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BIOGRAPHICAL HEALTH STUDIES.

BY F. L. OSWALD, M. D.,

Author of "Physical Education," "The Bible of Nature," etc.

23. Louis Pasteur.

IT is remarkable how many predictions of the ancient myths have been verified by the progress of science. Friar Bacon armed us with the thunderbolt that darts off amid whirls of flame and strikes the enemy from afar; James Watts discovered the magic steed that flies across rivers and mountains; and Morse, the winged servant that carries messages with the speed of thought; the legend of the Hesperian Gardens was realized in the discovery of Columbus; and Louis Pasteur freed the enchanted City of Life from a host of invisible foes.

That exploit is mentioned in Bishop Erwyn's romance of Charlemagne, the champion of the West, who sent one of his paladins to succor the Castle of Sorrows. Day after day the citizens of that burg had been harassed by the pranks of wizards, who had the art of making themselves invisible, and sorely embittered the existence of their victims. In their despair, the afflicted burghers often flung away life as a burden, or quarreled among themselves, each accusing the other of being the author of the secret mischief. Things had come to a desperate pass when the envoy of the great monarch arrived with a counter-charm that forced the imps to drop their mask of darkness, and discontinue their malicious attacks.

The discoverers of the germ theory of disease have achieved a similar miracle. For ages contagious disorders were ascribed to the agency of evil spirits or to the machinations of misbelievers. From the beginning of the fifth to the end of the sixteenth century, millions of priests performed the ceremony of "exorcism;" *i. e.*, read off mystic prayers and went through a course of strange manipulations to expel the demons that seemed to have taken possession of the afflicted man. During the paroxysm of a malignant fever the patient was dragged to the next monastery, and had to pay roundly for the privilege of being cuffed and kicked, and listening to the abracadabra of ghost-expelling formulas. If he got well, he was paraded as a living illustration of the benefits of prayer-cure. If he failed to recover, he was apt to be burned as a *succubus*, a miscreant whose body had been permanently occupied by the legions of Satan.

Dissenters had to bear the blame of nearly every contagious disease. During a cholera epidemic at the end of the thirteenth century four hundred Hebrews were massacred in Ratisbon, and nearly a thousand in Mayence. Scores of Alligense heretics were executed on a charge of having caused an outbreak of typhus in the camp of their persecutors; as late as the time of the German reformation, learned prelates ordered processions for the abatement of cattle plagues, and wrote treatises describing the myriads of devilkins hovering about in the atmosphere, and watching for a chance to wreak their spite on the sons of Adam. Among the many millions who buried themselves in convents or in voluntary graves, a large proportion must have been actuated by the desire to escape from a world so diabolically arranged that wisdom and virtue were no safeguard against the snares of vile enchantments.

That delusion was exploded by the establishment of the germ theory. Koch and Mackenzie tore the cloak of darkness from the microscopic enemies of the human race, and Louis Pasteur proved that their habits can be ascertained, and their power for mis-

chief limited, as easily as those of the wild beasts which man has contrived to banish from his haunts. Pasteur was the son of a *Vieux de l'Empire*, a battle-scarred old sergeant who had followed the first Napoleon to Russia, and whose son inherited his intense desire to test the value of energy and perseverance in a fair field of competition. In the little country town of Arbois the veteran engaged in various industrial enterprises, and finally fought his way into a vantage-ground of financial independence that enabled him to send his only son to college, and manage his business concerns by proxy.

Louis had passed his early boyhood on a hill farm in the neighborhood of Dole, and at first sorely missed his former opportunities for outdoor exercise; but about the end of his thirteenth year, he developed into a *helluo*, an insatiable devourer of instructive and entertaining literature. He soon eclipsed his schoolmates, and, as the only children of retired families are apt to do, began to renounce the amusements of the public playground, and devote all his leisure to the gratification of his reading passion. He was then sent to a college at Besancon, but continued to read eagerly all the miscellaneous literature he could get hold of. Before reaching his fifteenth year, however, he ceased growing, and soon could indulge his mania only by the aid of spectacles. "Surly, squat, (*engoncé*) chuck-headed, and freckle-faced," is the way in which one of his college-mates described him in 1839 — about the end of his seventeenth year; and the blazing out of a specialized ambition, indeed, did not occur till three years after, when he had gained admittance to the *Ecole Normale*, of Paris.

Among a batch of books which he had loaned from the curate of Arbois, there was a life of Benjamin Franklin, who a few years before the outbreak of the Revolution had visited France, and become the idol of the reform party. The book had been written by a hero-worshiper, with the penchant for exaggeration peculiar to that tribe; and the shrewd practical Yankee secularist became the patron-saint of the young French student, whose ideals were just then beginning to crystallize into permanent shapes. The glory of leaving the world freer and wiser than he found it remained for years the loadstar of his ambition, and his penchant for meddling in politics survived the collapse of the empire. For a while he also thought of rivaling the achievement of the American lightning-tamer, by some mechanical invention or other, but the ravages of the typhoid epidemic following the Crimean War turned his attention into other channels of inquiry, and within a year after his removal to Paris he had thrown himself, with all the energies of passion, into the study of organic chemistry.

That branch of science appeared to him less brittle and barren than medicine in the narrower sense of the word; and when the chances for life-redeeming discoveries began to dawn on his mind, his predilection rose to an all-absorbing enthusiasm, and one of his critics mentions that on the day of his marriage he had to be dragged from his laboratory in the University of Strasburg, where he had secured a position as lecturer on medical chemistry.

In his leisure hours he busied himself with miscellaneous experiments. Chemistry, in all its branches, was still his hobby, and in 1859 he celebrated, as a holiday of his professional career, the receipt of three thousand francs for the patent-right on some technical invention,— the simplification of some chemical manufacturing process.

Between 1859 and 1864, inventions of that kind followed each other more rapidly; and he might have settled down into a prosperous stockholder in new industrial enterprises (the establishment of a perfume-factory was one of his projects), when in 1865 a summons to Paris marked the turning-point of his life. A prolific parasite had preyed upon the mulberry plantations of Southern France till the silk industry approached the verge of ruin, and the government had convened a commission for the purpose of devising means for the abatement of the plague. Dr. Sequard and other eminent savants had been invited to attend, and at the urgent recommendation of the professor of chemistry at the *Ecole Normale*, his former pupil had been appointed secretary of a select committee of specialists.

His name, at that time, was known only as that of an indefatigable experimenter and originator of some valuable patents, but at the first session of the committee the Strasburg professor took the lead as easily as the first Napoleon at the meeting of the three consuls. "Let 's agree what we are driving at before we waste any more time on phrases," he said: "*Est-ce que vous proposez a prier pour des inspirations?* — Do you propose to wait for divine revelations? As for me, I see no earthly use in deliberating on a subject that none of us has as yet taken the trouble to study. Let one of us go South and get the requisite data."

The committee members objected this and that, but the chuckle-headed son of the old sergeant prevailed. He had grown a trifle taller, too, and his brusque, decisive manner carried the day against

the kid-gloved delegates. They drew up a memorandum, agreeing to wait till Professor Louis Pasteur, *the only specialist present*, had time to study the subject practically at Avignon.

The truth was that he could not claim the honor of specific qualifications in anything but superior common sense, and a "knack for getting hold of the practical handle of any problem," as he himself expressed it. The government sent him to Avignon, and waited three months before anybody ventured to inquire about the progress of his investigations.

"I have found an expedient," was his reply, "and am only experimenting to reduce the expenses of its wholesale application." Four weeks after, he returned to Paris with the details of his project in his pocket, and at once set about hunting a few suitable assistants. His air of quiet decision admonished the commissioners to leave the matter entirely in his hands. Within another month he had organized his staff and selected three or four centers of operation; the obnoxious parasites vanished from districts, departments, and entire provinces, and before the end of the third year the committee — now seeing their way to self-asserting cooperation — reported that the silkworm plague of France and Northern Italy had been stamped out.

The Spanish government, too, put itself in communication with the energetic savant, but his leisure, at that time, was already engrossed by another problem; viz., the study of the cause and possible cure of anthrax, a contagious disease fatal alike to animals and men, and characterized by the formation of malignant boils and gangrene. "He took up the matter with his accustomed vigor," says a reviewer of his scientific career, "and established the fact that the small filiform corpuscles found in the blood of animals killed by anthrax, were a terrible parasite, capable, in spite of their infinitely small dimensions, of killing sheep, cattle, and men. Finally he took the closing steps in the matter, and investigated the question why anthrax is perpetuated in certain countries. The germs of anthrax, buried at a depth of fifty centimeters, or a meter, with the body of their victim, become mixed with the earth, and live for years in the state of spores. But how do they come back to the surface of the soil, and spread the disease? It is the earthworms that are the vehicles of their resurrection. They bring up the germs, which are thus scattered over the fields, and become a constant source of contagion for grazing sheep and cattle — whence the deduction that it is necessary to set aside for the burial of animals killed by anthrax a space enclosed with care, into which healthy animals shall never penetrate, and to choose, as far as possible, dry and calcareous ground, where earthworms will have difficulty in living."

About the same time the great bacteriologist undertook a series of experiments to check the increase of a parasite that had destroyed the vineyards of Southern Europe at the rate of four million francs of damage per year. Finding the problem too elusive for his former methods of procedure, he approached it from another direction by setting a thief to catch a thief; viz., by promoting the propagation of a disease germ that preyed upon the vitals of the destructive parasite — and again science triumphed. For the abatement of that plague the farmers of the Mediterranean peninsula had marched millions of miles in procession, and recited billions of aves and paternosters,— too often only to be told that their efforts had been neutralized by the theological shortcomings of one of their neighbors.

Like the silkworm parasite, the vineyard plague was stamped out wherever the directions of this apostle of a new science were strictly followed, and the French government then voted him an annuity of twelve thousand francs for life. The value of his discoveries was estimated to exceed the five-thousand-fold multiple of that sum, which in mere shame was nearly doubled the next year; but Pasteur had passed the bread-insurance stage of his success years before, and declined various flattering appointments, to devote all his time to the solution of the knottiest problem which modern science has thus far attempted. A mere accident enabled the discoverer of spectroscopic analysis to devise means for ascertaining the component parts of distant stars, and accident may yet reveal a reliable specific for the cure of hydrophobia; but it cannot be positively asserted that twelve years of unremitting labors, directed by Professor Pasteur and his ablest assistants, were sufficient to accomplish the desired result to the great physiologist's own satisfaction. He proved, indeed, that hydrophobia virus can be reduced or increased to almost any desired degree of strength; that in the body of guinea-pigs it will become comparatively harmless, and in the blood of cats rise to an ultra-canine grade of virulence. He also demonstrated that by a judicious system of inoculation the organism of dogs and men can be made rabies proof — a dog thus treated being afterward, little, if at all, affected by the bite of any mad beast. Human beings, too, might thus fortify their system on the plan of King Mithridates, who swallowed drugs of all sorts till he became practically poison-proof. But it cannot be said that the retractive effect of the

prescription can always be relied upon. In other words, a patient unprepared by a previous course of inoculation may die from the effects of a mad dog's bite, in spite of any subsequent prophylactic procedures. Eight cases of that sort — three of them in France and two in Poland — are undoubtedly on record, and it is equally indisputable that a considerable percentage of the alleged cures may be ascribed to incidental circumstances, which even without the aid of a Pasteur Institute, would have prevented the poison from taking effect. The envenomed saliva may have been diluted, or may have failed to pass a stratum of woolen garments; or the patient may have been saved by a dietetic antidote — perhaps also by home appliances for the absorption of the virus.

