he does not eat meat. He hesitates to say just then and there that when an animal is killed the poisons that were on their way out of its body are stopped in their progress and retained in the tissues, so that by eating meat one simply adds the poisons produced in another animal's body to those of his own. He does not like to say that the bloody morsel almost turns him sick. He cannot courteously give a serious answer to the question, so he evades it by saying that he would n't like to have the cow eat him, so he does n't eat the cow, but he knows very well that in that person's mind his memory will forever be associated with the work "crank." In his own mind he is thankful that they cannot turn an X-ray upon his thoughts. How would his hostess feel if she knew what an amusing object lesson her vegetarian dinner furnished. If he had been forced to express his sentiments during the meal, they would have been about like this:—

"My dear madam, squash being a fruit, why don't you put it over there on the sideboard with those beautiful grapes and oranges, and not give it to us until we are too full to eat it? No, thank you, not any onions for me. If the volatile oil they contain makes the servant girl weep when she slices them, and fills the whole house with their odor, what do you think it will do when shut up tight in a sensitive stomach? Celery, O yes. I 'll eat some; it won't hurt me. Of course it won't do any good either, but I am willing to waste a few energies trying to please you. I suppose you don't know that celery just lies around in the stomach like the wet grass that it really is, and the stomach pays no attention to it, except to put it out when it is tired of holding it. Celery is simply a loafer in the alimentary canal. No vinegar, thank you, I have too many germs in my stomach to want any wriggling eels down there to make matters worse. A slice of bread, if you please, instead of the biscuit. Of course my stomach can kill off millions of microbes, but I would rather take them cold in the bread than just beginning to warm up and kick in the biscuit.

"You 'd 'rather not live so long any way, than make a martyr of yourself'? I don't doubt it in the least. Most people are of that opinion. That 's because you are mistaken about being a 'martyr.' You 're a martyr now, every time you eat. If you 'd learn a few things, you might be free. It 's a mystery to me how intelli-

gent people can go on year after year letting custom and tradition dictate what their food and drink shall be without even once inquiring why.

"It is a wonderful thing to be able to see your bones through the flesh, and you are eager to know everything possible about the discovery that has made this possible. But to be able to look into your stomach, to see how foods behave when they get there, to learn how they treat one another, and what they do for the body, all this is such an old-fashioned and common-place matter that you take no interest in it. However, it is really more important than gazing at your bones.

"O yes, thank you, I should like a finger bowl. I 'm glad there 's one thing on the table that I can use with a perfectly clear conscience."

If he is a wise man, however, the health reformer keeps all this to himself. He would be exceedingly foolish to mount his pedestal of knowledge and harangue his entertainers. Not until the time comes when they really long to know is it of any use to speak.

## THE EVIL EFFECTS OF ALCOHOL.

BY J. H. KELLOGG, M. D.

(Concluded.)

*Alcohol in Cookery.*— The use of alcohol in cookery is one way in which the appetite for alcohol is cultivated. Sauces, jellies, preserves, and similar preparations, when they contain wine, brandy, or other alcoholic liquors, have a most pernicious influence, and often lay the foundation for a life of intemperance. Alcohol and kindred drugs are dangerous poisons. They destroy the lives of thousands every year; and even when taken at first in small quantities, they often produce a fatal fascination from which the unfortunate victim never escapes.

*Alcoholic Candies.*— Candies and confections of various sorts frequently contain alcohol in the form of wine or brandy. The use of such candies may readily produce an appetite for alcohol in other and stronger forms. Children have been found in a state of partial intoxication as the result of eating freely of such candies.

The only safe rule for a person who desires to lead a temperate life is to avoid everything which contains alcohol in any form. Any other course is most unsafe; for the alcohol habit is often formed unconsciously, and is only recognized when it has become fully developed, and has attained the complete mastery.

*Absinth.*— This is an exceedingly poisonous and intoxicating liquor, made by adding the oil of wormwood to alcohol. It has long been very extensively used in France and Switzerland. Recently it has been introduced into this country and England. Absinth produces the same result as alcohol, with other and even worse effects, due to the poisonous oil which it contains. The stomach and nerves are especially injured by it. Its victims are short-lived, and die miserably and with great suffering.

How to Reform.— This is a question which thousands of men who have unwittingly enslaved themselves to the fascinating vice of liquor-drinking are daily asking themselves. Few if any would ever become addicted to the use of alcohol if they really appreciated the suffering which they must endure from the galling chain which the habit will sooner or later bind about them.

Alcohol is wholly merciless to its vic-

tims. It promises felicity, but gives misery; it promises strength, but gives weakness; it promises vigor, but gives only disease; it promises new life, but gives death in a most horrible form.

It is by no means easy to escape from the tyranny of a drug habit of any sort, and alcohol is one of the most difficult to overcome. The following brief suggestions may be helpful to one who is really in earnest in his desire to escape from this body- and soul-destroying poison: —

1. Resolve to stop and to stop at once. Determine to be free or die in the attempt, but have no fears of death. The most abject slave to alcohol may stop immediately without any danger to health or life. The idea that one must taper off, or that the system becomes so accustomed to the drug that it is a necessity, is entirely an error. Alcohol is a poison, and the sooner one is rid of it the better. The suffering which results is far less if one stops at once and altogether than when an attempt is made to leave off gradually.

Those who attempt to discontinue the use of alcohol by degrees seldom get entirely rid of it, and they are all the time relapsing, the old desire being kept alive.

One point must be emphasized: a person who has once been addicted to the use of alcohol in any form must discontinue its use in every form. He cannot use even light wine or beer, cider, or any other alcoholic drink, even in the smallest quantity. Alcohol must be shunned as one would avoid a venomous reptile, or any other deadly poison.

2. If the extent to which alcohol has been used has been very extreme in degree, and especially if several attempts at reform have been made without success, the individual should be placed under circumstances which will protect him so far as possible from temptation. Removal for a time to some secluded country place, away from old associates and where liquor will not be offered him, is advisable in some cases, or even confinement in a house or room.

Not infrequently the nervous disorders are so great that it is impossible for the individual to continue his regular work or duties, in which case he should go to bed and remain there a week, or even longer if necessary. He should receive daily treatment, such as fomentations to the spine, followed by sponging with cold water, and rubbing with oil. The nervousness may be wonderfully relieved by applications of this sort. A cool shower bath, following a short hot bath of some kind, is an excellent tonic in such cases.

3. Great care should be exercised respecting diet. Buttermilk is an exceedingly wholesome food for such cases. Milk of all kinds is usually well tolerated, also gruels. Avoid altogether meats, spices, confectionery, tea and coffee, and all sorts of hot and irritating foods.

4. The inebriate suffers most of all from weakness of will power and loss of resolution and decision of character, which is the natural result of long yielding to the clamors of appetite.

The restoration of the will power, while most essential for a complete and permanent recovery, cannot be accomplished by the individual himself, nor by any mode of treatment which can be applied to him. It is only by divine power acting in co-operation with the human will that mental and moral restitution can be completely accomplished; but this miracle of grace the divine Being who created man and dwells in him, is ever ready to accomplish for him who seeks deliverance from the thraldom of vice. Read Ps. 107: 17–21.

# THROUGH THE GOOD HEALTH SPY-GLASS.

THE word "health" once meant literally "holiness," and that means "wholeness."

From India comes the wise saying: "There is nothing noble in being superior to some other man. The true nobility is in being superior to your previous self."

The best singing voices are usually found in countries where meat and fish are not a common article of diet. Italy is a noteworthy example, Scandinavia also, where many fine voices are found among the lower classes.

Some friend to good health made the terse remark that "sanctified common sense armed with experience will do more to make people well than rivers of medicines and mountains of pills."

Laborers in Roumania work twelve and fourteen hours a day, carrying on their shoulders sacks of wheat weighing one hundred and fifty pounds. They do this on nothing more strengthening than a loaf of bread and half a kilogram of grapes. They are strong and healthy men.

A lady once asked a physician where she could get an appetite. "Out in the fresh air," he said; "just go right out and get one. Nature has thousands of appetites to give away. The winter atmosphere is full of them. All that nature asks is that you come after them yourself."

A man in Chicago, a broken-down army veteran fifty-five years old, has been cured of appendicitis by fasting thirty-one days. According to eminent physicians, about ninety per cent. of the cases of appendicitis could cure themselves if the sufferers would simply abstain from hearty foods. Absolute fasting is unnecessary except in rare instances.

Vegetarian candles, according to the *Vegetarian*, must be used in lighting the altars of Catholic churches. The laws of the ancient church, dating back to pre-Reformation days, demand that in the manufacture of altar candles pure vegetable products only shall be used. To-day these candles are usually made either of beeswax or a mixture of palm-oil and beeswax, the product of the bee being considered as vegetable matter for ecclesiastical purposes. The oil consumed in sanctuary lamps must also be vegetable, and the same regulation applies to the incense used in their churches.

Professor Hermann Bieder, of Munich, recently exposed cholera bacilli for fifty-five minutes upon a glass plate to the Roentgen rays. The germs ceased growing, notwithstanding the fact that later they were placed for twenty-four hours in an incubator. Another plate not exposed to the rays, and heated for the same period of time, was dotted over with colonies of bacteria. In the same way the growth of the bacilli of tuberculosis was stopped by the Roentgen rays. Professor Bieder says that these experiments, hitherto made only upon animals, encourage him to make similar trials on the human body.

The Buffalo *News* points a moral in the following dialogue: —

*Miss S. P. C. A.* (gazing with intense disapproval at the plumage of the new

fall bonnet of her companion) — Don't you know that it is mercilessly cruel to kill God's creatures for purposes of frivolous adornment?

*Miss Gayfeather* — But I suppose it is thoroughly human to slaughter a bird for food?

*Miss S. P. C. A.* — That is an entirely different matter. That's necessity, not cruelty.

*Miss Gayfeather* — Well, I'd like to know what difference it makes to the bird.

The following story is told by a well-known physician: "I knew a woman who went to a doctor to get some liniment for her husband who was suffering terribly with a pain in his stomach. The doctor wrote a prescription for a plaster, — a belladonna plaster six inches square. He gave it to the woman, saying, 'Tell your husband to wear that.' She took the paper containing the prescription home and placed it carefully over her husband's stomach. A month afterward she came back to the doctor and told him that the prescription which he had made for her husband had worn out, and that she would like another one, it had done her husband so much good."

"A hygienic floor" is described in a translation from the *Revue Scientifique* for the *Literary Digest*. This new kind of floor is made of wood pulp, and has no cracks. It is also a bad conductor of heat and sound, and although very durable, is soft to the feet, like linoleum. The wood pulp is mixed with a small amount of cement to increase the resistance. The price is lower than that of ordinary flooring. The dried pulp is reduced to powder to facilitate transportation, and the powder, after being made into a gelatinous mass, is pressed between rollers. When the pulp is dry, it is painted to imitate oak or other wood. The invention of a floor like this will be welcomed by those who think of the dangerous germs and other injurious dust that collect in the cracks of an ordinary floor.

The late Professor Francis William Newman, one of the pioneers of vegetarianism in England, renounced flesh-eating when he was between sixty and seventy years old. According to Charles W. Forward in the *Vegetarian*, his reasons were as follows: —

"1. Because experience and theory agree to convince me that the more I get of cabbage, turnip, onion, and such-like vegetables, the healthier I am.

"2. I have a fixed persuasion that the system is less inflammatory and therefore more robust, and in a more truly natural state, if it be nourished on fruits, roots, and *fruges*, if only these can be so tempered as to be consistent with health in a body accustomed to flesh meat.

"3. The moral argument from instinct is stronger, the more I dwell on it. Undoubtedly my instinct as a child against the butcher's shop was that of perfect shuddering. In my wife it is still highly active. All physicians have insisted that beef and mutton are her great want; and I have believed it, and have struggled, generally in vain, to make her eat meat. I have regarded her as having been underfed for thirty to forty years past, — from no religious asceticism, but from sheer repugnance to the viands that are the ordinary staple of dinner.

"4. I cannot doubt the national importance of vegetarianism. The millions ought, if only from economy, to avoid flesh and save their money for moral and intellectual purposes. It is deplorable that higher wages mean to them merely more beef or more mutton-chops — both needless to them, even when harmless.

Yet it is only by example that we can keep them from this infatuation. If, therefore, it be consistent with my health, I am bound to give an example.

"5. I hardly add to the last argument by admitting that England will be able to feed a larger population from her soil by vegetarianism; for at present it would solely increase the wealth of landlords if we increased upon it without emigrating."

## CORRECTIVE MEASURES FOR CHILDREN'S FAULTS.

BY MRS. E. E. KELLOGG.

WITH due recognition as to fitness of time, the kind of punishment is yet to be considered. In dealing with this question, it is not possible to lay down an invariable rule applicable to all children and all cases. What we must aim to learn is right principles, and base our discipline upon these. The nature of the offense, the age, temperament, and development of the child, and the circumstances under which the deed was committed, must all be taken into consideration in the selection of his punishment. To be thoroughly just, the punishment should fit the crime; that is, it should be some natural outcome or result of the misdemeanor, a retributive punishment, and not an arbitrary one wholly unconnected with the deed. If the child is led to feel that the deprivation, the pain, or the disgrace which he suffers is the natural consequence resulting from his own deed, he will recognize the justice of the punishment, and it will be far less likely to engender revengeful or rebellious feeling in his heart. Another advantage in retributive punishment is that there is far less likelihood that it will be administered by the parent in anger.

Illustrative of this method of punishment, Miss Harrison tells of a mother who, on returning home one day, found that her six-year-old boy had taken his younger brother over to the wagon-shop across the street, a forbidden spot, and they had smeared their aprons with the wagon grease. Said the mother, "My first impulse was to whip the boy, because he knew better than to go, but I thought I would try the retributive rather than the arbitrary method, and see if it would do any good. So I said, 'Why, that's too bad. It will be rather hard for you to get the grease off, but I think you can if you will run to the drug-store at the corner and buy a small bottle of turpentine.'" On his return she took the two aprons and spread them on the floor of the back porch; then, giving the boy a little sponge and a bottle of turpentine, she showed him how to begin his cleaning. In a few minutes he said, "O mama, this stuff smells horrid." "Yes," she serenely replied, "I know it does. I dislike the smell of turpentine very much, but I think you will get through soon." So Willie kept on scrubbing until he had cleaned the aprons as well as he could. "Well," said his mother, as she helped him put away the cleaning material, "I think my boy will be more careful about going to the wagon-shop; will he not?" "You bet I will!" was his emphatic reply.

A young lady who had given the subject of punishment much thought was called upon one summer to take charge of her little niece for a few weeks. The first morning after her arrival at her sister's home she heard angry words in the child's

bedroom. On opening the door to inquire what was the matter, the nurse said, "O, it is just the usual fuss Miss Anna makes each morning over having to be dressed. I am sometimes an hour at it." Further inquiry showed that various means, such as bribing, coaxing, threatening, had been used, but to no avail. Even the last device resorted to, that of depriving her of marmalade, her favorite dish, at each breakfast at which she was late, had proved ineffectual. The next morning the aunt went into the room and said quietly, "Anna, you can have Mary for just twenty minutes to dress you; after that time I shall need her downstairs." The child looked at her in astonishment, then went on with her play. In vain poor Mary coaxed and argued. The twenty minutes elapsed; the child was but half dressed. True to her word, the aunt sent for Mary to come down stairs. "But, auntie," called the child, "I am not dressed yet." "Is that so?" said her aunt, "I am sorry; jump back into bed and wait until Mary comes again." In about fifteen minutes the child called out petulantly, "Auntie, I want to get dressed, I tell you. Send Mary up to me." "I cannot yet," replied the aunt from below, "she is busy just now. Get into bed again, and she will come as soon as she is unoccupied." Breakfast was sent up to the child by another servant. At the end of an hour Mary came back, and it is needless to say that little Anna was quickly dressed. The next morning the aunt again gave the warning that Mary would be needed down stairs in just twenty minutes. This time the warning took effect, and when Mary was called, the child was ready. The following morning the force of habit was too strong, and again came the capricious delay. Again Mary was called, and again the child was detained in her room for an hour. Two or three such experiences, however, were sufficient to break up entirely the habit of dallying.

Other examples might be mentioned. For instance, if a child is rude and unkind to his sister or playmate, he has shown himself unfit to enjoy their society, and should be deprived of it for a longer or shorter time. He may be allowed to live in a room all by himself until his isolation becomes irksome. If he behaves in an ill-mannerly way at meal-time, he may be deprived of the privileges of the table, having his meals alone by himself in some less pleasant quarters. If he has idled away the time allotted for his work, he may use his play hour to finish his task. The little toddler who runs outside the gate when forbidden may experience the loss of the liberty he has misused, being, if necessary, comfortably fastened to a cord which shall permit him to play only within circumscribed limits.

