GOOD HEALTH

A Journal of Hygiene.

VOL. XXXIV. FEBRUARY, 1899. NO. 2.

ANCIENT SAGES ON VEGETARIANISM.

BY J. H. KELLOGG, M. D.

VEGETARIANISM is not a modern fad or cult. From the earliest ages down to the present it has been practised by the larger proportion of the human family, and at the present time, taking the race as a whole, there are, without doubt, four or five vegetarians to every flesh eater. Almost from the dawn of history there have been those who have stoutly defended the practise of vegetarianism, and who have earnestly maintained the physical and ethical error of flesh eating.

Hesiod, eight centuries before Christ, pictured the golden age in which flesh-foods were unknown. As the result of a simple and natural fare, the people of the golden age, according to this writer, enjoyed the happy state which the poet describes in the following lines: —

"Like gods, they lived with calm, untroubled mind,
Free from the toil and anguish of our kind,
Nor did decrepit age misshape their frame."

Pythagoras, who lived in the fifth century before the Christian era, was perhaps the most enthusiastic of all the ancient defenders of a natural dietary. To demonstrate his faith in the reforming influences of a non-flesh dietary, it is said that he tamed a formidable bear which had become the terror of the country round, and by subjecting it to a simple, non-flesh dietary, rendered it amiable and harmless for the remainder of its life. The Latin poet Ovid gives a graphic presentation of the views of Pythagoras and the telling arguments presented by him in defense of his doctrine, few of which could be materially improved upon by the most radical modern vegetarians.

Plato, in his famous dialogue, "The Republic," written in the fourth century before Christ, represents Socrates as describing a model city, and prescribing for the inhabitants therein a dietary consisting simply of fruits, grains, vegetables, and nuts. Replying to an objector who thought the fare suggested too simple, Socrates is represented as saying: "'Now, it appears to me that the city which we have described is the *genuine*, and, so to speak, *healthy* city. But if you wish us also to contemplate a city that is suffering from inflammation, there is nothing to hinder us. Some people will not be satisfied, it seems, with the fare or the mode of life which we have described, but must have, in addition, couches and tables and every other article of furniture, as well as viands. . . . Swineherds again are among the additions we shall require, —a class of persons not to be found, because not wanted, in our former city, but

needed among the rest in this. We shall also need great quantities of all kinds of cattle for those who may wish to eat them, shall we not?'

"'Of course we shall.'

"'Then shall we not experience the need of medical men also to a much greater extent under this than under the former régime?'

"'Yes, indeed.'

"'The country, too, I presume, which was formerly adequate to the support of its then inhabitants, will be now too small, and adequate no longer. Shall we say so?'

"'Certainly.'

"'Then must we not cut ourselves a slice of our neighbors' territory, if we are to have land enough for both pasture and tillage; while they will do the same to ours if they, like us, permit themselves to overstep the limit of necessaries, and plunge into the unbounded acquisition of wealth?'

"'It must inevitably be so, Socrates.'

"'Will our next step be to go to war, Glaukon, or how will it be?'

"'As you say.'"

It is interesting to note that Socrates traces the origin of both war and disease, and all the human ills growing out of these gigantic evils, to the use of flesh-food.

A careful reading of the ninth chapter of Genesis suggests the same thought. The unlawful taking of life for the mere gratification of unnatural and perverted instincts, carries with it its own penalty in the development of disease and the introduction of war, bloodshed, and all the horrors of human carnage.

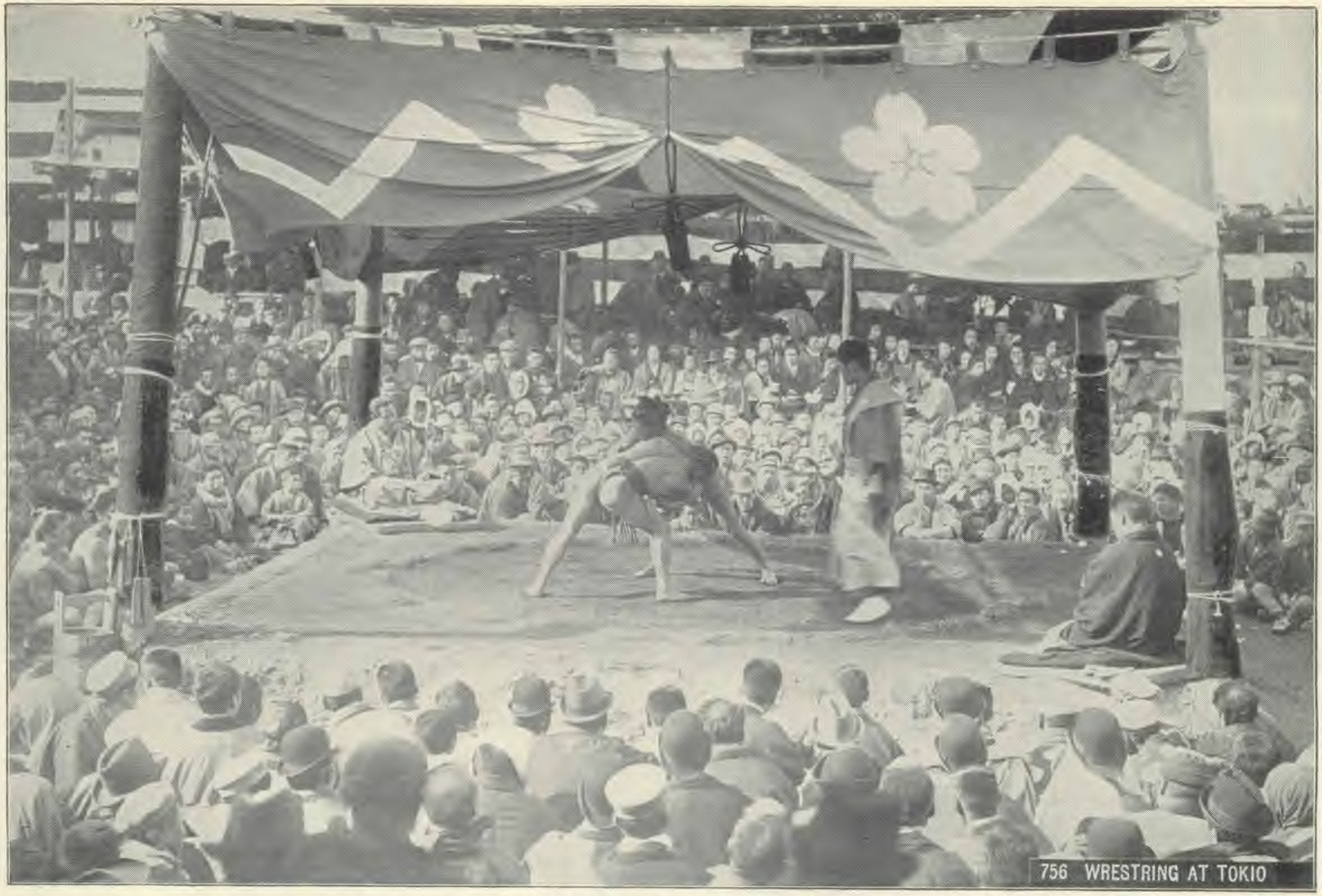
Seneca, who lived in the first century after Christ, dying A. D. 65, the contemporary of Paul, and perhaps not unacquainted with the great apostle, a victim also of Nero's insatiable cruelty, maintained that "vegetables are sufficient food for the stomach, into which we now stuff valuable lives." The following wise words by this just and thoughtful man apply as appropriately to the present as to the age in which he wrote:—

"In the simpler times there was no need of so large a supernumerary force of medical men, nor of so many surgical instruments, nor of so many boxes of drugs. Health was simple for a simple reason. Many dishes have induced many diseases. Note how vast a quantity of lives one stomach absorbs — devastator of land and sea. No wonder that with so discordant a diet disease is ever varying. . . . Count the cooks: you will no longer wonder at the innumerable number of human maladies."

One of the most interesting of all the ancient defenders of vegetarian principles was Plutarch, the author of "Plutarch's Lives." Plutarch wrote an essay on flesh eating, from which and from some of his other works we quote a few words:—

"Ill digestion is most to be feared after flesh eating, for it very soon clogs us, and leaves ill consequences behind it. It would be best to accustom one's self to eat no flesh at all, for the earth affords plenty enough of things fit not only for nourishment but for delight and enjoyment."

"All species of lower animals, according to their kind, feed upon one sort of food which is proper to their natures — some upon grass, some upon roots, and others upon fruits. Neither do they rob the weaker of their nourishment. But man, such is his voracity, falls upon all to satisfy the pleasures of his appetite, tries all things, tastes all things; and, as if he were yet to seek what was the most proper diet and most agreeable to his nature, among all animals is the only all-devourer. He makes use of flesh, not out of want and necessity, seeing that he has the liberty to make his choice of herbs and fruits, the plenty of which is inexhaustible, but out of luxury; and being



A JAPANESE WRESTLING MATCH.

cloyed with necessaries, he seeks after impure and inconvenient diet, purchased by the slaughter of living beings, by this showing himself more cruel than the most savage of wild beasts. For blood, murder, and flesh are proper to nourish the kite, the wolf, and the serpent: to men they are superfluous viands."

"That man is not, by nature, carnivorous is proved, in the first place, by the external frame of his body, seeing that to none of the animals designed for living on flesh has the human body any resemblance. He has no curved beak, no sharp talons and claws, no pointed teeth, no intense power of stomach or heat of blood which might help him to masticate and digest the gross and tough flesh-substance. On the contrary, by the smoothness of his teeth, the small capacity of his mouth, the softness of his tongue, and the sluggishness of his digestive apparatus, nature sternly forbids him to feed on flesh."

Tertullian, in the second century of our era; Clement of Alexandria, who died early in the third century; and numerous others of the early church Fathers, defended the simple, natural, and bloodless fare. Said Clement, "For is there not, within a temperate simplicity, a wholesome variety of eatables — vegetables, roots, olives, herbs, milk, cheese, fruits, and all kinds of dry food?"

Porphyry, the noted Greek philosopher of the third and fourth centuries, although he wrote against Christianity, recognized clearly the influence of dietetic habits upon the character. He said: —

"And let such a man tell me whether a rich flesh diet is more easily procured, or incites less to the indulgence of irregular passions and appetites, than a light vegetable dietary. But if neither he, nor a physician, nor, indeed, any reasonable man whosoever, dares to affirm this, why do we persist in oppressing ourselves with gross feeding? And why do we not, together with that luxurious indulgence, throw off the encumbrance and snares which attend it? It is not from those who have lived on innocent foods that murderers, tyrants, robbers, and sycophants have come, but from eaters of flesh. The necessaries of life are few and easily procured, without violation of justice, liberty, or peace of mind."

Several hundred years before the beginning of the Christian era, a religious teacher arose in India who instituted a most vigorous propaganda against the system of animal sacrifices which was at that time practised by the followers of the religion of Brahma. Buddha was a reformer. He taught the sacredness of life, basing his claims for the inviolability of animal life upon the ground that God dwells in every living sentient being.

The followers of Buddha have, for more than twenty-five hundred years, earnestly promulgated the doctrines that he taught among all the nations of the Orient and the far East, and at the present time Buddhists are to be counted by millions among the nations of India, Burma, Siam, Persia, China, and Japan, probably not less than four hundred million in all.

A Buddhist friend, a native of Japan, a few years ago wrote us as follows respecting the teaching of Buddhism in relation to vegetarianism: —

"In one of our Buddhist scriptures are these words: 'You, the Buddha's sons, should not voluntarily eat flesh-food of any kind. If you eat it, it destroys all the spiritual seeds of great compassion. All living beings seeing you eat flesh, walk away with contempt. For this reason all the Bodhisatovas are not allowed to live on any flesh-food.' In view of this, we Buddhists abstain from flesh eating.

"Vegetable diet is called by our Bud-

dhist teachers, *sho-zin-mono,* or, literally, 'diet that promotes spiritual progress.' Therefore, say we Buddhists, those that aspire after spiritual enlightenment should not eat even the least flesh-food. But why can not flesh-eating men attain the spiritual enlightenment? Why can not we reach the final goal — the Buddhahood — if we live on animal food? — Because, according to the wisest investigation and experience, animal food destroys our spiritual aspirations, and gives rise to gross thoughts and so to gross, vulgar doings. If we live upon flesh-food, we must necessarily be the murderers of certain beings. And we believe that ruthlessly to take the life of any living creature is to commit one of the greatest sins. The true enlightenment is a state free from all sins and vulgar thoughts. Thus it is evident that we must abstain strictly from meat eating if we aspire to reach enlightenment and Nirvana — the Buddhahood. These are the reasons given by our Buddhist teachers for the practise of vegetarianism, it being their opinion that flesh eating is not only harmful to the bodily health, but also to the mental, besides necessitating the needless taking of life, an act which we Buddhists are careful not to commit.

"In our country, vegetarianism was once the universal practise, but some five hundred years ago, certain of the lowest classes of Chinese people came and settled in this country. These men began to hunt wild animals, kill domestic ones, and to eat them greedily. Their brutish doings made the pure native Japanese who were Buddhists refuse to receive them, and they called them *etta,* the literal meaning of which is 'men full of dirt,' or 'dirty race;' and these 'men full of dirt' were not allowed to marry with the pure natives or to associate with them in any way.

Buddhist priests are constantly active in China, Japan, and other eastern countries, making and circulating tracts and leaflets condemning the use of flesh-food and inculcating the principles of kindness to animals. One of these missionary priests a few years ago wrote and circulated very widely at his own expense a poem entitled, "The Cow's Complaint," for an English translation of which we are indebted to a medical friend in China, and from which we quote the following stanzas: —

"Despite my long and useful life
They give me to the butcher's knife.
He ties me up without a tear,
And cuts my throat from ear to ear.

"My mouth is dumb, unformed for cries,
But hot tears glisten in my eyes.
Soon all my luckless flesh and bone
Ungrateful mortals fatten on.

"My murderers shall come to grief,
Along with all who relish beef;
When I 'm a man and you a cow,
I 'll treat you as you treat me now."

JAPANESE WRESTLING.

BY CHARLES E. STEWART, M. D.

WRESTLING, as a gymnastic exercise, was strongly encouraged by the ancient Greeks, and was largely participated in at the Olympic, Isthmian, and Nemean games. The Romans also encouraged this sort of amusement to a limited degree. The sculptures in the British Museum indicate that wrestling formed part of the sports in Egypt and Nineveh.

At the present time wrestling is the national sport of the Japanese. The event of the great national contests is one from which all others are dated. Wrestling has been participated in by the Japanese as one of their principal sports ever since the beginning of the Christian era. The first record we have of a wrestling match in that country is of one ordered by the Mikado (Suinin Tennow) nineteen hundred years ago. The contestants were Kehaya Taimino and Sukune Nomino, who wrestled in the imperial palace. This was the beginning of the sport for which the Japanese have become famous.

Wrestling, as it is carried on to-day in Japan, is governed by firmly established and thoroughly enforced rules. The professional wrestlers form a distinct class, and come from all grades of society, particularly the country people, or farmers. These men are selected for their size and muscle. Their height ranges from five feet eight inches to six feet six inches, and their weight from two hundred and fifty to three hundred and twenty pounds.

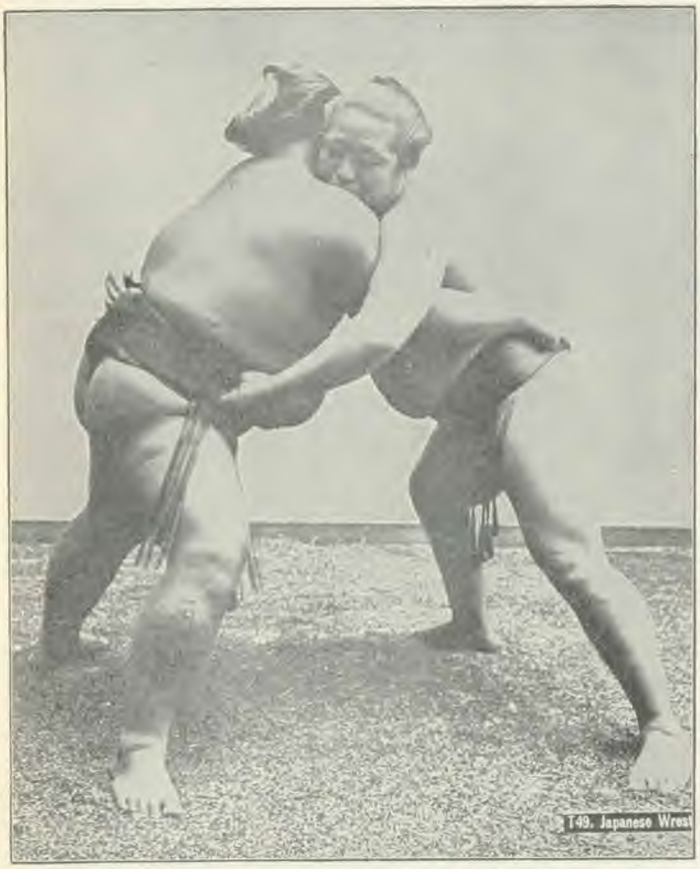
The Japanese, as a rule, are small in stature, and these huge wrestlers look like giants among them.

Some of these professional wrestlers possess a great deal of strength, and can with comparative ease pick up a weight of six hundred and fifty pounds from the ground and place it on their shoulders or hold it in their arms.

The diet of the class from which the wrestlers are chosen is simple, consisting principally of grains and vegetables, with occasionally a little fish; some of them also drink Japanese "sake," a fermented liquor brewed from rice.

The wrestlers rise at five or six in the

morning, and practise wrestling until half past ten, after which they eat a light breakfast of rice gruel. After breakfast they take a warm bath and then rest. Dinner, which consists of boiled rice, cooked vegetables, and a small piece of fish, is served at noon. All do not eat supper, but those who do, take a little boiled rice and vegetables or "sake" with a very small quantity of rice and vegetables. Supper is served at six, and they retire at ten.



The professional wrestler is extremely careful with respect to his diet and exercise; this is especially so during the period when he is preparing for a contest. During this time the diet is principally rice and vegetables, and no "sake" is taken. Very few use tobacco.

The age at which the most efficient wrestling is done ranges from eighteen to forty years; the professional wrestler usually dies before he is sixty years of age.

The remarkable strength which these wrestlers possess is in a large measure due to their use of a simple diet, and the systematic exercise to which they so closely adhere and which they practise faithfully.

The Japanese style of wrestling is quite different from the American. The ground where the contest takes place is a round elevation about twelve feet in diameter, covered with fine sand and surrounded by rice bags; at each of the cardinal points there is fixed a round pillar. The pillars are decorated with silk curtains under which sit the umpires. This is the most important part of the structure, it being the stage of action on which the wrestling is to occur. The building that shelters this stage is a circular structure of pine stems and bamboos, roofed with cotton cloth, and walled with the same. Tiers of rude seats rise one above the other from the wrestling stage. The building will accommodate about three thousand people. Besides the umpires seated under the pillars there are two other officials on the stage, or *dohiyow*, — the umpire and the herald. Around and just outside the ring sit a dozen or fifteen nearly naked men, who are the combatants.

The proceedings of the contest are carried out in a business-like manner. There is a wrestlers' committee, whose duty it is to place the combatants in the ring, one on the east side and the other on the west side of the *dohiyow*. The herald proclaims the style and the title of those who are about to participate in the contest. The umpire is on the *dohiyow* during the contest, and instructs the combatants as to the proper mode of conducting the struggle; he permits no unfairness, and discharges his duties in an impartial manner, at the close announcing the victory or defeat. As mentioned before, the rules governing Japanese wrestling are very strict, and any attempt at deviation is detected and dealt with at once.