The lack of statistics makes it difficult to name the percentage of spontaneous recoveries; but Dr. Albert Riese, of Czenstochow, asserts that, judging from cases under his own observation, it does not vary much from those of a hydrophobia hospital — seven in ten being about the average.

Professor Edmond Mortier claims eighty-six in a hundred (about eight and one half in ten) — the slight difference in favor of the inoculation method being possibly due to the influence of "expectancy;" and Pasteur's critics repeatedly expressed a doubt whether that trifling advantage over the let-alone plan justified the sacrifice of the thousands of innocent animals that suffered martyrdom under the hands of the relentless experimenter.

"If I had been actuated by idle curiosity," replied Pasteur, "I should have deserved impeachment for the torture of a single guinea-pig; but in pursuit of a nobler object, and with the slightest hope of success, or even progress in the right direction, I would not hesitate to sacrifice every animal I could get hold of, and have, indeed, often been tempted to long for a chance to accomplish the extermination of the entire race of worthless curs."

The French caricaturists represented him chasing, knife in hand, after a herd of panic-stricken quadrupeds; but the object of their ridicule kept his peace, while his friends recalled his action in 1871, when he had availed himself of a fine chance to refute the charge of truculence.

"You have celebrated the butchery of your neighbors as a festival," he wrote to the dean of the University of Bonn, when the Germans bombarded Paris, "and I must ask you to erase my name from your list of honorary doctors. I do not make this demand in a moment of irritation, but as a measure of protest against the barbarism and hypocrisy which, to satisfy criminal pride, persists in the slaughter of two great nations."

Both Pasteur and his collaborator Roux tried the effectiveness of their antidote on their own persons, and with apparent success, or it would have been a miracle how they escaped being dragged down by some of their victims, as they were repeatedly bitten, and could not always avoid envenomed fluids coming in contact with abrasions of their skin.

Dr. Maskelyne, of Liverpool, England, who inoculated himself with serpent poison, became finally "cobra-proof," but found to his cost that his plan afforded no protection against rattlesnake bites. He got off with a twelve hours' delirium and a temporary paralysis of the injured arm; and Professor Pasteur confesses that he more than once contracted a fever from the bite of "high-grade rabies" brutes.

Incidents of that kind may not have tended to sweeten his temper, which was naturally irritable, and was addled by the failure of some of his pet projects and the attacks of hostile critics. He became fond of seclusion, and in 1868 suffered a stroke of paralysis from which he never wholly recovered. His gait during the last five years was that of an invalid; but the gradual recognition of his services to mankind brightened the sunset of his life, and he died, like his father's idol, in the consciousness of having inscribed his name on the roll of the world's greatest conquerors.

RESULTS OF TEACHING PHYSIOLOGY IN THE PUBLIC SCHOOLS.

THAT students long remember some of their physiology, and that their habits are in some degree permanently modified by what they learn must be evident to any one who has taught the subject for a number of years; but to ascertain more definitely how much they remember, and what they put into practice, one hundred questions were recently asked of the pupils in the senior class of the Sandusky (Ohio) high-school. The class consisted of eight girls and seven boys, who had studied physiology four months at the beginning of their freshman year; viz., three years before, excepting one girl who had studied it at Port Clinton a year and one boy at Berlin Heights about as long. Besides the four

months of class work, there were four public lectures given by the teacher of physiology the year that this class studied it, and these were attended by some of them, and in their junior year all of the present class heard a series of talks on sanitary science given by the same teacher before the whole high-school, these occupying fifteen minutes each, and coming three times a week for fourteen weeks. There were several reasons for selecting this class to answer the questions : —

1. As three years had passed since they had studied the subject, it was thought that whatever impressions they retained, or habits they had formed or given up in consequence of it, would be likely to continue throughout their lives.

2. They were all students who could be trusted to answer the questions regarding their habits carefully and truthfully.

3. Being better acquainted with the teacher, they would have less reserve, and be less likely to give evasive or ambiguous answers or to change their practices temporarily so as to make a more favorable impression upon him. Further precaution was taken to prevent producing any embarassment that might arise from direct questions as to their habits, by asking in every case whether they did a thing in consequence of having studied physiology, a mere negative answer not implying whether they did not do it at all or had always done it. This precaution, however, proved unnecessary, as they answered the questions without reserve, in many cases taking the trouble to explain just what they meant.

To give them time to consider whether their practice regarding each of the things referred to in the first fifty questions had been modified by physiology and sanitary science, the list was handed to each to answer by himself at his leisure. The remaining fifty questions involving their knowledge rather than practice, were given in class.

The girls answered affirmatively, on an average, thirty-two questions out of the forty-nine, one question on smoking referring only to the boys, and the boys twenty-eight out of forty-nine, one question on tight clothing about the waist relating only to the girls. About two thirds of the remaining answers were negative because they had practiced them before studying physiology, and therefore did not need to change ; while of the remaining six or seven some were of minor importance, or had been barely noticed in their book or by their teacher, leaving very few which the difficulty of forming new habits or of giving up old ones or mere neglect had prevented them from carrying out.

Two considerations modify somewhat the force of these seemingly remarkable results.

1. These fifteen pupils were more conscientious than the average of those who studied physiology at the same time, but who had dropped out of school or graduated before reaching the fourth year. The very fact of their studies having made a deeper impression upon them accounts for their having continued longer than their fifty comrades who stopped before the course was finished. This consideration, however, is partly counterbalanced by the fact that, coming, on an average, from better homes, where hygienic laws were more fully practised and taught to the children, they had less to learn in this regard.

2. Many of the questions inquired, not as to complete change of habit, but merely as to whether their study had caused any improvement. Among the more interesting results of this inquiry, we may notice the following : All of the fifteen take better care of their eyes than before studying physiology. To the question, "Do you give more attention to the direction of the light when you are reading?" every student answered, "Yes." "Are you more particular to avoid a fading light or reading lying down?" Eleven answered, "Yes." "Did you learn other things about the care of the eyes which you put into practice?" Thirteen answered, "Yes." Twelve bend forward less when sitting, and ten walk more nearly erect, three others thinking that they do also, but being uncertain. Five of the girls and one boy take more exercise than before, all of the girls and four boys are more particular about getting some exercise each day, and six girls and two boys have more regard for getting exercise at about the same time each day. Four boys and four girls bathe oftener than before, five of these eight and four of the remaining seven being also more careful not to omit a customary bath. Nine of the class are more particular to avoid bathing after a meal, and eleven have learned other things about bathing which they put into practice. Eight brush their teeth more than before ; twelve use them less for cracking nuts or biting thread, and twelve have learned to do other things tending to their preservation. One boy and one girl are more careful than they were before to avoid tight shoes or those with high heels ; nine are more particular about taking off their rubbers on entering a building ; ten are more careful to avoid changing their garments during the day or in the evening for thinner ones ; and twelve had learned other things about clothing that they put into practice. To the question put to the girls, "Are you

more careful to avoid wearing tight clothing about the waist?" one answered, "Yes." Most of them said they never had worn it too tight, and one replied, "I do not avoid tight clothing about the waist, but enjoy it to a moderate degree; but I would never carry it to extremes, owing to the injurious effects on the system and also the uncomfortableness."

The answers to the questions on ventilation were alone sufficient to convince any hygienic reformer of the expediency of teaching physiology and hygiene in the public schools. The first was, "Do you ventilate your bedroom more thoroughly? Please specify how or when." All except one, who thought his had been ventilated enough, answered, "Yes." Characteristic answers were, "Yes, I open the windows during the day, and leave them open all night during the summer, and leave one window an inch all night in winter;" another, "Yes, I leave the window open except on exceedingly cold nights, and all day." A longer answer was, "After studying physiology, my family at first believed me to have metamorphosed into a ventilation crank, owing to my persistence in providing the proper amount of fresh air for my bedroom, and other places of the house where I stayed much. But since then I have completely brought them around to my opinions on the subject. I always open the window wide after dressing, and after the room is thoroughly aired, I shut it, all but a couple of inches from the top, where it stays all day and during the night." Nine answered affirmatively the question, "Has your study of ventilation been the cause of any other part of the house being better ventilated?" A part of the other six thought their houses always had been well ventilated. Eleven are more particular about having good air at school, church, or other places besides home; six breathe through their mouth less than before, one saying, "I used to think when the air around me happened to be very impure, or had a disagreeable odor, that if I breathed through my mouth, and closed my nose, I could receive no impurities just because I could not smell. But this false idea was corrected, and now I seldom breathe through my mouth."

Eight are more careful to avoid the contagion of consumption, diphtheria, and other communicable diseases, most of the rest saying they always were careful, or never to their knowledge have been with any person suffering from these diseases. Twelve have learned to avoid ways of taking cold not referred to in any other question. Ten have learned something about curing a cold which they have put into practice successfully, five of the ten mentioning the plan of inducing perspiration by exercise.

To the question, "Do you use alcoholic drinks less?" six answered, "Yes;" the remainder had never been in the habit of using them. To the question, "Are you either wholly or partly, on account of studying physiology, a total abstainer?" nine answered, "Yes." The remainder, excepting one girl and one boy, have long practised total abstinence from alcoholic drinks. "Do you think that because of what you learned in physiology you have ever had any influence, either by words or by example, on either the opinions or the conduct of any one else in regard to the use of alcoholic liquors?" Six believed that they had, while three others thought it possible that they had had some influence.

To comprehend the full meaning of the answers to the last three questions, it is necessary to consider that Sandusky is not a town where temperance principles are popular. With the exception of a single one of the smaller churches, and those societies founded for the express purpose of promoting such reform, the temperance sentiment in the high-school is probably stronger than in any other organization in the city.

(To be continued.)

PROGRESS IN DIETETICS — TWO NEW CEREAL FOODS.

PROBABLY no single article of food has been a source of so great disappointment to thousands as have the whole-grain preparations of wheat and oats. Under the advice of some physician, or led by a knowledge of the high nutritive value of the whole-grain preparations, and especially the qualities of wheat and oats as strength producers, or by a desire to escape from the biliousness, headache, stomach qualms, and mouth nastiness arising from the routine breakfast diet of hash, fried sausage, Saratoga chips, and other greasy combinations, multitudes of men and women have eagerly sought relief in the use of oatmeal, rolled oats, cracked wheat, and others of the various preparations of wheat and oats which are now offered the public in a variety of tempting forms.