A little boy whom we will call Newell was exceedingly careless, and though frequently cautioned concerning the matter, often left the garden gate open, and one day the cow, taking advantage of her opportunity, walked through into the garden and quite ruined it. Newell's father was greatly enraged, and proposed to whip the boy, but his mother proposed a retributive punishment, suggesting that he be kept at home from a picnic they were all anticipating attending on the morrow, and required to occupy his time in the garden repairing the mischief caused by leaving the gate open. That evening after tea, she said to Newell, "What are we going to do about the garden?" "O mother, I'm awfully sorry. I meant to go right back that way and fasten the gate. I just went into the lot to give Blackie an apple, and I saw the Brown boys down by the brook, so I went right on, and forgot all about the gate. I'm so sorry, mother." "Perhaps a real practical sorry will help put it to rights. Your father

has so much to do that you and I must work in the garden to-morrow and see if we can repair damages." "But the picnic?" interrupted Newell. "We must give up the picnic, and save what plants we can before they wilt. I presume we shall have to buy a great deal, and start anew, but I will take the money I was to spend for the piazza awning, so it will be no expense to your father." "O mother," said Newell, in a choked voice, "you are giving up to me. You wanted to go to-morrow, and you wanted the awning. How much trouble I have made just because I did n't think." "I am willing to give up a great deal if my boy will learn to be careful and obedient," replied his mother. Early the next day Newell was at work in the garden. During the next few weeks the boy faithfully watered, weeded, and hoed the plants. He carried the vegetables to market, and his father allowed him a certain percentage of the proceeds for his own. With this money he bought the awning for the piazza. A few months later his father stated that he had almost overcome his former carelessness.

I presume it is hardly necessary for me to say that to make retributive punishments the most effective, this method should be begun early in the life of the child. It may not be always applicable during babyhood, but a child very early learns to understand the relation between cause and effect. A light and comparatively trifling punishment will be all that is required, if that is sure to follow in every instance of the fault. Children are very quick to notice the omission of a merited punishment, and to hope that in some way they may escape it each time. A little girl who persisted in a certain misdemeanor for which she was repeatedly punished was asked by her mother, "Laura, why do you continue thus to do wrong when you know that I always punish you for so doing?" "O mama," said the little girl, "one time you forgot."

"It is in the certainty and not the severity that the efficiency of punishment most frequently consists. Very few children are ever severely burned by putting their fingers into the flame of a candle. They are effectually taught not to put them in by very slight burnings, on account of the absolute invariableness of the result produced by the contact." (Abbott.) It is always wisest to make punishment as light as will prove effectual.

The just parent will not punish a child for an offense which at the time of its committal is not understood by the child to be a deed meriting punishment. It is manifestly unfair in the home, as in the state, to impose a penalty upon the offense after it has been unwittingly committed.

Distinction should be made between intentional wrong-doing and mere animal overflow. We should be very careful how we punish for mere accidents, things that have no moral bearing, like unintentional soiling or tearing of clothing, or the breaking of ornaments and dishes. It is indeed very vexatious to have beautiful things broken and the results of much patient labor destroyed through recklessness; but even such damages can be more easily rectified than can the injury done to a child whose mother, provoked at such mischief, relieves her annoyance with a shaking, slapping, or box upon the ears of the object of it.

(To be continued.)

# CHILD-TRAINING.— NO. 1.

BY MRS. S. M. I. HENRY.

No one can approach the subject of child-training without realizing that it is in parental training that we are to find the solution of the problem.

"To train the child, begin with his parents," may well be adopted as our motto. But for the present discussion we will assume that we have a generation of fathers and mothers who have been taught in all that is best in the science of child culture, as it is known to this generation. They are alert to all that is involved in heredity and environment; they have chosen each other according to the most philosophical laws of selection, with due regard to the lives that were to be of them, and, in so far as it is possible for a true philanthropy to do it, have prepared the way for a successful progress of the new life from the moment of conception. They have crowded the evil with which human destiny is mingled into the narrowest possible limits. They have created the most perfect scientific conditions, and surely all should be well for the child. And yet these thoughtful parents cannot be unmindful — they dare not deny the fact — that utter ruin is still possible; they have not been able entirely to eliminate the poison of sin. They cannot ignore the possible downward dragging of the fallen nature, which will still be a potent factor in the child, even when father and mother have done their best to become perfect.

Besides this, too, there are those whose children are transplanted ones. All honor to those who are, in the truest sense of the word, *God*-parents. This sort of Christian philanthropy is based on the truest philosophy,—that of the gospel; for it dares to deny heredity its boasted rights, and to claim all the promises which are enfolded in the possibility of a *new creature*.

The child culturist who does not depend on the power of God is handicapped at every point, just as truly as would be the horticulturist who should ignore the powers of nature, and try to produce his harvest of fruits and grains by some substitute for soil, seed, sunlight, rain, heat, and cold.

God, as he has chosen to manifest himself in nature and in the gospel plan, must be reverently accepted as a fellow laborer in everything which concerns humanity, if we are to hope for the best success.

An evil heredity is a great misfortune, but a far greater misfortune is it to be "brought up" by those who are ignorant of, or so out of harmony with, natural law that they cannot represent it in their living, nor furnish a channel through which the love that is behind it, and which speaks through it, can operate on the growing child. The very best that the most scientific and consecrated father and mother can do for their children is to provide a channel of pure environment, through which the power of him whose name is Love may freely flow into their lives.

Training must be adapted in the case of the child as carefully as in that of the plant. To undertake the same methods with the infant oak and vine — with the well-born, preconsecrated child and the offspring of vice — would be ruinous to both. The heredity of each must be understood and respected; and the language by which the baby would reveal the individual traits from which he has made his selection through his various lines of ancestry, on his way hither, should be studied,

as the index to the volume which his life is to be when finished. All the training in the world cannot change one iota of this index page, but it can determine what shall be written under each topic.

The grandest theme which ever engaged the thought of the holiest and wisest of men, in the hands of a fool or a libertine may be changed into something too weak and vile to see the light. The sweetest song that mother ever sang to her sleeping babe may be tortured into a parody fit only for the reeking haunts of vice. Likewise the vilest thought that ever found expression may be made the text for purest teaching. So with this index of heredity: be it either pure or vile, it is only the theme upon which there is to be uttered, in the life, the wisdom of man which is foolishness with God, or the wisdom of God which is foolishness with man.

Training must be first physical, since the new-born babe is much more body than spirit. And it cannot be too soon begun. It is a shame that for lack of early physical training any boy or girl should grow up deformed or ungraceful. The first care should be to discover and remedy any defects before the child shall have become conscious of them; while every day and hour should be devoted to perfecting that which is to be the child's capital in the business of life.

Beauty is the human birthright par excellence; and since the body is largely to be shaped by the soul, the first intelligent glance should be greeted with only that which is worthy to be reproduced and live forever. The delicate film of the hidden nature is so sensitive to the slightest impression that the culturist must have a care, or something in tone or glance which he would be ashamed to repeat may return to him in after years, in some later generation; if, indeed, it does not always live in his sight, in the growing child, in some constantly recurring expression all the more hateful because his own repentance cannot touch it, — because he must wait for the awakened conscience and personal repentance of the one upon whom it was fastened in his innocent years before he can see its destruction; and then at last there may be left some perpetual remembrance of it. The child is a laggard when it comes to learning over again the lessons that were wrongly learned during his prenatal studies.

To be trained in dainty, neat, and pure personal habits is the right of every child, lacking which he will be less able to make effective use of the greatest gifts of mind and spirit. It is a mistake ever to suppose that God can as well use a boor as a gentleman in his work. As between a consecrated, truthful, teachable boor and a cultured, gentlemanly egotist, he would necessarily choose the boor; but as between the two, both consecrated and ready to his hand for his own will, it is evident that he would find a broader field for the man and woman of cultured and gentle manners; and gentle manners are of slow development, requiring that from earliest childhood they may come to perfect flower in manhood.

The object of training is to make men and women who will be capable of happy employment in this world, and will be eligible for immortality, — such men and women as God can use now, and whom he can enjoy forever. Character is to be the product, — the character of God as made known in the divine person, clothed with that beauty which was revealed in the face of Jesus Christ. This purpose is so great that we can afford to take note of the most trivial things in the necessary training. A tiny flaw in a costly mirror would not be tolerated for an instant; and it is God's plan that by the co-operation of the human and the divine, the little child, in spite of all the evil that he has caught up out of all the

generations, is to be made perfect, and presented before the eternal presence "without spot, or wrinkle, or any such thing."

It is the right of every child to be trained to individual independence. The sooner he can become self-reliant in the matter of his daily life, the sooner will he be able to learn his dependence upon God; and to acquire this he must have practise in the independent use of his faculties, and of the things about him. But in this special training, care must be taken to avoid so teaching him self-help that all his doing shall be for *self;* teach him to do for others — this is the safest self-reliance.

It is a great mistake to be always trying to get a child to do things your way. First of all, let him follow his own natural bend. Study *his* way, correcting when necessary, but so unobtrusively that he will not lose the sense of individuality, which means so much to us all.

## LIFE.

A CRUST of bread and a corner to sleep in,
A minute to smile and an hour to weep in,
A pint of joy to a peck of trouble,
And never a laugh but the moans come double;
And that is life!

A crust and a corner that love makes precious,
With the smile to warm and the tears to refresh us;
And joy seems sweeter when cares come after,
And a moan is the finest of foils for laughter;
And that is life!

— *Paul Lawrence Dunbar.*

## HYGIENIC HINTS.

CHARCOAL made of wheat is the best form of vegetable charcoal.

Spring biliousness is the natural result of winter gormandizing.

Coldness of feet and limbs is almost invariably an evidence of indigestion.

Lemon-juice will remove dandruff, and is good for the scalp.

Neuralgia is the "cry of a hungry nerve for better blood."

Radishes must be cooked to be wholesome. Raw radishes are hard to digest, and contain very little nutriment.

Occasional fasting is hygienic. It gives the stomach a chance "to catch up with its work." To eat nothing but fruit one day in the week is a great help against headache, nervousness, taking cold, and loss of sleep.

One of the best remedies for obesity is to eat only one thing at a meal. It does not matter greatly what this one thing is, whether it is any one kind of fruit, or any one grain. The prescription is, Eat one article only at one meal.

Cane-sugar is the least digestible of all foods. It is not digested in the stomach, but in the small intestine. There is only one fluid that will digest cane-sugar, —

the intestinal fluid,— consequently, when cane-sugar is taken into the stomach, there is fermentation and disturbance, if at the same time a food is taken that is not easily digestible.

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The best remedy for sick-headache is a stomach-tube. A sick-headache is evidence that there is something in the stomach undergoing decomposition. If this decaying matter is not removed, it will spread poisons all over the body. You must then wait for nature to eliminate them. But if the decomposing matter is washed out, the headache will be relieved at once.

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Baldness is generally due to the presence of minute parasites which get into the hair follicles and affect the roots of the hair. When the hairs are destroyed to such a degree that the scalp is smooth and shiny, there is no help for the baldness. If there is a thin down upon the scalp, the case is curable. In order to cure it, it is only necessary to improve the nutrition of the scalp. This is best done by massage. A shiny scalp should be rubbed until it recovers its natural softness.

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It is the soluble part of meat that gives the flavor; the insoluble part is tasteless. The soluble part is an excretory substance which was on its way out of the body when the animal was killed; because when an animal is killed, the nutritive juices in its flesh are retained, and the whole flesh is saturated with excretory substances, which, if the animal had lived, would have been carried to the kidneys and eliminated. If all the waste which was to be carried to the kidneys is washed out, so that the meat is really clean, there will be left simply a tasteless, woody, rubbery mass. This rubbery mass is the live, the nutritious, part. The rest is unnutritive.

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The habit of taking grains in a soft, pultaceous state is a pernicious one. People are suffering from the general habit of eating mushes. Scotchmen are almost invariably troubled with water-brash, because they eat Scotch "brose," which is made by pouring some kind of boiling liquid over the oats and stirring them, making a sort of oatmeal, imperfectly cooked. If the food is not chewed, saliva is not secreted, and the food passes into the intestine in an undigested state. The result is intestinal fermentation and indigestion. The constant use of soft grains naturally has this effect. Grains should be eaten dry because they will then be chewed, saliva will be produced, and digestion will follow.

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General housework is a capital means of exercise. Going up and down stairs, bending over and picking up things, sweeping, reaching up after things, washing dishes, kneading bread, scrubbing, washing clothes over a wash-tub,— all these movements bring various muscles into wholesome activity. If a woman does this work herself, instead of doing it by proxy, as many do, it is good exercise. It is a good thing in addition to have gymnastics, "to even up things." The farmer needs this exercise because he gets all out of shape. When he rests, he sits on a rail fence, all doubled up like a jack-knife, while after dinner he reclines in a chair. The housewife gets into the same condition by sitting in a rocking-chair, so that gymnastics are necessary for all classes.

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There are various ways of causing perspiration by a home bath. The old-fashioned water-cure doctors employed the wet-sheet pack. This is a very effective

method. Spread a sheet wrung out of cold water inside of four or five blankets. Wrap these around the patient, tucking him in, and in a couple of hours he will be in a sweat. He should first be made to drink hot water. A hot full bath is also a very good method for inducing perspiration. Simply use a bath-tub filled with hot water; the bath should be entered with the temperature at about 100° F. and the temperature increased until it reaches 105°. The patient should always drink hot water at the beginning of a sweat bath or just before getting into it.

A regular steam bath is very easily given if there is plenty of hot water at hand. All that is necessary is to have a hose set up, running to the bottom of the bath, and to have a wooden tray upon which the patient may lie. Then keep a stream of water running up this rubber tube, and have the plug out of the tub. Cover the bath-tub with a comfortable or a blanket. In this way you will have a Russian bath or vapor bath with no cost, except for the rubber tubing and the wooden tray. If the water is sufficiently hot, it will not take more than ten or fifteen gallons for a very good vapor bath. A small amount of very hot water run through a tube will cause a dense cloud of vapor.

## TEA AND COFFEE AND THEIR EFFECTS UPON THE BODY.

BY W. H. RILEY, M. D.

TEA and coffee are the most extensively used of all non-alcoholic beverages, and are considered by the majority of people to be almost indispensable. To sit down to breakfast without the customary coffee, or to dinner without the cup of tea, would be to many to spoil the entire meal. The use of these beverages being so general, it is worth while to consider what they are, and their effect upon the body.

Tea is one of the great articles of commerce, the estimated annual consumption being three billion pounds. It is a shrub native to China, but is now grown in India and other tropical countries. The tea-shrub, in a wild state, grows to a height of twenty to thirty feet, but is limited in cultivation to five or six feet, with numerous branches, and evergreen leaves, in the axils of which are to be seen the large, white, fragrant flowers. The leaves, though evergreen, are picked only at certain seasons. The first tender leaves of early spring are gathered for the finest young hyson. The later leaves give so-called inferior qualities of tea. After gathering, the leaves are first roasted in such a way as to produce variety in flavor and odor, and then treated to give different colors. For green tea, the leaves are roasted immediately after gathering, rolled with the hands, then re-roasted. For black tea, the leaves are first exposed to the atmosphere for a few hours, then roasted a few minutes, rolled in the hands, exposed to the air again for a few hours, and finally slowly dried over charcoal fires until the black color is well brought out. After this preparation, the tea is ready to ship.

The use of tea as a beverage was introduced into China from Corea, about the fourth century after Christ. From thence it extended to Japan about the ninth century, finding its way into Europe in the sixteenth century, where it met with great favor, and is to-day the favorite drink in England, Russia, and Holland.

Coffee is a roasted berry of the coffee-tree, a native of Abyssinia and Arabia, but now naturalized in the tropical countries colonized by Europeans. In a wild state, the coffee-tree grows to a height of fifteen to twenty-five feet, with few branches; but in cultivation, it is seldom allowed to become more than six to ten feet high, and is trained to grow in a pyramidal form, with numerous branches, beginning near the ground. The snow-white flowers are clustered in the axils of the shining evergreen leaves, and the odor is very fragrant. The seeds are of a horny hardness, and are commonly called coffee-beans, though they do not resemble beans in shape. As the tree blossoms continuously for eight months, several gatherings are made annually. The beans are placed on mats, or large floors especially adapted for the purpose, where they are dried by the sun's rays, being in the meantime frequently turned. They are passed through rollers to remove the dried pulp of the bean and the membrane which encloses the seeds, and after being winnowed, are conveyed in bags to the seaports.

Coffee was not known to the Greeks or Romans, but in Abyssinia and Ethiopia it has been used from time immemorial; in Arabia it was in use in the fifteenth century, and over the rest of the East in the sixteenth century. Coffee as a beverage was introduced into Europe about three hundred years ago, and almost immediately coffee-houses arose everywhere. The first coffee-house in Europe was established in Constantinople in 1573; the first in London was in 1652. Coffee is the favorite drink in Turkey, Sweden, France, and Germany, the average, in Germany, being fourteen pounds annually for each person.

Upon analysis, we find in tea and coffee very similar constituents. Each contains an aromatic oil which imparts the peculiar aroma and flavor to the beverage. This oil may be obtained by distillation, and is found to exert a most powerfully stimulating and intoxicating effect. In China, new tea is seldom used, on account of its well-known intoxicating effects. The active principle of both tea and coffee is the same, known as thein, or caffein. This is a narcotic alkaloid, constituting from three to six per cent. of the leaves of tea, and about one per cent. of the coffee-berry. This alkaloid is volatile, and may be easily obtained by heating a quantity of finely powdered tea, and collecting the white vapor arising, which condenses into white crystals. It has no odor, and only a slightly bitter taste, and has little to do with the taste or flavor of the drink. The other principal element in tea and coffee is a form of tannin, from which is derived the astringent taste.