This sport is to Japan what baseball is to America or cricket to England. The event of the national contests is looked forward to with great delight, and the Japanese point with pride to their champion wrestlers.

The fairness with which the contests are carried on makes it impossible for one combatant wilfully to injure another; if there is the slightest indication that anything of the kind is taking place, the guilty party is at once brought to account. This manner of exhibiting one's superiority in muscular strength and agility over another is certainly more commendable than the pugilistic and football contests of this country.

The frontispiece and illustrations show the *dohiyow*, the wrestlers, and the surroundings as seen when one of the national contests is in progress.

We are indebted to K. K. Arita, of Kobe, Japan, for the photographs and the facts relating to the diet of the wrestlers.

A FAITHFUL SENTINEL.

BY D. H. KRESS, M. D.

A PATIENT once said to his physician, "Doctor, I believe there is something wrong with my stomach." "Not a bit of it," replied the doctor. "God made your stomach, and he knows how to make stomachs. There may be something wrong with the stuff you put into it or something wrong with the way you stuff it in and cram it down; but your stomach is all right." Another patient said, "The stomach has come to be a curse to the human family." This man evidently longed for an iron-clad stomach, devoid of nerves.

The truth is, the stomach is not the offender; like every other involuntary organ, it is under the direct and constant control of its Maker. Like every other organ, it has a specific work to do, and will do that work faithfully and well without pain or inconvenience, providing it is properly treated.

The function of the stomach is to assist in converting good food into such a condition that it can be absorbed and appropriated by the system in building up tissue, repairing waste, and supplying heat and energy. A faithful sentinel protects the camp from disaster by reporting the approach of the enemy. Should we not expect a perfectly normal stomach, like the sentinel, to sound the alarm when food is taken into it that could only be converted into inferior blood and tissue, thus lowering the vital resistance of the body, and leaving it an easy prey to its enemy — disease?

The stomach, in a normal condition, always reports when an inferior quality of food is eaten, or when bad combinations

are made; it gives the warning when it is overloaded with even good food, or when good food has not been properly masticated or prepared, or when irregularity in eating is practised.

When an enemy is allowed to enter camp without being molested or without the camp's being notified, it is evidence that something is wrong with the sentinel, and an investigation is necessary. The sentinel is either asleep at his post, or he has been foully dealt with so that he can not report.

When men boast of being able to eat anything — pepper, mustard, pickles, vinegar, the flesh of dead animals, or even shingle-nails — without being disturbed or corrected by their stomachs, it is likewise evident that something is wrong and needs investigating. Inferior tissue is being brought into the camp; poisons are allowed to enter; ere long the individual is surprised by an attack of gout, rheumatism, neuralgia, or, worse still, the boaster is informed by his physician that he has Bright's disease, diabetes mellitus, or some other equally dangerous disease, from which complete recovery can not be expected, and he may further be told that by doing penance the remainder of his days, life may be prolonged a few years. It is well known that in nearly every case errors in diet are responsible for the diseases mentioned. They are designed to awaken us to our real condition, and to lead us to correct perverted habits of life; like the streets in London, all these diseases lead back to one center,— wrong habits of living.

These diseases can not be cured by the administration of drugs, patent medicines, Christian science, or so-called faith-cures. They can be cured only by the removal of causes, the correction of the habits of living, and the co-operation with nature in the oxidation and elimination of accumulated poisonous products. I do not wish to speak lightly of faith-cure: the true prayer of faith will avail much. It will lead a man to see the errors of his life, and to try to correct them. Having brought himself into harmony with the laws of life and health, he may expect restoration just as prayer offered for a sick plant stored away in a dark, damp cellar might be answered by the Creator's enabling the praying ones to recognize the causes of the plant's unhealthy condition, and by his leading them to remove these causes by bringing the plant into the light, or into harmony with the laws upon which the health of plant life depends.

Very frequently patients come to their physicians, saying, "Doctor, I have a bad headache," "I have neuralgia" or some other disagreeable symptom, "and I want to get rid of it." Upon the physician's asking the question, "Have you any difficulty with your digestion?" the confident reply is given, "Oh, no. My stomach is all right; I can eat anything," and he probably does eat everything. If the physician makes a physical examination, he often finds the following indications: Breath very foul, showing decay of foods in the stomach; tongue slimy and covered with a luxuriant growth of germs; stomach extremely dilated. These are not unusual discoveries in such cases; in fact, such conditions nearly always exist, and show that bad digestion is the cause of the secondary symptoms that he is trying to get rid of. Such a person on an aseptic and dry diet, composed of cereal foods requiring thorough mastication, nuts, and fruits, after a time is likely to come to his physician, saying, "Doctor, I had no difficulty with my stomach before coming to you; now everything I eat distresses me." "But," asks the physician, "how are your other symptoms, the headaches, etc?" "Oh," he replies, "my other symptoms are better. In fact, I have not felt better for years

than I do at present, but my stomach bothers me. What does it mean?" He is told that it means simply this: His stomach is coming into a more normal condition, is recovering from the paralysis, or anesthesia, produced by the poisonous products that have been generating there for years. Its nerves are assuming a normal condition, the telegraphic communications are again established between it and headquarters, so that digressions from the right can again be reported. The patient is assured that he is now on the highway to health, that the stomach will get back into a more normal condition so that good food, properly masticated, eaten at proper intervals, and rightly combined, will create no feeling of uneasiness or pain.

By frequent violation of what we know to be right, the conscience may become so seared, as with a hot iron, that sin ceases to look sinful, and crime may be winked at or committed without a prick of conscience or a blush of shame. This is, however, a sad condition of mind. What conscience is to the soul, pain and ill feelings are to the body. When all kinds of abominable things are thrown into the system through the stomach without any ill feeling on its part, the stomach can be said to be in an equally sad physical condition.

Our aim should be to get back into such a condition that the least error in diet will at once be reported, just as we would cultivate a condition of the mind so sensitive that the slightest deviation from right will cause feelings of uneasiness and unrest.

FOOD ECONOMY.

BY WILLIAM E. PHILLIPS.

WHILE the wealth of our country, per capita, is constantly increasing, it is every year becoming more difficult for the average working man to maintain the ratio between outgo and income. Whatever the reason, whether trusts and combines on the one hand, as asserted by some social economists, or excessive competition and overproduction, as held by others, it is undoubtedly true that the rich are growing richer and the poor becoming poorer. This is especially true in our great centers of population, for it is in the cities that the pressure of this condition of affairs is mostly felt.

The problem of providing daily bread, clothing, and shelter for wife and children, on a small and uncertain weekly wage, is causing much anxious thought and constant worry to thousands of home-loving and true-hearted men. They can see but two alternatives: the wages must be increased, or the expenses diminished. As to the former, the employers say that the condition of business will not permit it, and by sad experience many workmen have learned the futility of strikes. Regarding the latter, they can not see how they can live in any kind of comfort on less than they are now earning. While we may not be able to offer a solution of the wage question, I believe that something can be suggested in regard to the question of economy that will be both practical and helpful.

If you should ask the ordinary working man about his expenses, he would tell you that his grocery and provision bill was the most important item; and next, his rent, constantly increasing, unless he moves out into the suburbs, when car fare has to be considered, with the addition of the price of a dinner in town or the cheerless alternative of a cold lunch. It goes

without saying that the man who spends the usual ten hours a day in hard work, and perhaps the better part of two more in clinging to a strap in a street-car where human beings are sandwiched together, and the air very often is inexpressibly foul, should have a sufficient quantity of the best and most nourishing food. But, how seldom, alas, does he get it; how often he spends his "money for that which is not bread." Not to mention the large percentage of those whose earnings help to support the saloon-spider and the almost universal tax paid to the tobacco trust, the fact remains that with a slight knowledge of real food values and hygienic cookery, a very large amount of the money paid to the grocer might be saved for other uses, and the table yet be supplied with better food, more appetizing, more healthful, and more digestible, and the doctor's services needed much less often.

In order that this fact may appear more clearly, we will consider what I believe to be a fair sample of a working man's average weekly provision bill: —

½ lb. tea	$ .25
1 " coffee	.30
Sugar	.25
Potatoes	.50
2 lbs. butter	.50
2 " lard	.25
Pork	.50
Flour	.50
Baker's bread	.50
Oatmeal	.25
Roasting beef	.70
Corned beef	.30
Cabbage	.10
Beets	.10
Vinegar	.10
Fruit	.30
Milk	.35
Total	$5.75

Let us now look at this bill of fare from a hygienic and economic point of view. For tea and coffee he has expended fifty-five cents, nearly ten per cent. of the whole amount. What has he obtained for this expenditure? The value of tea and coffee as regards nourishment is absolutely nothing. They retard digestion, and considerably increase the amount of uric acid to be excreted by the kidneys, thus laying the foundation for dyspepsia, rheumatism, and Bright's disease. They act as stimulants, it is true; but a healthy man does not need stimulants any more than a well-fed horse needs a whip. Next on the list we have cane-sugar, twenty-five cents, which is used almost entirely to sweeten the tea and coffee. Its real food value is problematical, owing to the difficulty of digestion, for it has to be changed into fruit-sugar before it can be absorbed by the system. Next we have potatoes, fifty cents. These have a food value of less than twenty-five per cent., so that our workman is paying more than three fourths of this amount for water. The remainder, however, is fairly nourishing food.

Again, we read butter, fifty cents, lard, twenty-five cents, pork, fifty cents, — $1.25 for this mass of animal fats. The butter, being free fat, is difficult of digestion, and retards the digestion of the bread with which it is eaten. The lard is used to fry other foods and to make them still more indigestible, and the pork — possibly filled with trichinæ, which may cause the death of the eater — is the most filthy, indigestible, and unhealthful of all flesh-meats.

We refer again to the bill of fare. Flour, fifty cents; bread, fifty cents. The flour is almost certain to be the finely ground roller-process white flour, from which some of the nourishing gluten has been removed. The bread also is made of white flour, but of a poorer quality, and often contains alum, which is added to make it light and spongy.

Oatmeal, twenty-five cents. Here we have the first natural, wholesome, and concentrated food upon the list. In this the

workman gets genuine value for his money, and, we may say, receives compound interest on his investment.

Roasting beef, seventy cents. For this amount our friend gets about seven pounds. Allowing one and one-half pounds for the waste bone and gristle, he has about five and one-half pounds of meat. But the total nutritive value of beef is only twenty-eight per cent., the rest being water and salts. So the total amount of food material in the roast is reduced to about one and one-half pounds, which thus costs almost fifty cents a pound. Let us hope, seeing that it is so expensive, that it came from an animal that was not afflicted with tuberculosis, and will not convey the seeds of the dread "white plague" to the unfortunate eater. As for the corned beef, from which the juices, which are supposed by some to be so nourishing, have been largely extracted by the pickling, it very often happens that it once formed part of the carcass of an overworked cab or street-car horse.

Cabbage in the raw state, as it is often eaten, largely passes through the system without being acted upon by the digestive organs, and when cooked, is very likely to cause considerable trouble and inconvenience to the eater. Its total nutritive value, if it could be digested, is less than six per cent.

Beets, if baked and eaten as a vegetable, are quite nutritious, but they are almost always spoiled by the addition of vinegar. Vinegar is an article that should never on any account be taken into the stomach, as its action upon the lining membrane is even more injurious than that of alcohol.

We have now considered all but the last two items. Fruit, when fresh and ripe, is easily digested, and is nature's provision for keeping the bowels in an active and healthy condition. Milk is supposed by almost every one to be an ideal food. And so it is, if— If what? — Well, if it comes from a perfectly clean and healthy cow; if it is milked into a clean vessel by a dairymaid with clean hands; if it is properly cooled and not exposed to germs; if it is handled carefully; if — in fact, there are so many ifs that we could not begin to surmount them in a city, the milk supply of which comes hundreds of miles, is collected at hundreds of stations along the railroads, is carried in large cans containing many gallons, is skimmed, watered, and doctored, and rattled and jolted about the streets, and then sold as pure Clover Creamery or Brookside Farm milk.

Suppose now we substitute for this bill of fare, with its uncleanness, its unwholesomeness, and its indigestibility, a diet of pure grains, fruits, nuts, and vegetables. In place of tea and coffee let him use pure water and a more abundant supply of wholesome fruit. For the pork and beef, the lard and butter, substitute the legumes, nuts, and nut products, and in place of baker's bread and white flour, put granose, zwieback, and whole-wheat flour. There is no doubt that with this change our working man would be healthier and wealthier, more contented and cheerful, and better able to stand the increased competition of the times.

But perhaps you say that the average workman would not thank you for the change. This is probably true, and it makes it all the more necessary that those who know these things and have themselves experienced the blessings of living on a hygienic diet, do their utmost to educate those around them in the principles of true health reform.

It might be interesting to note here a list of a week's actual expenses furnished by two poor women, victims of the sweat-shop system, living in New York. The following is taken from Mrs. Helen Campbell's book, "Prisoners of Poverty": —

Sugar	$ .23
Tomatoes	.07
Potatoes	.10
Tea	.15
Butter	.30
Bread	.19
Coal	.12
Milk	.15
Clams	.20
Oil	.15
Cabbage	.05
Flour	.15
Rolls	.03
Total	$1 89

Leaving out the coal and oil, this shows an expenditure of $1.62 for a week's food for two women working fourteen hours a day.

When a question was asked about the tea, the answer was, "What you 'd want if you sat all day at a machine would be tea like lye, the stronger the better, to put backbone into you." These poor slaves of modern civilization are nearly all inveterate tea drinkers. When beans were mentioned by a lady visitor as a cheap and especially nourishing article of diet, she was answered, "Beans! What about the coal to cook 'em with, and coal twelve cents a scuttle?" Being obliged to buy their coal in small quantities, the poor are forced to pay for it about double the price charged their wealthier neighbors.

We thus see that both among the very poorest and among the intelligent and self-respecting laboring men, to say nothing of the rich with their *pâté de foie gras* and champagne suppers, there is the greatest need of education in health reform. Pure health foods should be extensively advertised and brought to the attention of the people in every possible way, and thus by creating an increased demand they could gradually be reduced in price, and brought within the reach of even the poorest. Schools of health should be established wherever possible, and instruction in regard to the real values of various foods for building up and nourishing the system and the best ways of preparing them for the table should be given both by voice and pen. In this, as in all other reforms, it must be educate and agitate, agitate and educate, till the people no longer literally "spend money for that which is not bread and their labor for that which satisfieth not."

THE HYGIENIC MANAGEMENT OF INSOMNIA.

BY W. H. RILEY, M. D.,

Superintendent of the Colorado Sanitarium, Boulder, Colo.

INSOMNIA is a condition in which an individual suffers from too little or imperfect sleep or from the entire absence of sleep for a greater or less length of time. As sleep is a function, insomnia can not be regarded as a disease, but is simply a disorder or a symptom. It often appears as a troublesome symptom in organic diseases of the heart, blood-vessels, kidneys, and brain. But space will not allow of a detailed consideration of the subject in all its relations to these organic diseases; we shall therefore direct our remarks, mostly at least, to insomnia as a disordered function without reference to its relations to gross organic diseases.

Insomnia is usually accompanied by other manifestations of morbid conditions, prominent among which may be mentioned nerve weakness and nerve irritability. It is a disorder quite as difficult to manage, and quite as trying to the physician, as any with which the general practitioner has to deal; and judging

from the number of hypnotics and sleep-producing remedies that are constantly brought to his notice in the weekly advertising sheets of the medical journals, his task in this direction is not at all diminishing, even if he have the aid of the manufacturing chemist and the pharmacist. The large number of these sleep-producing drugs that are offered to the public (and they are rapidly and constantly increasing in number) also suggests the importance of a knowledge of how to preserve normal sleep, and of how to relieve sleeplessness, if possible, by the use of more simple and less harmful remedies.

Americans have already established for themselves the unenviable reputation of being a nation of dyspeptics: they are fast becoming a nation of poor sleepers. Dyspepsia and insomnia are often associated in the same individual.

In order better to understand the conditions with which we have to deal in the treatment of insomnia it may be well to consider briefly: —

1. Some of the natural causes or conditions that produce normal sleep.

2. The changes in the functions of the body during sleep.

3. The most common causes of insomnia.

4. Some of the remedies that have proved their efficiency in the treatment of a large number of cases of chronic insomnia in the hands of the writer.

As sleep is the result of, or is attended by, those changes in the functions of the body that we have learned to call physiological rhythms, it may be proper, before considering the above four subheads, to divert slightly to a brief mention of physiological rhythms.

Physiological Rhythms. — From the fertilization of the ovum until somatic death, the body is the seat of ever-changing activity. Many of the changes of function take place in the form of waves, — a period of activity followed by a period of less activity or complete rest. These alternations of activity and rest, of exacerbation and remission of function, form the physiological rhythms that are present in all or at least nearly all the functions of higher animal life. They are the ebb and the flow, as it were, of the stream of life; yet it is only now and then that this ceaseless flux engages our attention sufficiently to rise into consciousness, and to reveal to ourselves our own changeableness.

These physiological rhythms appear in cycles of time of greater or less duration, the greatest being the period of growth, which begins with the fertilization of the ovum and ends at maturity. Some of these rhythms appear in the cycle of a year, depending for their appearance upon the changes of the seasons; others occur monthly; and again others in periods of shorter duration, by far the greater number showing themselves within the cycle of twenty-four hours.

These physiological rhythms may be regarded as natural and physiological habits, which have been established mostly as the result of external conditions and forces acting upon the organism. As physiological habits, they are fundamental, and consequently can be changed only with difficulty, by altering the conditions by which these habits have become established.

The most conspicuous, and I might say the most important, rhythm that appears within twenty-four hours is that of activity alternating with rest — wakefulness and consciousness followed by sleep and unconsciousness.

1. *Some of the Natural Causes or Conditions Conducive to Normal Sleep.* — Normal sleep is a condition of the body with which every one is of necessity and by actual experience acquainted. Yet the

causes and phenomena of sleep are questions with which physiologists and philosophers have wrestled for ages, and which even at the present time are not fully understood.

Nearly all the animals with highly developed nervous systems must, night after night, or day after day, or at least time after time, take some sleep.

The causes of sleep, or we might say the preliminaries of sleep, may be considered under the following heads: —

(*a*) Fatigue of the nervous system.

(*b*) Changes in the condition of the blood.

(*c*) A cessation or reduction to a minimum of all stimuli acting upon the nervous system.

(*d*) An exhaustion or tiring of the attention.

One of the most conspicuous and characteristic properties of nerve tissue is its irritability, or its capability of responding to stimuli that may be applied to it. It is this property of the nerve tissue that puts man in functional relation to the outside world, and without this relation his existence would be impossible; for if all the stimuli that are constantly acting upon his nervous system were entirely withdrawn, there would be nothing to keep the machinery of the body in motion, and he would soon cease to exist.

Modern scientific investigation is rapidly disproving the older doctrine of automaticity and spontaneity of action. What may appear to be either automatic, or a free action of the "will," if closely studied, will be found to be simply the result of forces and stimuli which have previously made their impression upon the sensitive nervous system; and these stimuli, starting nerve currents that travel in the nerve fiber toward the center of the body, are, in their passage from one nerve to another, often modified, and perhaps inhibited, but finally show their effects upon the nervous system in changes in the various functions of the body.

We may say without departing far from the truth that every nerve current that passes centripetally into the nervous system will sooner or later return, passing centrifugally outward from the nerve centers in some form, as an outgoing nerve current that may cause a muscle to contract or a gland to secrete, or that may modify in some way the action of the heart. And so the functions of the different organs of the body are modified and changed by the action of the various stimuli that are constantly playing upon the nervous system. The nervous system is thus the medium of connection between the body and the outside world. Any change in the external conditions that in any way affects the functions of the body must do so by first acting upon a sensitive nervous system.