The great majority of these persons are individuals of sedentary habits, who have forgotten in their busy lives to take time for exercise, or to give their stomachs a fair chance for digestion, and find them-

selves, if not already confirmed dyspeptics, at least just passing over the threshold into the den of that veritable minotaur of maladies — chronic indigestion. The great majority of those who have made the experiment have been woefully disappointed in the results; and not a few, after waiting patiently for months for the beneficial effects which they had been led to hope for and expect, have arrived at the conclusion that grains are unwholesome, and agree with Ben Johnson, that "oatmeal is fit only for a horse diet." Their experience clearly justifies their conclusions. While relieved, perhaps, of nausea and morning headache, and the "horrid taste in the mouth," they find themselves afflicted with stomach flatulence, acidity, eructations, heartburn, heaviness at the stomach, painful digestion, and an uncomfortable "all gone" sensation a few hours after eating; weakness of the knees, and other symptoms of disordered digestion and defective nutrition. A return to a meat diet often affording relief from these distressing symptoms, gives ground for the conclusion that grains are unsuited to the requirements of the human stomach.

This conclusion seems amply justified by the facts, but an important consideration has been overlooked; namely, the defective method of preparing the grains. It is conceded by all comparative anatomists that the natural diet of the human race, like that of the gorilla, chimpanzee, orang-outang, and other of the higher apes, is frugivorous; that is, the digestive apparatus of man is by nature best adapted to the digestion of fruits and nuts. In these, the choicest products of the vegetable kingdom, — the force and heat-producing elements, — are chiefly presented in the form of fats, sugar, and hydrated starch. In the process of ripening, the starch of the green fruit is hydrated, and thereby converted into dextrine and sugar, and rendered soluble, so that it may be easily absorbed or further converted by the digestive fluids.

Grains consist chiefly of starch. When taken into the stomach in a raw state, starch is not changed in the slightest degree either by the saliva or the gastric juice. This fact has been clearly shown by an experiment made not long ago in the Laboratory of Hygiene connected with the Battle Creek Sanitarium, under the author's direction. A healthy young man was made to swallow a portion of cooked flour, with a few ounces of water, and an hour afterward the contents of the stomach were withdrawn through a rubber tube, and subjected to a careful chemical analysis. The stomach fluid obtained was found to contain 1.08 per cent of sugar and .8 per cent of dextrine and soluble starch, or together 1.88 per cent of starch which had been acted upon by the saliva. A day or two later, the same young man was made to eat the same quantity of uncooked flour, taking with it the same quantity of water as before. The contents of the stomach were withdrawn as in the previous instance, at the end of an hour, and when subjected to analysis, were found to contain neither sugar nor dextrine, showing that no action whatever had taken place.

This experiment clearly demonstrates the value of cooking as a preparation for the digestion of starch, and the indigestibility of uncooked grain preparations. A dish of uncooked oatmeal or cracked wheat is just about equal in nutritive value to an equal quantity of sawdust; and yet this is practically the condition of most of the oatmeal, cracked wheat, rolled wheat, and other cereal preparations which are eaten as breakfast dishes by the American people, and to a large extent by other nationalities as well.

That indigestion is the result is not to be wondered at. The almost universal existence of water-brash among the Scotch Highlanders has been correctly attributed to their use of Scotch brose, which consists of a mixture of oatmeal and hot water stirred together, but not cooked. The Highlander prefers his oatmeal prepared in this manner because, as the lumbermen of Northern Michigan say of fat pork, "It sticks to the rib." This it literally does, remaining in the stomach, under the ribs, instead of being dissolved by the digestive fluids, and passed along into the intestines to be absorbed. The long retention of the coarse, insoluble particles in the stomach, which, only after a long and wearisome effort, unburdens itself of its contents, gives rise to irritation of the nerves connected with the stomach, this being manifested reflexly in the excessive activity of the salivary glands, the immediate cause of the water-brash.

To the same cause, — the raw condition of the whole-grain preparations in common use in this country, when they enter the stomach, — must be attributed the unpleasant symptoms which have been traced to their use, rather than to any intrinsic pernicious quality in the grains themselves. The public have been misled, and their confidence extensively abused by the statements printed upon the packages in which many of these foods are put up, such as "Thoroughly cooked," "Steam cooked," "Requires but fifteen minutes' cooking," "Ready for use in three minutes," etc. The writer has carefully examined all of these so-called "cooked" preparations in

the market, and has found the statements referred to, to be incorrect and misleading in every case. In not a single instance has the amount of cooking to which the cereal had been previously subjected been sufficient to materially lessen the time required for its proper preparation for the table. The best of these preparations requires from three to four hours' thorough cooking in a double boiler before they are in proper condition to enter the stomach. Three and one half to four hours is as short a time as should be allowed for the cooking of either oatmeal, cracked wheat, rolled wheat, rolled oats, or any other of the whole-grain preparations of wheat and oats. Entire wheat requires fully double this length of time.

But even when thoroughly cooked, these cereal preparations are found to disagree with a very large number of persons. This is especially the case with oatmeal. I was for a long time at a loss to understand the reason for this, but experiments which I have recently made have convinced me that the cause is to be found in the pasty quality of cereals when prepared in the ordinary way, in mushes and thick porridges, even when thoroughly cooked. The dextrine and soluble starch resulting from the cooking of cereals impart a sticky or adhesive quality, by reason of which mushes form in the stomach into masses, or lumps, which retain their form with a considerable degree of persistency. A vigorous stomach possesses sufficient muscular power to reduce these masses to a homogenous pulp with which the gastric juice is readily and thoroughly mingled; but in a feeble stomach, especially one which is dilated or pouched, this is by no means the case, and the pasty masses lie in the stomach for hours, unacted upon by the digestive fluids,-except as the gastric juice slowly erodes the surface, as water acts upon a large block of ice.

The solution of the cereal food in the stomach depends chiefly upon the action of the saliva. The chief constituent of foods of this character is starch, and it is impossible for them to be broken up unless the saliva acts upon the starch element. The action of the saliva upon starch in the food is mainly confined to the first half hour of digestion. Those portions of the starch elements which are not acted upon during this period are not digested at all in the stomach, but must wait until the food has been passed along into the small intestine, where it comes into contact with the pancreatic and intestinal juices.

(To be continued.)

To Grow Old Slowly. — Eat moderately of healthful, nutritious food. Dress warmly, but lightly. Work moderately, and take gentle exercise and abundant sleep. Avoid carking care and anxiety. Do not strain, or lift, or run, or exercise violently. Do not try to show how smart an old man can be. Wash all over with warm water twice a week. Treat young people so they will be glad to have you around. Make friends with all the children. Do not scowl, scold, or fret. Give liberally before you get so stingy that you cannot.

Avoid stimulants and condiments, salt, pepper, and spices. Do not carry big loads, do big day's work, or eat big dinners. You may buy new teeth to grind food, but you cannot buy a new stomach to digest it. Do not smoke, chew, or snuff tobacco, and so make yourself offensive, and subject yourself to heart disease and sudden death. Leave alone tea and coffee — drink milk and hot water, and so have a clear complexion, steady nerves, and be free from aches and quakes and shakes. Make yourself so pleasant, useful, and agreeable that no one will think you a burden. Beware of cold rooms and cold weather; most old people die in the winter; do not get chilled. Avoid excitement, passion, anger, and worldliness. Do not try to build — there is little comfort in being buried from a new house.

Do not undertake great enterprises; give the boys a chance. Do not hang on to every office and position till you drop dead in your tracks. Learn to retire in good order, so that people will be sorry rather than glad that you are gone. Use your money, and do good with it. Do not give it all to your children, so that they will be in a hurry to get rid of you because they have got it; and do not keep it so close that they will want you to die so that they can get it. Do not sit in the chimney-corner. Go to meeting, sing, pray, serve God; bring forth fruit in old age, and let your hoary head be a "crown of glory, being found in the way of righteousness." — *The Christian.*

Antiquity of the Corset. — According to a recent scientific paper, the mummy of an Egyptian princess who lived 2000 B. C., discovered a few years ago, was found to have around the waist a contrivance very similar to the modern corset.

"Pa," asked Johnnie, "what is a pathologist?"

"He's a man who lays out paths in parks and elsewhere, my boy. Now don't bother papa any more; he's busy."

CIDER DRINKING.

How soon fermentation begins after the juice has been pressed from the fruit cannot be told definitely. We may safely say that the change begins at once, though the presence of alcohol may not be detected for several days. The sweeter the apples, the greater will be the quantity of alcohol produced when the juice ferments. Cider contains from four to ten per cent of alcohol.

Its continued use as a drink will produce intoxication and drunkenness. Cases are on record of delirium tremens resulting from this drink alone.

Rev. W. H. H. Murray, late of Boston, said: "You are talking like idiots when you say there is no danger in the use of cider. I know from the blood of five generations of cider-drinking ancestors the danger there is in this habit."

The drinking of cider will very soon produce the flushed skin and the aching head that always results from alcohol.

If whisky has forty per cent of alcohol, and cider only five per cent, then whisky will contain eight times as much alcohol as the same quantity of cider. If a glass of cider is, in bulk, four times the ordinary dose of whisky, then two glasses of cider will contain as much alcohol as one dose of whisky or brandy. If the whisky toper takes three drinks a day, while the cider drinker indulges in six or eight, it will readily be seen that the cider guzzler will consume even more alcohol in twenty-four hours than the man who uses the stronger liquors. Alcohol taken into the stomach in small quanties, considerably diluted, will be absorbed more fully by the blood-vessels than larger quantities less diluted, as a portion of the latter usually passes from the system with refuse food. According to Axel Gustafson, of England, and other eminent scientists, small quantities of alcohol taken frequently will intoxicate more surely than larger quantities taken less often.

A little observation will suffice to show that cider drinking creates a demand for more and stronger liquors. When the fermentation of apple juice has reached a satisfactory point, substances can be put in the cider that will keep it from turning into vinegar. This is the hard cider that is used so freely in this country, and that so many people regard as harmless because it has been made from apples.— *Scientific Temperance Bulletin.*

A TOBACCO SLAVE.— A correspondent writes concerning a case of tobacco addiction which is almost beyond belief. The victim of the weed is a woman suffering from tobacco cancer, which began at one side of the mouth, and has eaten a hole through the face, and destroyed the lower lip to such an extent that it has separated from its supporting attachment, and lies a shapeless mass upon the chin. The disease has extended so far into the throat that the larynx is exposed, and the jugular vein can be plainly seen. The disease was, at the time the correspondent wrote us, rapidly extending across the base of the tongue. Nevertheless, the miserable creature will not suspend the use of the poisonous weed which has been the cause of this terrible state. Being no longer able to use a pipe herself, she has ingeniously devised a method by which she can still smoke by proxy. A smoker, whom she engages for the purpose, seats himself before her with the pipe in his mouth, draws a long puff, and blows it into the ghastly opening in her face, thus enabling her to still enjoy, after a fashion, the horrible drug which has reduced her to a state of living death.