Soon after drinking a cup of tea or coffee, an exhilarating effect is felt; the tired brain becomes at once active; the wearied muscles seem possessed of new strength; the flagging nerves seem energized; the vigor of a new life seems imparted, and praises are sung to "the cups that cheer, but not inebriate." It is found that by using tea or coffee, the appetite is satisfied with a smaller amount of food; hence it is generally supposed that these are foods, containing much nourishment. With these noticeable effects, it is not at all remarkable that tea and coffee are not only considered harmless, but of great value to the maintenance of physical health and mental vigor. While these seeming benefits may be attained, the headache, the sleeplessness, the nervousness, the indigestion, the dizziness, the palpitation of the heart, from which tea and coffee users suffer, are attributed to other causes. It may be well, then, to consider what science reveals concerning the nature and effects

of these beverages, and ascertain if they are really proper articles of diet.

We have already noticed that the chemical analysis reveals as a principal ingredient in both tea and coffee the narcotic alkaloid thein, or caffein. By experiments upon animals with this narcotic, it is found to be a deadly poison. Taken in a concentrated form, death speedily ensues. One seventh of a grain is sufficient to kill a frog, and five grains will kill a rabbit. In a pound of tea there are 224 grains of this poison, or enough to kill forty-five rabbits. Seven or eight grains will cause most distressing symptoms in a strong man, and a slightly larger dose causes highly dangerous symptoms. Dr. Smith, a prominent English physician, in experimenting with the effects of coffee, took, with his assistant, an infusion of two ounces of coffee; they both fell to the floor unconscious, and remained in that condition for several hours. We quote the following incident as illustrative of the effect of tea:—

"A prominent official in the British army, now doing service in Africa, recently lost his horse in a manner that is both singular and instructive. A cook left a few pounds of tea in the sack which had contained it, which was filled with corn by a Kafir groom who knew nothing of the presence of the tea. Upon serving out the corn to a group of horses, of course the last one received the larger share of the tea, which was eaten with the corn. The result is thus described:—

"'The animal plunged and kicked, and ran backward, at intervals galloping madly around, finally falling into a donga, where it lay dashing its head upon the rocks, and was despatched by an assagai thrust through the heart. The post-mortem appearances indicated extreme cerebral congestion.'"

The action of tea and coffee as ordinarily used is not as rapid and marked in its injurious effects as seen in the above instance, as the quantity used is not so great, and the system also becomes accustomed to the narcotic; but serious derangements of the digestive and nervous systems result therefrom.

"The relief obtained from tea and coffee is sudden, before the stomach has time to digest them. This shows that what the users of these stimulants call strength is only received by exciting the nerves of the stomach which convey the irritation to the brain; and this in turn is aroused to impart increased action to the heart and short-lived energy to the entire system. This is but false strength, that we are the worse off for having. They do not give a particle of natural strength." Though there is greater ease in making exertion, a greater sense of exhaustion follows than when the drink is not taken. "Under the influence of these poisons the nervous system is excited, and in some cases, for the time being, the intellect seems to be invigorated and the imagination more vivid. Because the stimulants produce, for the time being, such agreeable results, many conclude that they are actually beneficial, and so continue their use. But there is always a reaction. The nervous system, having been unduly excited, borrows power for present uses from its future resources of strength. All this temporary invigoration of the system is followed by depression." The headache removed by a cup of tea invariably returns, and the continued use of tea serves only to aggravate and increase the difficulty, of which it is frequently the source. Those to whom tea and coffee take the place of other food are generally found with hollow cheeks and thin faces, indicating the lack of nourishment from these beverages. And who is more tremulous than the old lady who regularly takes tea to quiet her nerves?

We see then that seeming good derived

from these drinks is only the deceptive influence of this narcotic poison. We may now notice specifically the effects upon various bodily organs and functions.

First, the digestive system. One very important part in the digestion of food is the action of the saliva upon starch, converting it into a kind of sugar called maltose, whereby it is readily absorbed and assimilated. This action of the saliva upon a large per cent. of our food is prevented by tea and coffee, even in small quantities, thus producing one of the commonest forms of indigestion, viz., starch digestion. The constituent in saliva which changes starch into maltose is known as *ptyalin*. This seems to be paralyzed in its action by the presence of the poisonous thein, or caffein. The action of the saliva is not confined to the mouth, but continues in the stomach until the contents of the stomach become acid in character by the introduction of the gastric juice. Hence, as the tea or coffee is present in the stomach, the action of the saliva is interfered with here also.

The pepsin in the gastric juice of the stomach is one of the principal factors in the digestion of albuminous substances, such as meat, boiled eggs, gluten, etc. This very important agent is precipitated by the tannin in tea and coffee, thus seriously interfering with the work of the stomach. In experiments made for the purpose of determining the influence of tea and coffee upon digestion, it has been found that in a case where, under ordinary conditions, there was ninety-four per cent. of albuminous digestion, upon the addition of tea the amount of digestion was only sixty-six per cent., and with coffee, sixty-one per cent. When distilled water was added instead, there was no change in the amount of digestive work done, so that it is evident that the change was not due to the simple dilution of the digestive fluids.

Then again, the use of these beverages is injurious in taking into the stomach too large a quantity of liquid food. The effect of this is to check the secretion of saliva, and to delay the action and weaken the digestive qualities of the gastric juice. If the drink is hot, it tends to relax and weaken the stomach; if cold, it checks digestion by cooling the contents of the stomach down to a temperature at which the work of digestion cannot proceed. Hence we see that the drinking of tea and coffee is one of the causes of the dyspepsia everywhere prevalent.

Upon the nervous system a very injurious effect is had. Upon the introduction of tea or coffee into the stomach, and the absorption of the thein, the drug is at once recognized by the system as a poison, a dangerous intruder, which must be expelled at once. The whole nervous system is aroused to energetic work, stimulating the heart, lungs, and kidneys to increased activity in order to get rid of the poison. Although the nerves may have been "run down," as we say, they are now so braced up that the person supposes that he is being greatly benefited; but after this exertion, the nerves are weaker than before. It is like a man, weary with his day's labor, plodding his way homeward. He is so tired that he can hardly place one foot before the other; but as he comes in sight of his home, he sees his dwelling in flames, or a child in danger. The sense of danger causes him to forget his weariness, and he works with energy until the danger is over; but afterward comes double exhaustion. He is more tired than at first, though for a time he had no sense of fatigue. So it is when the nerves are stimulated to undue action by the presence of this poison. The relief is only temporary, while future years are sure to bring a harvest of suffering.

The effect is the same upon the brain; and when that organ should be at rest, it is kept active by this poison, causing insomnia, or sleeplessness.

The narcotic has also an intoxicating effect, though in a less degree, of course, than alcohol. Cases of tea-intoxication are not infrequent. Among tea-tasters, those whose business it is to determine different qualities of tea by the taste, serious brain disorders arise, among them such mental complaints as melancholy, fear, continual anxiety, etc. In a recent report regarding insanity in Ireland, the habitual use of tea was given as one of the causes of this condition.

The stimulating effect upon the brain and nerves reacts upon the heart, causing increased activity, as indicated by the quickened pulse. Habitual tea and coffee drinkers are frequently affected with palpitation of the heart. Unusual activity of the lungs and kidneys is indicated by the increased amount of carbon dioxide exhaled and the urine secreted. This also indicates a more rapid tearing-down of the tissues of the body than when in a normal condition.

These effects show clearly that the use of tea and coffee results in a waste of the vital forces of the body, curtailing life and its possibilities. We may violate human laws with a possibility of escape from punishment; but not so in the disregard of nature's rules: she apprehends every offender, and is inexorable in exacting her penalties. The use of tea and coffee, like other indulgences, is a source of present enjoyment; but is not the addition of vigorous years to life, with the broad possibilities to which we may in those years attain, a sufficient incentive to persuade one to abandon these harmful pleasures? And is not the assertion of independence from this habit, which numbers its slaves by millions, indicative of a stronger manhood, both mental and physical?

## THE TRADITIONAL COMMUNION CUP.

PERHAPS custom and tradition have no greater enemy than modern science. In these days every ancient form or ceremony must prove its usefulness to society or be relegated by reform and progress to the world's great lumber-room.

At present it is the individual communion cup used in the service of the Lord's supper, that is in danger. Dr. W. S. Anders, in a recent number of the *Journal of the American Medical Association*, marshals the forces of sanitary science against this relic of early church usage. He believes that while the use of the common communion cup had a natural origin, and is maintained for strong conventional, ecclesiastical, ritualistic, and other reasons, yet with our present knowledge of the causes, modes of spread, and means of prevention of contagious diseases, it is only rational and consistent to condemn the common use of any drinking vessel, under any circumstances.

Dr. Anders has no difficulty in showing that the use of a common communion cup is unhygienic. With the development of the antiseptic and aseptic principles now so generally understood, it is inevitable that there should be a reaction against a custom so unsanitary and unclean. Dr. Charles Forbes, of Rochester, N. Y., was the first to make actual microscopic examination of the communion wine before and after a service in which common cups were used. He found in the dregs of the ordinary cup,

contamination from both the mouth and the clothing; from the former, epithelial cells, mucus, and various bacteria and spores; from the latter, fibrous matter. Examination showed the unused wine to be practically sterile.

In the same year, 1894, Dr. Anders himself discovered tubercle bacilli in two out of five specimens from the dregs of a common communion cup, besides some pus, and oral epithelial cells. He naturally concludes that it is of vital importance to substitute individual cups for these dangerous carriers of disease. He quotes among the maladies which may be communicated from mouth to mouth by the common cup, syphilis, cancer, tuberculosis, diphtheria, scarlatina, influenza, tonsillitis, and whooping-cough. The greatest of these is tuberculosis, "the great white plague," which, like the poor, we have always with us, principally because, not occurring in acute and alarming epidemic form, as do smallpox, diphtheria, and cholera, the fact of its contagiousness in insidious ways is not recognized generally by the public. He states also that dentists urge the importance of avoiding the common cup, because so many mouths are in an unclean, if not an unhealthy, condition. Neglected teeth, vitiated oral secretions, diseased gums, alveolar abscesses, pyorrhea, one and all may carry infection to an innocent and healthy person.

In 1894–95, when influenza was very prevalent in England, the spread of it was noticed and put down to the account of the common communion cup by several of the church and other papers.

Many distinguished sanitary and medical authorities are cited as supporting the movement for individual cups. A number of interesting and characteristic quotations from pastors and physicians are given, for example: —

"The condition of many men's mustaches as they touch the wine is very repulsive to think of." "A practise which is not for a moment tolerated in civilized households is doubly reprehensible under the conditions of this religious rite." "To drink after those we know is distasteful and unclean; to partake of the common cup at communion is unsanitary and disgusting." "Cleanliness is not sacrilege."

"We do not need to confess squeamishness when we say that we do not have that spiritual relish for the communion cup which has passed five hundred lips before reaching our own."

"It is not fastidiousness that causes people to abhor a drinking vessel used promiscuously. . . . This fact of uncleanliness detracts greatly from the beauty, attractiveness, solemnity, and effectiveness of the communion service."

"In its directions for the 'communion of the sick,' the Protestant Episcopal Church recognizes the danger of spreading known disease by the common cup. Would it not be equally wise, sensible, and prudent to guard its rectors and parishioners against unknown but often lurking disease?"

"Candor compels us to ask whether it is a true, intelligent, wholesome, or refined sentiment that is willing to swallow the breath-blown, saliva-tainted, mustache-dipped, and often tobacco-fouled wine of a cup that has passed the lips of fifty or one hundred or more good people? Does it not savor rather of sentimentalism and sickness, than of sincerity, security, and spirituality?"

The writer further states that "wherever individual cups have been adopted, the testimony of pastor and people has been expressive of the utmost satisfaction. The new method is beautiful, simple, sanitary, easily managed by both pastor and people, and adds harmony, dignity, and impressiveness to the service."

It is claimed that the use of individual cups has greatly increased the number of church-members who attend communion. In one reformed church in New York the number of communicants has doubled.

The chief objection to the use of individual cups has been that Christ used but one cup when he instituted the Lord's supper. But according to prominent ministers and theologians this cannot be proved to be true. He may have held in his hand one of many cups; for the Jews at that time used individual cups, and it is not stated definitely that his cup was passed around. The early Roman Catholic Church used a tube, or fistula, for suction from the cup, and a spoon was used by the early Greek Church. Those who insist upon "arithmetical and physical identity" ought to lay equal stress upon the use of unleavened bread, the custom of reclining at the table, and other ancient usages.

In many churches to-day where there are large congregations, more than one cup is used for convenience in serving. It is no more unscriptural to use six hundred cups than six.

Some object to the individual cup "because it destroys the feeling of fellowship, the unity of Christian brotherhood." But it does not destroy the feeling of fellowship to offer a guest at our own table an individual drinking glass. On the contrary, it would destroy the feeling of fellowship if we did not. If it shows a lack of consideration to ask guests at our own home tables to use a common cup, it is still more discourteous to do so at the Lord's table. Social custom should not be allowed to put religious custom to shame.

This movement to put the communion service upon a sanitary basis, although not more than five years old, is making substantial progress. It appeals to reason and common sense. Dr. Anders hopes that "this hygienic reform may prove to be a 'red letter' event in the history and development of sanitary science."

## TOBACCO AND HAPPINESS.

MEN smoke because they think it adds to their felicity. The only way to persuade a man to give up tobacco is to convince him that the use of it does not add to his happiness, but rather detracts from it. This would be easier to do were we not so adverse to convictions that interfere with our comfort. But whenever a fact strikes one of our foibles, or threatens a cherished appetite, almost immediately we knock it in the head or run away from it as if it were a deadly serpent. But, as Oliver Wendell Holmes said, "Facts are the brute beasts of the intellectual domain." They may not be beautiful or attractive, yet they are indispensable to our well being.

The smoker claims that the use of tobacco after eating is an aid to digestion, since it stimulates the flow of peptic fluids. Dr. Jay W. Seaver, in the *Arena* a year ago, showed that if this is true, the ordinary use of the drug must be extremely destructive to the digestive process. He says: —

"We have all chewed gum before dinner until, when we came to eat and chew dry food, there was no saliva to mix with it, and we ate with discomfort. In this case exactly the same thing has happened to the salivary glands that would happen to the peptic glands if one were to smoke before meals during the period of rest for the stomach; for the

gastric glands would be depleted, the fluids poured forth into the stomach under the stimulation, not being retained in that organ by food to be digested, would pass on into the intestinal tract, and when food was finally taken, the peptic cells would be unable to pour forth adequate solvents for the proteid mass, and digestion would be delayed until such solvents could be formed by cellular metabolism. Meanwhile the food would be retained in the stomach in a warm and moist condition favorable for the development of decomposition germs, which must always be present in the food we eat. The result of the decomposition process is the production of acids that are extremely irritating, and cause the discomforts that are so familiar to the dyspeptic. Not only has the food been manufactured into chemicals hostile to the organism, but, so far as future nutrition is concerned, it is actually lost, for the physiological cost of reducing these decomposition products to available forms for absorption and use is more than the available heat that can finally be produced in their oxidation."

It has been claimed by some physiologists that the drug in tobacco has a direct effect upon the blood corpuscles, but according to Dr. Seaver, "although anemia is a constant accompaniment of chronic nicotin poisoning, this is due to the disastrous results of the poison upon the digestive system, which does not prepare abundant nutriment for the blood current; and the anemia should, therefore, be referred to starvation rather than to corpuscular degeneration."

In common words, then, any use of tobacco injures the stomach, while the continual use of it ruins the entire digestive system. But for those who seek satisfaction in the senses, the seat of happiness lies in the stomach. No one, however lofty his ideal may be, can have joy and delight unmixed if his alimentary organs are in a state of rebellion. For this reason alone the tobacco habit is inconsistent with happiness.

There are other considerations also. The use of tobacco has a very injurious effect upon the nervous system, and indirectly upon the muscles. Dr. Foster, in his "Physiology," speaks of the influence of nicotin on the nervous tissues, especially on the vagi, as paralyzing their activity, thus allowing the heart muscle to wear itself out. "With this information," continues Dr. Seaver, "we can easily understand how, in the beginning of the habit of smoking, the influence of nicotin causes so much disturbance to the circulation; for the vagus is the great controlling nerve of the heart, and that organ first gives obvious response to the poison. The influence of nicotin may be counteracted by the administration of powerful heart stimulants, like strychnin, caffein, and alcohol. The whole nervous system is affected to some extent by even moderate doses of nicotin. Although the muscle cells are apparently only slightly affected by it, yet the nerve supply to the muscles being affected, the practical motor ability is greatly impaired. This has been thoroughly demonstrated by experiments carried out by Dr. W. P. Lombard, of the University of Michigan, who has shown that the administration of even moderate amounts of tobacco in the form of smoke lowers the working power of the human muscles by a high percentage, and there seems to be no compensation for lowered temporary ability in increased duration of it. His experiments were made with Mosso's ergograph, and his results may be crudely summarized as follows: In from five to ten minutes after beginning to smoke an ordinary cigar, muscular power began to diminish; and in an hour, when the cigar was burnt, it had fallen to about twenty-

five per cent. of its initial value. The total work of the time of depression, compared with a similar normal period, was as 24.2 to 44.8."