Physiologically, the nervous system of man and the higher animals may be regarded as made up of three classes of nerve cells: Afferent cells, over whose neuron (nerve cell) the incoming nerve current arrives at the nerve center; efferent cells, which furnish paths for the outgoing nerve currents; and between these two, central cells, which distribute the current to different parts of the nervous system, and form the connecting link between the afferent and the efferent nerve cells. In man the number of these central cells is large, and the arrangement complicated; in the lower animals they are fewer, and sometimes absent. This anatomical difference between the nervous system of man and that of the lower animals offers one explanation at least for the physiological difference that is so often strikingly apparent.

In the lower animals, in which the nervous system is simple, a nerve current passing inward along an afferent nerve is soon reflected outward to a muscle or a

gland without traveling over a central cell at all, or at least its course through the central cells is short and simple; and sometimes, as in the case of the hydra or the medusa, a single bipolar sensory cell affords the only path over which the current may pass from beginning to end.

But in man, where there are numerous central cells interpolated between the afferent on the one hand and the efferent on the other, the paths afforded to the incoming current are numerous, and consequently the reaction is more complicated, and often very much delayed.

As the result of response to stimuli of one kind or another, energy is liberated from the nerve cell, and there is a change in its material composition. If a nerve cell is stimulated mechanically, chemically, or electrically, the activity of the cell produced by such stimulation is attended with a rise of temperature, electrical variations in the nerve cell and fiber, and the production of acid, all of which mean that energy has been liberated. The passage of the nerve current through the nerve cell is itself a form of energy, which, previous to its passage, was stored up in the nerve cell as chemical potential energy; but after the discharge of the cell, it is transformed into kinetic energy, and liberated as a nerve current. This discharge of energy from the cell in the form of heat, electric changes, and nerve currents, and the transformation in the composition of the cell by which the unstable complex molecules are broken down into more stable and simpler ones, is sooner or later followed by changes in its structure, form, and function.

The changes in the histological appearance of the nerve cell after prolonged functional activity or stimulation for some time, have been worked out by Hodge, Vas, and Mann, in the cat, the dog, the sparrow, and the honey-bee. The results of the experimentation relating to this question show that after prolonged functional activity or artificial stimulation of the nerve cell, the changes in the body of the cell are as follows: —

The size of the cell becomes smaller,

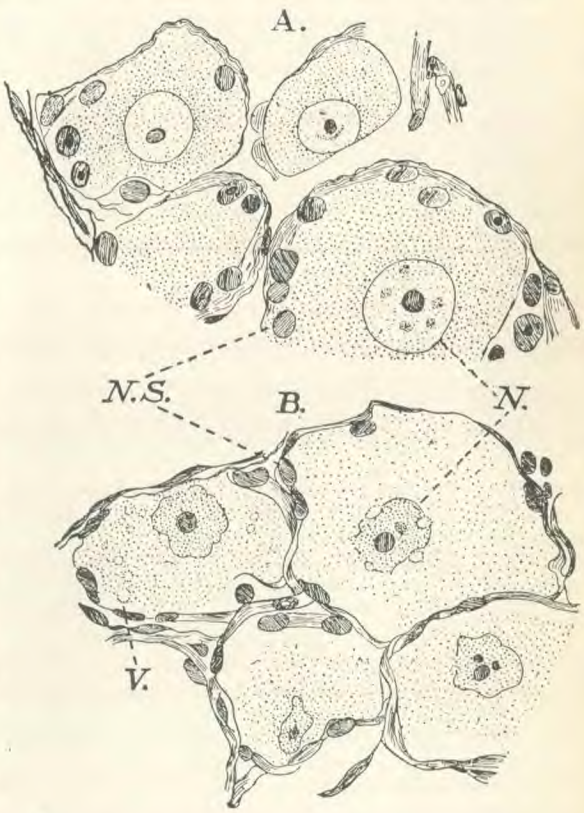


FIG. 1. Two sections, A and B, from the thoracic spinal ganglion of the cat. B, from the ganglion which has been electrically stimulated through its nerve for five hours. A, corresponding resting ganglion. The shrinkage of the structure connected with the stimulated cells is the most marked general change. N, nuclei. N S., nuclei of the capsule. V, vacuole. Magnified 500 diameters. (Hodge.)

and its outline more irregular; the cytoplasm of the cell becomes shrunken, and often vacuolated; the nucleus and nucleoli are smaller and more irregular in outline, and stain more deeply with osmic acid than in the resting cell, while the

cytoplasm stains less deeply; and the cells in the sheath which surrounds the nerve cells are also smaller and more irregular in the stimulated cell than in the cell at rest.

These changes are illustrated in Fig. 1, where A shows the condition of the cells of the thoracic ganglia of the cat in a rested condition, and B, the shape, form, and appearance of cells and nuclei after being stimulated for a period of five hours. During this interval the nerve cells were stimulated with electricity for fifteen minutes, and allowed to rest for forty five minutes of each of the five hours. The appearance of the cells at the end of this five hours is shown in B (Hodge). Hodge has shown that the above-described changes also obtain in the nerve cell as the result of functional activity.

Such are the changes produced in the lower animals — the cat, the dog, etc. — as the result of functional activity. And although these changes have not been so clearly demonstrated in man, yet they are sufficiently well proved to make the application to him.

There are also changes in the function of the cell as the result of prolonged activity. These may be briefly mentioned as follows : —

The nerve cell is less irritable, consequently responds less readily to various stimuli that may act upon it; the nerve currents that are generated within it are weaker, and less rapid in their transit; it can be readily demonstrated that the reaction time of various stimuli, such as heat, cold, light, touch, and sound, at certain periods of the twenty-four hours, when one is tired and the nerve cells fatigued, is much greater than it is in the earlier part of the day, when one is refreshed by a good night's sleep, and when the nerve cells are fully charged with energy and new matter.

In the morning, then, after a night of sufficient and normal sleep, the nerve cell is well stored with new matter arranged in the form of complex, unstable molecules, and recharged with chemical potential energy, which, whenever the cell is stimulated, is readily transformed and liberated in the form of heat, electricity, and nerve currents.

As the result of continued stimulation through the day, the cell runs down, as it were, the complex molecules being broken down into simpler and more stable ones, and the potential energy that is stored up in the cell is liberated and discharged in the form of nerve currents, until at night, after a day of activity, the cell is exhausted, and must have a period of rest in which to store up new material and recharge itself with new energy.

But within the twenty-four hours, and during the course of the running-down process, the nerve cell may show signs of fatigue that are more conspicuous at certain intervals than at others, and therefore appear in the form of waves. The curve of fatigue attending continuous voluntary muscular contraction illustrates this fact.

If a weight is repeatedly raised by the flexion of the forefinger, in a short time the distance through which the weight is raised becomes less and less, until there comes a time when the greatest voluntary effort will fail to raise the weight; but if the effort is continued, despite the fact that the weight does not move, the muscular action will finally reappear, and in a short time the weight can be raised to nearly its maximum height.

On the other hand, if a muscle is made to contract by stimulation with electricity, and without any voluntary effort, the distance through which a weight is raised in consequence of the muscular contraction produced by the electrical stimulation is greatest at first, and in a short time becomes less and less, and continues to de-

crease without any periods of returning activity until no response to electrical stimulation appears at all, and the distance through which the weight passes is nil.

There is evidently a difference in the curve of fatigue produced by voluntary effort and that produced by electrical stimulation. The waves of fatigue that appear in curves of voluntary muscular contraction indicate that at certain times weak nerve currents are sent out from the nerve cell as the result of its partial exhaustion.

Fig. 2 illustrates the curve produced by continuous voluntary muscular effort, and that produced by electrical stimulation of the muscle, and also shows the difference between the effect of these two forms of stimuli. The long light lines are those for voluntary contractions; the heavy lines, those for contraction following the direct stimulation of the flexor muscles by electricity. In the former there are periods; in the latter, none.

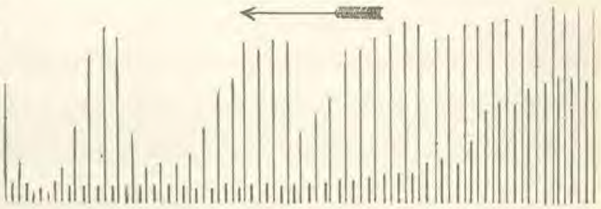


Fig. 2 represents the record of the flexion of the forefinger. The light lines are those for the voluntary contractions; the heavy lines, for those contractions following the direct stimulation of the flexor muscles by electricity. In the former there are periods of extreme fatigue; in the latter, none. The arrow shows the direction in which the curve is to be read. (Lombard.)

But the running down, or discharge, of the nerve cell is not the only element that causes fatigue of the nervous system. This condition is hastened by the accumulation in the blood of waste products of cell activity. These substances are not eliminated as fast as they are formed in the tissues, and their retention in the blood lessens the irritability of nerve tissue, and hastens fatigue.

Mosse found that fatigue could readily be produced in a dog at rest by injecting into his vessels blood from another dog that had been wearied by prolonged activity. Waste products that are thus formed by cell activity are not only toxic in the cells that produce them, but to other tissues with which they may be brought in contact by the circulation. Thus the waste products resulting from muscular activity may, when brought to the nerve centers of the body, produce fatigue by their toxic influence on the nerve cell, and our own experience tells us that the sensation of fatigue produced by mental effort is entirely different from that caused by muscular work.

The fewer the stimuli that act upon the nervous system, the more readily is sleep induced. At night, therefore, when the nervous system is fatigued, and the irritability of the nerve cell is greatly diminished as the result of the day's activity, and when the stimulating influences of the day are largely withdrawn from the body and the processes of nature are less active, the conditions are the most favorable for sleep. It is then that we naturally withdraw from the outside world, and retire to the seclusion and quietness of our chamber for sleep. Our own experience tells us that we can sleep better in the darkness and quietness of night than in the presence of noises and light, which act as irritants to the nervous system.

Strumpell reports an interesting case of a lad of low intelligence whose avenues of communication with the outside world had been reduced to one eye and one ear, as the result of disease. This lad could be put to sleep at will by plugging the one ear and closing the one eye.

But fatigue of the nervous system, changes in the composition of the blood,

and the reduction to a minimum of the stimuli that act upon the nervous system, — conditions that we have thus far considered as causes or preliminaries to sleep, — are not always sufficient to change one from wakefulness and consciousness to sleep and unconsciousness.

One of the necessary preliminaries to sleep is a tiring of the attention. In our usual experience in passing from wakefulness to sleep, this tiring of the attention occurs unconsciously. The mental images grow dimmer and dimmer, thought flows slower and slower, the attention becomes weaker and weaker, and finally is exhausted, and we pass into sleep and unconsciousness.

The tiring of attention is closely related to fatigue of the nervous system, and a reduction of the stimuli that act upon the nervous system, but this tiring of the attention is not entirely dependent upon these conditions. We often see instances of extreme fatigue of the nervous system, and yet the individual can not sleep. In these cases the attention is usually active, and is the principal factor that keeps the individual awake. One of the surest ways of producing sleep is by tiring the attention, and this may often be accomplished by counting, reading dull and heavy books, listening to monotonous sounds, or by keeping before the mind blank and heavy verse.

THE POWER OF THE TOBACCO HABIT.

BY CHARLOTTE SMITH ANGSTMAN.

(Continued.)

THERE is another way in which the use of tobacco affects men and women. Let us see whether it plays any part in the breaking up of homes. In these days of frequent divorces, it is an interesting and profitable study to consider anything that contributes to such results. Anything for which either husband or wife is responsible, affecting the happiness of the home, affects the stability of the marriage relation.

Money matters are a very frequent source of disagreement in families. Marriage must mean a partnership, or a doing and planning together for the family so far as is possible. No one member of the family has any right to use more than a fair share of the common income upon himself. We all recognize this if the wife spends too much for display or personal gratification of any kind, but do not recognize it as the same kind of transgression if the husband uses perhaps a quarter of the income for his so-called pleasure, in the gratification of an unnatural appetite. When any member of a family expends upon himself for pure pleasure, and physical pleasure at that, a sum which brings in neither intellectual nor moral return, and equaling in amount often one third more than the other members expend, it is an exhibition of selfishness,— selfishness so gross that it is only its universality that blinds us to its character. There is no greater foe to the stability of the marriage relation than selfishness in its many-sided manifestations. What would a man think of a woman, a wife, who would persist in spending from one dollar and a half to seven dollars a week upon candy or ice-cream soda to delight her own senses, her own palate, to say nothing of treating her friends? If a divorce followed in a family where the wife persisted in such conduct, it would be taken as an evidence of selfishness and extravagance which undoubtedly extended throughout the family relations to the extent of "ex-

treme cruelty." If other evidence were needed with the judge, none other would be needed with the friends of the husband.

Have we not all seen delicate women struggling along with their housework, even the very heaviest of it, when the money expended by the husband on tobacco would pay for a servant? Unless the wife be one of the very meek, martyrlike kind, this unfair appropriation of the family income does not tend to tighten the marriage tie.

As an illustration of how this unfair and undue appropriation of the family income affects the man as well as his family, I will mention the case of an inveterate smoker who was engaged in an employment wholly uncongenial to him, but which he was unable to leave for the one which he understood better, and in which he would undoubtedly have made a brilliant success, because he had no capital. His family were always troubled to get the necessaries of life; there was never anything extra for travel or special education, and the three hundred dollars a year or more that he spent to indulge himself in this harmful and disagreeable habit, which was very plainly keeping him in poor health, would have seemed like wealth to those dependent upon him. However, when it was suggested that he save his smoke money for capital, and he was asked if he had ever kept any account of this expenditure, he replied that he never had, but supposed it might amount to a good deal in a year, but one did n't live very long and ought to take all the pleasure one could. How short-sighted for any one to think that he ought to take the lion's share of the family income, make himself a personal nuisance to his friends as well as his family, disorder his health, and spoil his own business future, all because one does not live very long and ought to take all the pleasure one can! Is there nothing higher and better than pleasant physical sensations? This very man had become so nervous from habitual smoking that his hands, feet, and limbs were in perpetual motion whenever he was sitting, and on making a call he so filled the atmosphere with the odor of stale tobacco that his host was much relieved when he departed. Are we surprised when we learn that the marriage tie is dreadfully strained in such cases?

Mr. Luther Prescott Hubbard was a New Yorker who was induced to give up the tobacco habit by the reasoning of a dear friend, and this gentleman compiled a table of figures showing how the saving of the smoke money of the so-called moderate consumer amounts with interest to $118,924.26 in sixty-one years. This sum, accumulated by a conscientious yearly saving of what he had been in the habit of using on tobacco, afforded means for the education of his children and an allowance for benevolent objects, besides paying for a beautiful suburban home. Here we can see mathematically demonstrated the right which the wife has to feel dissatisfied with her husband's misappropriation of what should be used for the good of the whole family.

There can be no question that the offensiveness of a smoker's person has been the entering wedge that has divided the hearts of many a husband and wife, especially where the wife never experienced before her marriage what the smoke nuisance is in the home.

A man who had formerly used tobacco declared to me that he did not see how a woman could tolerate a tobacco user about the house. Now that he had given it up, he could realize what a foul-odored object he had been. He also declared, very frankly, that no man would tolerate any woman in his house who was so offensive personally as he now knew every tobacco user to be.

(To be continued.)

MODERATION.

THERE is one metaphor in literature that I believe to be universally true. It is this: "Moderation is the silken string running through the pearl chain of all virtues." Is it not the common observation that without moderation any virtue is bound to roll off into fanaticism, obscurity, weakness, or to be crushed under foot and robbed of its beauty?

Take the virtue of truthfulness. Is that truthfulness a virtue which is not joined by moderation to those other virtues, love and mercy?

In the physical as well as the moral world the virtues are all strung upon this same silken thread, moderation. Health is that physical righteousness which results from the practise of the physical virtues. It is the "pearl chain."

Everybody longs to possess the priceless necklace of health. Many fail to obtain it because they do not realize that it is a treasure of separate jewels, every one of which must be faithfully earned and carefully guarded on the silken string.

It is true that health is often inherited. But the vast majority of people neglect this precious heirloom. The string is broken. The pearls are scattered. Some are preserved because their value is recognized, but others are thrown away as being of no intrinsic worth.

Most of us, however, it seems to me, lose or never win true physical righteousness chiefly because we have sought certain of the physical virtues at the expense of others, and have quite disregarded the shining thread that must run through all.

Some try to find health by practising the one virtue of exercise. They think that if they walk far enough and fast enough every day, or manipulate pulleys and Indian clubs, or practise Swedish gymnastics, they may eat what they please and when they please, and sit up till midnight seven times a week — and still be well. Others reverse this theory, and believe that everything depends upon diet,— that if a man eats only simple and wholesome fare, he may neglect physical exercise, work all day and half the night at a high tension of nerve and will, and still maintain vigorous and sound health.

Another class extols the virtue of sleep, or of recreation, or of some particular game or sport.

Many, alas! seek after false jewels,— tonics, medicines, fads of all sorts,— thinking with them to fashion the orna-

ment health. But sooner or later these spurious gems crumble or tarnish in their hands, and they are left with worse than nothing for all their trouble.

The man who magnifies one physical virtue and fails to give the rest their proper place, is working an evil as widespread as his influence. He is really a sinner. Like Romney in "Aurora Leigh,"—

> "He builds his goodness up so high,
> It topples down to the other side,
> And makes a sort of badness."

The apostle Paul said, "Every man that striveth for the mastery is temperate in all things." It is quite likely that in this great man's mind the "all things" included working and sleeping as well as eating and drinking. "Let your moderation be known unto all men."

Would you have health? Would you carry an atmosphere of health wherever you go? Then gather and cherish every virtue that nature has decreed belongs to that sacred and beautiful whole. Take exercise — not spasmodically or excessively, but in moderation. Eat simple and healthful food — not too much, too little, too often, or too seldom, but in moderation. Take sleep — not fitfully, two or three hours one night and ten the next, but regularly, and in moderation. Wear healthful clothes — not bags, but made with sense and moderation. Take recreation — not long, idle vacations or short, feverish pleasure trips when your health has threatened to give way, but sensible, wholesome outings by which the whole current of your thoughts is changed and your entire being refreshed. Seek with equal ardor all these shining gems that make for physical righteousness. Preserve their beauty and unity by keeping them always upon that "silken string," and you will have a possession of worth untold, not only to yourself, but to every one whose life touches yours.

MARY HENRY ROSSITER.

INCORRECT ATTITUDES — SITTING.

IF most of us could see ourselves as others see us when we sit, — "down" or "up," and generally "down" hard upon our spinal columns, — we should wish to join a school of health immediately to learn how to make ourselves more graceful objects. But although incorrect attitudes are bad enough from the standpoint of beauty, they are even worse from the standpoint of health.

The writer once saw a tall, thin woman sitting at a table eating her dinner, whose body was curved forward to such an extent that the food she swallowed must have been obliged to travel almost in a semi-circle to reach her stomach. Nature does her best to accommodate herself to all kinds of deformities and unnatural positions, but it is not reasonable to suppose that she can do her work as well when the body is out of shape as when it conforms to her original plan.

Many disorders of digestion and consequent nervous and mental troubles are the direct result of wrong attitudes, particularly of sitting. A relaxed position in sitting often causes the stomach to be crowded out of position. After a time this misplacement becomes chronic. When the stomach is prolapsed, the food can not readily find its way out of it, and being retained there longer than it should be, undergoes fermentation, and putrefactive processes are set up whereby the system is not only robbed of the nutrient elements necessary for proper nourishment of the blood and repair of the tissues, but,

through the conversion of a portion of the food elements into ptomains and other poisonous substances, the whole body is contaminated. This is the chief source of headache, of palpitation of the heart, and of so-called biliousness.