EXPEND upon your daughter's body one quarter as much as you devote to her music; and if the expenditure be wisely directed, you will, unless her constitution is exceedingly frail, save her from all physical maladies. You may not think so, but I assure you that during her life she will be more grateful to you for this attention to her physical health than for all the music and French you can give her. And if you will pardon the apparent extravagance of the statement, I believe a good vigorous body would be worth a thousand times as much to her as the music and French. — *Dio Lewis, M. D.*

Teacher of Physiology— "What should one do immediately upon coming into the house with wet feet?"

Pupil— "Take them off, and put on others as soon as possible."

ACCORDING to Sir Benjamin Ward Richardson, the normal period of human life is about one hundred years; and seven out of ten average persons, if they took proper care of themselves, ought to attain to that age.

THE CAUSES OF ILL HEALTH IN AMERICAN WOMEN.

Professor John Ford Barbour, M. D., of Louisville, Ky., recently contributed to the *American Therapist* an interesting article on the above subject, from which we quote the following paragraphs: —

"Dr Austin Flint, Sr., is said to have declared that if things went on as they are now going, in fifty years it would be well-nigh impossible to find a healthy woman of American descent. Numerous articles have appeared in the medical magazines by such writers as Dr. Mary Putnam-Jacobi, Dr. Engelmann, and others, calling attention to the alarming and increasing prevalence of ill health among American women. We have in addition the testimony of such close and careful observers as our novelists, Howells and James, which is of even greater value, as coming from laymen, who would naturally not be so quick to notice such things as physicians. Howells speaks of the 'typical American girl, never very sick and never very well.' Do we not all know her?

"Let the reader take his stand at some fashionable street corner on a sunny afternoon, and notice carefully the women who pass. They will show by their sallow complexions, thin, flat chests, angular figures, and miserable gait all the evidences of present or impending ill health. He will hardly find one woman out of ten with bright eyes, clear complexion, erect carriage, and firm step.

"It is simply impossible for human beings to live as most American women live, and have good health. After a girl puts on long dresses, she is taught that almost any sort of active bodily movement is unladylike. Her frail little body is incased in a corset which effectually prevents the full development of the important trunk muscles. At school she gets perhaps a little make-believe calisthenics. During her life in society she waltzes with great ardor, it is true — and it is said that to go through all the evolutions of a German is equivalent to a walk of fifteen miles; but no one has ever seriously claimed that this form of exercise is conducive to health. After marrying, the American woman reduces physical exertion to the minimum. Any form of physical labor is regarded by her as menial. If the weather is bad, she will not put her foot out of the house for whole days at a time. If she does go out, often she will take a car to ride two squares."

"There are many unavoidable causes of ill health in American women which need not be discussed here. Let us rather turn our attention to the more practical consideration of the avoidable causes of ill health in our women. While there are very many of these, it has seemed to the writer that the following are the principal ones: —

"1. Lack of general exercise.

"2. Lack of specific exercise.

"3. Lack of abdominal breathing.

"4. Improper modes of dress.

"5. Superstition.

"As every one is aware, there are three causes for the circulation of the blood: —

"1. The contraction of the heart.

"2. Contraction of the voluntary muscles.

"3. The contraction of the diaphragm.

"American women attempt to dispense with the last two; they neither take exercise, nor do they breathe with the diaphragm. The muscles act precisely like the bulb of a Davidson syringe, — when they contract, the blood is forced into the veins; when they relax, a new supply flows in.

"Dubois-Reymond determined by experiment that the minimum amount of exercise necessary to maintain the circulation is equivalent to a walk of five

miles a day. American women do not average one fifth of this amount.

"The diaphragm acts like the piston of a great pump, rising and falling sixteen times a minute, and pumping the blood out of the abdominal and pelvic cavities. Where its stroke is only one half or one third the normal, the amount of blood raised must be correspondingly less. The investigations of Dr. Thos. J. Mays, of Philadelphia, and of Dr. J. H. Kellogg, of Battle Creek, Mich., have shown that women ought to breathe precisely as men do. The thoracic type of respiration in women is entirely artificial, and is not, as physiologists have claimed, a wise provision of nature, having in view the restriction of the movements of the diaphragm during pregnancy.

"The second cause assigned for the ill health of American women is lack of specific exercise. All exercise is not of equal value; exercise of the arms and legs, while of great value, is relatively far less important than exercise of the trunk muscles, for the reason that the circulation through the thoracic, abdominal, and pelvic cavities is dependent upon the exercise of the muscles surrounding these cavities. When the trunk muscles are not freely and systematically exercised, the circulation through the lungs and the abdominal and pelvic organs becomes feeble, and the functions of these organs are imperfectly fulfilled.

"We have now arrived at the point where we can trace, step by step, the evolution of ill health in the American woman. Her undeveloped body is incased in a corset when she is fifteen years old. At school she learns a great many things, but is not taught that in order to have good health she must exercise the muscles of her body, and especially those of the trunk, daily and systematically. After marriage she settles down to a life of physical inactivity; she takes hardly any exercise, and even this little is not taken systematically; she does not breathe with the diaphragm; her circulation becomes feeble, her hands and feet are always cold, the blood accumulates in her abdominal and pelvic cavities, the functions of the abdominal and pelvic viscera are imperfectly carried on; she becomes dyspeptic, her stomach is distended with gas, her liver and intestines are torpid, the waste products of the system are not carried off, but accumulate in the blood. The opinion is constantly gaining ground that most of the functional nervous disturbances in women are due to autointoxication.

"By and by the pelvic organs begin to show signs of disease. When one hears of the daily exploits of the abdominal surgeon, and learns that there is hardly one woman out of five who has not some form of pelvic disturbance, the conviction forces itself upon the mind that surely our women must be grossly violating some fundamental law of health. We have traced out the chain of physical causes which lead inevitably to a stasis in the abdominal and pelvic circulation. As a further result of this stasis, there occurs a sagging of the abdominal and pelvic viscera; and, as the latter are underneath, they get the worst of it. Malpositions of the uterus are produced; the power of resistance of the pelvic tissues to invasion by pathogenic microbes is lowered; the tendency to plastic exudations is increased; the resolution of inflammatory processes is very much retarded, and thus the foundation for every variety of pelvic disease is laid."

SWIMMING AS AN EXERCISE.

DR. GRAY, editor of the *Interior*, writes as follows concerning swimming as an exercise: —

"Swimming is an athletic exercise, an accomplishment, a life insurance, a sport, a courage inspirer, a luxury, a refreshment, and a health giver. Like anything else that is valuable, it is not very easily attained — though it may be attained by chance. One may happen on the stroke, but most have to seek long for it. All animals are naturally adapted for swimming. The horizontal body, the lifted head, and the pendant or supporting limbs — the animal on the land is in his proper position for the water. He does not change the movement of his limbs from walking to swimming or *vice versa*. But a man's limbs are parallel with his body. On the water his nostrils are below the surface. His neck is short and bends backward but little. His brain is disproportionately heavy. He must move his limbs in a way that he cannot move them unless he be in the water. The consequence is that when he has learned the stroke, the muscles which he employs are weak, and easily exhausted. A good swimmer must develop the appropriate muscles. As this is not often practicable, there are but few good swimmers. But wading around in shallow water is a mere mockery of the sport. Any one may have much more of it by procuring a good cork or reed life-preserver, such as are provided on ship-

board. With this bound securely around the chest — it must cover the back and sides as well as the breast — one who cannot swim can rock-a-by in deep water deliciously — and may learn the form of the stroke, though on removing the buoy, he will go under, and has considerable skill yet to attain. I find that confidence in myself as a swimmer adds greatly to my ease and comfort when boating — takes away all fear, and gives me more liberty of action. Besides, there is nothing more exhilarating than rough water, which is only a terror to those who cannot swim."

TO MY COLUMBIA.

To ache, to groan, and thus to feel
The livelong day the bitter world
Makes merry at one's misery;
To work in pain, for one must earn
His daily bread in spite of ill;
To grow apart from humankind,
Shut in by woes no other knows,—
Aye, there 's the rub: t' were better borne
Did others only sympathize.

To ride, to laugh, and on a wheel to glide
Serenely out from Pain's dark, lonesome door;
To shout, to fly, to feel new vigor thrill
Through every muscle, nerve, and cell of life;
To bid defiance to miasma's horde,
To drown tuberculous bacilli swift
In seas of pure, fresh air, and scout disease,—
Aye, that 's the way to make this world a heaven,
And we ourselves as angels in it.

M. A. S.

PRESERVING THE FIGURE.

THERE are a number of disadvantages which befall the woman who loses in middle life the lithe, agile, symmetrical figure of early womanhood. One of these is very patent to the eye of the observer, who sees a curve in the wrong place as the eye follows what should be a straight line from the bust to the floor. But greater than the consciousness of visible loss in symmetry is the growing sense of clumsiness and helplessness that creeps over one as the accumulation of adipose, instead of being uniformly distributed over the body, piles up in the abdomen. The center of gravity is thrown from its normal position. Lightness on the feet becomes a thing of the past, and an inertness and disinclination to moving about increases constantly, and makes the trouble grow by what it feeds upon. The remedy for this state of things is within the reach of every one who has time and resolution to spend ten or fifteen minutes every day in certain exercises, which will be given in detail, and which require absolutely nothing else but time and persistence.

The best time for taking these exercises is in the morning, immediately after leaving one's bed, and before any garments that compress the figure in any way are put on. The air of the room should be pure and sweet, so that the lungs may be benefited no less than the abdominal muscles, and the blood purified.

1. Draw in the abdomen as far as possible, fill the lungs with air, and then raise the arms above the head till the hands meet; without moving or bending the knees, bend the body as far back as possible, and then, allowing the air to escape from the lungs gradually, bend the body as far forward as possible until the hands touch the floor. Repeat this ten times, following exactly the directions for breathing.

2. Place the hands upon the hips, akimbo, draw air into the lungs as before, and bend forward, first to the right as far as possible, allowing the air to escape from the lungs, and then, after filling the lungs again, to the left. Repeat this exercise ten times.

3. Place the hands lightly on the breast, draw in the abdomen, fill the lungs, and turn the head and body without moving the knees or feet, as far, first to the right, and after filling the lungs again, to the left, as possible. Repeat this ten times.

4. With the arms at the sides, draw in the abdomen, fill the lungs with air, and raise the arms to their height above the head, keeping the lungs fully expanded; then, breathing out, allow the arms to fall to the sides again. Repeat ten times.