From his earliest childhood the natural man has an intense desire to be stronger than his fellows. But he can never accomplish this if he becomes a slave to the "weed." It is well known that whenever it is desired to secure the highest possible working ability by the organism, as in athletic contests, tobacco is one of the first substances prohibited. If a man would have the happiness of strength and vigor, he must let this dangerous drug alone.

Man by nature has also a desire to be tall and well developed. But the influence of tobacco on growth is unquestioned and easily estimated. Dr. E. Hitchcock, of Amherst College, after careful observation of an average group of young men, gives the following statement: —

"In separating the smokers from the non-smokers, it appears that in the item of weight the non-smokers have increased twenty-four per cent. more than the smokers; in growth in height, they have surpassed them thirty-seven per cent., and in chest girth, forty-two per cent.; in lung capacity there is a difference of 8.36 cubic inches (this is about seventy-five per cent.) in favor of the non-smokers, which is three per cent. of the total average lung capacity of the class."

In speaking of the effect of nicotin upon mental progress, Dr. Seaver remarks: —

"Out of our highest scholarship men, only a very small percentage (about five) use tobacco, while of the men who do not get appointments over sixty per cent. are tobacco users. But this does not mean that mental decrepitude follows the use of tobacco, for we may read the results in another way; viz., the kind of mind that permits its possessor to become addicted to a habit that is primarily offensive is the kind of mind that will be graded low on general intellectual tests."

Thus we see that the use of tobacco interferes with the digestion, weakens the nerves, lowers the working power of the muscles, stunts the physical development, indicates a low standard of intellectuality, and proves conclusively an illogical mind or a lack of will power.

The tobacco user cannot be a philosopher, if he is an intelligent man. He cannot be a true seeker after happiness unless he is grossly ignorant, for in every act of life we really do what we prefer to do. The man who smokes, knowing the effects of tobacco on the system, actually prefers to destroy his body, to be weak and miserable when he is old.

Tobacco and happiness are thoroughly incongruous. No true lover of the former can ever really win the latter. Nature has made happiness the highest reward for pure and high-minded living; self-indulgence receives no consideration from her august hands.

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"PICTURE the wondering, thirst-famished cattle,
Dazed by the street traffic's deafening rattle;
'Mid the clatter of hoofs, and the roar of the
wheels,
With drivers and dogs close on to their heels;
And think, as you look in each terrified face,
'T is the fear-stricken food of a civilized (?) race;
A people CALLED Christians in motive and deed,
With kindness to animals part of their creed."

# SEASONABLE BILLS OF FARE

***BREAKFAST***

Fresh Fruit
Toasted Granose
Gluten Mush with Dates
Banana Toast
Whole-wheat Bread with Sterilized
Nut Butter

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***DINNER***

Vegetable Broth with Toasted Rolls
Baked Potato with Pease Gravy
Baked Cabbage
Cracked Wheat with Cream
Cranberries
Crystal Wheat Custard
Pudding

***BREAKFAST***

Fresh Fruit
Rolled Oats with Cream
Apple Macaroni
Baked Sweet Apples
Whole-wheat Puffs with Sterilized
Nut Butter
Caramel Coffee

****

***DINNER***

Pea and Tomato Soup
Browned Potatoes
Nuttose with Granola
Cream Rolls
Scalloped Tomato
Steamed Rice with Fig Sauce
Stewed Fruit
Graham Bread

## RECIPES.

*Gluten Mush with Dates.*— Heat a quart of milk or water, or one half of each, as preferred, to boiling; sift in lightly with the fingers six tablespoonfuls of gluten, or sufficient to make a mush of the desired consistency. Just before serving, add some fresh dates, from which the stones have been removed.

*Banana Toast.*— Peel and press some good bananas through a colander. This may be very easily done with a potato masher, or a vegetable press may be used for the purpose. Moisten slices of zwieback with hot cream, and serve with a large spoonful of the banana pulp on each slice.

*Vegetable Broth with Toasted Rolls.*— Put a cupful of well-washed white beans into a quart of cold water in a double boiler, and cook slowly until but a cupful of the liquor remains. Strain off the broth, add salt, and serve hot on toasted rolls. If preferred, a few grains of powdered thyme may be added as flavoring.

*Another.*— Pick over and wash a cup of dried Scotch peas, and put to cook in a quart of cold water. Cook slowly in a double boiler or in a kettle placed on the range where they will just simmer, until but a cupful of liquid remains. Strain off the broth, add salt and one third of a cupful of the liquor, without pulp, from well-stewed tomatoes. Serve hot, pouring over toasted rolls.

*Crystal Wheat Custard Pudding.*— Take two cups of cooked crystal wheat, two and one-half cups of milk, one-half cup of sugar, and two eggs. Beat to-

gether thoroughly, and bake in a moderate oven until the custard is well set. A little grated lemon rind may be used as flavoring, or the sugar may be omitted, and a cup of raisins added.

*Pea and Tomato Soup.*— Soak one pint of Scotch peas overnight. When ready to cook, put into a quart of boiling water and simmer slowly until quite dry and well disintegrated. Rub through a colander to remove the skins. Add a pint of hot water, one cup of mashed potato, two cups of strained stewed tomato, and one cup of twelve-hour cream. Turn into a double boiler and cook together for a half-hour or longer; turn a second time through a colander or soup strainer, and serve. The proportions given are quite sufficient for two quarts of soup. There may need to be some variation in the quantity of tomato to be used, depending upon its thickness. If very thin, a larger quantity and less water will be needed. The soup should be a rich reddish brown in color when done. The peas may be cooked without being first soaked, if preferred.

*Nuttose with Granola.*— Put one-half pound of nuttose through a vegetable press, or grate it quite fine in a grater. Mix together two cups of granola and three of warm water; season with a little salt and a little pulverized sage or minced celery. Put alternate layers of the seasoned granola and the nuttose in a pudding-dish, finishing with the nuttose. Press together slightly, and bake in a moderate oven until lightly browned.

O WINDS of March!
God's messengers o'erflowing
With blessings for the cold and wintry world.
As at your call the violet upward growing,
Wakens the primrose and the bluebell,
Knowing that spring-time is at hand.
So may we teach our laggard souls
The story of life thro' death,
Of victory after strife, through storm and calm,
Bright spring or winter hoary,
Discerning ever in the outward glory,
The power of endless life. — *Sel.*

## OLD AGE IN NATURE.

DR. NEWELL DWIGHT HILLIS, in a recent sermon in Chicago, made the following comparison of nature and man with respect to old age: —

"If we analyze man's longing for perpetual youth, we shall find its explanation in the fact that in all hearts there is an instinct whispering that immortal youth is possible as a permanent possession. In the large and generous sense there is no such thing as old age. God is not old; his rivers have no wrinkles, his sunbeams are not decrepit, his oceans decay not. It is given to the soul also to feel that the dew of the morning is ever on the grass, that a great, rich career is always in front and never behind. There is no such thing as old age for music, love, friendship, hope, aspiration. The sunbeams are just as young and fresh as on that natal morn when the morning stars first sang together, and the sons of God shouted for joy.

"Nansen, with his sun-glass, on the coldest January day in the arctics, could burn a hole through a thick piece of wood.

The sunbeams are unspent, unexhausted, and are tireless in their working. When our great naturalist read Hesiod's description of the morning, he was discouraged, and said: 'Nothing new could ever be said of the dawn.' But when the June day came, the scholar found the morning just as new as though a summer's day had never before broken upon man's vision. It was still true that the warm, 'moist, melodious, budding hour took down the narrow walls of the soul and extended its life and pulsations to the very horizon.'

"Of great rivers, also, men cannot affirm age. The banks are indeed dead, and therefore the hillsides are wrinkled and the valleys register time, while the sands are worn by the ebb and flow of the current. But the river itself is neither young nor old. The proverb is: 'We never behold the same river twice,' which means that we behold a new river every morning. Now what the banks are to the river, that the body is to the soul. That great marble statue in the gardens of Berlin is in reality a fountain, and the living waters gush forth from the palms of the hand. The marble is yellow with age, but the cool currents of water flowing through it are as young to-day as they were one hundred years ago when first of all the emperor opened up that gushing stream.

"And it is given to man so to open his heart to the infinite flood-tides that perpetual youth is made possible. It is given to scholar and soldier, to sage and seer, to feel that the light shineth more and more, that each year is richer than the last, that God keeps the best wine until the end of life's feast. There is a valley of spices in Persia where the very leaves and boughs exhale sweet odors; and so long as the bough keeps drawing its supplies from the trunk, its sweetness is perennial. For untold ages also the great Nile has been flowing on, feeding nations, yet ever young, for it is fed by a thousand mountain streams that rise in the mountain heights and lay hold of the eternal heavens. Man also may be a partaker of the divine nature; and though the years be fourscore, in the heart God can open up the springs of perpetual youth."

## BATTLE CREEK SANITARIUM QUESTION BOX.

BY J. H. KELLOGG, M. D.

1. WHAT causes the sensation of falling when you are just going to sleep?

*Ans.*— It is a neurasthenic symptom closely akin to a small explosion in the head. It shows a disordered condition of digestion which is disturbing the sympathetic nerves.

2. What makes children talk, cry, and walk in their sleep? What is the preventive?

*Ans.*— These actions during sleep show an abnormal condition, a sort of somnambulistic state, analogous to the condition produced by the hypnotist. As a rule, they indicate that the child has indigestion, and the trouble should be removed by a proper diet.

3. Would ice-cream made of sterilized cream be unwholesome?

*Ans.*— Not if taken right. Ice-cream should be taken hot. This is the only way to take it in a perfectly wholesome fashion. It should be as hot as you can eat it. It is the coldness of ice-cream that is the chief cause of injury. The

cold paralyzes the stomach, and prevents the food from digesting.

4. Why does the appetite of some persons increase as they eat?

*Ans.*— Some persons have not much appetite because the solar plexus has so little blood in it. The seat of hunger is in the solar plexus, although appetite pertains somewhat to the brain. If one gets hungrier the longer he eats, it is because the eating brings the blood to the solar plexus, and creates an excitement which increases the flow of blood to this part, and so increases the appetite.

5. When the skin is tawny and has a greasy feeling, what kind of dyspepsia does it indicate?

*Ans.*—It does not indicate dyspepsia. It indicates a dirty skin. It means that the skin is dirty all the way through, and that this dirt is more than skin deep. The whole body is full of uncleanness, and should be washed out by electric-light baths, vigorous exercise out of doors, and proper diet.

6. Do you think plain dancing injurious?

*Ans.*— Not such plain dancing as we have in the gymnasium every morning after breakfast. There is no harm in a polka step, or a waltz step, as such. It is the surroundings and the excess that are injurious. These steps are good exercise, but people don't go to evening parties and dance till one o'clock in the morning for exercise. Dancing as it is done in society is most unhygienic and injurious.

7. In what way does a weak stomach affect the eyes?

*Ans.*— A weak stomach weakens every part of the body. If the stomach is out of order, the brain, and the bones even, are affected. Our bodies are made of what we eat; and if the stomach fails to receive and prepare the proper amount of nutrition, our bodies grow weak in consequence. More than this, the dyspeptic stomach allows decay of the food taken into it, and these products of decay ferment and make poisons that are absorbed into the blood, and contaminate every cell in the body. The eyes are affected no less than the blood, brain, and muscles.

8. Why should one be seized soon after meals with a sudden fear or dread of something, he knows not what?

*Ans.*— Such a person is suffering from gastric neurasthenia. Soon after eating, a sudden fear comes over him, probably not a fear that his dinner will fail to digest, but simply a general feeling of apprehension. Sometimes this fear assumes a specific form. I knew a person afflicted in this way, who, after his meals, would think there was something coming up behind him, and who was constantly glancing behind him to see. When passing a high building, he would look up for fear that something was going to fall upon him. When his dinner had been digested, he would be relieved of this apprehension. This peculiarity seems to arise from neurasthenic disturbances of the nervous system, when the spinal column is affected.

9. What is the effect of sleeping with the arms over the head?

*Ans.*— Probably there is no injurious effect. It seems foolish to pay so much attention to one's sleeping posture. A person who goes to sleep with his arms over his head may find them lying by his side when he awakens. Then if he is told by the doctor that he might become paralyzed if he sleeps with his arms over his head, he goes to bed with this idea in his mind, and finds it difficult to sleep. The various instructions published in the newspapers, advising sleeping on the right side or on the left side, with one's head

to the north or the south, or the east or the west, are all absurd. It is impossible for one to regulate his conduct when asleep.

10. How long does it usually take to cure a case of threatened nervous prostration?

*Ans.*— Nervous prostration is nothing but a symptom. If it comes from a physiological cause, it is not dangerous. If a person has nervous prostration because he has been working too hard, a proper amount of rest will cure him; but if his nervous prostration is caused by a pocket in his stomach, that is quite another thing. Since he cannot get rid of either stomach or pocket, he must find out how to manage the stomach, so that it will not give him nervous prostration by flooding his body with poisons. If you are threatened with nervous prostration, you probably have indigestion. You may have a prolapsed or a dilated stomach. The length of time required to effect a cure depends upon the cause, and how long it takes to remove it.

11. What treatment would you recommend for a boy ten years old who is so nervous that he makes faces and cannot help it?

*Ans.*— This is probably a case of what is called habit chorea. It is a disease not uncommon in nervous children. In this condition a child forms the habit of squinting, shrugging the shoulders, drawing up the limbs, and performing other abnormal actions. The difficulty is that the brain has not the proper inhibitory power. The cure consists in restoring the child's nervous equilibrium. What this boy needs is not medicine, or whipping, or scolding; he must learn more self-control; he must get inhibitory power. Teach him to control his muscles. Make him walk a crack in the floor. When he tries to do that, you will see that he lacks the power to control the muscles of his legs. The boy is not making faces because he likes to do so. The trouble is physical, not moral, and must be cured by physical, not moral, training. The boy must have a better nervous machine. Massage, cold baths, electricity, and gymnastics are important aids to this end.

## THE HOUSE BY THE SIDE OF THE ROAD.

["He was a friend to man, and he lived in a house by the side of the road."— *Homer.*]

THERE are hermit souls that live withdrawn
In the place of their self-content;
There are souls like stars, that dwell apart,
In a fellowless firmament,
There are pioneer souls that blaze their paths
Where highways never ran —
But let me live by the side of the road,
And be a friend to man.

Let me live in a house by the side of the road,
Where the race of men go by —
The men who are good and the men who are bad,
As good and as bad as I.

I would not sit in the scorner's seat,
Or hurl the cynic's ban —
Let me live in a house by the side of the road,
And be a friend to man.

I see from my house by the side of the road,
By the side of the highway of life,
The men who press with the ardor of hope,
The men who are faint with the strife.
But I turn not away from their smiles nor their tears —
Both parts of an infinite plan —
Let me live in my house by the side of the road,
And be a friend to man.

— *Sam Walter Foss.*

### Sciatica Treated by Means of Hydrochloric Acid.

A patient of M. Bourlier (Algiers), according to the N. Y. *Herald*, European edition, was being treated by means of saline injections, for sciatica. Not receiving much relief from this, he thought that perhaps the salt used was not strong enough, so he applied "spirits of salt," otherwise known as hydrochloric acid, to his skin. The result was that the disease soon disappeared. This mode of treatment has long been practised by M. Bourlier and others with good results.

The manner of application is very simple. A small quantity of the acid, one half to three fourths of an ounce, is poured into a bowl, and with the aid of a brush the painful parts are painted with the substance four or five times, and then a cotton dressing is applied.

During the application of the acid the patient experiences a prickling sensation, which is quite bearable. Some moments later the skin reddens, and the local temperature rises. Sometimes whitish serous vesicles appear, but they disappear within a couple of days.

The patient is usually relieved by the first application. From twenty-four to forty-eight hours are then allowed to elapse before it is repeated. Hydrochloric acid must, however, never be applied for several days in succession, and must never be used where the skin nutrition is defective.

### Vegetarianism in the Tropics.

Writing of a visit to Jamaica, "Summer at Christmas-Tide," in the *Century* magazine, Julian Hawthorne says: —

"One does not expect to eat much meat down here; vegetarians are in their element in the tropics, especially that superior order of them who favor that part of the vegetable kingdom which grows above ground. The country women who walk fifteen to twenty-five miles a day in the sun, with burdens on their heads which must sometimes weigh not less than fifty pounds, and who are never in the least tired — these ladies, it appears, live on fruit and yams only, and find them an all-sufficient diet."

### Audubon a Vegetarian.

In his journals, just published, Audubon, the great American naturalist, makes the statement that he does not eat meat. On one of his excursions for studying birds, a buffalo was killed by others of the party, and he tasted a bit of the flesh. "To my astonishment, it tasted good," he says, "but the idea was repulsive to me; besides I am not a meat eater, as you know, except when other provisions fail."

### The Nourishment in Peanuts.

Food experts in the department of agriculture at Washington assert that, pound for pound, peanuts have a food value greater than beefsteak, and that ten cents' worth of peanuts furnishes more actual nutriment than ten cents' worth of almost anything else.

THERE is no doubt that lack of good air is responsible for more physical disorders than we imagine. The air of a common sitting-room, office, or railroad-car is an offense to a person just entering from the pure outside atmosphere, and it cannot be but harmful to those who endure it.