The writer has met numerous cases in which the stomach was so much disturbed in its function as the result of this abnormal position that it could not empty itself; the liver so compressed that it was unable to perform its duties satisfactorily; and one or both kidneys so much out of place that urinary secretion was held back, resulting in the formation of calculi and the final destruction of the organ. In one

instance it became necessary to remove the right kidney, and in it was found a stone weighing more than four ounces. This, of course, was an extreme case, and yet a morbid condition may arise in any case in which a kidney becomes depressed from the cause mentioned.

The importance, then, of a correct sitting position can not be overestimated. In a correct attitude in sitting, as well as in standing, the general anterior line of the body is convex; but as soon as the muscles are relaxed, the weight of the upper part of the body causes posterior curvature of the upper part of the spine — a sinking in of the chest and waist, producing a concave anterior trunk line. To a certain degree, a forcible contraction of the muscles must be maintained whenever the body is in an upright, or erect, position, whether standing or sitting. This is necessary because the internal organs depend for their support upon the contraction of the muscles and the elevated position of the chest. When the chest is dropped and the anterior wall of the abdomen sinks in as the result of relaxation of the muscles of the back, allowing the natural hollow of the back to disappear and the head and shoulders to fall forward, the center of the back is straightened, the stomach, liver, bowels, and other organs of the abdomen and pelvis at once drop downward, and the result is an abnormal strain upon the abdominal sympathetic nerve and a more or less marked derangement of the functions of the stomach, liver, kidneys, and other organs.

A correct attitude in sitting requires proper height and width of seat, a desk or a table of the proper height, when desk work is required, and care upon the part of the pupil to sit upon his seat in a proper position. The height of the seat should be such that the feet may rest squarely upon the floor without undue pressure upon the large nerves and blood-vessels at the bend of the knee. A high seat not only produces undue pressure upon the nerves and vessels, thus causing cold feet, numbness, and other unpleasant symptoms, and possibly also a deficient development of the legs, but has the effect to drag the trunk forward, thus creating a tendency to relaxation of the muscles of the trunk and posterior curvature.

The seat should be of such width that the hips can touch the back of the seat

while the soles of the feet are still resting squarely upon the floor.

The relation of the person to the seat should be such that while the hips and shoulders touch the back of the seat (the back of the chair should be of sufficient height to reach the shoulders), the center of the back remains free from the seat, owing to its concavity. The center of the back can not touch the back of the seat without relaxation of the muscles and resulting flatness of the chest and waist, unless, of course, the seat back has a forward curvature.

Sitting in a rocking-chair is very inimical to correct position, and is a frequent cause of curvature of the spine. The ordinary position of a person sitting in a rocking-chair allows the weight of the body to rest chiefly upon the lower part of the back instead of entirely upon the thighs, so that the natural anterior curve of the lower portion of the back is wholly obliterated, the line of the front of the body having become concave instead of convex as in the normal position. It is almost impossible to maintain the correct position and at the same time to sit comfortably in a rocking-chair.

Those who have been long accustomed to a relaxed sitting position must not only take constant care in assuming the attitude of sitting, but should also devote some time each day to exercising and developing the muscles that have become weakened by disuse.

Hopping, first on one foot and then on the other, continuing the exercise until one half or three fourths of a mile have been traversed in this way, is an excellent means of strengthening the muscles of the sides of the waist. Walking on the edge of the top board of a fence, or the iron rail of a railroad track, or a tight rope, with a balance pole, gives these muscles very active and useful exercise.

Balancing a weight upon the head while walking is also an effective means

of strengthening the muscles of the waist, as well as of the neck and back. There

is no better exercise for this purpose, however, than energetic walking, with body erect and shoulders back, especially if the feet are raised high in stepping.

Fig. 1

To strengthen the muscles of the abdomen the following exercises are especially good: —

1. Sit on the side of a chair placed close to the wall, so that the toes may touch the base-board. Sit erect with the body rigid. Place the hands upon the hips. Let the body fall slowly backward, and after a few seconds return to an erect position. After some practise, the body can be lowered to a horizontal plane and restored again to position with great ease. The exercise should be repeated a greater number of times as the muscles become stronger.

2. Fasten a couple of loops to the base-board, each large enough to admit the foot. Place a low stool at such a distance from the wall that when one sits upon it with the limbs extended, the feet can be placed in the loops. Now place the hands upon the hips, and sway the body back and forth.

Fig. 2

3. Lie on the back on the floor or on an ordinary bench. Fill the lungs by taking a deep breath. Keep the legs stiff. Place the hands upon the hips. Raise the trunk slowly to the perpendicular, and slowly return to the horizontal. Repeat several times. The vigor of this exercise may be much increased by placing weights upon the shoulders.

4. Stand erect. Place the hands upon the hips, and bend backward as far as possible. Then bring the body to the perpendicular. This not only exercises the abdominal muscles, but stretches them when they have become contracted, and corrects flatness and posterior curvature of the spine, which are indicated by a sunken-in appearance of the lower part of the chest.

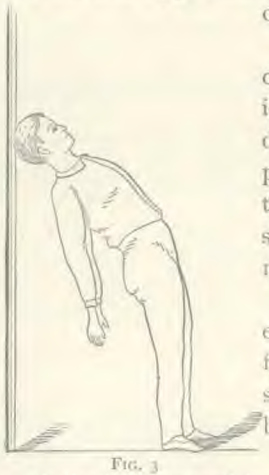


Fig. 3

5. Other exercises, such as swinging clubs, using dumb-bells, chopping, pushing with the hands, also strengthen these muscles.

The following exercises will be found useful in strengthening the back and loins: —

1. Sit upon a stool with the feet secured by loops fastened to the floor. Place the hands upon the hips, and bend the body slowly forward and back to position several times. Bend the body backward in the same way, and to either side, repeating each movement a number of times. Or, stand erect, the feet half or two thirds of a yard apart.

Fig. 4.

Clasp the arms over the head, and sway the body back and forth and from side to side. Fig. 1.

2. Standing against the wall, place the hands upon the hips and bend the head down as far as possible without bending the knees. If the muscles of the back are rigid, it would be well to have an

assistant to press the head down a little farther when the body has been bent as much as possible. Fig. 2.

3. Stand a foot or two away from the wall. Lean against the wall, supporting the body by the head, keeping the trunk and limbs rigid. Fig. 3.

4. Place two low stools far enough apart so that the difference between them will be about six inches less than the height of the body. Now lie down, and place the feet upon one and the head upon the other, so that the body will be supported between the two, as shown in Fig. 4.

FIG. 5.

5. Place the body in the position shown in Fig. 5, the feet being placed under the edge of a sofa. Now inflate the lungs, and bend forward to the floor. Return to position and repeat.

6. An excellent exercise to strengthen the muscles of the neck and back is shown in Fig. 6.

FIG. 6.

7. The muscles of the loins are developed by the use of dumb-bells, Indian clubs, and pulley-weights, as well as by such occupations as hoeing, shoveling, lifting, and carrying weights.

J. H. KELLOGG, M. D.

THE BODY AND ITS CLOTHES.

WHILE every one admits that tight lacing is injurious, many can not see how the ordinary corset, worn "loose," is in any way objectionable. To have perfect health we must have perfect freedom and development of every organ and muscle of the body. This is not possible if there is any constriction or stiffness which in any way hinders the action of the muscles.

From the outline figure you will observe the position of the various organs in the normal condition. The upper part of the trunk is a bony framework containing the heart, the lungs, and the larger blood-vessels. These organs are protected by the bony wall, and hence are not subject to such great changes in position as are some other organs, but their function is greatly hindered by the various influences that affect the other organs.

The liver and the stomach are also partly under the ribs, but being beneath the diaphragm, are more easily displaced than are the organs above it. In the lower part of the trunk is located the colon, or large intestine, which is divided into three portions, the ascending colon on the right side, the transverse colon extending across from right to left, and the descending colon on the left side. Beneath this and connected with it is the

small intestine, and in the lowest portion of the trunk are the pelvic organs.

You will observe that there are no vacant spaces, or cavities, but that each organ has its proper place, and is so related to all the surrounding organs that not a single one can be moved from its position even slightly without interfering to some extent with the other organs. Unlike the upper portion of the trunk, the lower portion has no bony wall; from the sternum and the ribs above to the hip-bones below there is no bony support.

The organs are not held in place, as many suppose, by strong ligaments. It is true there is a small ligamentous band suspending each organ, but these bands serve more as guy-ropes than as actual supports. Were there no other support, the weight of the organs alone would stretch the ligaments to such an extent that they would no longer be of use.

The abdominal wall, which is composed of three layers of muscles, is the principal support of these important organs. Clothing that in any way interferes with the action of these muscles weakens the support of the viscera. The wearing of a corset, however loose, prevents the development of these muscles, and they become weak and flabby, with insufficient power to support the organs.

The tightness of the clothing, though a great evil, is not the only one. The stiffness of the corset brings the hips forward, causing the straight back, the flat chest, the round shoulders, and the prominent abdomen. This tends to weakness of the whole body, and especially of the abdominal walls. It tends to break the natural curves of the back, and to cause a drooping of the shoulders; hence the carriage of the body becomes unnatural. This unnatural position brings undue pressure upon the front steels of the corset, often causing them to break. Every movement of the trunk then makes these broken ends of the steel press into the tender flesh.

But the corset is not the only garment that has an injurious effect upon the body. It is just as harmful to wear heavy skirts, as many do, supported simply by the hips. The skirts may be loose when fastened around the waist, but the clothing naturally will not stay suspended without any support. If fastened simply around the waist, it will drop down until it rests upon the hips. As the skirt bands drop downward, they crowd the organs before them, causing prolapsed organs with all the accompanying evils.

The great majority of women suffer from many disturbances caused by constriction and compression. A great variety of nervous symptoms—headaches, backaches, languor, indigestion, hysteria, inactivity of the bowels, depression of spirits, and many other troubles—are the result of wearing tight or heavy clothing.

We often find the abdominal wall so weak and flabby that it is of no practical use as a support. In such cases there always exists also a prolapsed condition of all the abdominal organs, and consequent inefficiency.

In post-mortem examinations it is very common to find what is called a corset liver — one in which there are great depressions and ridges from the pressure of the ribs upon the liver. Sometimes we find the liver almost cut in two, and the lower portion very much lower than it should be.

The tailor, the dressmaker, — everybody who makes or wears clothes, needs especially to study the human form and the position, relation, and function of the bodily organs, if he intends to provide garments that will suit the form and meet the requirements of the individual for whom they are intended.

ABBIE M. WINEGAR, M. D.

DRESS RIGHT. SIT STRAIGHT.

A WRITER in the *Journal of Hygiene* says: —

"It is rarely that girls get lateral curvature of the spine before they put on long dresses with waists, or go to a school where physical culture is either neglected or imperfectly provided for, or where opportunities for play are restricted. So long as they can run about in short, loose clothes, and play at every sort of game, they preserve uprightness of the body, with equal development of its two sides. The tight waist helps to produce lateral curvature, by restricting the circulation of the blood in the muscles under it, causing partial atrophy and weakness, so that they can not hold the spine in its normal upright position. It then sags a little to one side or the other, and this makes a lateral curvature. Ever after every movement in walking, running, or work is unsymmetrical, just as the movement of a hoop which is not quite round, when set to rolling, is unsymmetrical, or just as a ball which is not round, when rolled over the floor, goes bobbing about instead of straight to the mark. A symmetrical growth in a girl is so necessary to health, grace, and beauty that I feel like impressing this fact on mothers with some emphasis.

"Another cause of lateral curvature is in sitting at the school-desk sidewise, instead of directly fronting it. This sidewise attitude causes the spinal column to be rotated, and to bring one shoulder higher than the other. It seems next to impossible to make a perfectly hygienic school-desk, at which one would find it impossible to sit except upright and fronting it. One can make pictures of desks, with boys and girls in the right positions; but when they are used, it is found impossible for the young pupil to maintain the correct attitude continuously. But it is not a perfect desk which is wanted so much as a perfect system of education, *which does not require that pupils shall sit for hours at a time*, but where they shall be up and active, moving about and using their bodies naturally, as they do at work or at play.

"Another cause of spinal curvature in girls is in helping to tend the baby for their mothers when the latter go out to work, as is the case among the poor in all large cities. They generally hold the baby on one arm more than on the other, and this causes the spine to curve laterally, if done for a long time. The remedy would be to use both arms equally, but very young girls can not see the need of this, however much they are told to do it. Any kind of hard work in which one arm is used more than the other produces the same effect.

"Too many and too high pillows in bed is another cause, and there is no need for this. A thin pillow is all that is required to raise the head, when lying on the side, to a level with the rest of the body. Better go without a pillow than have one too high."

THE COOKING OF VEGETABLES.

No foods are more universally served as a part of the daily bill of fare of rich and poor alike than vegetables, and none are more frequently spoiled in the cooking.

The preparation of vegetables for the table is generally thought to be a very simple process, one which the most inexperienced cook need not hesitate to undertake. "Anybody can cook vegetables" is a common expression. It is not difficult so to apply heat and the solvent property of water as to soften vegetable tissues enough for mastication, and by the addition of condiments and seasonings to make them taste well; but to cook them so as to preserve their natural flavors and change their constituent elements into the most digestible form requires no little care and skill.

For the proper cooking of vegetables, as of all other foods, it is of the first importance that the cook understand the nature of the food itself, that she know the kind and the amount of nutrient elements of which it is composed, for only thereby can she with certainty know by what process it can best be fitted for digestion, and what other food materials should be used with it to make a well-balanced bill of fare.

The vegetables ordinarily used for culinary purposes comprise roots and tubers, shoots and stems, leaves and inflorescence, immature seeds, seed receptacles, and a few of the fruity products, as the squash and the tomato. In our present lesson we shall consider only those most available at this season of the year. Of all vegetables, the roots and tubers rank highest in food value. The following analysis shows the composition of some of these: —

	Water	Albuminous Elements	Free Fat	Non-Nitrog. Substances	Salts	Cellulose	Propor. Carbon. to Nitrog. El	Total Nutritive Value
Potato	75.	2.2	.2	21.	1.	.6	.1	24.4
Sweet Potato	71.8	1.	.2	25.3	.7	1.	.2	27.2
Parsnip	82.	1.2	.6	7.2	1.	8.	.5	10.
Beet	87.5	1.3	.1	9.	1.1	.1	.1	11.5
White Turnip	92.5	1.5	.2	.3	.7	2.1	.1	5.4
Carrot	86.8	1.2	.3	9.2	1.	1.5	.2	11.7

As will be noted, these foods contain but a small percentage of nutritive elements. Water enters largely into their composition. Their special dietetic value consists in the starch, the mineral elements, and the bulk which they give to the food mass. An exclusive diet of vegetables, however, would give too great bulk and at the same time fail to supply the proper amount of nutritive elements. To provide the requisite amount of proteid material for one day, if potatoes alone were depended upon, would require the consumption of nine pounds for each person; if parsnips, eighteen pounds; and if cabbage, twenty-two pounds. For these reasons, vegetables need to be used in combination with other articles of diet rich in proteids, such as seeds, nuts, and grain foods.

Vegetables admit of much variety in preparation for the table. They may be wholesomely cooked by baking, roasting, steaming, boiling, and stewing. Water enters so largely into their composition that but little additional liquid is needed for cooking, and a general rule, applicable to all tubers to be cooked by boiling or stewing, is to cook them in as small an amount of water as possible without burning. The salts and the nutrient juices are largely dissolved in the water, and if this is drained off, much of the little nutriment these foods possess is wasted.

The predominating nutritive element in the tubers is starch. Starch is but slightly acted upon by cold water, hence it is evident that tubers, to be cooked by boiling, should be introduced into boiling water, that the cooking process should be continuous, and that if additional water needs to be added, it should also be at boiling temperature.

The Irish potato is the most commonly used of all the tubers, and in nutritive value it exceeds all others. To cook it properly is one of the tests of a good cook.

Examined under a microscope, we find the potato made up of small cells filled with starch granules, surrounding and permeating which is a watery fluid containing a small percentage of albumin. This watery fluid exudes when the potato is cut.

When the potato is exposed for a time to heat at the temperature of boiling water, the albumin becomes coagulated, and the starch granules, absorbing the watery portion, swell, as does all starch when in boiling liquid, and distend the cells. The cohesion between the cells is destroyed, and they easily separate. If the change is complete, the potato becomes a loose farinaceous mass, or, as it is termed, "mealy." When, however, the liquid portion is not wholly absorbed, and the cells are but imperfectly separated, the potato appears waxen, or watery.

In a mealy state the potato is easily digested, but when waxy, or water-soaked, it is exceedingly trying to the digestive powers. It is obvious, then, that the great desideratum in cooking the potato is to promote the expansion and separation of its cells; in other words, to render it mealy. It will be evident, also, that to put it to cooking in cold water, to allow the boiling to cease once or more during the cooking process, to continue the boiling long after the cells have separated, are measures that will tend to make the tuber water-soaked and soggy. Young potatoes are always waxy, and consequently less wholesome than ripe ones.

To obtain the desired result, when the potato is to be cooked by boiling, it should be introduced into water that is actively bubbling, and cooked continuously until it can be easily pierced, then thoroughly drained. Cover the kettle, with the exception of a small aperture for the steam to escape, and set it on the back of the range or in some other warm place for a few minutes to allow the moisture on the outside of the vegetables to evaporate, and serve at once.

Whether or not to cook the potatoes with skins on is a matter to be settled by individual consumers. The chemists have demonstrated that when boiled in their skins the waste of nutritive elements is only three per cent.; when boiled without skins, fourteen per cent., or two ounces to every pound. Because so much of the nutriment is lost in water, the potato, as well as most other tubers, is better when cooked by steaming, roasting, or baking.

To cook a potato by baking, first thoroughly clean and dry it. For cleaning tubers nothing is better than a vegetable brush. Put into the oven, the temperature of which should not at any time during the cooking exceed four hundred degrees. A common test is a temperature in which the hand can be held long enough to count twenty. Do not pierce to try. When done, the tuber will feel soft or mellow when pressed with the fingers. On taking from the oven, burst the distended skins by a quick pressure of the fingers, just enough to allow the steam to escape, and serve at once.

A principle to be observed in the cooking of tubers is to remove them from the water or oven just as soon as tender. The cooking will continue some minutes after their removal, owing to the heat stored within. By overcooking, vegetables be-

come less digestible. The following table gives the average length of time required for the cooking of tubers, although much depends upon the age, size, and freshness of the vegetables :—

Potatoes, baked, from thirty to forty-five minutes.

Potatoes, boiled, from twenty to thirty minutes.

Beets, baked, from five to six hours.

Beets, boiled, one hour if young ; if old, from three to five hours.

Parsnips (young), baked, from forty-five to sixty minutes.

Turnips (young), boiled, forty-five minutes.

Turnips (old), boiled, from one and one half to two hours.

Carrots, boiled, from one to two hours.

Vegetables are often cooked in hot fat, but we can not recommend this as a wholesome method. A morsel of food encrusted with fat is not easily digested. Fat is not acted upon by the digestive fluids in the stomach, and its combination with other food materials hinders their digestion also. The action of the heat during the process of frying decomposes the fat; in consequence, various poisonous substances are formed, which are highly detrimental to digestion.

For the seasoning of vegetables, cream and the fat of nuts are, from the point of wholesomeness, to be preferred to butter.