These exercises strengthen all the muscles of the abdomen, and cause in them a gradual contraction, which, as it increases, restores symmetry of form as well as the center of gravity to its proper position, and gives the exerciser a command of herself in movement that is very delightful. As hunters, when short of food, tighten the belt, so these exercises have a similar effect; they tighten the natural belt of the body, so that less food is required to produce the feeling of distention requisite to comfort; and as less energy needs to be spent on digestion, there is more left to be applied in other directions.— *Phrenological Journal.*

WHAT IS GOOD FOR ALL MEN AND WOMEN. — We see clearly that it is good for every man among us that he and every other man should be as tall, as strong, as well-knit, as supple, as wholesome, as effective, as free from vice and defect, as possible. We see clearly that it is his first duty to make his own muscles, his own organs, his own bodily functions, as perfect as he can make them, and to transmit them in like perfection, unspoilt, to his descendants. We see clearly that it is good for every woman among us that she and every other woman should be as physically developed and as finely equipped for her place as a mother, as is possible to make herself. We see that it is good for every woman that there should be such men, and for every man that there should be such women. We see it is good for every child that it should be born of such a father and such a mother.—*Grant Allen.*

HOW TO WALK.— A Delsarte teacher, well drilled in Delsarte's system of expression, says that women can improve their walk without a teacher, though they cannot learn about walking from print. The proper length of the step is twice the length of one foot, and is measured from the hollow of one foot to the hollow of the other. Now, take a piece of tape and sew on it bits of flannel at intervals twice the length of one of your feet, stretch it across the longest room you have at your disposal, and you are ready for practice. Maybe you don't know that each foot should cross the same line with each successive step? It should — that is very important — so now you must walk your tape, setting one foot and then the other right over one of these bits of flannel, letting the flannel come just under the instep. Do this, and turn your toes out well and swing your leg from the thigh, and you are far on the road to a beautiful walk.— *Sel.*

A FIELD-DAY IN B. C. 400.—Soon after, they prepared to perform the sacrifice which they had vowed. They also celebrated gymnastic games upon the hill where they were encamped, and chose Dracontius, a Spartan, to prepare the course and preside at the contest. When the sacrifice was ended, they gave the hides to Dracontius (for prizes), and desired him to conduct them to the place where he had made the course. Dracontius, pointing to the place where they were standing, said: "This hill is an excellent place for running in whatever direction the men may wish."

"But how will they be able," said they, "to wrestle on ground so rough and bushy?"

"He that falls," said he, "will suffer the more."

Boys, most of them from among the prisoners, contended in the short course (stadion, 606¾ English feet), and in the long course (6 to 24 stadia) about sixty Cretans ran; while others were matched in wrestling, boxing, and the pancratium. It was a fine sight; for many entered the lists, and as their friends were spectators, there was great emulation. Horses also ran; and they had to gallop down the steep, and, turning round in the sea, to come up again to the altar. In the descent many rolled down; but in the ascent, against the exceedingly steep ground, the horses could scarcely get up a walking pace. There was consequently great shouting, laughter, and cheering from the people. Recorder, Xenophon; Physical Director, Dracontius.— *C. F. B. Wall, in Physical Education.*

PHYSICAL TRAINING OF INDIAN HUNTERS. — The physical training of the hunter was a part of the education of every Indian boy, and different tribes had different modes of developing the powers of endurance. Among the Omahas the youth were taught to run — not so much to run rapidly for a short distance, as to keep up an even pace for many miles; and the habit of careful observation was also inculcated. The runners' services on the tribal hunt were important; it was necessary for them to be able to travel far in search of the buffalo, and to return quickly, so that the tribe could go forward, and the hunters encompass the herd before it could move any great distance. They must also closely note the topography of the country as they ran here and there in search of the game, so as to be able to direct the tribe to the herd over the shortest route, which they might not themselves have traveled. They must also be constantly on the watch for tracks or signs of an enemy, lest the tribe should be brought into danger. It was not uncommon for these young men to run from seventy to one hundred miles within twenty-four hours, taking very little rest and food.— *Alice C. Fletcher, in the Century.*

HOW TO GO TO SLEEP.—Begin at your toes to relax; loosen all your joints and muscles, unbind your fingers, shake your wrists loose, take the curve and strain out of your neck; go all to pieces, in fact, and see how the day's fatigue seems to slip off from you, and the gentle mantle of rest and oblivion to enfold you like a garment.—*Sel.*

THE SIGNIFICANCE OF PLAY.

(Concluded.)

ILLUSTRATIVE of the educating influences of play, Miss Harrison relates the following of two boys, aged respectively seven and nine: —

"So far as I could judge, their mothers were equally in earnest as to their maternal duties, and had about the same degree of mental culture. The two children had the ordinary cleverness of their age, but the one child had learned to play, and the other had not. The more fortunate little fellow could amuse himself for an hour by digging a canal in the sand, playing that various bits of grass were canal boats loaded with all imaginable merchandise, and that he was the old gray-haired keeper of the lock who greeted with friendly chat all passing boats. Or, again, a pile of sand in the middle of a two-foot lake became a foreign country from which boats passed back and forth to the mainland, exchanging one kind of produce for another. He needed but a bit of sand and a little water, a piece of paper and a lead-pencil, or a handful of papers and pebbles and a few sticks, and a new world was created at his command, and a score of delightful experiences were lived through during each summer day. The other child was always scrupulously clean, was well trained in the etiquette which belongs to good society, and I believe he was rigidly instructed in morality, but his life was pitiful and dreary. He knew nothing about play, except to occasionally engage in a rough scuffle with some other boy, which demonstration of animal life was usually checked by the mother as soon as she noticed it. His chief occupation seemed to be hanging onto her chair and asking at intervals, 'What shall I do, mamma?' or begging for some forbidden privilege or indulgence. His recreation had to come from without always. He had no happy inner world from which to draw his amusements. He had never learned the joy of self-occupation which comes through play."

Play is a means by which we may give the child the benefit of our larger experience, and thus extend the limits of his inner world by broadening his ideas. But we must avoid offering too much help in carrying out suggestions. Let the child's own ideas lead, and we add with our greater knowledge simply the things which are necessary to carry out his ideas, not to introduce our own ideas. The great fault of mothers and nurses is to do too much for the child. Our place is simply that of a spur to stimulate him to new ideas and new activities when needed.

Mothers need to possess some ability to make simple, childish playthings out of paper, sticks, and other material at hand. The child enjoys these home-made playthings much better than toys which are purchased for him. Miss Harrison relates an incident which occurred while traveling, which may perhaps illustrate how much enjoyment may be gotten out of little things when the play is properly directed. She says: —

"While on a railway journey I became much interested in a young mother who was traveling alone with several small children. Before the day was half over, she looked very weary, as the demands which the active little creatures made upon her had been incessant. I invited the most restless of the group to come over to my seat and see my flowers. After a few moment's chat with him, I made the suggestion that he should play he was a gardener planting flowers in a park. The iron lattice work which protected the steam pipe near the floor of the car was selected as the park. For a time he was greatly amused by sticking flowers one at a time in

the openings of the lattice. At last, tiring of this, he said, 'Now that will do. I guess I will go back to mamma.' I glanced across the aisle and saw the tired mother was just closing her eyes for a much-needed nap. So I felt my services were still needed. I turned to the boy and said, 'If you go away, I must get a new gardener. Will you be kind enough to stay and show the new gardener how to take care of the garden? I am afraid he does not even know the names of the flowers.' With that I tore a bit of paper into the form of a man and handed it to the child. He was delighted with the possession of authority, with the superior knowledge which this new phase of the play implied. He at once assumed the rôle of teacher, and for ten minutes was happily engaged in instructing his supposed successor. At the end of that time he began to glance uneasily over at his sleeping mother, and I saw he had exhausted his imagination in that line, and that it was time to change the play. So taking another piece of paper, I folded it into a house, and placing it on the window-sill, said, 'Here is the gardener's house. Do you suppose you could get a painter to come and paint it for me?' 'I will be the painter,' he joyfully exclaimed. This was, of course, what I had expected. A change of position from sitting on the floor to standing by the window, rested him physically, and the change of thought refreshed him mentally. I twisted a small fragment of paper into a paint-brush and showed him how to play that the naturally closed hand was a paint pot. Later on we made a hoe and a rake, and a garden-house in which to keep them. With very little trouble I kept him occupied for nearly an hour.

"A very little skill then gives the mother or nurse great power; not only does it give her the ability to amuse and entertain any child she may happen to meet, but by giving her the power to help him to enter more heartily into his play, she is thereby preparing the child to enter heartily into life, and so helping to make his life rich and full of significance to himself as well as a pleasure and an inspiration to those about him.

"The skill and ability in improvising toys and helps to the child's play is a very important part of the mother's education. In play the child endeavors to surround himself by a world of his own creation and ordering. Through this world a child creates something like his own inner world, of which it is in fact a mirror. It is like a book upon the open pages of which we may read the influence of the outer world upon the child's mind, and can readily discern what portion of the child's environment has made the deepest impression upon him. It also gives us a standard by which to judge of his ability, his ambitions, his ideals, and his aspirations. In his play he unconsciously puts forth his true inner life. There is no hypocrisy about it. Thus in his play we have a standard by which to judge of his inner life,— a standard, which, if recognized by the parent and followed would greatly aid in understanding the child.

"The child should play with a joyous whole-heartedness. Listless and indifferent play forms a listless and stupid habit of mind, which will extend to the activities of his future life. Hence the child should be encouraged to play heartily. In later years the man who has a delight in his work is he who thoroughly believes in it and throws his whole being into it. A good definition of drudgery is— 'doing that in which one's heart is not interested.' There may be drudgery in play as well as drudgery in work. Sending a child out to play, with instructions that he must not soil his clothes, must not play in the dirt, robs him of half the advantages of his outing, and prepares him to live a life of drudgery and not of real work. The right kind of play prepares the child for his life-work. Work which is thoroughly enjoyed is generally well done. Joy is the inner reaction of the right kind of activity. This is why children enjoy their play. Real work creates the same happiness as does healthy, hearty play."

Speaking of the importance of prolonging the child's play period to its full limit, Kate Douglas Wiggin says:—

"The child wants to see and hear, to examine and to work with his hands. How absurd, then, for us to make him fold his arms and keep his active fingers still, or strive to supply him with such an opiate as the alphabet! If we can possess our souls and primers in patience for awhile, if we will let him take in living facts and wait the results, that result will be that when he has learned to perceive, compare, and construct, he will desire to learn words for this. Tell him what others have seen, thought, and done. This reading and writing, what is it, after all, but the sign for things and thoughts? Logically, we must first know things, then thoughts, then their records. The kindergarten, with its purposeful play following this natural method of developing the young mind, is a most helpful factor in right education."

The child does not need expensive playthings and toys, and such are usually money thrown away when purchased for him; something to roll, push, set up,

take down or apart and put together, a heap of sand, a string, a box of blocks, a boat to sail, are usually far more satisfying than complicated toys.

It is important that children be not surfeited with innumerable toys. Children who have many toys soon tire of each, and long for new or additional ones. Those who have but few toys usually take far better care of them, and get more enjoyment out of them.

Teach the children always to complete their play by taking care of the playthings. Self dependence, patience, perseverance, order, determination to overcome difficulties, are traits of character for the exercise of which play offers ample opportunity. Play should be indoors only during inclement weather. The physical exercises belonging to out-of-door sports are great promoters of health and physical development. E. E. K.

THE MAN IN THE MOON.

BY MRS. MARTHA WATROUS STEARNS.