SHE had sorrows besides her own to comfort, and such work does a body more good than floods of regretful tears or hours of sentimental lamentation. — *Louisa M. Alcott.*

# EDITORIAL.

WE rejoice to see that the *Voice*, of New York, has been making such a vigorous warfare against the Princeton Inn, and are equally astonished that some religious journals which claim to stand for the highest standards of morality and purity should take occasion to speak in defense of alcohol and of the maintenance of a convenient opportunity for Princeton students to supply themselves with strong drink. The assertion by the *Outlook* that the weight of the scientific authority is "that alcohol is sometimes a food and often a useful adjunct of food in promoting digestion" is certainly an error. There is no respectable scientific authority at the present time that undertakes to maintain that alcohol is in any real or practical sense a food substance. Even if this were true, the argument is utterly fallacious and ridiculous; for does the *Outlook* suppose for a moment that any Princeton student visits the Princeton Inn for beer, cocktails, mint juleps, or punch, because he is hungry? If the Princeton authorities had neglected to supply their students with the proper facilities for obtaining good, wholesome food, the hungry student might find in this fact a reasonable excuse for visiting the saloon to obtain a supply of alcohol, provided he believed this to be a good food. But there has been no complaint that the students have suffered from an inadequate food supply, and hence it is evident that the old argument that alcohol is a food is only hatched up to bolster up the devil's business of debauching men and luring them on in the road to ruin. We cannot think that the *Outlook* has any such intention, however, in its defense of the Princeton Inn. It is simply making use of the hackneyed argument that alcohol has a certain food value. Bunge and other physiological chemists of the greatest eminence have taken their stand against this false assumption, and the results of all modern investigations respecting the physiological effects of alcohol go to confirm Professor Bunge's views.

### The Great White Plague.

The death of forty thousand persons from the plague in Foochow the last year is evidence that the disease which depopulated whole countries during the Middle Ages still retains its old-time virulence, and that nothing but favoring conditions is lacking for a repetition of the awful epidemics of that period.

The fact that the plague is still with us doubtless strikes terror to many minds, but it would be well if all could be made to recognize the fact that we have ever present with us a plague which carries off annually in the United States four or five times as many persons as have died in the province of Foochow the last year,— a disease which, if less rapidly destructive, is, under ordinary conditions, more certainly fatal, than the Black Death. This is pulmonary tuberculosis, or consumption, which has been aptly termed the "great white plague."

This disease, like the plague, is contagious. The idea that the malady is usually hereditary was long ago abandoned by medical men; and it is now understood that when a man has consumption, he has received it from some other person or persons having the same disease, just as certainly as, when a man has smallpox, it is known that the disease has been derived from some other person or persons suffering from smallpox. Nothing is more discouraging to an intelligent and thoroughly informed physician than the apathy of the public in respect to this dread disease. Physicians and trained nurses fear it more than they do typhoid fever, diphtheria, scarlet fever, or any other ordinary infectious malady. The public ought to be everywhere informed respecting its extreme contagiousness, and its almost certain fatality

without change of climate; and it should also be generally known that a high altitude, with proper hygienic conditions, is the most valuable and important of all known curative measures. The Rocky Mountain region in the United States and Mexico is especially adapted to the treatment of this disease. The establishment of well-equipped sanitariums at Boulder, Colo., and at Guadalajara, Mexico, offer those suffering from tuberculosis an opportunity for recovery such as would be eagerly sought by persons suffering from the plague, if so certain a cure were within their reach.

### A Plague of Typhoid Fever.

A few weeks ago the English sanitary authorities reported an epidemic of typhoid fever prevailing at Maidstone, of such magnitude that forty per cent. of the inhabitants, numbering more than thirteen hundred cases in all, were sick at one time. Shops were closed, church bells silent, the streets deserted. Ninety-six per cent. of all the cases were traced to a single water supply, which had been polluted by drainage from a field in which was an encampment of hop-pickers who were living under the most unsanitary conditions. The outbreak occurred two weeks after these hop-pickers arrived from London. It is to the discredit of any city to have typhoid fever among its inhabitants. Dr. Parkes, the eminent English sanitarian, used to say that when a man dies of typhoid fever, somebody ought to be hung. If the sanitary authorities of any place do not take such measures regarding the protection of water supplies as to prevent typhoid fever, the intelligent inhabitants should make it their first business to see that their sanitarians become more active and intelligent, or that they are succeeded by others who are prepared to secure to them an immunity from disease which the present state of sanitary science renders possible.

### Importance of Symmetrical Development.

M. Kuntstler has recently undertaken to combat the idea that the body is an assemblage of friendly and sympathetic organs and tissues, asserting that the very opposite is true; that the various organs and tissues are not only competitors, but that they "fight one another." He undertakes to demonstrate this by citing the evils which arise from the overdevelopment of any particular organ or set of organs or tissues. He reminds us that over-fat people are not especially intelligent, but rather the opposite; and that the same must be said of those who possess a gigantic muscular and bony development. M. Kuntstler's contention is doubtless, in some degree at least, a valid one, and emphasizes the importance of symmetrical, or all-round, development. On the whole, however, we are inclined to the opinion that it is better for a man to have a slightly excessive development of brawn than to be "sicklied o'er with the pale cast of thought." What the world needs just now more than almost anything else is the "sound mind in a sound body" which was the aspiration of the ancient Greeks.

### The Nature of the Drink Habit.

Apropos of the numerous cures for intemperance with which the country at the present time fairly swarms, we call attention to an excellent article in the July (1897) number of the *Journal of the American Public Health Association*, by Dr. A. N. Bell, of New York, in which a number of cases and experiences are cited to demonstrate that inebriety is a vice rather than a disease. It is, of course, admitted that the vice of drunkenness, if maintained for a sufficient length of time, results in disease, or rather in diseases, numerous and grave in character.

In the writer's opinion it is highly important that it should be generally understood that the popular notion that inebriety is a disease, sometimes hereditary, sometimes the natural result of diseased conditions which create a craving for stimulants, is true only in a secondary sense, that the disease is directly due to voluntary vicious habits.

### Drinking at Meals.

Too much liquid of any kind is prejudicial to digestion, because it delays the action of

the gastric juice, weakens its digestive qualities, and overtasks the absorbents. In case the fluid is hot, it relaxes and weakens the stomach. If it is cold, it checks digestion by cooling the contents of the stomach to a degree at which digestion cannot proceed. Few people are aware how serious a disturbance even a small quantity of cold water, iced cream, or other cold substance, will create when taken into a stomach where food is undergoing digestion, as this process cannot be carried on at a temperature less than that of the body, or about 100° F. Dr. Beaumont observed that when Alexis St. Martin drank a glassful of water at the usual temperature of freshly drawn well-water, the temperature of the food undergoing digestion fell immediately to 70°, and did not regain the proper temperature until after the lapse of more than half an hour.

Of course the eating of very cold food must have a similar effect, making digestion very tardy and slow. If any drink at all is taken, it should be a short time before eating, so as to allow time for absorption before digestion begins. If the meal is mostly composed of dry foods, a few sips of warm or moderately hot water will be beneficial rather than otherwise, taken either at the beginning of the meal or at its close. The habit of drinking during the meal should be discontinued wholly, and especially by those whose digestive powers are weak. If the diet is of proper quality, and the food is well masticated, there will be little inclination to eat too much. When the food is rendered fiery with spices and stimulating condiments, it is no wonder that there is an imperious demand for water or liquid of some kind to allay the irritation.

### An Appropriate Epitaph.

A curious custom prevails in Zululand which might with advantage be adopted in more civilized countries. On visiting the cemeteries of that country, one sees numerous graves marked with mounds consisting of the bottles of medicine used by the deceased during his last illness. A like custom adopted in this country would soon diminish the trade in patent medicines, and probably drugs of other sorts. For example, consider the moral effect likely to be produced upon a man who daily swallows doses out of a bottle labeled "Somebody's Liver and Kidney Cure," when he discovers a half-dozen graves in his village cemetery decorated with the same sort of bottles.

Certain it is that the medicine-taking habit has acquired such enormous proportions in this country that "Dosed to Death" would be an appropriate epitaph for a vast number of tombstones, if the truth might be told in so blunt and conspicuous a fashion.

### Death in a Bouquet.

As the season of buttercups and daisies is approaching, it is important that parents should know that quite a large proportion of wild flowers, even those most modest and unassuming in appearance, are more or less poisonous. They may be handled with perfect impunity, but if eaten, deadly effects may be produced by the narcotic and irritant properties possessed by even such simple and innocent-looking flowers as buttercups. Nearly all the members of the botanical family to which the buttercup belongs are more or less poisonous, and are likely to produce serious effects if eaten, and even death if taken in considerable quantities.

This warning does not apply to boys who smoke cigarettes and chew tobacco, as the tobacco-plant is so much more deadly than the buttercup that a boy who makes use of it is probably as immune against ordinary poisonous weeds as a goat or a potato-bug

### Brain Work.

Mental labor, if agreeable and pleasant, is a most healthful occupation. There is no evidence for believing that brain work of that sort ever disagreed with the stomach or impaired its functions in any degree; but mental worry, discontent, anxiety, and gloom are most unfavorable conditions for digestion, and under their influence few stomachs can long maintain their integrity.

# DR. HAIG ON FLESH-EATING.

DR. HAIG, an eminent English physician, in his work entitled "Uric Acid as a Factor in the Causation of Disease," speaks thus clearly and emphatically respecting the influence of flesh-eating upon health. Dr. Haig premises his remarks with the statement that he had for many years suffered from severe headaches, for which he employed drug remedies of all sorts, but without relief, until in the year 1882 he renounced the use of flesh meats, with the most happy results.

"I had previously tried a great variety of alterations in diet, . . . but on adopting the non-meat diet a change was at once apparent; my headaches diminished in both frequency and severity, and from an average of one in a week they fell steadily, as this diet was persevered in, down to one in a month, one in three, six, eight, or twelve months, and eventually eighteen months elapsed without an attack of notable severity. . . .

"A further study of the clinical history of migraine brought out such a strong relationship to gout that I began to suspect that uric acid might be the poison of which I was in search, and I therefore proceeded to estimate the excretion of uric acid and urea. At first I estimated only the excretion of twenty-four hours, and as many of my headaches lasted only a portion of a day, I got indefinite or contradictory results; but when I separated the urine excreted during the headache from that both before and after it, a definite and distinct relation between the headache and the excretion of uric acid at once became apparent. . . .

"I have made two discoveries with regard to the causation of disease by uric acid. First of all, I found that uric acid taken by the mouth passes into the blood, and that if this fluid is kept in a condition to hold it in solution, it will remain in the blood until the kidney has time to pass the whole of it into the urine. The uric acid excreted normally in the urine comes from two sources: (1) the uric acid formed in the body out of nitrogenous food; and (2) the uric acid introduced into the body in meat, meat extracts, soup, tea, coffee, etc., all of which contain it in considerable quantity. . . . The explanation is therefore complete; meat produces the headache by introducing into the body and blood uric-acid plus substances of the xanthin group, and the same headache can be produced at will by swallowing any one of these substances in a state of comparative chemical purity. . . . My second discovery was that uric acid, when present in excess in the blood, affects its quality in an important manner, producing the changes met with in anemia and other diseases. . . .

"With regard to diet, we can give the main point in very few words, for we have seen that as flesh diet increases the introduction of uric acid, it increases the formation of uric acid, and its salts diminish the excretion and elimination of uric acid. A milk and vegetable diet, provided that no excess of albumens is taken, introduces less uric acid, causes the formation of less uric acid, and its salts promote the free elimination of all uric acid that is introduced into or formed in the body."

Dr. Haig in his investigations found that not only flesh meat but also eggs contain uric acid, and that tea, coffee, and cocoa, the alkaloids of which, caffein and theobromin, were long ago shown by Lehmann closely to resemble the extractives of meat, are also productive of uric acid in the system, and hence must be discarded.

Dr. Haig depends chiefly upon milk as a substitute for flesh food. In this respect, his views are in our opinion somewhat faulty, for the reason that headaches and other nervous disturbances which arise from the production of poisons within the body are not infrequently produced by the habitual use of milk; and Glenard has clearly shown that persons suffering from dilatation of the stomach must avoid the use of milk because of its too long retention in the stomach and consequent decomposition, with the product of ptomains and toxins.

Dr. Haig seems not to have discovered the interesting and most useful fact that nuts are a complete substitute for meats, eggs, and milk.

Nuts are, in fact, the vegetable analogue of meat, and require only suitable preparation to render them not only exceedingly palatable, but in the highest degree wholesome and digestible. The recent invention of methods by which this can be done, and the discovery of such interesting preparations as nuttose, malted nuts, nut butters, creams, etc., has made it easily possible for any person at once and entirely to dispense with the use of flesh food. A knowledge of this fact is of special practical importance in the United States, where so much stress has been laid by many physicians upon the employment of an almost exclusively meat diet as a remedy for amylaceous dyspepsia, or the inability to digest starch.

## TUBERCULOSIS IN COWS.

A RECENT examination of the cattle of the State Agricultural College of Kansas shows that of sixty cows, fifteen were infected with tuberculosis. A recent article relating to the subject remarks as follows: —

"Consumptive cattle could be pointed out in a very large per cent. of the herds of this State. Consumptive persons are known to live in every town. These all carry the infecting germs about with them. They expectorate on the streets and sidewalks of our towns, and on the highways of the country. The mucus thus thrown off contains tubercle bacilli. It dries, is reduced to dust, and fills the air with bacilli, thus giving everybody a chance to inhale it and contract the disease."

The danger of infection from tuberculosis is an ever-present one. The evil may be lessened somewhat by the inspection and slaughter of infected animals, but so long as infected human beings are allowed to go about in multitudes (the total number in the United States cannot be much less than three to four hundred thousand), infecting public assembly-rooms, hotels, sleeping-cars, and even the dust of the street, by expectoration, it must be evident that the destruction of a few cows will not exercise any very profound influence upon the control of this malady.

Tuberculosis is nearly as fatal a disease as leprosy, which it in many respects closely resembles. It is certainly a more contagious disease than leprosy, and is far more to be dreaded. Yet, strangely enough, although the public have long been informed respecting the fatal and generally incurable character of the disease and the great readiness with which it is communicated, there have been as yet no really serious attempts made toward its suppression or eradication.

In Naples, more than a century ago, a hospital for consumptives was erected, to which all persons infected with this disease were carried, so as to prevent the extension of the malady. It is passing strange that in the great centers of our advanced modern civilization, as London, New York, Paris, and Berlin, scarcely any attention is given to this important subject. Recently, however, there is an awakening to the necessity for definite and efficient steps to prevent the extension of this disease, which destroys, under ordinary conditions of life, one seventh of all the people who die in civilized lands, while under less favorable conditions, as in the tenement-house districts of our large cities, one fourth of all the deaths is due to one disease, tuberculosis.

That measures should be taken for efficiently quarantining persons suffering from pulmonary tuberculosis cannot be doubted. The writer, however, is not in favor of the erection of expensive hospitals in our large cities for this class, but would instead suggest that every State should build for itself in some portion of the Rocky Mountain region a hospital for the accommodation of its consumptive citizens, where they can have proper care, diet, baths, and such other conditions as will afford the best opportunity for recovery. The astonishing results which have been attained in the treatment of tuber-

cular patients by modern sanitary methods in an elevated region are such as must challenge the attention of the whole civilized world, and there can be no question that well-equipped sanitariums at an altitude of four to six thousand feet above the sea level afford to persons suffering from this fell disease the best possible chance for recovery, and not only the best chance, but a good chance, especially if the disease has not yet advanced to its latest stages. Incipient cases are almost certain to recover if they can have the intelligent guidance of a skilled physician, and the benefit of the care of trained nurses, correct dietary, correct training, and the intelligent employment of hydrotherapy.

At the present time there is but one such sanitarium in the United States, the Colorado Sanitarium at Boulder. Another is being equipped at Guadalajara, in Old Mexico, but there ought to be at least a hundred such institutions to accommodate the vast multitude of dying men and women, nine tenths of whom might expect to recover if they could take advantage of the proper conditions at an early period in the disease. With a hundred sanitariums in the Rocky Mountain region, special trains equipped for the transportation of tubercular patients, and an appropriation by each State sufficient to provide for the isolation and care of its dependent consumptive patients, prodigious progress could be made within one or two years toward the stamping out of this intractable disease. The time may come when our legislators will discover the fact, already patent to well-informed physicians, that for their own safety some such measures as those suggested will have to be adopted.

## NEW FACTS RELATING TO STARCH DIGESTION.

A RECENT German authority on the feeding of young children calls attention to the fact that the starch of the potato is more easily digested than the starch of wheat and other cereals. This statement is so much at variance with the established ideas respecting the comparative digestibility of vegetable and cereal starches that we felt quite incredulous, and so outlined a series of experiments to be conducted for the purpose of obtaining definite and reliable information upon the subject.