It is important that as short a time as possible elapse between the cooking and the serving of most vegetables. If for any reason they can not be served at once, it is best to dish them, and place the dish containing them in a pan of hot water, where they will keep hot but will not cook. Vegetables are never so good after standing, but they spoil less readily kept in this way than any other.

ELLA EATON KELLOGG.

RECIPES.

Broiled Potato.— Mashed potatoes, if packed firmly while warm into a sheet-iron bread tin which has been dipped in cold water, may be cut into slices when cold, brushed with cream or nuttolene cream, and browned on a broiler over hot coals.

Corn Dodgers.— Mix one tablespoonful of sugar with two cups of best corn-meal. Scald with one cup of boiling water. Add rich milk to make a batter thin enough to drop from a spoon. Lastly, add one egg, yolk and white beaten separately, and bake on a griddle in the oven from three fourths of an hour to one hour.

Vegetable Oyster Soup.— Eight bunches of vegetable oysters, seven or eight in a bunch ; one can of sweet corn ; one-fourth pound of nuttolene. Cook the oysters until tender, and run them through a colander. Rub the corn through a colander and the nuttolene through a fine sieve. Mix the corn and nuttolene together, and add to the oysters ; add the liquor in which the oysters were cooked, with a sufficient quantity of water to make it the consistency of soup, not porridge. Salt to taste. Heat from one half to one hour. This makes about five quarts of soup. E. B.

Potato Snowballs.— Cut large potatoes into quarters ; if small, leave them undivided ; boil in just enough water to cover. When tender, drain and dry in the usual way. Take up two or three pieces at a time in a strong, clean cloth, and press them compactly together in the shape of balls. Serve in a folded napkin on a hot dish.

Browned Sweet Potato.— Slice cold, cooked sweet potatoes evenly, place on slightly oiled tins in a hot oven, and brown.

SEASONABLE MENUS

By Mrs. E. E. Kellogg.

Breakfast No. 1.

Granose Flakes with Cream or
Nut Cream
Broiled Potatoes
Corn Dodgers
Stewed Tomato
Zwieback

Dinner No. 1.

Vegetable Oyster Soup
Potato Snowballs
Browned Sweet Potato
Nut Roast with Dressing
Whole-Wheat Bread
Stewed Apples
Ambrosia

Breakfast No. 2.

Fresh Fruit
Browned Granose Biscuit
Dried Peach Toast
Hominy with Cream or Nut Cream
Baked Apples
Graham Wafers

Dinner No. 2.

Dried Lima Bean Soup
Parsnips with Potato
Baked Beets Celery
Whole-Wheat Bread
Boiled Wheat with Cream or Fruit Sauce
Fig Sandwiches
Lemon Apple Sauce

Baked Beets.— Beets are far better baked than boiled, although it takes longer to cook them properly. French cooks bake them slowly six hours in a covered dish, the bottom of which is lined with well-moistened rye straw; however, they may be baked on the oven grate, like potatoes. Wipe dry after washing, and bake slowly. They are very nice served with a sauce made with equal quantities of lemon-juice and whipped cream, with a little salt. Nut cream is also good used in the same way in place of cream.

Scalloped Potatoes.— Pare the potatoes and slice thin; put them in layers in an earthen pudding-dish, dredge each layer lightly with flour, add salt, and pour over all enough rich milk to cover well. Cover, and bake rather slowly till tender, removing the cover just long enough before the potatoes are done, to brown nicely. If preferred, a little less milk may be used, and a cup of thin cream added when the potatoes are nearly done.

Chopped Turnip.— Chop well-boiled white turnips very fine, add salt to taste and sufficient lemon-juice to moisten. Turn into a sauce-pan and heat till hot, gently lifting and stirring constantly. Cold boiled turnip may be used advantageously in this way.

Vegetable Hash.— With one quart of finely sliced potato, chop one carrot, one red beet, one white turnip, all boiled, also one or two stalks of celery. Put all together into a stew-pan, cover closely, and set in the oven; when hot, pour over them a cup of boiling cream or nut cream, stir well together, and serve hot.

Fig Sandwiches.— Spread thin slices of bread or toasted whole-wheat wafers with almond butter, or, if that is not ob-

tainable, with a paste made by grating or pulverizing shelled almonds and moistening slightly. Place nicely steamed figs between the slices, and serve.

Nut Roast with Dressing.— Cook one cup of brown lentils until tender and dry, and rub them through a colander. Add three-fourths cup of dry crystal wheat, one and one-half teaspoonfuls of powdered leaf sage, one-eighth teaspoonful of powdered mint, one and one-half to two teaspoonfuls of salt, and one cup of water. Mix all together, and add one pound of nuttolene cut in small strips; press all down in a pan, and bake slowly for about an hour. This serves fifteen people.

Dressing.— Moisten slices of bread with hot water, and lay them in a pan. Sprinkle this with powdered sage and salt, and continue to put in layers in this manner until a sufficient quantity is prepared; sprinkle the top with bread or cracker crumbs. Sprinkle over a little more water, if necessary, and heat in a quick oven until brown.

Gravy.— Heat one-half cup of nut oil in a stew-pan, without browning. Stir into this six rounded tablespoonfuls of flour, and add three pints of boiling water. When smooth add two ounces of nuttolene which has been rubbed through a sieve and two teaspoonfuls of celery-salt. Add some of the hot liquid to the nuttolene to make a smooth paste before putting it into the whole. E. B.

Peach Toast.— Stew nice fresh peaches in a small quantity of water; when tender, rub through a colander, and if quite juicy, place on the back of the range where they will cook very slowly until nearly all the water has evaporated, and the peach is of the consistency of marmalade. Add sugar to sweeten, and serve the same as prunes, on slices of zwieback previously moistened with hot cream. Dried or evaporated peaches may also be used. Toast with dried-peach dressing will be more delicate in flavor if one third dried apples be used with the peaches.

THE PHYSIOLOGICAL EFFECTS OF COLD.

Cold is a vital depressant. Under all circumstances and in all modes of application this is its primary and real effect.

A low temperature, in whatever way produced, checks cell, or protoplasmic, activity. This may be readily seen by a microscopic study of the ameba, or white blood-corpuscle, or the embryo of a chick, the movements of which are at once suspended when the temperature is lowered, but begin again with the application of heat.

The life processes of warm-blooded animals are slowed when the body temperature falls a few degrees below the normal standard of temperature for the individual class or species of animals under investigation. This accounts for the phenomena of hibernation. In a bear in the state of hibernation the temperature has been found as low as 35° F., the pulse eight per minute, and the respiratory chest movements entirely suspended, showing almost complete cessation of vital activity. In this state, little waste of tissue takes place, so that the animal may pass several weeks without eating or drinking.

In fishes, whose temperature is generally only a degree or two above the water in which they live, the temperature may be reduced so low that actual freezing

takes place, when there seems to be complete suspension of vital activity, but not actual death, and the animal may live in this condition for weeks and even months.

The depressing influence of cold upon vital activity is utilized in the preservation of food, the germs that give rise to putrefactive processes being unable to multiply and produce their peculiar ferments and toxins at a temperature of 32° F. It is through this depressing influence also that diphtheria and other localized maladies, even cancer, may often be effectually controlled by applications of ice to the affected parts. The activity of the perspiratory glands is at once checked by the application of cold to the skin, and so also is the secretion of gastric juice by the peptic glands when cold water is swallowed.

In the study of the physiological effects of water at different temperatures upon the various structures and organs of the body, the fact must be kept in mind that as employed in hydrotherapy, water is chiefly useful as a means of communicating heat to the body or abstracting heat from it. In its internal use, the thermic effects of water are supplemented by effects arising from its solvent and nutrient properties. In its external use, certain mechanical effects are added to its thermic effects in some forms of application, particularly the several varieties of the douche.

Heat and cold are relative terms, objects being recognized as cold when they have a temperature less than the zero of the temperature sense; that is, the temperature of the skin, and the reverse. For convenience, however, in the study of the physiological effects of water, as well as in directing its therapeutic application, it is necessary to fix the meaning of certain terms more accurately indicative of the approximate temperature of the application. The terms that have been most commonly applied are the following: *very cold, cold, cool, tepid, warm, hot,* and *very hot.*

The terms "temperate," "nauseating," "excessively hot," and "excessively cold" are used, especially by French hydrotherapeutists, but the utility of these terms is so restricted that we have eliminated them.

As the classification proposed is necessarily artificial and arbitrary, it is not easy to fix the exact limits of temperature to which each term should be applied, and this fact has given rise to considerable discussion and to diversity of views. It is the belief of the writer, however, that the following table represents very nearly the concensus of intelligent opinion, and the results of the largest experience: —

Very cold	32° to 55° F.
Cold	54° to 65° F.
Cool	65° to 80° F.
Tepid	80° to 92° F.
Warm (neutral)	92° to 98° F.
Hot	98° to 104° F.
Very hot	104° and above.

The effects of applications at these various temperatures differ according to the part of the body to which the application is made, and the extent of surface involved.

Whether or not the final effect of an application of cold is sedative or excitant, depends much on the mode of application and the temperature employed, but most of all on the length of the application.

When a cold application is made to the body in any form, whether internally or externally, the first effect is depression and a lessening of the activity of the living structures with which the cold medium comes in immediate contact. If the application is continued for a long time, this vital depression continues likewise, and is maintained after withdrawal of the application. The longer the application, the longer the depression that follows. Sooner or later, however, the parts return

to their normal condition; and if the depression has not been so great as vitally to damage the parts, in the return to normal activity the pendulum swings, so to speak, beyond the normal line, so that for a time a higher degree of vital activity is maintained than before the application. This increased physiological activity is termed *reaction.*

When the cold application is a short one, the reaction follows quickly, and is as much more intense as the application made is energetic; that is, low in temperature and with considerable pressure, as in the form of the douche.

The application may be so managed that the primary effect, or action, may be diminished; or the secondary effect, or reaction, may be diminished; or both may be lessened.

Cold applications may be made by means of ice, cold water, cold air, or by the evaporation of water or other volatile liquids from the surface of the body, which may be either spontaneous or increased by a current of air. All these methods are employed in hydrotherapy. The same principles apply, however, whatever the mode of application.

All discussion respecting the mode of "action" of cold must cease with the recognition of the fact that it really has no vital action whatever, serving only as a physical agent to lower the temperature of those parts with which it comes in contact. Its so-called physiological action is wholly due to the action of the body itself,—first, in recognizing the presence of an agent that interferes with its functions and is capable of injuring the integrity of its tissues; and secondly, in rallying its forces to repel the invader or to avert the danger arising from its presence. If this principle is kept in mind, the interpretation of the various phenomena developed by the application of cold to the body will be relieved of many difficulties.

The primary effect of a cold application is excitant.

The secondary effect is invigorating, restorative, and tonic.

The actual effect of an application of cold depends upon the method of making the application, the temperature, the susceptibility and condition of the patient, and many other factors; in general it may be said that—

A short application of intense cold is excitant, and if repeated daily, tonic.

A more prolonged application of cold at a moderately low temperature is less exciting and less tonic.

A prolonged cold application is both excitant, or tonic, and sedative, the depressant effects resulting from the exhaustion of the nerve centers from prolonged excitation and the lowering of the temperature of the body.

J. H. KELLOGG, M. D.

THE PHYSIOLOGY OF DIGESTION.

THE old theory that man is a unit is no longer tenable, for we know that each of the myriads of cells of which the body is composed possesses a life of its own; consequently man is a grand composite — an association of living beings. This association is governed by a set of physiological laws, which, when allowed to be applied in a proper manner, keep every part of this great association in harmony with every other part, and the result is a condition of health,—a condition that every one is desirous of possessing.

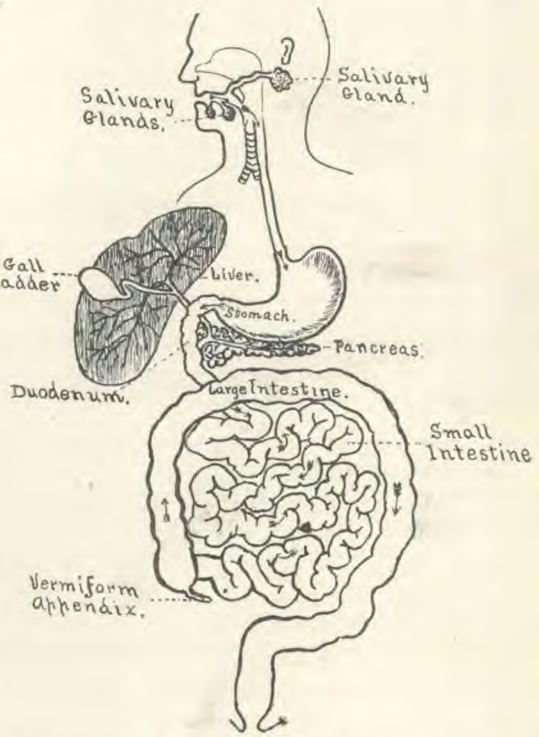
In order that man may co-operate intelligently with these laws, it is necessary to

know something concerning the various processes that are taking place in the body. One of the most important is that of digestion, which may be defined as follows: It is the series of physical and chemical changes through which food passes in order to render it absorbable.

Before attempting to describe the physiology of digestion, we wish to consider what a food is and what food elements the body requires to sustain it. A food may be defined as a substance, which, when taken into the body, is oxidized (or burned up), goes to repair or build up tissue, and adds to the sum total of energy liberated within the body in a given time. The nature of the tissues of the body is such that they require a variety of food elements. We find that nature has supplied us with an abundance of these, and they can be conveniently classified under four heads: (1) Proteids, or nitrogenous elements; (2) carbohydrates; (3) fats; (4) salts and water. As an example of the proteid elements we have gluten of wheat, casein of peas, beans, lentils, and milk, fibrin of meat, albumen of egg. The carbohydrates comprise the starches and sugars, and are found in grains, fruits, and vegetables. Fats are found in grains, nuts, and some fruits, also in animal tissues. The salts and water are found in all foods. The proteid elements are used in building up tissue; fats, starches, and sugars are the substances that supply energy; the salts and water act as foods after they have become oxidized, by assisting the cells to take up nourishment and give off waste material.

In order that these various food substances may be digested, the body furnishes five fluids to accomplish this work. But before coming in contact with these fluids it is necessary that the food undergo changes that will enable the fluids to act upon it to the best advantage. Among these changes are cooking, maturing of the food, as ripening of fruits, disintegration, or breaking up into small particles, so that the digestive fluids can thoroughly permeate all parts.

The manner in which the food is cooked has a great deal to do with its digestion;



improperly cooked food means imperfect digestion, and imperfect digestion means disease.

The saliva, the gastric juice, the pancreatic juice, the bile, and the intestinal juices are the five fluids employed in the process of digestion. These fluids are the products of specialized cells found along the alimentary canal or in glands that have been developed as offshoots from it.

The saliva, the first fluid with which the food comes in contact, is a product

of three pairs of salivary glands situated in close proximity to the mouth and which pour their secretions into it. The function of the saliva is to convert the starchy foods into sugar. This is accomplished by a substance called ptyalin. These glands also supply a fluid and a mucilaginous substance which surrounds the mass of food and makes it easy to swallow.

The gastric juice is the second fluid with which the food comes in contact, and is supplied by the cells lining the glands of the inner coat of the stomach. This fluid, besides being capable of digesting certain food elements, destroys germs, thus preventing the food from decomposing in the stomach. The digestive principles of this fluid are hydrochloric acid, which dissolves the substance surrounding fat globules and meat fibers; pepsin, the duty of which is to digest the proteid substances; and rennin, which curdles the casein of the milk preparatory to its being acted upon by the pepsin.

The pancreatic juice, which is a product of the cells of the pancreas, and the bile, which comes from the liver, pass into the intestine a short distance below the pyloric end of the stomach. Here the food from the stomach comes in contact with these juices. The pancreatic juice contains three digestive principles; viz., amylopsin, which converts starch into sugar; trypsin, which digests proteids; and steapsin, which, with the aid of the bile, digests the fats.

The intestinal juices, which are secretions from cells of the lining membrane of the small and large intestines, have to some degree the power of digesting all the food elements. Their chief action, however, seems to be the digestion of cane-sugar.

The accompanying diagram shows the relation which the various digestive organs bear to one another.

CHARLES E. STEWART, M. D.

THE CELLAR.

MANY of the cellars built under houses are simply the hold of almost every abominable thing. The cellar and the attic are considered as convenient places to store things that people desire to get out of sight. However, as it is the tendency of most foul gases to rise upward, from a sanitary standpoint the cellar becomes the more dangerous of the two, so far as the health of the family is concerned.

In far too many cases the cellar is merely a dark and poorly ventilated hole in the ground under the house, its walls perhaps sustained with stone or other material sufficiently to keep them from crumbling, but not half enough to keep out moisture and foul odors that are likely to fill air spaces in the earth for many feet in all directions from the house, unless the drainage and cesspool and the back yard have been well attended to. In addition to this there is generally a more or less open space under other portions of the house, the openings in the brick foundation not being large enough, perhaps, for proper ventilation, but just the convenient size for the cat to slip in and eat in peace some rat or mouse, and if not very hungry to leave a portion of the carcass to rot and mingle its odors with those "mysterious" ones from the cellar that penetrate the pores of the wooden floors and play their part in producing disease in the family.

It has long been recognized that epidemics of diphtheria and scarlet fever are more frequent and more virulent in those

families who occupy houses that are in an unsanitary condition. The foul odors arising from decaying vegetables, mold, and the like do not directly cause these diseases, but when they are constantly inhaled by those members of the family who have but little access to the open air, they favor such a deteriorated condition of the entire system that any stray germ that comes along finds, as it were, the bars of health all let down, and stalks in without meeting any active resistance.

To prevent moisture there should be an open-air space in the walls and floor, and to shut out the foul ground airs the walls should be cemented so as to be impervious to the air. To carry out various odors there must be a foul-air outlet. This is best arranged by connecting it with the kitchen chimney, thus insuring a constant suction which will give the proper ventilation, provided that decaying vegetables and other sources of contamination are not allowed to accumulate.

In cities the house sewer pipe opens into the street sewer from the cellar, and if not carefully watched, may begin to leak, and thus become another source of contamination to the air. The common custom of having such pipes pass through the cellar is not the wisest plan. When constructing a cellar, it is better to have it built adjoining the house than under it. Many of the cellars in the Western States are built in this way, so that they may serve as cyclone refuges as well, and from a sanitary standpoint this plan is a valuable improvement.

DAVID PAULSON, M. D.

HOME CLUB QUESTIONS.

PHYSICAL DEVELOPMENT.

1. WHAT special deformities are caused by incorrect attitudes in sitting?

2. How does an incorrect sitting position interfere with digestion?

3. Are the chairs and other seats manufactured to-day more or less hygienic than formerly?

4. What classes of people most often sit and stand correctly?

5. How does the wearing of a corset aggravate the evils of a bad sitting attitude?

HEALTHFUL DRESS.

1. Are "health corsets" injurious?

2. Are the so-called health waists good substitutes for the corset?

3. Is it possible to replace organs that have been displaced by improper dress?

4. What is the physiological effect of the high stocks and collars now so fashionable?

5. Should a woman who has always worn a corset discard it suddenly or gradually?

SCIENTIFIC COOKERY.

1. Why are vegetables not the most economical foods.

2. Why is it necessary to exercise particular care in cooking them?

3. Are vegetables and fruit a good combination? Why?

4. What is the best combination with vegetables?

5. When are vegetables an advisable substitute for fruit?

HYDROTHERAPY.

1. What is the general effect of a low temperature upon the body?

2. What is the chief factor in determining the final effect of a cold application?

3. What is "reaction"?

4. How would you define a "tonic treatment"?

5. How may a sedative effect be obtained from a cold application?

PHYSIOLOGY AND HYGIENE.