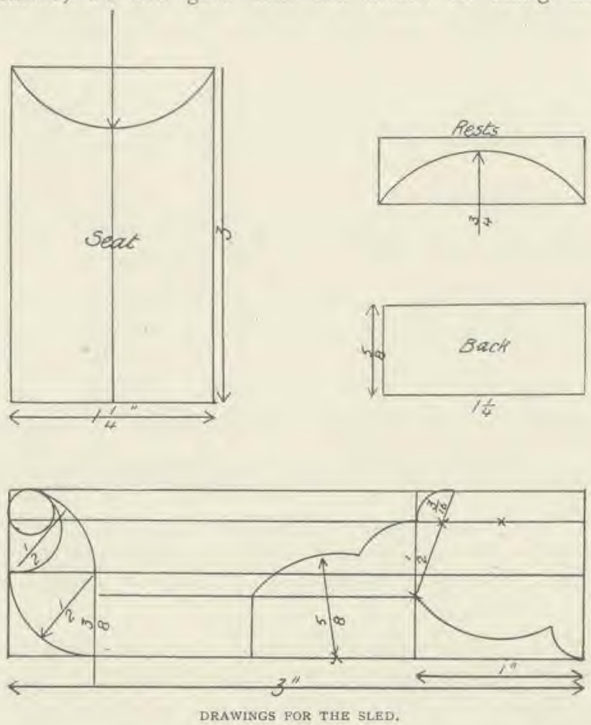
"The man in the moon
Came down too soon,
And asked his way to Nor'ich;
He came by the south,
And burned his mouth
By eating cold plum porridge!"

Mother Goose didn't say he was Santa Claus; but his residence having never been more definitely located than the North Pole, we may take the liberty of supposing he may have dropped from the Arctic regions of the moon, or that he must at least have been an Antarctic brother of the original, since he came from the south; and being accustomed to his lunar residence, it is not surprising he burned his frigid mouth with something so warm as "cold plum porridge."

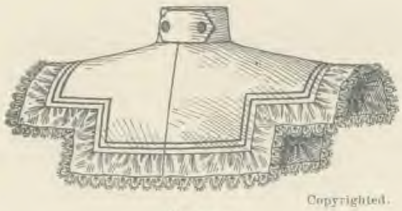
Since his mission to Nor'ich was not particularly stated, we will give him the credit of being the fabled gift-bringer. He coasted down on a moon-beam this particular Yule-tide, and whistled delightedly as he saw his large family of children busily at work on something new. What was it? —sloyd of course!

He sat down on a chimney-top while making an inventory of the wants of the juvenile world, and was soon buried in reminiscences. How that want-column had varied the last hundred Christmas-tides! It didn't use to ask for much but dolls, sleds, and sweets; but this was an age of educated babies, and educational toys were in greatest demand. He concluded therefore that to keep up with the times he must put in a quantity of sloyd materials.

The small boy of 1800 would have been perfectly contented with a sled for the sled's sake; but the boy of ninety-five added years wants the sled and the fun of making it too! therefore he must have a set of wood sloyd tools and plenty of wood. The small girl of long ago would have been perfectly satisfied with a pretty work-basket, but the little girl of to-day wants the fun of weaving one for herself! "Well, well," reflected Santa Claus, "what else could be expected when I can't make a run down this way without being tripped up by their fathers' electric-car trolleys and telephone wires!



DRAWINGS FOR THE SLED.



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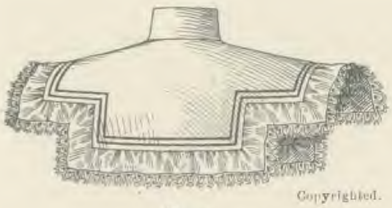

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BACK.

COLLARETTE OF THE LYDIA COSTUME.

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THE LYDIA COSTUME.

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LYDIA GOWN.— FRONT.

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LYDIA GOWN.— BACK.

"I feel out of style myself with anything so antiquated as reindeer for my motive power. My next excursion this way, I expect I shall have to leave my poor old reindeers at home, and put an electric motor on my sled, to be up to date!

"It is all right though, it is all right, if they do n't go to living so fast that after a while they can't take time to live at all!" chuckled Santa Claus. Sloyd is a good thing for the babies though; it puts a brake on this machine craze, by making them love hand-work. It gives them time to breathe and develop naturally. Hand-work *has* to be slow and thorough. I almost expect to find on some of my descents an automatic, electric, educational incubator, by which the infant mind can be incubated with all knowledge by the pressure of an electric button, in an incredibly short time, and thus save the usual outlay of time expended on a thorough education. I will do my best to put on the brakes; I will bring a sloyd outfit for pasteboard, wood, and basket work, to every chick and child on earth's side!"

And this is the drawing of a Christmas model he dropped in somebody's stocking! It may be worked out in any size, but the proportion given in the drawing should be preserved. The measurements given are the actual size of the drawing where an inch represents a foot. It is pretty made up in toy size for a doll, when the maker is very young. In putting together, the sides should first be screwed to the rests, of which there should be three, a foot apart. The seat should then be put on, and finally the back. A rod should be put across the front for a foot rest and brace, as well as to fasten the rope to. Then all is ready for a merry Christmas coast with Santa Claus himself!

THE BATTLE CREEK SANITARIUM DRESS SYSTEM.— XI.

It is with a great deal of satisfaction that we present this month the latest work of our special designer, the Lydia Costume, to our readers. This costume embraces all the hygienic advantages hitherto included in our dress system, as well as others which are more particularly its own. One special advantage possessed by the skirt of this costume is that the fulness is so skilfully distributed that no particular weight or inconvenience is felt at any point. One accustomed to the conventional skirt with its entire weight massed at the back, and pulling directly upon the back of the neck, will thus experience a great sense of relief. Another advantage peculiar to itself and worthy of special note, is that this suit can be made with or without lining; thus it has the widest possible range of fabrics, from the rough wool suitings of winter to the thin gauzy dress goods of the summer season,— from homespun wool goods to India mull and grenadines. This is, in fact, the most excellent of all-purpose costumes.

When fashioned of light goods, and trimmed with silk and ribbons, this is the most dainty and graceful of gowns, and does away at once and completely with the once common idea that a thoroughly hygienic dress must of necessity be ungraceful and unbecoming. We would particularly commend this suit to those of our lady friends and patrons whose home is in a tropical or sub-tropical climate, and would also suggest that the addition of the collarette renders this costume appropriate for street wear. It may be made of the same goods as the dress, and trimmed in any way the wearer prefers; or it may be fashioned of lace, velvet, silk, batiste, or some other light, filmy material, and trimmed with ribbon, and may thus transform a rather plain dress into a pretty gown for evening wear. The daintiest of collarettes may be made of insertion and ribbon, or narrow rows of velvet, edged with lace. The collarette may be made of any material desired, and worn with any dress.

The Lydia Costume.— This pattern is in eighteen pieces,— half of two front portions, under-arm gore, and half of back of lining, half of yoke, and lower portion of front for outside material, half of yoke and lower portion of back for outside material, collar, box-plait for front, three sleeve portions, half of front of skirt, three side gores, and half of back. The sleeve is leg o'mutton, and is mounted on a plain coat sleeve lining. The garment in the present instance was developed in serge and trimmed with buttons, but braid, ribbon, velvet, and lace, can be satisfactorily employed in the matter of decoration, and silk, wool, novelty, or cotton goods, used in making the garment. The skirt has the graceful ripple, and the gores are cut so they will not sag between the seams. The width of the skirt is 4¾ yards. The quantity of material needed is 7½ yards of 36-inch goods. Patterns can be furnished in the even sizes from 30 to 44 inches, bust measure. Price of pattern, 35 cents.

Ladies' Collarette.— This collarette is in one

piece, and one half of the pattern is given. If it is made of suiting goods, velvet, or silk, and a stiff appearance is desired, use an interlining of chamois fiber; otherwise an interlining of cambric or silesia is sufficient. With delicate fabrics no interlining is needed. The quantity of material called for by this pattern is ½ yard of 22-inch goods. There is only one size given, and that is medium. Price of pattern, 10 cents. For all patterns, address, Sanitarium Dress and Pattern Dept., Battle Creek, Mich.

TEACHING TYRANNY.

BY MARY WOOD-ALLEN, M. D.

"PHILIP, my king," is a very poetic appellation for the darling baby, but, when Philip manifests a disposition to institute an absolute monarchy and become a despotic sovereign, "Philip, my tyrant," would be nearer the truth. It is also doubtless quite near the truth to assert that those who suffer under this autocratic rule are themselves directly responsible for their own servitude, and began the training of the young tyrant in his earliest infancy. It is surprising to see how very soon the babe learns the effectiveness of screams. He reaches for some desired article. It is refused and he cries; it is given to him, and the first lesson in tyranny is taught. One or two recitations of the lesson and it is thoroughly learned, and we may expect that child in a few months to be well versed in the arts of despotism. It is the old mistake of postponing the training of the child until he shall be able to understand spoken words and reasons for commands.

When this age is reached, the child is already master of every one but himself. A child two years of age asked for pickles at the table. His request was refused. He at once began to kick the under side of the table with his toes, and to pound the top with his fists, and to scream vigorously.

"Oh, well," said the mother, "I suppose I will have to give it to you at last, so I may as well give it to you now."

She selected a pickle and gave him, but he angrily threw it across the room, and demanded the plate. It was obediently handed to him, and he fingered every pickle, and finally chose one, which he condescended to eat in good-humored silence.

"You see," said the father, "that we purchase peace at any price."

"Well, that is Scriptural," said the gentle mother.

Whether peace will be the final outcome is doubtful. That mother was so under the dominion of this mere baby that she asked his permission in nearly every act of her daily life.

"Georgie will let mamma go up and make the beds, won't he?"

"No, I won't," asserts Georgie.

"Mamma wants to go down cellar after some potatoes. Georgie will be a good boy, and stay here till she comes back?"

"No, you can't go."

And mamma coaxes and bribes, and finally induces master tyrant to be carried into the cellar to pick up a "great big red apple."

These parents fondly expect that in a few years their son will be amenable to reason, and *then* they can begin to train him. We can, in imagination, look forward those few years, and see him wayward, headstrong, rebellious against the restraints of home, school, and even the laws of the land,—a tyrant at home, a bully everywhere.

Tyranny is often taught by the attitude which the father assumes toward the mother. The words, "Oh, you're only a woman," though uttered in jest, make their impression on the boys of the family; and in their conduct toward mother and sisters in youth, and their own wives in adult years, they reflect the idea that woman is an inferior being, and man her master. How often do we see callow youths sneering at mother's ideas because she is a woman, imagining that they manifest their own superiority by treating her with a lack of deference.

Paradoxical as it may seem, it is nevertheless true that tyranny is taught by parental severity as well as by parental laxity. The obedience that follows the sharp, authoritative "Stop that noise, I tell you!" springs from outward pressure, not from inward inclination, and the result upon character is a reproduction of the same feelings which prompted the command; and when an opportunity occurs for the child to exercise his power over some one younger or weaker than himself, he is the small tyrant imitating the larger one.