Potato starch, corn starch, wheat starch, and oatmeal starch were submitted to the test of artificial digestion. In the experiments made, a given quantity of each variety of starch was submitted to the action of a given quantity of saliva, the exact time required for the complete digestion of the starch being carefully noted. The saliva was obtained from eight different persons, and each variety of starch, carefully cooked, was subjected to the action of each person's saliva. As the result of these experiments, it was found that in every instance, except in one in which an evident error occurred, potato starch was digested much more quickly than starch of any other variety, it being digested in one half the time of the corn or wheat starch. The average time for potato, corn, and wheat starch was as follows: For potato starch, 1.6 minutes; for corn starch, 2.6 minutes; for wheat starch, 2.7 minutes. Only two experiments were made with the oatmeal starch. In one of these thirty minutes were required for the complete conversion; in the other, fifteen minutes. The same saliva digested an equal amount of potato starch in two minutes in one case, and in fifty seconds in the other. The same saliva that digested oatmeal starch in thirty minutes digested an equal amount of corn starch in three minutes, and the saliva that digested the oatmeal starch in fifteen minutes completely converted the same quantity of corn starch in one minute.

From these experiments there are two facts apparent: First, that the oat is the least easily digestible of the three most commonly used cereals; and second, that the current opinion regarding the indigestibility of the potato is without actual scientific foundation.

It must be remembered, however, that for the same reason, vegetables and fruits are not readily digested together by persons whose digestion is slow, for the reason that vegetables contain a considerable amount of woody matter, which interferes with their prompt and thorough disintegration in the stomach, so that they are too long retained, and thus fermentation is set up, and is encouraged by the saccharine juices of the fruits. Further investigations are being conducted in the Laboratory of Hygiene at the Battle Creek Sanitarium, the results of which will be reported in due time.

## TOLERATED DUELING.

It is strange indeed that in this day and age, when the tolerated barbarisms of the Middle Ages, such as dueling and allied social customs, are supposed to have been left behind in the onward march of progress, at least by nations which claim to represent Christian civilization,—it is strange indeed that in this enlightened age, and at this late moment, there should still be tolerated in all civilized countries practises, and even public exhibitions, which, if not generally known as dueling, are really nothing else, and are in every way as brutal, savage, and inhuman as dueling with swords or pistols, as is still practised in some European countries, and, until comparatively recent times, in our own frontier States and Territories. It is really a matter of no moment whether two men set about killing each other with pistols, knives, swords, or fists, so long as the weapon used is a deadly one, or one which may be made deadly if skilfully handled; in fact, at a distance of ten paces, a man would have fully as good a chance of escaping serious injury from a pistol-shot, as from the blow of an iron-sinewed arm administered by an antagonist close at hand. And yet pugilism is tolerated in a tacit way, if not openly, in every civilized country. The fact that every now and then a pugilist is killed seems to have little or no influence upon public sentiment against this most brutal and demoralizing pastime.

We shudder at and moralize about the bull-fights of Mexico and Spain, because a bull is generally killed, while now and then a bull-fighter is justly punished for his foolhardy cruelty by immolation on the horns of his intended victim; but we scarcely raise a protest against the constantly renewed spectacle of men in a ring smashing each other's noses, breaking each other's jaws, knocking each other senseless, and spattering the arena with human gore, though the torture endured is fully as great as that ever inflicted in the bull-ring, and the risk to human life actually greater than in bull-fighting.

According to a report recently published by the *Times-Herald*, of Chicago, thirty-one pugilists have been killed in the arena between June 1, 1832, and Dec. 7, 1897. Of these, three deaths occurred in England; the remaining twenty-eight in this country. On looking over the list, we find that after the death of Simon Burn, of St. Albans, Eng., in 1832, there were no further pugilistic casualties until the year 1876, which witnessed two deaths. Two deaths occurred in 1885, one in 1886, four in 1890, one in 1891, two in 1892, five in 1893, three in 1894, one in 1895, and nine in 1897. From this it appears that we are not growing more humane in this matter, but are rapidly growing more and more obtuse as to the value of human life, and more accustomed to the brutal spectacle of men pumicing each other's faces and dealing trip-hammer blows with scientific precision at the most vulnerable spots.

Another form of dueling which is not only tolerated but actually encouraged, and frequently by people whose position and character give no little weight to their influence, is foot-ball dueling, which, every year, is the occasion of several deaths and a multitude of maiming accidents involving lifelong injury and suffering. We may, as the result, ask ourselves the question: Are we a civilized people? or do we only wear the

garb of civilization while the savage still yells and leaps in our hearts?

It seems particularly inappropriate that this form of dueling should be tolerated and even encouraged at nearly all the leading educational institutions of the country. It would seem that no more effective means could be conceived for breaking down respect for the body as the temple of God, destroying all sense of its sacredness and of man's obligations to his fellow man as a brother and a brother's keeper.

## MEAT EXTRACTS NOT FOODS, BUT POISONS.

NEW developments confirming the remark of the late Dr. Austin Flint, that "thousands of people have starved to death on beef tea," are constantly coming forward. Professor Von Voit, of Munich, Germany, has recently announced the result of late researches concerning the nutritive value of meat extracts. The professor asserts that these extracts consist chiefly of excrementitious alkaloids, such as creatin and creatinin, which have been proved to have no nutritive value whatever. They very closely resemble, in composition, thein, or caffein, the poison present in tea and coffee, and produce similar effects.

We are not at all surprised at this discovery. The surprising thing is that any one should ever have supposed it to be possible to concentrate the nutritive properties of thirty or forty pounds of beef into one pound of beef extract, as claimed by the manufacturers of Liebig's Extract of Beef and similar preparations. Beef tea is simply a solution of the excrementitious elements of the meat.

The only portion of the flesh of an animal which is possessed of real nutritive value is that part which has been alive and active before death. These living structures are not soluble; if they were, an animal which happened to fall into the water would dissolve like a lump of sugar. During life there is a small portion of nutritive material in solution in circulation in the body. After death, this small amount of soluble food material is rapidly converted into excrementitious matter; and as the skin, kidneys, and lungs cease their action, these poisonous substances rapidly accumulate within the body, the molecular, or cell-life, of the body continuing some hours after death.

It thus appears that beef tea, as a French physician recently remarked, is "a veritable solution of poisons." The only portion of the flesh which has any nutritive value is that which is thrown away in making the beef tea or extract. The popular faith in beef tea as a concentrated nourishment has, however, become so thoroughly fixed and rooted that some time will be required to rid the world of this erroneous idea; but it is highly important that information upon the subject should be disseminated as rapidly and as widely as possible, for there is no doubt that many lives are annually sacrificed by faith in the superior nutrient value of meat juices.

### Unwholesome Desserts.

The practise of serving fruit, puddings, nuts, confectionery, and tidbits of various kinds as a dessert, is a pernicious one. In the first place, it is an inducement to overeating, since it is quite probable that enough has been eaten before the dessert is served. If the articles offered are wholesome, they should be served and eaten with the meal, as a part of it, and not at its close, in addition to the meal. But it is generally the case that most of the articles served at dessert are wholly unfit to be eaten at any time, and so should be discarded. Dessert is really an ingenious device to lead people to make dyspeptics of themselves by eating more than they need. A safer and more sensible method would be to begin the meal instead of ending it with the dessert.

# ANSWERS TO CORRESPONDENTS.

**Night Sweats.**— W. E. L., Montana, asks what to do for cold night sweats.

*Ans.*— A saline sponge bath (two teaspoonfuls of salt to a quart of water) taken at night on retiring, is a valuable remedy.

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**Sciatica.**— D. A. Y. wishes to know what is the best diet for a sedentary person who has quite constant sciatic pain.

*Ans.*— The cause of the difficulty must be sought out and removed. Rest in bed with a fomentation over the seat of the pain will generally effect a cure in the course of one or two weeks.

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**Morning Bath — Fruit Diet — Drinking-Water.**— J. C. S., Iowa, wishes to have the following questions answered: "1. Would the practise of taking a cold sponge bath in the morning be harmful taken in a room at a temperature of about 60° F.? 2. In case a person becomes chilly in going from the bedroom to the bath-room, would it not be better to take a warm bath before the cool sponge? 3. A diet of grapes, watermelons, and peaches is recommended for certain forms of indigestion; but when these are not obtainable, would apples do as well? 4. For persons who cannot afford to use the nut preparations, which would best supply their place, walnuts or meat? 5. In discarding the third meal, would it not be well to drink two or three cups of strong caramel-cereal at the time the third meal was usually taken? 6. Would the continued use of the water, the analysis of which I enclose, have any deleterious effect? It comes from a depth of between three and four hundred feet. Would it not be better than common well or hydrant water?"

*Ans.*— 1. No.

2. Yes.

3. Yes, in most cases.

4. By all means avoid meats. Walnuts, pecans, hickory-nuts, and almonds are all excellent nuts, but care should be taken to obtain them fresh.

5. Strong caramel-cereal is not to be recommended. Hot water would be better than any sort of mixture. A little fresh or stewed fruit will satisfy the stomach better than water, and will tax it very little. A melon of some sort is the least objectionable fruit, but unfortunately a melon cannot always be obtained at all seasons of the year.

6. The analysis enclosed shows that the water contains 153 grains, or one-third of an ounce, of salts per gallon. This is a very large quantity, almost as much as ordinary hard water contains. The salts are chiefly potassium, sodium, and magnesium sulphates. The continuous use of such water would certainly be harmful. Common well or hard water can be made soft by boiling.

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**Obesity — Croup — Displacement.**— Mrs. G. B., Pennsylvania, a new subscriber, is anxious to find a cure for obesity. She asks: "1. What exercise should one take who has not a bicycle? 2. What diet would you advise? 3. What is a good remedy for croup? 4. What remedy would you advise for displacement and falling of the uterus?"

*Ans.*— 1. Walking is an excellent remedy for obesity, but it must be remembered that it takes a large amount of walking to obtain the amount of exercise required by such a case. Manual Swedish movements are of special value, also gymnastic exercises. Hill-climbing is about the only kind of exercise which can be relied upon to reduce obesity.

2. Eat as little as possible, and food which contains only a moderate amount of starch: avoid sugar and fats as much as possible. Granose and fruit is an excellent diet for persons suffering from obesity.

3. Spasmodic croup is usually relieved by the warm bath or a hot blanket pack. True croup is usually diphtheritic in character, and should receive the same treatment as diphtheria.

4. This patient should consult a specialist. The Natural Abdominal Supporter is required, and probably other treatment.

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**Beet-Sugar.**— A. R., New York, asks if beet-sugar is more healthful than cane-sugar.

*Ans.*— Beet-sugar and cane-sugar are precisely the same thing. The variety of sugar known as cane-sugar, is found not only in the sugar-cane and the sorghum, but in the ma-

ple-tree, the sugar-beet, and in several other plants.

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**Constipation — Tetter.** — A. C. M., Illinois, asks: "1. What is the cause and the best treatment for chronic constipation? 2. Is there any cure for tetter in the hands?"

*Ans.* — 1. There are many causes of constipation. Among the most active might be mentioned the following: (1) Prolapse of the bowels from tight lacing, wearing of a belt about the waist, or bad positions in sitting; (2) dilatation of the colon; (3) dilatation of the stomach; (4) general weakness; (5) clogged liver; (6) hemorrhoids; (7) rectal ulcer; (8) complete or incomplete paralysis of the rectum, the result of a surgical operation or other causes; (9) deficient secretion in the large intestine.

As remedies for constipation, the following measures are especially to be commended: (1) A relaxing diet, the articles best adapted to this purpose being granose, malted nuts, bromose, maltol, and other nut preparations, figs, — particularly steamed, — stewed prunes, apples, and most other fruits. The diet should be chiefly composed of these articles in order to secure the best effects. (2) Antiseptic charcoal tablets, of which two to four may be used after each meal. (3) A glass of cold water half an hour before breakfast. (4) One or two oranges eaten before breakfast. (5) For persons who have sufficient strength, a brisk walk or other vigorous exercise half an hour before breakfast. (6) Massage of the bowels and abdomen. (7) Manual Swedish movements. (8) Moist abdominal bandage. (9) Hot and cold douche over the liver and abdomen. (10) Cold morning shower-bath. (11) Wearing the Natural Abdominal Supporter, or Natural Body-Trainer. (12) Application of electricity to the abdomen and rectum. (13) The graduated enema. (14) The introduction of half a pint of cold water into the rectum before breakfast or the night before. (15) The introduction of an ounce or two of olive-oil or almond-oil into the rectum on retiring at night. (16) The introduction into the rectum of three or four ounces of water containing half a teaspoonful of spirits of camphor on going to bed. (17) The introduction of a small quantity of glycerin into the rectum — two or three teaspoonfuls with equal parts of water — just before going to bed at night. (18) Glycerin suppositories introduced at night and before breakfast. (19) The introduction of a dram or two of boracic acid into the rectum daily before breakfast. (20) Regularity in eating and in going to stool.

In the great majority of cases the free use of granose will alone suffice to regulate the bowels. Sometimes a combination of several of the foregoing measures is necessary to establish regularity of the intestinal movement. Full directions for the employment of the above measures will be found in "The Stomach," published by the Modern Medicine Publishing Co., Battle Creek, Mich.

2. Yes. So-called tetter is a form of eczema. The method of treatment required differs with the individual cases.

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**How to Sterilize Butter — Sweet Potatoes — Buttermilk.** — J. G. Mc L., Louisiana, asks: "1. How is butter sterilized? 2. Are sweet potatoes constipating? 3. Are they hard to digest? 4. Is buttermilk constipating? 5. Is it a good food for one who has indigestion?"

*Ans.* — 1. In making sterilized butter, the cream must be first sterilized by boiling from fifteen to twenty minutes. The butter must then be made with as little exposure to the air as possible. Butter thus made is not perfectly sterilized; that is, it will not keep indefinitely, as will perfectly sterilized food substances, but the dangerous and disease-producing germs are killed.

2. No.

3. Sweet potatoes are somewhat less digestible than common potatoes.

4. No.

5. It is excellent for certain cases.

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**Eczema — Catarrh.** — Mrs. E. M. C. asks, "1. Will eczema 'get into the blood'? 2. Do you consider sulphur and cream of tartar proper remedies for it? 3. Should a mother with a nursing baby take such medicine for the sake of the child? 4. What are the symptoms of catarrh of the stomach in a baby? 5. How should a cold in the head be treated in a very young infant?"

*Ans.*— 1. No.

2. Sulphur is an intestinal antiseptic, and mixed with cream of tartar, produces a laxative effect when administered, and might prove of temporary benefit in some cases of eczema; but remedies of this sort are not curative ; the cure must be found in correcting the bodily condition. An aseptic dietary, — which of course excludes meats of all sorts,— consisting of fruits, grains, and nuts, is especially appropriate for these cases.

3. No.

4. Vomiting of mucus.

5. Keep the child in a warm room; blow into the nostrils antiseptic vapors, by the aid of the Magic Pocket Vaporizer, several times every hour. Give the child a cool sponge bath followed by a vigorous rubbing with oil twice a day.

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**Fruit in Dyspepsia.**— Mrs. A. T. S., Pennsylvania, has been a dyspeptic for many years. She finds difficulty in using acid fruits, and asks especially for our opinion regarding the use of apples and oranges with acidity of the stomach, and their relation to rheumatism.

*Ans.* — The use of fruit does not cause rheumatism or aggravate it ; it is indeed an excellent food remedy for rheumatism. Acid fruits must be avoided in cases of indigestion where there is an inability to digest starch, especially when accompanied by hyperpepsia, or excessive production of hydrochloric acid. Even such cases, however, can generally eat fruit, if no other food is eaten at the same meal.

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**Nervous Child.**— Mrs. E. W., Iowa, is anxious to know what to do for her little boy. He is never still an instant, is morbidly fearful, and destructive ; is subject to croup, and cannot be induced to sleep in the daytime. He has been carefully and tenderly reared.

*Ans.*—The child needs general health culture. He should have a cold sponge bath every morning followed by rubbing with oil. He should be carefully fed upon a dietary of fruits, grains, and prepared nuts. He should be out of doors, properly protected, for an hour or two every day He should be well protected with clothing, but should not be kept in too high a temperature indoors. A temperature of 65° to 70° F. should not be exceeded. Great care should be exercised in relation to the quality of his food, regularity of feeding, etc. Granose and malted nuts are especially to be recommended for such a child.

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**Pimples.**— W. C. M., New York, asks for a cure for pimples on the chin.

*Ans.*— Discard the use of meat, butter, and milk. The diet should consist of fruits, grains, and nuts. Take two or three antiseptic charcoal tablets after each meal.

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**Free Fat — Nut Foods.**— A subscriber in California wishes to know : " 1. What is the difference between emulsified and free fat ? 2. Can a person in health remain in as good condition without milk, butter, cream, and eggs, as with them, provided nuts take their place in the bill of fare ? 3. Is nut butter as easily digested as cow's butter ? 4. Do you consider the nutcoa, or cocoanut butter, made by the Vegetarian Society of America, at Philadelphia, a wholesome fat ? "

*Ans.*— 1. In an emulsified fat the fat is divided into minute particles which are mixed with water and are very easily taken up by the absorbents. Emulsified fat mixes readily with the food substances in the stomach, and does not interfere with their digestion; while free fat smears over the food and the walls of the stomach, and is likely to ferment and decompose, producing "heartburn" and various other symptoms of indigestion.

2. Certainly.

3. Sterilized nut butter is much more easily digested than cow's butter. Ordinary nut butter is not easily digested by some persons because of the high temperature to which it is exposed in the process of manufacture.

4. I have not examined this product, but considering the source from which it comes, I think it is doubtless as wholesome as any free fat can be.