1. What evils result from a failure to masticate food thoroughly?

2. What is the chief objection to drinking at meals?

3. Why should the cellar be kept as clean as any other part of the house?

4. Are pickles, celery, chow-chow, and similar edibles properly called foods?

5. What argument against corset wearing is suggested by the diagram showing the relative position of the digestive organs?

For Answer by Subscribers.

1. Which is the worse, to sit or to stand incorrectly?

2. Why should the ambitious man especially cultivate correct attitudes?

3. Is man or woman most responsible for existing evils of dress?

4. Can you mention a greater folly than a twenty-one inch waist and a twenty-four inch train?

5. Are vegetables the best food for the vegetarian?

6. What is the best substitute for fruit when it is impossible to obtain the latter?

7. What is the moral effect of a cold sponge bath on a winter morning?

8. Is it impossible for a person in ordinary health to overdo cold bathing?

9. Is there any danger in the possession of too scientific a knowledge of the processes of digestion?

10. How many times a year should the cellar be cleaned out?

ANSWERS TO HOME CLUB QUESTIONS FOR JANUARY.

PHYSICAL DEVELOPMENT.

1. BECAUSE the work of every cell of the body is interfered with if but one is hindered in its action. Incorrect position, however slight, disturbs the entire plan of nature.

2. By the curve of the back, the position of the chest, the poise of the head, the shape of the shoulders, the position of the abdomen.

3. By observing the natural and habitual position of healthy peasants and hard-working country people whose habits have not been corrupted by society or by specialized labor.

4. The lungs, the stomach, the liver, the kidneys, and the pelvic organs.

5. Young people and those of sedentary occupation; especially those in whom routine work favors the relaxation of particular muscles.

HEALTHFUL DRESS.

1. By comparing the form of the savage woman or of the classical statuary of antiquity with that of the civilized woman of to-day.

2. The fact that men and women both have ceased to jest at dress reform and are earnestly seeking a better way.

3. That woman's body has been subjected to slow torture for ages; that people can become so accustomed to deformity that they learn to look upon it as natural; that nature has wonderful resources or she would long ago have given up the effort to produce women at all.

4. Displacement of the abdominal and pelvic organs, resulting in the improper performance of their functions.

5. For answer see editorial in this number, "The Civilized Woman Deformed."

SCIENTIFIC COOKERY.

1. The fact that it has so powerful an influence in moulding the physical appearance as well as the character of every human being. To produce a healthy and beautiful figure of living man is a greater work of art than to paint a portrait or to sculpture marble.

2. It is inestimable. It outranks the temperance, the purity, the tobacco question. It lies back of them all.

3. It has come to have for its chief object to make food appetizing rather than nutritious.

4. Whether or not it offers foods that contain the necessary elements in the proper proportions to nourish the body and so prepared as to be both digestible and palatable.

5. Because most foods are not digestible in the raw state, at least by the modern stomach.

HYDROTHERAPY.

1. The scientific use of water in the treatment of disease. "Prophylactic" comes from

a Greek word meaning "to guard against," and as a medical term signifies "defending from disease," "preventive."

2. Because it adds no foreign substances or poisons to the system to impose additional labor upon organs already overburdened.

3. By acting upon the sympathetic nervous system, it stimulates all the processes of nutrition and assimilation. It also increases the amount of hydrochloric acid produced in the stomach, thus directly aiding digestion.

4. See table of temperatures in the lesson entitled "Physiological Effects of Cold," in this number.

5. A short cold bath is exciting, while a prolonged cold bath is depressing.

PHYSIOLOGY AND HYGIENE.

1. By the blood.

2. If improper food is eaten, the blood will be poor, and hence unable to maintain proper activity and health of cell life.

3. All the difference in the world. If the cell life is sluggish, the brain life and every activity of the body will be correspondingly weak and slow.

4. It means pure air, not simply in one room or part of a room, but everywhere throughout the house, in closets and among bedclothes.

5. When the air of the room is so impure that the head aches and the mind can not work without great effort.

THE CARE OF THE TEETHING BABY.

BY KATE LINDSAY, M. D.

(Concluded.)

TEETHING, as understood by the laity, means the time when the teeth begin to give evidence of cutting through the gums, and usually begins in the fifth or the sixth month. Between six and eight months the normal baby usually cuts the two lower middle incisors. Then there is a rest of from six weeks to two months, when, between the eighth and the tenth month, four upper incisors appear. At ten months the average healthy baby has six teeth. After another rest of two months, at from twelve to fourteen months of age, six more teeth are due, the two lower lateral incisors, and four double teeth, or first molars. At fourteen months the baby has twelve teeth. After a rest of three or four months, at from eighteen to twenty months of age the four canines, or what are known as stomach- and eye-teeth, are usually cut. After a rest of from eight to ten months, at the age of from twenty-eight to thirty-two months, the last four milk-teeth are cut, when the baby should have twenty teeth. These teeth, for want of proper care, often give serious trouble after they are cut, especially if they are allowed to ulcerate and decay, and to keep the mouth continually filled with foul matter which will more or less infect the stomach and also the glands of the neck.

First teeth need the same care as permanent teeth. Keep them clean by free use of the tooth-brush, and have every cavity filled so as to preserve them until replaced by the permanent teeth.

The symptoms of teething have been described as drooling and fever, restlessness, irritation and soreness of the mouth, diarrhea, and various eruptions of the skin. These disorders, as we have already shown, usually come from some other cause. It is true that often at the time the teeth are cutting, the nervous system is more irritable, and the little one is more susceptible to any unhygienic conditions. Many causes of disease which would be successfully resisted at other times give rise to serious symptoms now; therefore, special care should be taken of the little one's health at this time. No change in diet, such as weaning, and if possible no

unfavorable change of location should be made, as a change from the country to the city in the warm months, or the taking of a long journey at the time the teeth are appearing and the gums are congested and irritable. As the teeth come in groups with a rest between, wait until the resting time to make any unfavorable change. It would save the life of many a city infant, however, if it could be taken into the country or on a sea voyage in the hot weather.

The average time for teething has been stated above, but many children have cut two teeth by the end of the third or fourth month, while others have cut no teeth at all in the first year. As a rule, children who cut teeth early are strong and well developed, while those who cut them very late suffer from some disorder of nutrition. When a child has cut no teeth by the time it is nine months old, its condition should at once be examined. Bottle-fed children are almost invariably late in teething, and late teething predisposes the teeth to early decay. In those cases the teeth are often defective in structure because the artificial food was wanting in bone-making elements. Often such children may look fat and even be good-natured, but it is frequently because their tissues are soft and their muscles flabby that they lie so still and have the reputation of being models for mischievous children. Often a square, intellectual-looking forehead is a deformity due to rickets.

It is not always the case that a baby without teeth in its first year is really diseased, but in the experience of the writer it has been usual to find some form of faulty nutrition as evidenced by the early decay of the teeth; often, also, there are swollen glands, while the body, although seemingly well nourished and plump, will be found to lack that firmness of tissue that indicates sound health.

Teeth are not always cut in the order given, but may come in the upper jaw first. The salivation, or drooling, which is so often thought to indicate that teething has begun, is oftener an evidence of some irritation of the mouth due to other causes, or some undue excitation of the salivary glands by "comforters," and other hard things given the baby to suck after it has finished its regular meal. A grown person drools when chewing gum or tobacco, but he has been trained to swallow his spittle or to expectorate, instead of allowing it to flow from the mouth as the infant does.

Second dentition begins about the sixth year with the cutting of the first four permanent molars. At this time the child has twenty-four teeth. The next year the front teeth, or central incisors, are replaced by permanent incisors, and an average of four teeth a year are replaced by the permanent teeth until all the milk-teeth are shed, about the tenth or the eleventh year. In the twelfth year four molars are cut. If the teeth are sound, they should now number twenty-eight. The wisdom teeth do not usually appear until adult life.

The cutting of the second teeth sometimes occasions irritability of temper or some other slight nervous disturbance in excitable children; but if the teeth are sound and the child healthy, no serious disorders of any kind need attend second dentition. The conditions under which the milk-teeth may be expected to be cut without any disturbance or serious disorder, are, first, that the little one shall be well fed on healthy milk from a sound, healthy, intelligent mother, who will care for her own health properly, and take pains to feed the little one at regular intervals, and attend to all its other habits of life, and when any disturbance of any other organ occurs, to be sure to find out the cause at the time of teething as carefully as at other times. During the hot

summer months endeavor to get the little one into the country, away from the heat, if possible, or if that be an impossibility, keep it cool by giving it cool baths several times a day, and by keeping it in a cool, well-ventilated, shady place during the hot part of the day. Give it plenty of cool boiled water to drink, and be sure that it has nothing to eat that may derange the digestive organs. After the teeth are cut, and before also, keep the mouth clean; whenever it becomes sore or shows any signs of inflammation, wash it out several times a day with equal parts of glycerin and borax mixed with four parts of boiled water.

Never neglect the first teeth. Remember that any defect in them is likely to be transmitted to the permanent teeth. The lime salts in the roots of the milk-teeth help to form the dentine of the permanent teeth. Also remember that when a milk-tooth has to be pulled prematurely, it always affects the form of the jaw, and may be the cause of an irregular seam of teeth, also of crowding the teeth because of too narrow a jaw and want of room. Sometimes the milk-teeth are not properly displaced by the permanent, then they must be pulled to make room for the others. If any milk-tooth has a cavity in it, have it filled at once. Do not leave it there with its load of germs to infect the jaw and other coming teeth. From this cause may arise tubercular infection of the glands of the neck, leading to a fatal termination in after life. Nothing is more conducive to ill health in the adult than to allow him when a child to have his mouth full of decayed stumps.

Intelligence on the part of mothers will do away with the dread and danger of teething. The care of the teeth must begin with the earliest life of the little one, and never be relaxed. It is of the greatest importance to the child to enter upon life with a mouthful of sound teeth, with the knowledge of how to care for them, and the habit of caring for them properly so well fixed that it will never be neglected.

A QUESTION OF ETHICS.

BY MRS. S. M. I. HENRY

(Continued.)

"THAT'S a pretty bundle of swag!"

It was a chuckling voice out of an evil face. The woman who was leading little Johnnie Wheeler by the hand turned quickly, for the voice came from over her shoulder.

"O you, Nance?" she cried, and added fiercely,—

"'Tain't no swag; it's company."

All the well-bred instincts that had stayed by her until now sprang at once to the rescue of what little reputation she had left. But conscience was her enemy in this attempt, for it faithfully reminded her of that ulterior purpose which prompted her to take this company home with her. Was it company or swag? and she was compelled to acknowledge that Nance had called it by the right name.

Very well, if it was swag, what then? Nothing to anybody. Was she obliged to answer every question? What was Nance that she should cry "swag" to her?

Thus she reasoned, and out of this reasoning answered defiantly,—

"Well, suppose 'tis; what of it anyhow?"

"Only stand by it, dear; that's all; and it'll stand by you. *It is swag*, dear.

It can't get out o' being put in lavender for somebody nohow. If you wants it, hold on fair and square; if you don't, let go, and get out o' the way."

Margaret Stillman groaned inwardly, and only by vigorous swallowing prevented it outwardly. She grasped the little hand more firmly, and hurried on as fast as her halting hip would allow, feeling all the time that that evil face was turned her way, its blinking eyes keeping her in sight. This filled her with alarm, and she made several détours to escape such observation. She saw that she would never be able to take that elegant little "bundle" much farther without attracting meddlesome attention. But she was quick-witted, and a series of misfortunes, together with much suffering, had made her desperate, and therefore she was fruitful in expedients.

In passing under the elevated railroad she took advantage of a few huddled shadows deftly to loosen and drop off her petticoat, with which, before he could much more than wonder what she was doing, she had covered Johnnie from his stylish cap to his boot-tops in such a way as to leave nothing to be desired.

"What did you put that on me for?" asked Johnnie. "Did you s'pose I was cold?"

"I want to keep your nice clothes from getting sooty. You see I don't live on a fine avenue, and I don't want you to go home all smutty."

"Well, I think you are a very nice lady," said Johnnie.

"Then you call me a lady, do you?"

"Yes; for my mama told sister that ladies are always kind; and you are kind to think about my getting smutty. These are my new clothes ——"

"Christmas?" suggested Margaret.

"No — pho! course not. Clothes ain't presents. I had lots of nice presents though."

"Well, *my* little boy would be glad of clothes for Christmas," she said bitterly.

"Would he? I've got lots, but it's too late for Christmas."

"But it's never too late to be cold and hungry," she sighed under her breath.

She was walking as rapidly as her lameness would allow — fast enough to give the child's little short legs all they could do to keep up. She, however, held him by the firm grip of her hand, and he trotted bravely along, sometimes on his toes, his attention taken every moment by some new and strange sight, so that he had no time to think of himself. Such a funny little figure as he was in his masquerade, with his glowing cheeks, eager eyes, cherubic mouth, and one golden ring of a curl that had fallen out from under his cap.

At last they turned into a narrow court, and the woman paused at the top of an open stairway, broken, dark, dirty, leading down into damp, malodorous depths from which any human creature would instinctively shrink with dread, unless he needed a hiding-place.

The child drew back as soon as he discovered that the way he was traveling led down into those nether glooms, and in a startled voice he cried out,—

"No! — What are you going down there for?"

"Because I live down there," answered the woman sullenly.

He looked up at her as if to assure himself that she was human, then asked,—

"Do *folks* live down there?"

"Yes, when they can't get any better."

"And your little boy,— does he live down there?"

"Yes;" and the words seemed to choke her.

"Why don't your papa give you a good place to live in, up out of doors?"

The woman did not answer, but ground

her teeth, and made him feel the fierce, convulsive grip of her hand as she clinched it on his little palm.

"Say, lady, why don't your papa—"

"Shut up," she cried. Then quickly bethinking herself of possible consequences if she should terrify him too much, she added,—

"No, no, I didn't mean that. But we haven't anybody — my little boy and I — we haven't anybody. I have had to lift him all this time alone. Come on, don't be afraid," for the child still drew back. "You came to call on him, you know," she said pitifully, pleadingly, with tears in her voice. "I'll carry you down if you like, and bring you back. You don't want me to take you home now until you have seen my poor little sick boy, do you? He has n't seen a little boy like you in ever and ever so long," and a great sob burst from her lips.

"Don't cry," said Johnnie, his lip quivering with sympathy, and his heart rising with courage, "course I ain't going back till I make my call. See! I ain't afraid," and he began to make ready for the descent. The color, however, faded from his cheeks, his eyes grew large and alert, his lips compressed. It was clear even to the eyes of Margaret Stillman that it was nothing short of a most heroic giving up of himself that at last led the little fellow to put his tiny foot out and step down the long step into those dark shadows that seemed only waiting to swallow him up.

His was that quality of courage that will "rise with danger," so after the first step, although the darkness grew dense about him, he did not flinch, not even when a door opened and shut on him, and he could scarcely distinguish one object before him. He stood dazed and waiting, his eyes making every effort to adapt themselves to the shadows; but meanwhile his ears were busy with sounds which even his childish experience fully comprehended. He heard a cry of —

"Mama, O mama!"

The voice was weak and thin, but glad, and Johnnie smiled behind the veil of dimness that covered it.

"Yes, Davie, dearie," came the reply. "Have you been awful lonesome?"

"Some, mama, but I was hungrier. Did you bring me something?"

Then there were kisses for answer, and a sob or two. Johnnie knew how such kisses tasted, and was not entirely a stranger to sob flavoring. He also knew what hunger meant. He was hungry even now, and he knew just how glad he felt to have mama come home; so in spite of everything that was strange, mysterious, and scary, he felt that he was still in the same world with which he was familiar.

"Say, mama," asked the thin voice amid the kisses, "did you bring me something? I am so hungry."

"Yes, darling, I did," came the reply, fierce in the intensity of feeling that was behind it, and the next thing that Johnnie knew he was quickly unbundled out of his masquerade, his cap and coat were taken off, the door had opened and shut, and he was alone, with the awful darkness and the things that it covered.

"Mama!" called the weak voice; but no answer came.

"O mama, mama, have you gone again?" Then there was a pitiful little wail which aroused all the latent strength of love and compassion in the heart of Johnnie Wheeler. He had not yet become very conscious of himself, but was very much alive to his surroundings, and he began to move carefully over the uneven floor toward the wailing voice.

"Little boy, little boy," he cried.

"Who 's there?" came the startled reply.

"Say, little boy, I came to call on you. Where are you? It 's so dark! Oh, now

I can see you a little. You are sick, and I came with your mama to see you. She brought me. I — I am so sorry for you!"

Johnnie had been left in a little entry beyond the range of the sick child's vision, but now he, accustomed as he was to the dim light, saw distinctly what was to him a vision of angelic beauty floating toward him, and with dilating eyes he lay watching and speechless with wonder.

But for Johnnie there was only the other wholly human and earthly side of the picture—the face so pale that it almost shone in the gloom as it lay on a heap of blackness, the thin, shrunken features, the great staring eyes, and the clawlike hand that was lifted just above the head ready for any emergency that might arise.

"Ain't you glad I came to see you?" said Johnnie. "Don't you want me to kiss you? I heard you kiss your mama. I kiss mine, too," and he bent forward over the pale face, the upraised skeleton of an arm came down over his neck, and the lips of the two children met in a holy kiss that made that dark cellar fragrant with heaven.

But heaven and fragrance could not linger. The cry of nature was too imperative and bitter. The weak arm fell from the embrace, the pale lips dropped from the rosy ones with a bitter cry for bread.

(To be concluded.)

Tobacco Poisoning.

Dr. D. P. Robbins, in the *Dietetic and Hygienic Gazette*, gives strong testimony against tobacco. He bases his conclusions upon experience gained as medical examiner for life insurance companies. He states his observation that four fifths of the applicants for insurance use tobacco, and that three fourths of the tobacco users are perceptibly injured by the habit. One fourth are dangerously poisoned, and at least one eighth have "smokers' heart." The writer exclaims: "Think of this American nation having worse than uselessly spent over five hundred millions of dollars for tobacco in 1897, which was more than the cost of bread and potatoes, or of sustaining schools and churches; yet we wonder why it has been hard times. To be sure, this was less than half the cost of the other great destroyer, — liquor, — but it is certainly worth our careful attention. It is not only selfish, filthy, and entirely useless, except as strychnin or arsenic, in rare instances and in homeopathic doses, but benumbs the mental and moral sensibilities, and outrages respectable society."

Chestnuts.

The consuls in France report that Indian corn as an article of diet among the French peasants is being replaced by the chestnut. The report says: —

"The poor people, during the fall and winter, often make two meals daily from chestnuts. The ordinary way of cooking them is to remove the outside shell and blanch them; then a wet cloth is placed in an earthen pot, which is almost filled with raw chestnuts; they are then covered with a second wet cloth, and put on the fire to steam. They are eaten with salt or milk. Hot steamed chestnuts are carried around the city streets in baskets or pails; the majority of the working people, who usually have no fire early in the morning, eat them for their first breakfast, with or without milk. Physicians state that as an article of food chestnuts are wholesome, hearty, nutritious, and fattening. These nuts are often used as a vegetable, and are exceedingly popular, being found on the table of the well-to-do and wealthy. They are served not only boiled, but roasted, steamed, puréed, and as dressing for poultry and meats."

EDITORIAL.

THE VEGETARIAN QUESTION.

A CORRESPONDENT sends a clipping from the New York *Medical Record* in which this question is discussed, with the request that a few words be said in reply. The following is the extract referred to:—

"The old controversy between those who term themselves vegetarians and those who pin their faith to meat as a necessary article of food, has once again broken out, and with renewed energy, in England.