In the child of the domineering parent we have two forces combining to create a tyrannical disposition; viz., the inherited despotic temperament, and the daily example of the parent. His natural tendency is toward rebellion, and the arbitrary com-

mands of the parents thwarting the child's wishes, as it seems to him merely to prove the parent's power, strengthen his obstinacy, and the result is disastrous. A German writer says: "A child that is inclined to obstinacy and disobedience should be commanded and forbidden less than one of a more pliant nature. Leave him to his own inclinations as long as this can be done with safety, but, when you give a command, do not yield a hair's breadth." George Macdonald says, "If one wants a hard-mouthed horse more responsive to the rein, he must relax the pressure. If the rider supports himself by the rein, the horse will pull." The child who is subjected to the strong curb of the domineering parent, with no chance to make little plans for his own enjoyment, will, in his turn, draw a tight rein on all who by any chance come under his control.

OPPORTUNITIES TO HONOR GOD.— It is incomprehensible to see Christians hunting for what they call opportunities to honor God, while overlooking the opportunities which they carry with them wherever they go. A slovenly carpenter was once heard at a weekly prayer-meeting to pray with great fervency for the spread of Christ's cause — a cause which he disgraced and hindered in his sphere every time he stood at his work-bench. When he ended his prayer, a hearty "Amen" came from a servant who put her mistress out of temper a hundred times a day by her carelessness. A clerk also was there, who, although he taught a class in the mission-school on Sabbath, was always late at his employer's store on week-days. He whispered "Amen" too, and meant it so far as he knew himself. A lady hearer, as she listened, resolved to join the church, and then went home and found unreasonable fault with her cook. And others also felt warmed to do something for Christ, who never seemed to think that religion, like charity, begins at home. The mechanic who is powerful in class-meeting and weak at his trade, is no credit to the cause he professes. The servant who drops dishes unfeelingly in the kitchen has her tenderness altogether too much on one side. And it is a poor kind of religion that seeks opportunities to set others straight, but overlooks its own crookedness. — *Sunday-School Times.*

A WOOLEN rag saturated with boiled linseed oil is recommended for removing scratches from a highly polished surface, which may afterward be varnished with shellac, dissolved in alcohol.

AFTER THE THANKSGIVING DINNER.—"Well, Jack, I suppose you are very thankful for something to-day?"

"I dunno' yet. I'll tell you to-morrow."

"To-morrow! and why to-morrow?"

"I dunno' how I'll feel after those four pieces of mince pie and three saucers of cranberry sauce."— *Harpers' Magazine.*

SEASONABLE RECIPES.

Sugar Crisps.— Make a soft dough of two and one fourth cups of graham flour, one-half cup of granulated white sugar, and one cup of rather thick sweet cream. Knead as little as possible, roll out very thin, cut in rounds or squares, and bake in a quick oven.

Date Bread.— Take a pint of light white bread sponge prepared with milk, add two tablespoonfuls of sugar, and graham flour to make a very stiff batter. Add lastly a cupful of stoned dates. Turn into a bread pan. Let it rise, and bake.

Fruit Loaf.— Set a sponge with one pint of rich milk, one-fourth cup of yeast, and a pint of flour, over night. In the morning, add two cups of Zante currants, one cup of sugar, and three cups of flour, or enough to make a rather stiff dough. Knead well, and set to rise; when light, mold into loaves; let it rise again, and bake.

Grape-Apples.— Sweeten a pint of fresh grape juice with half a pint of sugar, and simmer gently until reduced one third. Pare and core, without dividing, six or eight nice tart apples, and stew very slowly in the grape juice until tender, but not broken. Remove the apples and boil the juice (if any remains) until thickened to the consistency of syrup. Serve cold in individual dishes, with a little of the grape syrup over each apple, or with a dressing of whipped cream. Canned grape pulp or juice may be utilized for this purpose. Sweet apples may be used instead of tart ones, and the sugar omitted.

E. E. K.

THE NURSING AND TREATMENT OF SIMPLE FEVERS.

FEVER is a condition of the body in which there is a rise of temperature and more or less disarrangement of all the functions of the body. Each organ, being more or less crippled in its work, acts in an imperfect manner. Thus the head aches, and the mind is confused; the stomach does not secrete perfect gastric juice, and therefore digestion is not thoroughly performed, and the food undergoes decomposition instead of digestion. In this way all the tissues suffer for the lack of proper nutrient material for building up and repairing, and for use in the working energy and heat-furnishing functions of the body. This state of disorder soon causes the body to become weak, and unfit for any work either mental or physical. These results follow more or less in every case of rise of temperature above the normal standard, the extent of the damage done the functions and structures of the body being in proportion to the length of its continuance, and the height and severity of the fever.

Fevers have been classified as simple, intermittent, continued, and eruptive. Simple fever is also called ephemeral fever, or one-day fever, or febricula, slight fever. It is so called because, unlike the other class of fevers, it is due to no one specific germ. For example, we know that typhoid fever is due to a germ which always produces this special form of fever; smallpox is due to a germ which always produces smallpox; measles is due to a germ which always produces measles. The same is true of scarlet fever, yellow fever, and all other infectious diseases. Whenever these germs get into the human body, and find a soil in which they can grow and multiply, they produce a certain crop of symptoms more or less severe, and run a certain course, modified, however, more or less by treatment and the vital powers of the patient to resist the disease. We expect these results just as certainly as we expect a crop of wheat or oats where seed has been sown, and the season and soil are favorable for their growth.

Simple fever is not produced by any one specific germ, so far as known, but is due to a great number of predisposing and exciting causes. It resembles more complicated fevers in many points, chief of which is that many of the symptoms of the onset are the same. There is the same tired, exhausted feeling, the aching, loss of appetite, the rise of temperature, and chilly feeling which mark the onset of all fevers. There is also always some poisonous element which is being generated somewhere in the body, or is being absorbed from without, and carried by the blood and lymph to all parts of the organism, causing disturbance of the nervous system, interfering with the nutrition of the body and the action of its every organ. Tissues break down faster than they are repaired; the blood and lymph become filled with waste matter, which the disordered excretory organs are unable to expel. Thus every bodily tissue becomes as it were smothered in its own waste; the poisons destroy the nutritive fluids of the body, and it is starved for want of proper nutrition. Simple fever manifests all these symptoms, and the poisonous elements which cause the fever damage the tissues in the same manner, though not to the same extent, or as great a length of time, as the other and more severe specific fevers.

The fact that simple fever is usually of short duration and not a fatal disease has led to its being very much neglected by the medical profession. Yet, as every such fever is due to causes which, if not removed, will result in serious damage to the human organism, it is a very important matter to study each case of simple fever carefully, and ascertain, if possible, the causes which have led to the attack, so as to prevent a recurrence of it, as every successive illness of course helps to break down the defenses of the body.

The body in a healthy condition is well prepared to combat the inroads of any poison material which may find entrance into either its cavities or structures. The healthy mucus of whole mucous membranes; the secretions, such as healthy saliva, gastric juice, bile, pancreatic fluid, and intestinal juice; also the synovial fluid of joints and the serum generated by healthy serous membranes, as the pleura and peritoneum,— these are all antiseptic, and will destroy germs and their products. The white corpuscles of the blood and lymph, and the blood serum, as well as the living tissue cells of the whole body, all have power to resist and destroy these morbid elements; but their ability to defend themselves and the body from disease depends upon the health of each individual cell,— the ability of each secreting organ to secrete healthy fluids, and the ability of the excretory organs to expel the wastes and poisonous products of the body.

The causes of simple fever are poisons retained in the body, the result of the too rapid wearing out of tissue in organic activity. Soreness and aching, and a rise of temperature often follow severe bodily exertion in persons unused to physical work, and therefore having flabby muscles lacking proper tone. There is rapid destruction of tissue to meet the extra demand for energy and heat production; but proper oxidation and expulsion of the waste products being wanting, the body is poisoned by their accumulation in the tissues, blood, and lymph. The patient becomes feverish and languid, has a coated tongue, with bad taste in the mouth, headache, pains all over the body, and loss of appetite.

With proper nursing and treatment, in from twenty-four to forty-eight hours all the symptoms will disappear, and the patient be ready for work again, which should, however, be begun in moderation, and care taken to have the diet abstemious. But if the person neglects this simple fever, and goes on working excessively, and especially eating heartily, thus keeping the body full of waste products, some chronic disease, as neuralgia or rheumatism, is very likely to develop; and if exposed to the germs of any infectious disease, as malaria, typhoid fever, or the like, he is quite sure to have an attack, because the body defenses, in their crippled and worn-out condition, having no power to combat the disease germs, they find a suitable place in which to grow in the waste matter and diseased secretions of the cavities of the body.

In all times of prevailing epidemics or infectious fevers, there will be found among those who are in close attendance on the sick or exposed in any way to the exciting causes of the infection, a number of persons ailing, with a slight rise of temperature, languor, aching, and other bad feelings. These cases are doubtless a mild form of the prevailing infectious disease, but are often called simple fevers, and so neglected, until in the course of a few days or weeks more pronounced symptoms appear, and the disease is pronounced typhoid, typhus, or some other grave disorder. In other cases, where the surroundings are more favorable, and the bodily power of resistance greater, the patient is able to recover in a few days or a week without any serious illness. Other cases might terminate in a like fortunate manner, would the patient take a simple laxative, and eat very lightly, taking rest in bed, also warm baths, or hot packs and fomentations, to stimulate the activity of the skin, liver, and other excretory organs. Another preventive is the free drinking of pure water, usually best taken hot, to increase the activity of the kidneys, and thus wash out the morbid matters from the system. By these simple measures, which can be safely applied by any intelligent person, and can never do any harm, weeks and months of sickness might be avoided, and many valuable lives saved. In these cases the "ounce of prevention" is worth hundreds of pounds of cure.

Of all the causes of simple fever, the most common are the poisons formed in and absorbed from the alimentary canal. As the feasting season begins, thousands of persons will have an attack of fever arising from gluttony. More food is taken into the stomach than it is able to digest, and being improperly digested, it undergoes decomposition in the stomach and intestines, and the poisons there formed find an easy entrance into the structures and circulating fluids of the body through the same channels by which properly digested food material should enter the circulation. These products of decay, called ptomaines, damage and disorder all structures they come in contact with, poison the nerve centers, and make the patient not only bodily but mentally and morally sick. Suffering with fever and nausea, despondent, and at war with himself, all mankind, and the universe at large, the poor reveler after the feast pays a fearful penalty for his short-lived enjoyment. The oft-repeated bilious attack, with its fever, vomiting, and other symptoms due to surfeiting, soon results in chronic catarrh of the stomach and torpidity of the liver, with other constitutional derangements, all of which prepare the way for other diseases to make an easy victim of the already damaged and impaired organism.

Besides the causes already mentioned, simple fever

may be due to taking cold, overheating, fear, want of sleep, and nervous excitement. It often occurs in children who are overworked at school, especially during the time they are preparing for examinations. Change of climate, of food, and of water often produce constitutional derangement and a rise of temperature, also change of altitude, habits of life, occupation, etc. A person moving from the country into the city, or one giving up some active out-of-door work for a sedentary occupation inside the four walls of a badly ventilated room, will often have a fever more or less severe, unless he is wise enough to cut down his dietary, and by gymnastic exercise, walks, and outdoor sports, seek to keep up the organic activity of the body.