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**Paralysis.**— J. T. B., London, England, writes of the case of a friend who has been paralyzed on the right side of the body for

three years, the brain also being affected. She has been able to talk during one year of the time. The principal treatment given is magnetism, with hot and cold water, under which there has been some slight improvement. The patient wishes to know why such articles of food as oranges, apples, raisins, etc., are forbidden by her physician. There is inactivity of the bowels without pills.

*Ans.*— We cannot imagine any good reason why the fruits named should be forbidden.

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**Acid Dyspepsia.**— J. H. T., Iowa, has suffered with acid dyspepsia for years. When the food and sour liquid in the stomach is expelled by regurgitation, the patient feels relieved. This occurs when the diet is of soft foods, but when dry foods are eaten, the poisons are not thus thrown out, and dizziness and other unpleasant symptoms result. The appetite is good. The patient is employed in a sedentary occupation, and cannot afford a visit to a sanitarium.

*Ans.*— This patient is probably suffering from dilatation of the stomach. Benefit would probably be derived from lavage, or washing by a stomach-tube, once a week. The diet should be dry and aseptic,— chiefly granose and nut products,— and two or three antiseptic charcoal tablets should be taken after each meal.

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**Grape Juice — Fruits and Vegetables.** H. L. P., Washington, having seen in GOOD HEALTH a recommendation of pure grape juice as a drink, wishes to know: (1) where it can be obtained, and the cost; (2) how much of it should be taken at a time; (3) with what class of foods may fruits be eaten, if not with vegetables and meat?

*Ans.*— 1. A most excellent brand of grape juice is provided by the Battle Creek Sanitarium Health Food Company, at 35 cents per pint; in quantities it is sold at $4 per dozen pint bottles.

2. One may take without injury a half-pint of grape juice at a meal; it should be only taken at meals, and at other times should be added to the water simply as a flavor.

3. With grains and nuts.

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**Fleas — "Fizzing" Drinks.**— G. W. G., California, asks: "1. Is there any solution, preparation, or measure which will prove sufficiently obnoxious to fleas to keep them off the person of one for whom they seem to manifest a decided partiality? 2. What is the effect of 'fizzing' drinks upon the stomach? They are made by preparing lemonade in the usual way, then stirring into it enough soda to cause it to foam up. Does the soda change the essential character of the lemonade? If so, is it deleterious?"

*Ans.*— 1. The oil of pennyroyal and the oil of sassafras have been recommended for this purpose. Menthol liniment will usually relieve the pain caused by flea-bites.

2. The effect upon the stomach of such a drink as that described must be exceedingly deleterious. The chemical change which takes place is the liberation of the carbonic acid gas, the citric acid of the lemon taking its place, and producing citrate of soda, a chemical compound more or less harmful in character.

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**The Olive.**— H. Mc D., California, wishes to know what are the good and what the bad qualities of olives; and if they are wholesome as commonly put up — in salt.

*Ans.*— The olive is extremely indigestible. When preserved with salt, its indigestibility is increased to such a degree that it becomes about as unwholesome and indigestible as sole-leather. It has practically no food value. Olive-oil may be utilized as a food by combination with other food substances.

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**Gall-Stones.**— E. W. C., Iowa, asks: "1. What is the cause of gall-stones? 2. What is the best treatment for this condition? 3. Do you recommend the internal use of olive-oil as a remedy in these cases?"

*Ans.*— 1. The formation of small concretions in the biliary passages, which, falling into the gall-bladder, increase in size. The disease may originate in catarrh of the bile ducts.

2. The diet must be corrected; it should be confined to fruits, grains, and nuts. When the stones are small, they may sometimes be removed by the efforts of nature in forcing them out into the intestine. When they are too large to pass through the duct, a surgical operation is necessary for their removal.

3. Olive-oil may possibly be of benefit in some cases, but its value must certainly be very small.

# LITERARY NOTICES.

THE Christian Union Church of Wethersfield, Conn., has just begun the publication of a little monthly which promises to become an effective and uplifting force in behalf of our poor fallen humanity. From the fact that three of the editors are vegetarians, it is easy to predict that something will be said now and then in the columns of this excellent little monthly in behalf of that most fundamental and effective of all humanitarian reforms, vegetarianism. Vegetarianism represents the broadest humanitarianism, for it extends humanitarian principles beyond humanity, including what we are accustomed to term the "lower orders of life." It recognizes not only the brotherhood of man, but the kinship and brotherhood of all things that breathe and think. Although no mention is made of this movement in the number of this new monthly which has been brought to our notice, we are confident that the vegetarian contingency of the editorial corps will not be able long to hold their peace in relation to principles so true and noble and sacred as those which underlie the vegetarian crusade.

The editor of GOOD HEALTH welcomes most heartily this new champion for truth.

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THE February *Cosmopolitan* contains the conclusion of the imaginary history of "Our Late War with Spain" by an anonymous writer, whose style the *Review of Reviews* says strongly resembles that of the editor, James Brisben Walker. An important article of this issue is "The Selection of One's Life-Work," by Professor E. Benjamin Andrews. Col. George E. Waring, in his series, "Great Business Operations," tells of the utilization of city garbage, a subject to which he has given not only much study, but practical experiment as well, during his term of office as the street-cleaning commissioner of New York. One dollar a year; single copy, ten cents, The *Cosmopolitan*, Irvington, New York.

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THE *Chautauquan* for February treats of the following interesting subjects, among others: "The Rhine Country," by H. A. Guerber; "Colonial Household Industries," by Alice M. Earle; "Insect Communities," Alice B. Comstock; "Telegraphy without Wires" (a translation), by Ernesto Macini; "Lohengrin," by Charles Barnard; "Indian Native Skill," by Chief Pokagon.

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THE *Demorest's Family Magazine* comes out in a new form for 1898, the page being now about the size of that of the *Ladies' Home Journal*. The February number is profusely illustrated. Two articles which may be mentioned as of special interest are: "Physical Training in Our Public Schools," by Mary Annable Fanton; and "Scientific Mothering: A Mechanical Device for Assisting Nature" by the same writer. The price of this magazine has been reduced to one dollar a year, ten cents a single copy. Demorest Pub. Co., 110 Fifth Ave., New York.

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THE February number of *Munsey's* magazine has a well-illustrated article on "The National Library," which is not so long as to tire the ordinary reader with its detail, but gives a good general idea of the interior of this magnificent building. As the writer well says: "The best description gives only a shadowy idea of the actual grandeur of our National Library. This most beautiful structure in America must be seen to be appreciated." One dollar a year; ten cents a single copy. Frank A. Munsey, publisher, No. 111 Fifth Ave., New York.

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IN the February Lippincott's R. G. Robinson, who is an authority on his chosen subject, supplies some information upon Florida, "The Land of the Winter Cucumber." "The Poetry of Shelter," is one of Dr. Charles C. Abbott's very best nature-papers. Samuel M. Warns writes briefly of "Odors," William Towbridge Larned of "Insomnia," Ellen Duvall of "Opportunity," and M. A. De Wolfe Howe of "The Other Side of Letters," while Dr. Theodore F. Wolfe gives the third paper of his series, "Some Literary Shrines of Manhattan."

# PUBLISHERS' DEPARTMENT.

We must apologize for our tardiness in filling orders for the January number of Good Health. With the magazine's remarkable growth in circulation, orders came in so fast that the office was almost snowed under. By the middle of the month the supply of the current number had been entirely exhausted, and still requests were coming in daily from subscribers who did not want to lose a single number of the volume. To meet these demands, it became necessary to print a second edition, so that we are now prepared to begin subscriptions with the January number, where it is desired, and none need to miss any part of the volume.

Subscriptions continue to pour in, and agents send in most encouraging reports. Still there is room for more. We want a live, active agent in every city, town, and county in the United States.

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A health exposition is to be held at the Grand Central Palace, New York, beginning April 25 and continuing five weeks. The foundation will be a sanitary science show, upon which will be built a series of practical lectures and demonstrations, amusement features, etc. There are already more than eight thousand women co-operating with the management. During the first week of the exposition there will be a convention of the National Association of Trained Nurses.

Perhaps the most important single department, both from a popular and an educational standpoint, will be the Trained Nurses' Educational Exhibit. The display will comprise everything in modern hospital and sick-room service, a historical collection representing the advance in medical and surgical science during the century. There will be shown a sick-room, not only of the rich house, with all the expensive appliances and furnishings, but also of the house of the very poor. Exhibits have already been secured from nearly all the hospitals of New York and Brooklyn, and the co-operation of all the nurses in the country is desired. An attractive corner of the second floor will be occupied by the Domestic Science Department of the W. C. T. U. Here will be given noonday talks on everything connected with this branch of the organization, such as nutrition, cooking without alcohol, in the home and hospital, etc. Afternoon receptions and five o'clock teas will be held daily.

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We take pleasure in calling the attention of young men and women to the offer in another column of a three months' scholarship in Battle Creek College. This institution not only affords its students rare facilities for rapid advancement in their studies, but also throws about them influences of a moral and spiritual nature especially favorable to the attainment of the highest type of culture. We are sure that the courses will more than meet the expectations of the persons planning to enter them. The offer is certainly a liberal one, and will doubtless meet with a hearty response.

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## SCHOOLS OF HEALTH.

The rapidity with which Schools of Health are coming into favor indicates that a great many people are finding out that there is more than one way to deal with disease, and that the best way to treat an illness is never to have it. Our workers find open doors everywhere. People are anxious for instruction in health principles, and eager to put them into practise. Letters from workers in different cities give the following items of interest: —

"In the school here our program for yesterday was as follows: First, cooking lessons, a talk on soups, three kinds being prepared in the presence of the class. Then followed a lesson in physical culture, in which even the old ladies took part with evident interest. After this the gentlemen were dismissed, and a talk was given from the outline charts. Several ladies had come clothed more loosely as the result of a previous talk."

"Three leading clergymen attended part of our school, and others were interested."

"One woman walked in from the country five miles to attend the school."

"Our work has been gladly received by all whom we have met. Everything seems to be ready for the school."

"We are finding plenty to do. One evening a paper on health principles was read at a meeting of the Epworth League. The meeting was well attended, and the paper favorably received."

One of the workers was asked to sing at a missionary meeting, and agreed to do so on condition that he might be given some time to explain this work. After singing, he was to have fifteen minutes, but the people were so interested that he was urged to continue, and finally talked almost an hour. He took several subscriptions for Good Health, and received invitations to make calls upon people who wished to learn more.

A school is being organized in Syracuse, N. Y., under the supervision of G. D. Ballou.

In Brooklyn, N. Y., our old and experienced agent, George A. King, is organizing five schools.

C. E. Dunlap is at work in Lima, O.

R. B. Craig is getting the work under way in New Orleans, La.

F. B. Johnson and C. W. Patch are organizing a school in Memphis, Tenn.

Elder E. H. Gates and Mrs. Gates have worked up an excellent interest in Harriman, Tenn.

L. A. Hansen sends in encouraging reports from Nashville.

February 8, A. B. Castle and F. W. Proctor started for Port Huron, Mich., to take up the work there. The citizens of that city have been calling for a school for some time.

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WE take pleasure in calling the attention of our readers to an advertisement in another column of a very interesting and instructive parlor game called "Combi-numbers," which will be found particularly valuable to school children, advanced students, and bookkeepers. We are confident that any one who will take the pains to become familiar with the combinations of numbers which are contained in this game may not only become very rapid and accurate in addition, but will also find the system of assistance in every kind of mathematics.

IN going to St. Paul and Minneapolis the wise traveler selects the Chicago, Milwaukee & St. Paul Railway.

Why?

It is the best road between Chicago and the twin cities.

It has the most perfect track.

Its equipment is the finest.

Its sleeping-cars are palaces.

Its dining-car service is equal to the best hotels.

Its electric-lighted trains are steam-heated.

Its general excellence has no equal.

It is patronized by the best people.

It is the favorite route for ladies and children as well as for men.

It is the most popular road west of Chicago.

For further information, apply to nearest ticket agent or address Harry Mercer, Michigan Passenger Agent, C., M. & St. P. Ry., 7 Fort St. W., Detroit, Mich.

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"A GOLDEN ERA" is the title of an illustrated pamphlet issued by the general passenger department of the Chicago, Milwaukee & St. Paul Railway on mining in Colorado, California, and other Western States.

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# THE QUESTION OF FOOD.[1]

In the modern treatment of disease, *materia alimentaria* has come to be recognized as pre-eminent in importance, yet the science of dietetics has scarcely kept pace with progress in other branches of therapeutics. Not a drug in the materia medica nor a poison in the nosological category can be named which has not been most minutely studied in relation to its effects upon the human organism, whether taken alone or in combination with other agents.

**The Foundation of Medical Dietetics.**

Liebig laid the foundation of scientific dietetics by his indefatigable researches bearing upon the relation of food substances of various sorts to nutrition, and Bernard, Pettenkoffer, Pereira, Lehmann, Bunge, and others have given us practical facts of immense value from a dietetic standpoint; but for some unexplained reason we have been remarkably slow to avail ourselves of the scientific knowledge gained by laboratory investigation and experiment, and, for the most part, invalids are no better fed to-day than they were a hundred years ago. Indeed, not a few physicians are decidedly pessimistic upon the subject of dietetics, advising their patients, as did the late Dr. Austin Flint, to eat what they like, when they like, and as much as they like.

The considerable degree of success obtained, however, by various diet-cure establishments which have sprung up within the last quarter of a century in different parts of Europe, especially Germany and France, have demonstrated the fact that in dietetics the physician possesses an agent of tremendous power with which to combat morbid conditions of the most varied types, and one which a rational practitioner cannot afford to ignore.

**Artificial Digestives Worthless as Curatives.**

In every civilized community there is to be found a class of invalids, increasingly large in numbers, who have exhausted the resources of medication for the relief of chronic stomach disorders, having been promoted from pepsins to peptones, from ferments to enzymes, from tonics and stimulants to so-called restoratives, but without other result than the gradual and certain development of their maladies and an aggravation of inconveniences and sufferings. The only hope for this great class of sufferers is to be found in rational dietetics.

Probably the chief reason why progress along the line of medical dietetics has been so slow has been the lack of facilities whereby the physician could meet the requirements of the various morbid conditions brought to his notice. To say to a patient, "You must not eat this," "You must avoid that," "You must exclude such and such articles from your bill of fare," often leaves the sick man in a state of perplexity as to what he shall eat; everything he cares to eat — everything his appetite craves — has been denied him. Almost every article accessible to him has been proscribed, and he seems to have but one alternative, either to starve to death or to continue eating those things which have been condemned as unwholesome.

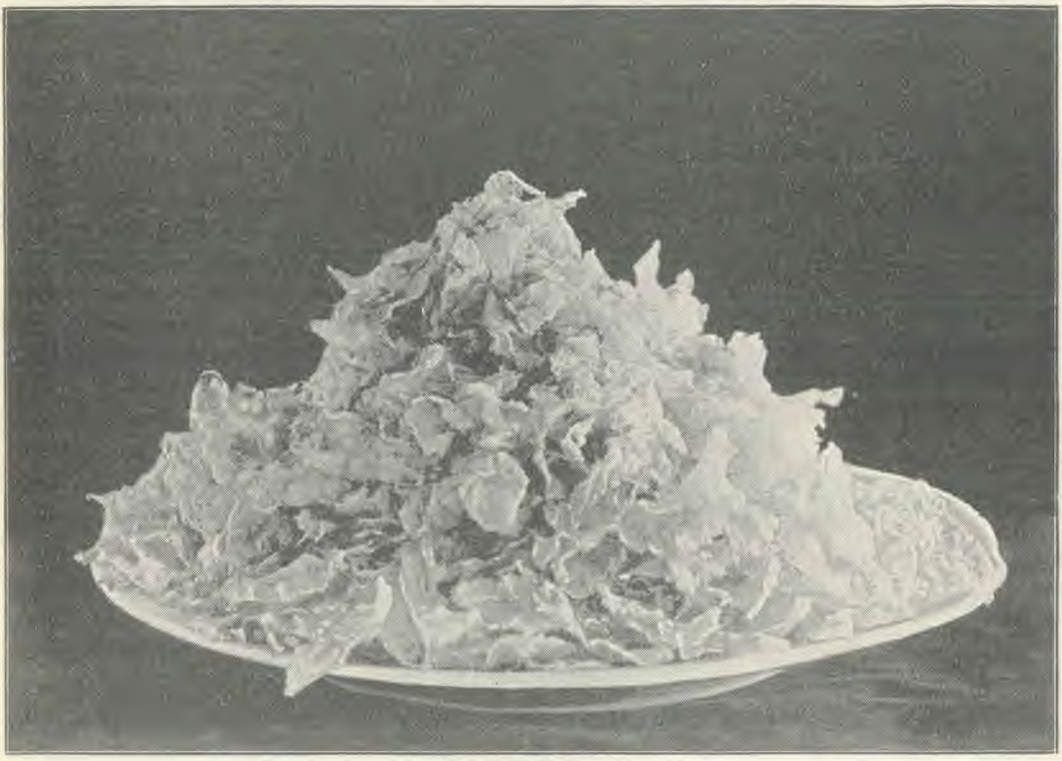
The patient needs positive as well as negative advice in the matter of diet; to say, "Thou shalt not eat this or that," is not sufficient; the physician ought to be prepared to give to his patient a list of things which are wholesome and exactly adapted to his condition.