"The *Times* presents the case for the anti-vegetarians in the following well-considered words:—

"'The truth is, if there be any question which has been thoroughly threshed out by physiologists and physicians, it is that of diet. By scientifically conducted experiments, sometimes upon individuals under laboratory conditions, sometimes upon masses of men in barracks or prisons, and sometimes upon nations by observation of their habits and of developments, whether physical or mental, which these habits have produced, we possess complete information upon all questions relating to food and the influence which it exerts.

"'We know that the maintenance of a high standard of bodily and mental capacity requires the consumption of proteids, hydrocarbons, and salt, in definite quantities and proportions, and that so far as the effects are concerned, it is a matter of indifference in what proportions these are furnished by the animal or by the vegetable kingdom.

"'Sir Henry Thompson has long been cited as a thoroughgoing adherent of the flesh-abhorring band, and his name has been used as a battle-cry to strengthen the faith of waverers and to rally fresh recruits to the ranks. So much has this been the case that Sir Henry Thompson has in self-defense been compelled to state clearly his true opinions, and thus set himself right with the public at large. This he has lately done in the *Nineteenth Century* in no uncertain tones. Sir Henry says:—

"'"Climate is an important factor in relation to food. Man, wherever he exists, has to maintain his body at a constant temperature of at least 98° F.; and it is obvious that an enormous difference must exist between the needs of the individual who lives near the equator, with all surrounding objects at a constant temperature of from 85° to 95° F., and those of one who inhabits northerly latitudes, where it is continuously below the freezing point (32° F.), often to the extent of many degrees. In each case the body must be maintained at 95° F. or a little more, or man will cease to exist. In the large and populous zone we inhabit, which forms so extensive a portion of Europe, Asia, South Africa, America, and Australia, and is known as the 'temperate zone,' there are very few persons indeed who can sustain their health and a fair amount of strength for many years on a strictly vegetable diet.

"'"Hence it is only possible to regard man — considered as an inhabitant of the world at large and manifesting, as he does, a strong and increasing impulse to explore and colonize in any part of the globe — as now naturally omnivorous; in other words, possessed of a constitution which requires for his well-being a mixed diet of animal and vegetable foods in relative proportions, varying according to temperature and activity of life."

"'"There is no doubt that more flesh is eaten by many persons than is necessary, especially by those persons who are in easy circumstances and lead a sedentary life. These persons should live on a lighter animal food than beef or mutton, and use plenty of vegetables. On the other hand, those who take much exercise or perform hard manual labor, exposed to all weathers, are able to digest and thrive on meat in large quantities.

"'The whole matter resolves itself into a question of environment and manner of life, not forgetting the constitution of the individual. If a man finds that he is in better health on a vegetable diet, he should by all means use that description of food, but it is absurd to contend that with all persons, under all conditions of life and in all climates, such a procedure is most suitable.'"

In reply to the foregoing, we find very little to be said; first, because Dr. Henry Thompson does not answer a single one of the numerous grave objections which have for many years been raised against the use of flesh-food, and which have, up to the present date, never been satisfactorily answered. These objections are chiefly the following: —

1. Man's teeth, his stomach, his alimentary canal, his digestive processes, his entire anatomy, in fact, place him in the list of non-flesh-eating animals, along with the gorilla, the chimpanzee, the orang-outang, and the other higher apes. The Darwinians all insist that man, together with the higher apes, is a direct descendant of the megatherium, an animal strictly vegetarian in its habits. Baron Cuvier, Sir Everard Home, and all the great comparative anatomists have testified without equivocation or exception to the fact that man is naturally an eater of fruits, grains, and nuts.

2. Both sacred and profane history show that the whole human family was, at first, strictly vegetarian in habit, as stated in Gen. 1 : 29: "And God said, Behold, I have given you every herb bearing seed, which is upon the face of all the earth, and every tree, in the which is the fruit of a tree yielding seed; to you it shall be for meat." The early Greek and Roman poets make many references to the golden age, when men —

"Fed with fruit,
Nor durst with bloody meats their mouths pollute."

3. The greater share of the human family at the present time are non-flesh eaters. There are at least four hundred million in India, Burma, China, Siam, Japan, and other countries in the East who never taste flesh, who abhor the sight of it, and yet enjoy robust health and long life. This is quite as true of the natives of North China and of Japan, where the climate is certainly as rigorous as that of England, as it is of the Hindu natives of the East Indies. It is not necessary to go far from London to find multitudes of men, who, all their lives, and whose ancestors for generations back, have been practical vegetarians, and who have vastly more vital stamina than the beef-fed doctors, merchants, manufacturers, shopkeepers, and politicians of London.

Dr. Letheby, one of the most eminent English authorities on dietetics, tells us that the average Irishman eats less meat in one week than the average Englishman in one day, and that the peasantry of England are practical vegetarians. I took some pains to investigate this matter the last time I was in England, spending a little time among the iron workers of Lye, a nail-making town in the "Black Country." I found that by these stalwart, hard-working nailmakers, among whom none were idle, men, women, and children all working at the forge, meat is scarcely ever tasted. Wages are so small, and the price of meat so high, that it is never eaten as a luxury, and, practically, it can not be said to enter into the dietary of the robust thousands who live in this part of England. A soup-bone on Sunday, perhaps a taste of roast beef on holiday occasions, represents the sum total of the meat eating among a great proportion of the laboring classes outside of the large cities of England. Inquiry into the family of a thriving farmer elicited the fact that meat was not eaten in the family more than once a month, excepting an occasional Sunday soup-bone. The Highland Scotch are practical vegetarians, yet they are noted for their courage and hardihood.

4. There are many thousands of robust men and women alive to-day who have lived all their lives without flesh. That modern as well as ancient people can live long and well without flesh is beautifully illustrated in the case of the Trappist monks, who for two hundred years have practised vegetarianism with such excellent success that their order is steadily growing in numbers. The abbot of a large Trappist establishment in Kentucky wrote me several years ago, in reply

to one of a series of questions, that the only cause of death among the members of this order is old age, and that their average length of life is between seventy-five and eighty years. The Carmelite Sisters of the Catholic Church are also vegetarians, and on inquiry at a large Carmelite convent, I found the same testimony borne by the inmates,—that they enjoy excellent health and long life.

5. The characteristic food elements of flesh-food are not those which are required either for maintaining the energy or the heat of the body. Bodily heat and energy are maintained by the hydrocarbons and the carbohydrates; that is, by the fats, starches, and sugars. Carefully conducted laboratory experiments by eminent physiologists have repeatedly shown that muscular activity is not maintained by the lean meat of animals, but by starch and sugar. The relative value of vegetable fat and lean meat for supporting heat or work is as nine to five; that is, vegetable fat has nearly double the value of lean meat as a means of supporting heat and work. The experiments of Fick and Wisliscenus, many years ago, showed that when the body is called upon for an unusual expenditure of energy and heat, as in mountain climbing, the system does not demand an increased amount of nitrogenous matter such as is furnished by flesh-food, but simply an increase of the carbohydrates or hydrocarbons, or both; that is, an addition to the dietary of starch, sugar, or fats, substances which are readily obtained from the vegetable kingdom. It is also well to bear in mind the fact that many vegetarian animals are able to live and thrive even in the coldest regions of the North. The reindeer, one of the fleetest and most enduring animals on earth, replenishes its store of heat and energy from the starchy mosses which it digs out from beneath the snow and ice. There are not a few other vegetarian animals that inhabit the same region. Captain Hall was an advocate of a flesh diet for travelers in the far North; yet it was not lean meat but "blubber" which he maintained to be so essential, and blubber consists exclusively of fat, which is as readily obtained from the vegetable as from the animal kingdom, an ample supply being furnished by nuts of various sorts and ripe olives. It is interesting to note, however, that Captain Hall, when brought to the test, on the occasion of his memorable sledge journey, records that his dinner consisted simply of graham crackers.

6. Animals are, to an increasing degree, contaminated by disease. Dr. Gamgee, an eminent British health authority, states that "every year, more than twenty thousand diseased carcasses are buried in the catacombs of human stomachs in England alone." Tapeworm, trichinosis, and other maladies exclusively contracted through eating flesh are rapidly increasing.

7. Flesh eating, if not practised in great moderation, gives rise to well-recognized constitutional disorders and cachexias, so characteristic that Dr. Haig tells us that there is clearly distinguishable in all flesh-eating countries a disease that may be known as "meat eater's disorder," characterized by nervous exhaustion, nervous headache, gout, rheumatism, Bright's disease, and many other maladies which indicate tissue degeneration and poisoning.

8. The slaughter of animals and the eating of corpses are abhorrent to human instincts, and necessitate the maintenance of enormous industries devoted to bloodshed and occupations which harden men's hearts, and train them to murder and deeds of violence.

9. The order of nature is the storage of energy by plants, the consumption of energy by animals. The animal body is an engine; plants provide the stores of food to be consumed as fuel in the bodies of animals. All food is necessarily derived originally from the vegetable kingdom. When a man eats an ox, he is simply eating corn at second hand, not improved corn, but adulterated corn, for a pound of corn possesses the nutritive value of three pounds of ox, and is not only more nourishing, but more digestible.

10. Animals are sentient creatures, deriving their life from God, and they have the same right to enjoy that life that human beings have to enjoy their lives, so long as they commit no violence or depredation upon the

rights of human beings or other sentient creatures.

Sir Henry Thompson makes no attempt to answer any of the foregoing arguments. He simply makes the bald assertion that "there are very few persons indeed who can sustain their health and a fair amount of strength for many years on a strictly vegetable diet." The millions of Japan, North China, and India, as well as thousands in England and the United States, rise to testify that this statement is not based upon fact, but is born of fancy or superstition. There are to be found in London alone more than a score of vegetarian restaurants at which many thousands of people dine daily without tasting flesh. Perhaps the finest class of men, physically, in the world, is found in the wrestlers of Japan, who are as a rule vegetarian in their habits; and yet their home is in the temperate zone. Their health is good and their strength far beyond that of the average man, Sir Henry Thompson to the contrary notwithstanding. It is true, as he says, that those who take much exercise, etc., are able to digest and to thrive on meat in large quantities. This is shown in the Pampas Indians of South America, who live exclusively upon horse-flesh and horse-milk. They are quite strong and vigorous, but very short-lived.

It is surprising, indeed, that a man of so great scientific attainments as Sir Henry Thompson, in undertaking to combat so dangerous, widespread, and rapidly growing a failure (?) as he claims vegetarianism to be, and as the *Medical Record* declares it to be, should not be able to produce at least one pointed and clearly established scientific fact in support of his denunciatory attitude. He offers no argument and no evidence whatever, but merely makes the bare statement that men can not live well and long in a temperate climate without meat, a statement the fallacy of which thousands of his countrymen are demonstrating by living longer and better than the average Englishman, on a vegetarian diet.

Professor Newman, of the University of London, was, at the age of eighty years, still active, and as clear-headed and vigorous as many younger men, notwithstanding his life-long vegetarian diet.

The writer started out in life a puny, sickly boy. At the age of fourteen he was expected to die of consumption, as two sisters had done; but, adopting a non-flesh dietary at that time, he finds himself to-day, after thirty years of hard work, enjoying better health than ever before, able to work more continuously, for a larger number of consecutive hours, with less sleep and with less food than the average meat eater, and on a spare diet of fruits, grains, and nuts. If Sir Henry Thompson will visit Battle Creek, the writer will take pleasure in showing him a family of nearly one thousand rosy-cheeked, bright-eyed, vigorous men and women who are living well, and who hope to live long and usefully, on a strictly non-flesh dietary.

THE CIVILIZED WOMAN DEFORMED.

THAT the waist of the average civilized woman is too small for her body can be shown very easily by actual measurements. Mrs. Langtry once published some figures about her proportions, comparing them with those of the Venus de Medici. These measurements showed that in the dimensions of the arm, in the calf of the leg, in height, and in other proportions, they were just the same. But when it came to the waist, the dimensions of the waist of the Venus de Medici were not given. Mrs. Langtry's waist was twenty-six and one-half inches, and her height five feet seven inches; so that in her case the proportion of the measurement of the waist to the height was only thirty-nine per cent. The writer took the measurement of the waist of the Venus de Medici, and made a careful computation; he found the waist of the Venus to be thirty-two inches, instead of twenty-six and one half; while the shoulders, instead of being larger than

those of Mrs. Langtry, were not so large. The waist of the Venus, then, measuring a little less than thirty-two inches, was almost forty-seven per cent. of the height.

We also took measurements in Washington, in the Corcoran Art Gallery, and found the circumference of the waist of the Venus de Milo to be forty-seven per cent. of the height. The waist of the average man is forty-three per cent. of his height; and of the average woman in a savage or a natural state, the waist is from forty-five to fifty-three per cent. of the height. This shows that woman naturally has a larger waist than man.

Why should this be so? — Because woman has a larger heart and a larger liver than man. This is a fact known to all anatomists. It would seem to call for a larger waist in woman than in man. At least, the feminine waist should be as large as the masculine; but we usually find it to be only about thirty-five per cent. of the height, instead of from forty-five to forty-seven per cent., as in the Venus de Medici.

There is no reason why a woman should not be as strong as a man of the same age and size. In South Africa the women are said to be the best porters. A physician who had lived in that country stated that his observations in Africa had satisfied him that woman was made for work; he was convinced that woman is even better adapted to physical work than man. This has been shown to be the case in some civilized countries.

In Germany it is common to see a woman traveling along a country road with an enormous load of vegetables balanced on her head, with rosy cheeks and straight spine, looking the picture of health. These women as a regular thing carry loads of from ninety to a hundred pounds. You will see them climbing up inclined planes to buildings, with piles of mortar on their heads that no three women in this country could lift. They claim to be just as strong and vigorous as men of the same age and size.

A man can generally lift more than a woman, but he can not endure so much. The feminine muscles, although not so large, seem to have more endurance than those of men. This is an important fact that should be advertised abroad. I think it is necessary for women to get it into their minds that woman is *not* the "weaker vessel." That idea took possession of people in the dark ages, when the condition of woman had greatly deteriorated. Women themselves have fostered the notion, not only by their opinions and beliefs, but by adopting and continuing practises which necessarily tend to make the statement true. But the natural woman is of equal strength and vigor with man, and the woman of to-day may return to her natural condition if she diligently wills and works to that end.

The Value of Apples as Food.

The apple is one of the most wholesome and valuable of foods for the reason that it keeps so well in temperate climates and presents such a variety of flavors, suiting itself to man's needs by ripening at different seasons and supplying a considerable amount of nourishment in the most easily digestible form. The nutritive value of the apple is about fourteen per cent. Its value consists chiefly in the amount of carbohydrates and vegetable acids it contains. The apple contains also a large amount of phosphorus, which fact has led to the supposition that it is particularly valuable as a brain food. But the value of any food is certainly not to be measured by the amount of phosphorus it contains. Pure phosphorus would be a poison, and even dilute phosphorus is in the highest degree unwholesome. The best foods are those that nourish the whole body, and not those that contain elements similar to those found in any one particular part of the body.

The old Scandinavians believed that the gods subsisted wholly upon apples, and that it was through the peculiar properties communicated by this queen of fruits, that they acquired the wisdom which they imparted to men.

The acids of apples are exceedingly useful through their stimulating influence upon the kidneys, whereby poisons are removed from the body, and the blood and tissues purified. The acids of apples are all highly useful as a means of disinfecting the stomach, since the ordinary germs that grow in the stomach, producing biliousness, headache, and other troubles, will not grow in fruit-juice or fruit-pulp.

A ripe apple is digested in about an hour or an hour and a half, whereas a much longer time is required for the digestion of flesh-foods and many cereal foods.

Apples should be eaten at meal-time, not alone at the beginning or the close of the meal, but, if one chooses, throughout the meal, mingling the fruit with bread and other cereal preparations and also with nut products.

In the case of a person suffering from biliousness, an excellent plan is to adopt an exclusive diet of apples for a day or two or even longer. One could live upon an exclusive diet of apples for a week without any injury, and in some cases decided benefit may be derived from the use of such a special dietary.

ANSWERS TO CORRESPONDENTS.

Do Gentlemen Smoke?—Mr. W. C. Clark, of Cairo, Ills., writes us as follows: "Dear Doctor: Why do you allow such a question, 'Gentlemen vs. Tobacco,' found in your November No. of GOOD HEALTH, page 743, to be answered in such an ungentlemanly way? Is it not an insult to a great many good, true-hearted, Christian gentlemen? Is it a good advertisement for such a beautiful book as I find GOOD HEALTH or for the Battle Creek Sanitarium? Would the smokers, the fathers and husbands (upon whom you are largely dependent), who send their children and wives to your beautiful Sanitarium, and pay you well, be pleased to know of having their loved ones under the care and treatment of one who expresses himself in such a cramped way? Do you think I am a smoker? Will you publish my letter under 'Answers to Correspondents'?"

Ans.—We have carefully reviewed our answer in the November No. to which Mr. Clark refers, and can find no reason for retracting anything we have there said. The smoker may wish to be a gentleman; he may have all the polish, the manners, the amiability of temper, and the desire to be genteel that any person can possess, yet he can not be truly a gentleman in the full sense so long as he indulges in the filthy weed. Tobacco smoking is a nasty habit. It defiles every one who has anything to do with it. Tobacco smoke may possess attractions to the smoker, but to the non smoker with unperverted and sensitive nerves and senses, the odor of tobacco is by no means a pleasant aroma; it is as far removed from the odor of new-mown hay and the sweet breath of roses and violets as black is removed from white, as hell is removed from heaven; it is the antipode of sweetness and fragrance. Tobacco *stinks*, and the man who saturates himself with the filthy weed possesses the same characteristic; and wherever he comes in contact with those who are not, like himself, saturated with the filthy weed, he is a veritable "stone of stumbling" and a "rock of offense."

Smokers become singularly obtuse to the fact that they can not pass down a street, take a seat in a street-car, in a church, or other place where people assemble, without making themselves more or less disagreeable to some of those about them. The man who is going to move around among his fellow men has no right to make a nuisance of himself. How can any man who aspires to be a gentleman conceive that he has a right to march down a public highway, giving off with every breath the stinking fumes of a nauseous and poisonous weed, and compelling every man that follows him within a quarter of a mile to breathe nicotine-poisoned air. Such a man may consider himself a gentleman, and his education may have been so far neglected that he is quite oblivious to the fact that whatever his pretensions to gentility may be, he is constantly violating every fundamental principle of courtesy, refinement, and gentility.

We are sorry to disagree with our friend in our views as to what constitutes a gentleman, but this question is one upon which we feel deeply, and upon which our views have not been hastily formed, but have been long and thoroughly considered. So long as non-smokers tolerate this smoking nuisance, and allow smokers to consider themselves as entitled to the same respect and consideration and regard as non-smokers, this debasing and infinitely mischievous practise will continue to grow, and the time may come, and may not be far distant in places less remote than New York City and London, when a woman will smoke and still be considered a lady. Certainly, no one can offer a reasonable

foundation for considering a man-smoker a gentleman while condemning a woman-smoker as no lady.

Consumption.—S. M. T., New York: "My sister last May was pronounced an incurable consumptive. A month previously her case was not considered dangerous. During the winter she had grippe three times. 1. What would you advise in her case? 2. What can be done for hemorrhage of the lungs? 3. What will relieve roughness and hardness of the palms of the hands?"

Ans.—1. I should advise making a change of climate. The dry, elevated region of Colorado will be found especially helpful in this case. We should recommend a sojourn at the Sanitarium at Boulder, Colo.

2. The patient should be kept quiet until all danger of hemorrhage is past, should avoid anything that produces congestion of the lungs, and as far as possible should avoid coughing. This patient should especially avoid getting out of breath, which is always a sign of pulmonary congestion. In going to an elevated region, care should be taken to avoid exercise for some time after reaching the high altitude. This is an important precaution against incurring hemorrhages, and should be strictly regarded.