[1] Reprinted from the *Journal of the American Medical Association.*

**Medical Dietetics Require Special Food Preparations, just as Materia Medica Requires Pharmaceutical Preparations.**

The great difficulty with which physicians have had to deal in the dietetic management of their patients has been the fact that the ordinary bill of fare is so far removed from the natural way in diet that a prescription made in harmony with correct principles and based upon an exact analysis of stomach fluid obtained after a test-meal can scarcely be constructed from articles of food which are found upon the customary menu. It has long been apparent that the scientific management of dietaries in the treatment of disease requires the application of scientific principles in the preparation of special food products just as the rational use of drugs depends upon the science of pharmacy.

For more than twenty years the management of the Battle Creek Sanitarium have been doing pioneer work in rational therapeutics along various lines. The management of this institution have given special attention to the question of food, and many years ago recognized as a problem urgently requiring solution the production of a series of genuine food products prepared in such a manner as to require the least possible labor on the part of the digestive organs, and to meet the most common and important therapeutic indications, and at a price in proper proportion to first cost, so as to be within the reach of the average invalid.



GRANOSE FLAKES.

**The Origin of Some Important Health Foods.**

It is not the purpose of this paper to give a historical account of the elaborate and extensive experiments or series of in-

vestigations which have been conducted for the purpose of solving problems in medical dietetics within the last twenty years, but rather to call attention to the results which are recognized as including a great number of important advances in methods of meeting the dietetic wants of invalids. The means at service for this work have been an Experimental Kitchen, under the management of the superintendent of the Battle Creek Sanitarium School of Cookery; a Laboratory of Hygiene, with a full outfit of chemical, bacteriological, and physiological appliances; and a large Hospital and Sanitarium, feeding daily from 800 to 1,000 persons, including every possible phase of digestive and nutritive disease.

Many products and combinations have been discovered and formulated which were at first exceedingly promising, but which proved by experience to be not possessed of permanent value. A few have stood the test of many years' experience and trial, under all conditions and in all climates, and their production has been gradually increased from a few hundred pounds annually to hundreds of tons.

**A New Era in Breadstuffs.**

Bread, as the representative of cereal foods in general, is "the staff of life" in all civilized countries. A kernel of wheat, which may be taken as the representative of cereals in general, is simply a neat little package of nutrient material securely done up for preservation until needed for the nourishment of the body. It is a complete ration; that is, it contains the elements of nutrition in just the proportion needed to make a complete and perfect human body, and to nourish and maintain it. This, however, is true only of the wheat kernel in its entirety, since the various elements are not equally distributed through the kernel, but are found in different proportions in different parts of it. The central portion is chiefly starch. Outside of this are several layers containing gluten and organic salts in large proportions, mingled with a certain proportion of starch-filled cells. The outer layers are largely made up of cellulose, or woody material, which also contains a certain amount of albumin and organic salts. The germ of the wheat contains a highly nutritious oil.

In the ordinary process of milling, some of the most important nutritive elements of the grain are lost, especially the gluten, phosphates, and fats.

**The Bacteria in Flours.**

Another objection to ordinary milling processes is the fact that they undertake nothing in the direction of sterilization of the grain or purification from the vast numbers of microbes which are always to be found adhering to the surface and buried in the crease of the kernel. Microscopical and bacteriological examination of ordinary flour shows it to contain vast numbers of germs. The ordinary baking of bread does not expose the center of the mass of dough to a sufficiently high temperature to destroy germs. Ordinary fermented and raised bread, and even such unleavened bread as rolls, gems, etc., contain great numbers of germs derived from the flour, and in the case of fermented bread, from the yeast. Experiments made in the Laboratory of Hygiene in the Battle Creek Sanitarium, by eminent bacteriologists employed to make special researches upon this subject, has shown that the fluid obtained from the stomach an hour after eating ordinary bread, contains vast numbers of germs, while that obtained from the stomach after a sterile test-meal, contains no germs.

**Millions of Germs.**

The importance of this fact will be recognized when it is remembered that

most disorders of the stomach are due to the presence and action of germs. In one case examined in the Laboratory of Hygiene of the Battle Creek Sanitarium, more than twenty-five million germs were found in a single ounce of stomach fluid. The presence of these microbes in the stomach is indicated by a coated tongue, a bad taste in the mouth, biliousness, gas in the stomach, a sense of fulness, eructations, acidity, and other well-known symptoms of indigestion.

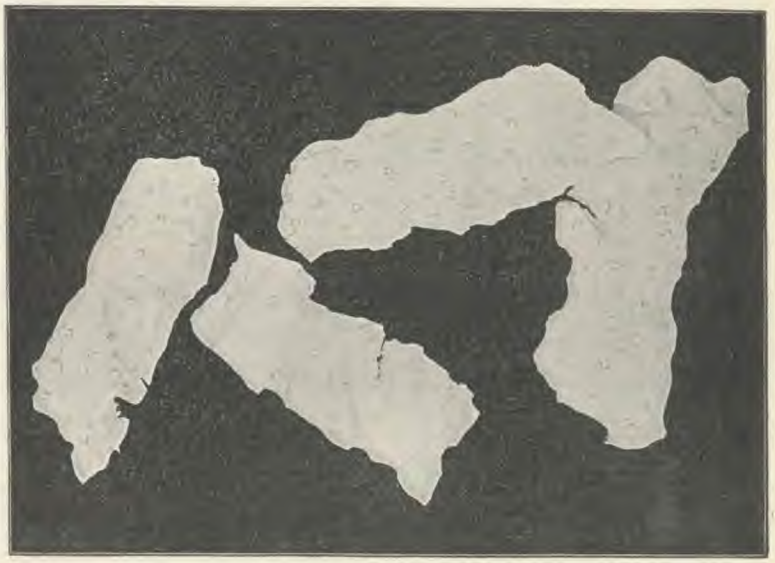
GRANOSE BISCUIT.

It is evident that whole-grain products, though retaining all the nutritive elements of the grain, are still more objectionable from the standpoint of the bacteriologist than ordinary flour. It should also be remembered that in graham flour, cracked wheat, rolled wheat and oats, oatmeal, and other whole-grain preparations, the outer, woody, silicious covering of the grain is presented in harsh, sharp-edged flakes of bran which are more or less irritating to a sensitive stomach; and in many cases of dilatation of the stomach, they create disturbance by their retention in the stomach, which, owing to its feeble muscular power, is unable to discharge them with the fluid portion of the food.

Ordinary wheat carries a large amount of dirt, particles of which adhere to the surface of the grain, entangled among minute hairs and buried in the little furrow which characterizes the wheat berry. Wheat also contains particles of chaff, straw, etc. The ordinary processes of milling do not perfectly remove these impurities. One hundred pounds of graham flour has been found to contain on an average ten pounds of coarse bran, straw, and other particles of foreign and innutritious material.

**Granose, a New Food Remedy for Constipation.**

It is thus apparent that the so-called "whole-grain preparations" are not to be altogether recommended, although it must be confessed that for the average individual they are certainly preferable to the superfine products of our modern milling processes. Long-continued and extensive experiments have finally resulted in the production of a food which retains the entire nutritive elements of the grain, while at the same time freeing it completely from dirt, germs, and extraneous matter, and subdividing the cellulose covering so prefectly as to render it altogether unirritating. The product of this new process is known as *Granose*.



GRANOSE FLAKES (magnified).

The several steps by which granose is produced are : —

1. Thorough cleaning by the most elaborate methods known to the modern miller, which includes screening, brushing, exposure to a strong blast of air, scouring, etc.

2. Thorough sterilization by moist heat whereby the grain is also thoroughly cooked.

3. A process by which each grain is compressed into a translucent film.

4. Baking, whereby the process of cooking is carried to the farthest possible limit by exposure of the product for several hours to a temperature of 300° to 350° F.

Granose, when perfected, is presented in the form of large, brownish flakes, crisp, toothsome, readily soluble in the digestive fluids; and also in the form of cakes.

**Wheat Biscuit: Crisp, Light, Toothsome, without Yeast, Baking-Powder, or Shortening.**

The reader can have no appreciation of the immense obstacles which it is necessary to overcome in order to produce a cake which is lighter than the lightest baking-powder biscuit, more flaky than the shortest pie-crust, and yet without the slightest admixture of seasoning or raising ingredients of any sort, — indeed, containing nothing but pure wheat with a very little salt. There is nothing else in the line of cereal foods quite so good as *Granose Biscuit*.

The advantages claimed for Granose are the following: —

1. It is a thoroughly cooked food, and hence is ready for immediate use.

2. It is thoroughly sterilized, and its use, as shown by experiments made under the direction of a well-known bacteriologist, enables the stomach thoroughly to free itself from the presence of germs.

3. It is a remarkably good food remedy for chronic constipation. This is due to the fact that it contains the cellulose envelop of the grain in a finely divided state, and in part, also, to the presence of the nutritious oil afforded by the wheat germ.

4. Granose is well digested in a majority of cases in which no other food can be retained or digested, owing to the fact that in its preparation the process of cooking is carried farther than by any ordinary methods of cookery, and hence less labor is required of the digestive organs.

**A Heat-Digested Cereal Food for Invalids and Infants.**

Another cereal product which well deserves attention is known as Granola. This is a thoroughly cooked and partially digested cereal food prepared from the choicest grains so combined as to constitute a perfect food, containing all the elements of nutrition in due proportion. It is presented in a finely granular form ready for immediate use, requiring only to be softened with a little milk, water, or broth.

By the prolonged action of heat, the starch is not only *hydrated*, but is partially converted into *dextrin* and *dextrose*, which give to the food qualities that render it readily assimilable and impart to it a most agreeable, sweet, nutty flavor. The manner of preparation is such as to secure to a large extent the advantages of those changes naturally effected by the digestive process and without the development of those side-products which are possessed of a disagreeable flavor and more or less toxic properties produced by the various enzymes found in the digestive fluid.

In its preparation, Granola is subjected to processes whereby it is not only thoroughly cooked, but partially digested, and that without the addition of any seasoning or other foreign ingredient whatever.

The palatable and nourishing qualities of bread crust and its easy digestibility have long been known to experienced nurses. The process by which this food is made, gives to it these excellent qualities and more, and renders it a most acceptable food for sick or well.

Granola is just the thing for a patient who needs to gain in flesh. It is the food *par excellence* for all persons with weak digestion, defective assimilation, general or nervous debility, brain workers, feeble children, and invalids generally, as well as travelers and excursionists. It is also excellent for those who, while not sick, need to obtain the largest possible supply of nourishment with the least labor on the part of the digestive organs.

**A Series of Genuine and Scientifically Prepared Wheat Glutens.**

The necessity for a genuine and practical gluten preparation has long been appreciated by the medical profession. For a few years this want has been supplied in France by gluten biscuit containing from 40 to 50 per cent. gluten. These biscuit, while not very palatable, have been far superior to anything produced in this country, and at the same time have been all they were claimed to be, a real gluten biscuit; whereas the so-called "gluten breads," and other preparations of gluten which have been sold under various names in this country, have been, almost without exception, most thoroughly fraudulent in character. This statement is well backed up by exposures made by the *Scientific American* and other authorities within the last few years.

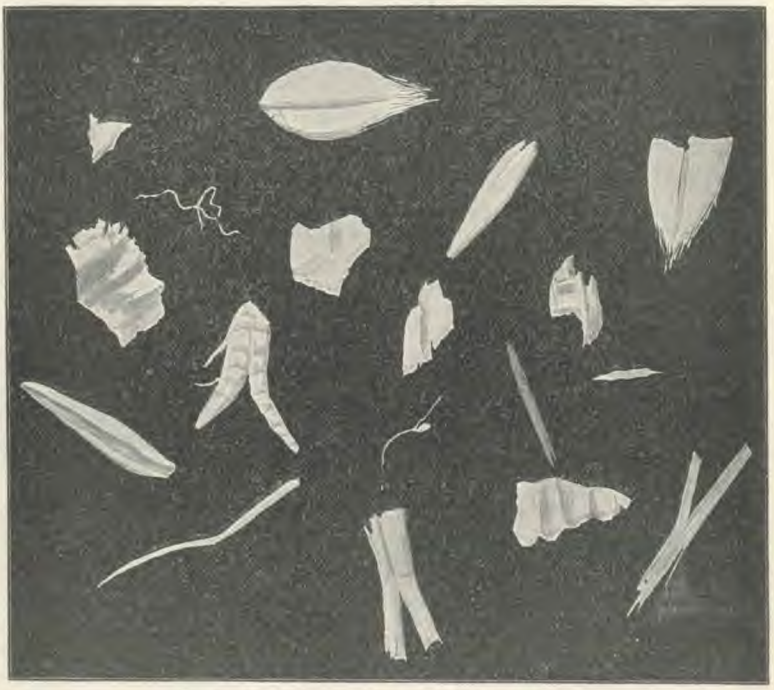
**Bogus Glutens and Gluten Flours.**

The so-called gluten flours are simply ordinary whole-wheat flours. We have never found one which contained more than 16 per cent. gluten. Thousands have been imposed upon, and doubtless many lives have been lost, by depending upon these bogus gluten flours. Their sale is one of the greatest impositions with which we are acquainted.

After a visit to Paris and an investigation of the methods there employed in the preparation of wheat gluten, the management of the Battle Creek Sanitarium Health Food Company began the manufacture of this class of preparations, and for a number of years have manufactured a line of gluten preparations which include the following: —

*Pure Gluten.* — This preparation is put up in the form of gluten biscuit, which are eatable, and not unpalatable. This is the only successful attempt ever made in this or any other country to produce a really pure gluten bread.

*40 Per Cent. Gluten.* — This is a biscuit which any one could eat with relish, and just the thing for diabetic patients.



DIRT AND SCREENINGS FROM GRAHAM FLOUR.

**Hulled-Wheat Flour, a New and Unique Product of Wheat.**

The effort which has been made to perfect cereal food products has led to the investigation of the various systems of milling at present in vogue, and has finally resulted in a number of important improvements, the carrying out of which has demanded the construction of a special system of milling, whereby it is possible to manufacture a number of new cereal products of unique and unequaled qualities. This system includes, among other special processes, a process whereby the entire outer cellulose layer of the grain is removed without the loss of any of its nutritive elements, producing a veritable *hulled wheat* entirely analogous to hulled corn or lye hominy, but produced by purely mechanical means and without the intervention of any chemical process. From this hulled wheat is manufactured "Hulled-Wheat Flour," which is pronounced by every one who has tested its merits perfection itself in the line of flours.

**The Original Cereal Substitute for Coffee.**

One of the earliest undertakings of the Battle Creek Sanitarium Health Food Company, a department of the Battle Creek Sanitarium, was to manufacture a substitute for coffee which more than twenty years ago had already begun to be recognized as a harmful beverage, notwithstanding the popular belief in its innocence. Subsequent investigations which have been made by Sir William Roberts, Professor Schutz

Schutzenstein, and others, have clearly developed the fact that coffee is not only a nerve poison, but, in addition, greatly interferes with the digestion of starch, and have given rise to an increasing interest in a suitable substitute for this harmful beverage. Although at first manufactured for use at the Battle Creek Sanitarium, the cereal substitute for coffee now known as Caramel-Cereal has become so widely and favorably known that the demand requires the employment of an extensive plant in its production, and its popularity has invited scores of imitators. To produce a really palatable beverage from simply cereal substances, without the admixture of injurious chemicals, requires the greatest skill in manipulation, large experience, and a considerable amount of chemical knowledge.

*Caramel-Cereal* is prepared from wheat by a process which develops from the grain an aroma and a flavor so closely resembling those of genuine Mocha or Rio as often to deceive an expert. Caramel-Cereal does not, like tea and coffee, prevent the digestion of starch or albumin, cause headache or biliousness, produce nervousness or sleeplessness, nor does it contain caffein, a brain and nerve poison, nor tannin, an astringent.

Before leaving this subject of coffee substitutes we ought to add a word of warning to call attention to the fact that with coffee substitutes as well as other things, "all is not gold that glitters." Ignorant and inexperienced persons who sometimes undertake the preparation of coffee substitutes, by improper methods of treatment often succeed in developing in their products a quantity of powerfully poisonous substances whereby the so-called substitute is rendered more injurious than genuine coffee.

**Food Nostrums the Analogue of Patent Medicines.**

The increasing demand for food preparations specially healthful in character, and designed to meet the needs of special classes of invalids, has given rise to a great number of widely advertised products presented under various alluring titles, but which, notwithstanding the high prices charged for them, possess few if any of the merits claimed for them, and are made to sell rather than to supply the means of meeting any real therapeutic want. The *Scientific American* and other scientific journals have frequently called attention to the fraudulent character of some of these preparations. The exploiting of these dietetic nostrums has, to some degree, served to discredit all attempts in the direction of the development of genuine food preparations, but a discriminating public is, by degrees, learning to distinguish between the true and the meretricious in diet as in other things, and the increase of physiological knowledge is developing a steadily growing interest in the class of enterprises which has been pioneered by the management of the Battle Creek Sanitarium.

Any one who desires to make a study of the subject of health foods may obtain literature and information by addressing,

**BATTLE CREEK SANITARIUM HEALTH FOOD CO.,**
**Battle Creek, Michigan.**