3. A moist compress during the night, followed by an oil rub in the morning.

Bread — Condiments.—A subscriber in North Carolina asks: "1. Is crisply toasted bread constipating? 2. Is it necessary to use pepper, salt, and vinegar on cucumbers?"

Ans.—1. No.

2. Certainly not.

Stomach Trouble.—A. M. D., California, has had stomach trouble for about a year, preceded by a bilicus attack. Although the difficulty has lessened now, he has slight attacks of it occasionally, accompanied by sharp pains in his stomach. His diet consists largely of health foods, bean broth, and fruit. He is very careful about taking liquids with or directly after meals. He writes: "1. Would it be hurtful for me to do mental work under the circumstances? 2. What more can be added to the above dietary? 3. Is it hurtful for me to attend church, social gatherings, etc., even if the effort is somewhat tiresome?"

Ans.—1. No, brain work is healthy, but avoid worry.

2. Browned rice, malted nuts, and kumyzoon.

3. Efforts that produce any considerable degree of exhaustion or weariness not readily recovered from should be avoided.

Recipe for Coloring the Hair.—F. J. P., Massachusetts, wishes a harmless recipe for coloring and cleansing the hair.

Ans.—Cleanse the hair by means of a good shampoo or the use of fine Castile soap, carefully removing the soap by thorough rinsing in soft water. We know of no good harmless hair dye; a decoction of walnut shells has been recommended for the purpose, but we have no personal knowledge of its value.

Meat Eating—Eggs and Milk.—J. S. D., Nebraska, asks: "1. How do you account for God's feeding the Israelites on quails, and the seeming countenancing of flesh eating in many places in the Bible? 2. Are milk and eggs good as food?"

Ans.—1. According to the Bible account of the feeding of the Israelites with quails, they were given because of the people's murmurings, and the result of their eating the quails is certainly a very forcible illustration of the pernicious effects of flesh eating.

2. Milk and eggs are much better food than meat; they do not overwhelm the body with toxins, ptomains, uric acid, etc.

Catarrh of the Head — Sleep Walking.—J. A. W., Utah, writes: "1. Can catarrh of the head be cured? If so, by what means? 2. What causes a person to walk in his sleep? Is there a remedy for it? 3. What is the best diet for a person troubled with pain in the pit of the stomach two or three hours after eating? 4. What is the difficulty under the above conditions?"

Ans.—1. Yes, by building up the constitution by the use of cold baths and other eliminative measures, by local applications of antiseptic vapors, by the use of a vaporizer, and other similar means.

2. Somnambulism is a diseased condition of the brain and nerves. The condition usually improves with the improvement of the health. Careful watching of the patient is sometimes necessary.

3. A bland, simple dietary, which passes out of the stomach quickly, such as browned rice, granose, bromose, and similar foods.

4. Probably an irritable condition of the stomach and the sympathetic nerves connected with it.

Headache.—Mrs. F. J. W., Jamaica, Vt., says: "1. I have a great deal of pain in the top of my head, especially when in a crowd, or when riding, or from excitement or overwork. I have suffered much for the last eight years from nervous prostration and muscular weakness, but have taken comparatively little medicine, having for the last two years lived on a diet of fruits, grains, and nuts. I am thirty-two years old, and weigh eighty-six pounds. I do not weigh one hundred pounds even when in health. I have always been troubled with weak eyes, but have worn glasses for about a year. Do you think this bad feeling in my head is due to my eyes or to some other cause, and what treatment would you advise to remove the pain?"

Ans.—You are suffering from neurasthenia, or so-called nervous exhaustion, caused doubtless from a disordered state of the stomach or an irritated condition of the sympathetic nerves. Certain disorders of the eyes sometimes aggravate the condition, increasing the violence of the symptoms. The cause must be removed by discarding irritating foods, the adoption of wholesome, simple, easily digested foods, and by building up the general health in the best possible way.

Hip Disease.—G. E. O., Ohio, asks: "1. What course of treatment would you advise for a girl of six who has a short and crooked limb, but who has as yet had no abscess or much pain? 2. What should one do for a baby nine months old who has pneumonia?"

Ans.—1. The case should be taken to a skilled surgeon at once, preferably an orthopedic surgeon.

2. Pneumonia is often a fatal disease among very young children. The treatment of a case of this sort requires the very best care and a high degree of medical skill and experience. The general measures which are the most effective in combating pneumonia are the hot blanket pack, cold applications over the affected lung, fomentations over the chest every hour or two for several minutes.

How to Improve the Voice.—A subscriber, who wishes to make the most of her voice, wants to know if there is anything that will tend to make the tones clearer and sweeter? What will make the voice stronger? Does very loud, harsh speaking injure the voice? Is it possible to restore the same sweetness and clearness to a voice which it possessed for the first twelve or fourteen years of childhood, but which it has lost to some extent at the age of twenty-two?"

Ans.—The voice can be wonderfully improved by the daily practise of breathing exercises and voice gymnastics. We have not room in these columns to give more than a hint or two upon this subject, but in some future number we will give the matter fuller consideration. It is very important to develop the abdominal muscles and the diaphragm as a foundation for good singing. Loud, harsh speaking will certainly injure the voice. Some of the very best teachers require the pupils to practise in a very low tone, and avoid loud speaking altogether for months. A young lady of twenty-two ought to be able to improve her voice very greatly by proper training. Harshness of the voice is sometimes due to disease of the nose and throat. When this is the case, complete recovery of the lost qualities may not be possible.

Amount of Sleep for Children.—Mrs. W. G. M. B., Ohio, is desirous of knowing (1) how much sleep a child requires at different ages; (2) how important is the daily nap after the age of three years; (3) when a child of four sleeps from ten to eleven hours at night, if it is wise to try to make her sleep during the daytime; (4) what is the difference between hypopepsia and hyperpepsia; (5) for which do you use hot water and for which cold.

Ans.—1. A child's sleep should not be regulated by the clock, but the little one should be allowed to sleep as much as it wishes. A very young child usually sleeps nearly all the time; a child of four usually requires ten or eleven hours' sleep.

2. The daily nap is very useful for all children.

3. A half hour's additional sleep will be no disadvantage to the child, and doubtless a real benefit when the habit is established.

4. In hypopepsia the amount of hydrochloric acid formed by the stomach is deficient. In hyperpepsia the reverse condition exists.

5. A quarter of a glass of cold water half an hour before eating is useful in hypopepsia; half a glass of hot water is equally useful in hyperpepsia half an hour before the meal.

Nervous Dyspepsia.—N. W. R., New York, is very anxious to know what to do for nervous dyspepsia.

Ans.—Nervous dyspepsia, or so-called gastric neurasthenia, is an extremely complicated disorder. There is no special formula for treating the disease. The conditions of the patients differ very greatly; some bear one class of applications best, while in the case of other patients very different methods are required.

Ice-Cream Soda.—C. S. G., Kentucky, asks whether ice-cream soda is injurious to a healthy person, and if soda-water alone, without flavoring syrups or ice-cream or ice, is harmful.

Ans.—Ice-cream and soda-water as ordinarily prepared are certainly not to be recommended. Many of the syrups employed do not contain a particle of the fruit after which they are named. The large amount of sugar and other substances swallowed along with the soda-water is likely to be injurious.

Baldness.—A. M. L., Illinois, wishes to know if there is any book on the subject of massage for baldness, price, etc.

Ans.—See "Art of Massage," published by the Modern Medicine Pub. Co., Battle Creek, Mich.

LITERARY NOTICES.

THE **Forum** begins the new year with an excellent number. Sir Charles Dilke writes forcefully on "The Future Relations of Great Britain and the United States;" Adjutant-General Corbin contributes a paper on "The Army of the United States," showing the wonderful improvement of late years in its *personnel;* and Mr. G. Everett Hill, who was private secretary to the late Col. G. E. Waring, gives the substance of the Colonel's report to the United States Government "On the Sanitation of Havana." Mr. Hamilton W. Mabie contributes a brilliant essay on "American Literature and American Nationality." Professor John Trowbridge, of Harvard, has an extremely interesting paper on "The Upper Regions of the Air." Professor Trowbridge argues that whereas we receive the long waves of the energy of the sun as heat-waves, and the intermediate as light-waves, the very short waves are absorbed by our atmosphere and transformed. What they are transformed into is still undecided by the scientists, but Professor Trowbridge contends that the disappearance of these short waves is connected with the production of the magnetism of the earth, the phenomenon of the northern lights, and thunder-storms.

TO have the men who have demonstrated their organizing ability by great business successes tell their secrets of organization, is the object of the editor of the **Cosmopolitan.** That he is succeeding is proved in the January issue by the article from Charles R. Flint, who is regarded in New York as one of the three or four ablest organizers in America. He is president of the Rubber Trust and the head of the great mercantile house of Flint, Eddy & Co., which has its ramifications in almost every port of the world. Mr. Flint tells very openly what makes for success in the organization of business. His article may be read with interest by the Rockefellers, the Armours, and the Wanamakers as well as by the humblest clerk seeking to fathom the secret of business success. Published at Irvington, N. Y. $1 a year.

President Eliot in the January **Atlantic** shows a courageous patriotism, and points out many ways in which our Government may contribute to the greatest good of the greatest number in times of peace. In "A Mother of Martyrs," Chalmers Roberts gives an appalling picture of the nature and methods of the terrible Turko-Armenian massacres of 1896, of which he was an eye-witness. Mr. Roberts was at Constantinople at the time, and in the midst of the hideous scenes, and he presents a graphic picture of the brutal bloodthirstiness of the Turks and the unresisting submission, even to death, of their Armenian victims. Returning from the fascinations of a Southern spring, Bradford Torrey visits the Switzerland of America in the height of the season,— the natural, not the fashionable season,— and in this number he begins his account of the autumn glories of Franconia and the White Mountains. His opening paper combines his well-known and glowing descriptions of nature, with more than usual of anecdote and personal adventure, together with a touching tribute to the memory of one of his former fellow-naturalists and strollers.

The complete novel in the January issue of **Lippincott's** is "The Mystery of Mr. Cain," by Miss Lafayette Mc Laws, daughter of the Confederate general of that name. The scene is in Georgia, and the plot is so uncommon that to reveal it would be unfair to the reader. "The Other Mr. Smith" is a society story, but of the unconventional kind, by Ellen Douglas Deland. "John Rutland's Christmas," by Henry A. Parker, is a tale of practical philanthropy, personally administered. In "Black Feather's Throw" Joseph A. Altsheler deals again with the times when Indians tortured their white prisoners and burned them at the stake. The history of an ill-fated empress — "Poor Carlotta," wife of Maximilian of Mexico — is told by Lucy C. Lillie. Charles Cotesworth Pinckney revives "The Great Debate of 1833," in which Calhoun bore a prominent part and was opposed by Webster. Dr. Felix L. Oswald offers "An International Study on Liberty," bringing out the widely differing significations which the word is made to bear, or aspects of the things that are insisted on, by different races or sets of men. $3 a year.

There is a fine character sketch of Benjamin Franklin in the January **Self Culture,** by Chas. K. Edmunds, of Johns Hopkins University, who handles the subject in a delightfully appreciative way. Another article in this number is "The Passing of Old Mexico," in which the writer, while approving the modern innovations that are raising Mexico in civilization, regrets the decay of the picturesque and ancient beauties that have lent such a charm to the land of the Aztecs. There are a number of pictures of Guadalajara and vicinity, where the Gaudalajara Sanitarium is located. "Health Culture as Part of Self Culture," is a

sensible article by Oscar Herzberg. He says, "The study of physiology, anatomy, and hygiene ought not to be subjects merely for specialists or physicians, but for every intelligent human being who recognizes that upon the condition of his physical organism depends much of the pleasure to be derived from life. That fact once recognized, to acquire knowledge of one's 'temple of the soul' appears in the light of an imperative duty. Nor is it a dry and uninteresting study: the wonders of which one learns appeal to the imagination forcibly, and fill one with reverence for the Creator of an instrument so marvelously adapted to the purposes for which it was designed."

Success is one of the few journals that have sprung into fame at one bound. It began publication one year ago as a monthly, but it found such a warm corner for itself in the homes of the people that a demand for more frequent visits was made, and the second volume finds it a cheerful, helpful, welcome visitor every week. Success to *Success*. The Success Co., New York. $1.50 a year.

The Home Journal, a literary and society weekly, was founded in 1846 by George P. Morris and N. P. Willis. It contains poems, stories, translations, letters of travel, Paris and London correspondence, excerpts from the foreign press, music, dramatic and art criticism, essays, book reviews, gossip of fashions. The *Home Journal* is the exponent of that literary and art culture which gives grace and refinement to social intercourse — a society journal in the best sense of the term. Out-of-town readers will find the best life of the Metropolis reflected in its pages. It is an international journal, and by its foreign correspondence and essays brings its readers *en rapport* with the social life of the great European centers. The *Home Journal* addresses its editorial and advertising columns to people of culture and fashion. It is essentially a paper for the home. Morris, Phillips & Co., 231 Broadway, New York. Price, $2 a year.

Little Men and Women is full of jingles to please the baby ears, stories that call forth the "Tell it over again" request, kindergarten articles that furnish play for baby fingers. Among the contributors to the 1899 volume are Sophie May, Emile Paulsson, Margaret Johnson, Edith Thomas. Two splendid serials: "The Purple Owl Rug," by Sophie Swett; "The Five Little Smithers," by Neil K. McElhone. Special short stories by Kate Upson Clark, Frank Pope Humphreys, Margaret Compton, Carolyn Bailey, Albert Bigelow Paine. Other notable features: "Classic Myths of Many Nations," compiled in several papers by Cora Haviland; "The Pastimes of German Children," by Miss F. Otey Farmer; "Holidays in Japan," by Mrs. Ada Wooten Shaw;" "Queer Swiss Toys," by Mrs. Alice Crossette Hall; "Dakotah Play Days," by Miss Annie Beecher Scoville; and frequent fairy stories, natural history stories, stories of adventure.

Little Men and Women and *Babyland* have been combined, giving a 32-page magazine for 50 cents a year! Little Men and Women Co., Troy, N. Y.

Literature is "an international gazette of criticism," published weekly by Harper and Brothers. The name of the publishers is sufficient guaranty of the excellence of this publication, both as a critic and as a guide in the choice of literature. $4 a year.

In January comes the 300th anniversary of the death of Edmund Spenser, the author of "The Faerie Queene." The anniversary is made the occasion of a comprehensive sketch of Spenser s life and work written for the January number of the **Outlook** by Mr. H. C. Shelley, and illustrated by portraits, facsimile reproductions, and other original photographs, all made by the author of the article. Mr. George Kennan's letters to the *Outlook* from Tampa and Santiago during the war excited much interest and attention; and the recent army investigations have shown in a striking way that Mr. Kennan was among the first to point out the really important points in the conduct of the war and the treatment of the soldiers. Mr. Kennan has now returned to Cuba, and will soon begin in the *Outlook* a second series of letters devoted chiefly to a careful study of actual political and social conditions in the island. The Outlook Company, New York. $3 a year.

Money is the rather misleading cover-title of a little book written by the Rev. Andrew Murray and published by the Fleming H. Revell Co., Chicago. The title page, however, gives the true thought of the book, "Thoughts for God's Stewards;" for the book treats the money question from the standpoint of the Christian, and shows clearly and forcibly the necessity for one who has given himself to God to consider his money also as not his own, but to be used as God may direct. It is a thoughtful book, and will surely prove a conscience awakener to those who have not before thought of the subject in this light.

PUBLISHERS' DEPARTMENT.

THE Sanitarium is crowded with patients. There is scarcely a vacant room to be found in the main building. Among present guests and those who have recently visited the institution may be mentioned the following : —

Dr. E. J. Waggoner, of London, England.

Miss Sophie Will and Miss Parkinson, of Hull, England.

Miss Kate Bradley, of Birmingham, England.

Dr. P. Newman, Mr. P. M. Hanney, Mr. R. J. Gunning, Mr. H. W. Allen, and Mr. Geo. Haskell, all members of the Chicago Athletic Association.

Dr. F. A. McGrew, of the Alma Sanitarium, Alma, Mich.

Mr. Frank Baker, of New York, the famous tourist.

PROF. A. S. HUMPHREY, of the Columbia School of Oratory, has been with us a few weeks, and is conducting several classes in oratory. His work is highly appreciated. He has assisted on a number of programs, and the readings he gives are perfect in their simplicity and naturalness.

DECEMBER 15 a special train, consisting of thirty cars, of woven wire fence, left the Western avenue station, Chicago, via the Chicago & North-Western Railway, for Lincoln, Nebraska. The shipment was made from Adrian, Mich. This is the largest shipment of wire fencing ever made at one time over any railroad, and the North-Western Line demonstrated its progressive spirit by furnishing a special train for it.

A Hotel on Wheels.

The managers of the Grand Trunk Railroad are determined to keep in the front rank in all branches of railroad enterprises which concern the comfort of the traveling public. They have recently made a noteworthy addition to their managing force in the appointment of Mr. J. Lee, late manager of the Windsor Hotel, of Montreal, to direct the dining-car services of this great system. They propose to give travelers in their magnificent dining palace as good a cuisine service as can be found at the best city hotels.

WHAT SOME OF OUR FRIENDS SAY OF GOOD HEALTH.

THE following have been culled from among several hundred letters received during the past few months: —

"Your GOOD HEALTH magazine is a gem, just what every one ought to have in his home. I am thoroughly in sympathy with your methods and ideas."

"GOOD HEALTH is entirely unique, and one of the most readable magazines that can be found."

"I greatly enjoy your rational magazine."

"Next to saving souls, the highest and grandest work of human hands and hearts is the saving of human bodies, and what places your noble work among the grandest on earth is that you combine the saving of the soul and the body."

"What I have read in GOOD HEALTH has only stimulated my appetite for more. I think your magazine is splendid."

"Since reading GOOD HEALTH I have become convinced that meat is not good, and I have not tasted any since February 22."

"No, I don't wish to take that journal. Since reading those articles on meat, my whole family is turned against the eating of it, and I can hardly swallow it myself, but I must have my meat. I don't care if it is true; I don't want the journal."

"How any one can help taking GOOD HEALTH is a mystery to me."

"The magazine has become a part of my life."

"The teachers who have been reading your GOOD HEALTH speak very highly of it, and I feel that it is full of good, sensible advice and hints that must appeal to the best that is in us."

"Accept my thanks for the copy of GOOD HEALTH that you sent me. Typographically as well as editorially it is so nearly perfect as to be a delight."

"I believe that we are commanded to test all things and to hold fast that which is good. I have found your magazine very good, so enclose $1 for another year's subscription."

"Enclosed find twenty cents, for which please send me two extra copies of GOOD HEALTH for December. The magazine is invaluable in my home, and I wish to extend its usefulness to others."

"Many thanks for the delicious dinner I received by express the 11th. Everything was nice every way, and I enjoyed it very much."

"The health dinner was excellent. Everybody was more than satisfied. The dinner without the magazine was worth $1."

"I read your GOOD HEALTH with much pleasure and profit, and want to thank you particularly for your suggestions as to dress for business women."

"Lately I have been reading your journal, and I can scarcely wait for the next copy to come out. I have been cured of a very obstinate constipation by eating granose."

"I am highly pleased with the magazine; in fact, I do not know how I could do without it."

"I have taken GOOD HEALTH for about nineteen years, and to miss a number means something to me."

"I dearly love the magazine, and think each number well worth the price for the whole year."

"I have read GOOD HEALTH with great interest, and have lived up to many of its principles, and feel the better for it."