Simple fever is a disease very much neglected by both the medical profession and the people. But as very serious results may follow neglect of this apparently trifling ailment, especially when the attacks are frequently repeated, it is important that every one should know how to treat such an illness.

In cases of fever, due to whatever cause, it should be borne in mind that some poison is circulating in the body which must be gotten rid of, also that in most cases there is some special organ or cavity in the body where this poison is being manufactured, or else some poisonous germ has gotten into the circulating fluids or tissues of the body, and is forming poisonous substances by destroying the tissues. Perchance it may be some secretory organ, as the kidney or liver, that is diseased and doing imperfect work, and thus the bodily wastes are retained, and cause febrile symptoms. The alimentary canal being the most frequent toxic center, the first thing to do in almost every case is to give the digestive organs rest, also to use some method of ridding them as quickly as possible of decaying food and diseased secretions. Often a stomach lavage will reduce a temperature of 103°–104° to the normal in an hour or two. An enema, given when the poison-center is in the lower bowel, due to constipation and the masses of fecal matter accumulated there, will often produce a marked abatement of symptoms. A mild laxative, as a dose of seltzer aperient, is also sometimes very efficient. Of course rest in bed and fasting is necessary in all these cases; and a warm bath or hot pack, fomentations, and free hot water drinking to increase the action of the skin and kidneys, are all very useful measures. When due to overwork, overheating, overstudy, or mental anxiety, the rest, fasting, and mild eliminative treatment will help to remove the morbid matter from the body without doing serious damage to any organ; and a return of the fever should be guarded against by care about sweating, overwork, study, or any other cause which would be likely to bring about a return of the disease. When the trouble is from taking cold, and the toxic centers are in the mucous membranes of the respiratory organs, the same treatment will help the patient to throw off the morbid secretions and expel the poisons absorbed from the diseased mucous membranes. Sometimes the fever is due to exposure and want of food, and in children, to teething, worms, and other disturbing causes. These subjects will all be considered in a future article on simple fevers in infancy and childhood.

THE NEED OF KNOWING HOW TO PREVENT DISEASE.

MANY persons, when urged to take care of their health or give attention to sanitary matters concerning their surroundings, make the excuse that they do not wish to be always thinking about their health, and fearing that this thing or that will make them sick. It is true that the dread of disease is in itself an injury to the health; but it is those who are ignorant on health subjects that suffer most in this way, especially during epidemics of contagious disorders. The person who understands the nature of the disease, its causes, and the methods of preventing its spread, is not afraid. Is it an invasion of cholera? He thoroughly cooks all the food and boils the drink for himself and family, keeps his person and premises clean; and goes about his daily business with a calm trust in Providence that he and his will be safe from the pestilence. If smallpox be prevalent, he sees to it that himself and family are successfully vaccinated, and then goes about his usual avocation without fear of this dread disorder. He is not in need of a shotgun defense to protect his person; and when duty calls, he goes fearlessly into the hospital or anywhere else where he can serve his fellow-men or lighten suffering.

A poor man taken with smallpox while on the Mississippi River tried to land first on one side the river, and then on the other; but everywhere a shotgun met him instead of human compassion. Being too sick to remain on the water, he persisted in landing, but was instantly killed, and his body left to rot in the sun,—a much more dangerous object to the health of the community than the living man would

nave been, if properly cared for. This ignorant community was panic-stricken, and all became frenzied because they felt themselves defenseless. A more enlightened people would have taken the suffering man in and cared for him, because they would have understood how to defend themselves from the disease,—how to place the patient and his nurses in isolation, and by disinfecting destroy the contagion, so that no one would be injured thereby.

It is the enlightened who build hospitals and improve sewerage systems; who look after the ventilation, the source of the water and food supply, and all other details of public hygiene. The more knowledge we gain on any subject, the less mysterious it becomes, and the less we fear and dread it. So, to allay useless anxiety about personal health there is nothing so efficient as enlightenment.

CONSUMPTION.

A GLANCE over the mortality in various cities in different parts of the world, as it comes to us in the very latest reports, shows everywhere ravages of consumption. We find in Dr. Tracy's report to the Health Department of New York City for the week ending March 22, 1890, that in New York City, out of 772 deaths from all causes, 121 were from consumption. In Chicago, out of 2072 deaths, 178 were from consumption. In London, out of 1889 deaths, 206 were from consumption. In St. Petersburg, out of 617 deaths, 128 were from consumption. In Paris, out of 1214 deaths, 248 were from consumption. In Viennna, out of 470 deaths, 116 were from consumption. In Berlin, out of 650 deaths, 96 were from consumption.

These are the bald, relentless records of the deaths. But who shall adequately picture, or even remotely conceive, the shattered ambitions, the long, weary hours of distress and suffering and trouble, the slow weeks and months, lighted fitfully now and then by gleams of fictitious hope, which lead to the last long release? Probably the actual distress caused by all other diseases put together is far less than that which in one way or another is associated with consumption.

Now where do all these people get this most wide-spread disease? How do they become infected? Where do the living bacilli of this particular species come from which get into their bodies? They do not grow at the temperature of the air out of doors. There are no lurking places for them in nature apart from those men or animals who have the disease. Plant them artificially with other common bacteria in tubes in the laboratory, and they die; they succumb in the struggle for existence with the harmless species of the earth and water and air.

In a certain number of cases they no doubt are taken in with the food, and inasmuch as tuberculosis of cattle is a very common disease all about us, there is every reason for believing that the infection often enough occurs through the use of uncooked meat or milk. That the consumptive mother may infect the nursing child with its food has been abundantly proven. There are cases in which the tubercle bacilli get into the blood and are distributed to all parts of the body, setting up such innumerable foci of disease that the individual soon succumbs to the violence of the poison.

But after all, the prevailing seat of consumption being in the lungs, the most natural supposition is that the lärger proportion of consumptive people become infected through the inhaled air.

Now, as has been absolutely proven over and over again, in almost all populous regions, both out of doors and indoors, tubercular persons may be discharging thousands of living tubercle bacilli every time they spit out material from their lungs upon the streets, or upon the floors, or wherever it can dry and mingle with the dust. If the tubercle bacilli is not easily killed by drying, as has been fully proven, have we not a sufficient explanation of the way in which the infection of tuberculosis becomes so widely and perpetually spread?

If this be true,— that tuberculosis is spread by the breathing in of tubercle bacilli in the dust of the air, then, it may be said, we ought to be able to find these particular germs in the dust of rooms inhabited by consumptives. This is by no means an easy task, because our means of identifying this germ are rather complex, and require for their execution much time and skill. But, notwithstanding this, Cornet, in Berlin, has over and over again, in the dust high up on the walls of consumptive wards of hospitals, in the dust of private houses and hotel rooms occupied by consumptive patients, found living, virulent tubercle bacilli. But he found these only in cases in which the discharged sputum was not carefully and at once destroyed, but was permitted to lodge upon floors or clothing or articles of furniture, where it dried and finally became pulverized, and was carried as dust to such parts of the room as are not ordinarily cleaned.— *Sel.*

GOOD HEALTH
J. H. KELLOGG, M. D., EDITOR.
BATTLE CREEK, MICHIGAN.

THE ORIGIN OF CARNIVOROUS ANIMALS.

THOSE who believe the biblical account of creation will recognize as a fact, that animals were not originally created carnivorous. We read in Gen. 1 : 29, 30 : "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. And to every beast of the earth, and to every fowl of the air, and to every thing that creepeth upon the earth, wherein there is life, I have given every green herb for meat: and it was so." From the above, it is clear that the diet of the first men was fruits and grains, and that of the first animals, herbs.

We have no evidence, in fact, that meat was eaten until after the flood, some hundreds of years after the creation. When Noah gathered the animals into the ark, his instruction was: "And take thou unto thee of all food that is eaten, and thou shalt gather it to thee; and it shall be for food for thee, and for them." Gen. 6 : 21. It is evident that reference is here made to instructions which had been previously given in reference to both human diet and the diet of the lower animals.

After the flood, however, Noah was given permission to eat animals. "Every moving thing that liveth shall be meat for you." Gen. 9 : 3. But a penalty was inflicted with this permission to make use of food other than that originally intended for man's sustenance: "And the fear of you and the dread of you shall be upon every beast of the earth, and upon every fowl of the air, upon all that moveth upon the earth, and upon all the fishes of the sea; into your hand are they delivered." Gen. 9 : 2. The same animals which had before looked upon man as their natural protector, after entering the ark with Noah, and escaping destruction by the flood, now fled at his approach, warned by an intuitive fear that man might choose to exercise his divine right to slay and eat. An interesting fact in this connection, which seems to have been overlooked, is that recorded in the words, "And surely your blood of your lives will I require; at the hand of every beast will I require it." Gen. 9 : 5.

From this it is evident that the same permission which was given to man to slay and eat the lower animals was also given to these animals to slay and eat man. In other words, the lion has as good a right to slay and eat the man as has the man to slay and eat the sheep. In fact, as a little boy not long ago suggested to the writer upon hearing this statement, "The lion has a better right to kill and eat man than man has to kill and eat the sheep, for man is the enemy of the lion, but the sheep is man's friend."

The fact that carnivorous animals possess teeth and digestive organs differing in structure from herbivorous animals has suggested the idea that they were created with carnivorous instincts; and one writer, philosophizing upon this subject, even goes so far as to call attention to what he denominates a remarkable illustration of divine wisdom in the fact that the lion is furnished with peculiar-shaped teeth which are admirably adapted to eating deer; while the deer is provided with nimble legs with which to escape from the lion. In other words, according to this philosophy the Creator has provided the lion with teeth especially adapted to eating a certain kind of breakfast, and then provided the breakfast with special facilities for getting away, so that it need not be eaten. It is very difficult indeed to see where there is any special degree of wisdom manifested in this sort of arrangement, and the question may well be raised whether any animal was originally created with carnivorous instincts, or rather, whether any animal was originally so constituted as to render the use of flesh food necessary. Indeed, we think it quite clear that flesh food cannot be regarded as absolutely essential to the life of even so-

called carnivorous animals; for the dog and the cat, both belonging to the class of true carnivora, are easily taught to subsist upon a non-flesh diet, and thrive upon it even better than when fed upon meat.

The keepers of fine hunting dogs always feed their animals upon corn-meal or oatmeal mush and bread, giving them little or no meat; and the writer has known instances in which cats have positively refused to eat meat, choosing a diet of fruits, nuts, and sometimes even such herbs as lettuce and celery.

Many animals which are usually considered carnivorous, as, for example, the fox, which has the reputation of being a great chicken thief, are nevertheless still more fond of fruit. A fine fox which has been in the writer's possession for a number of years remains in excellent health, although never fed a particle of meat. The raccoon and the opossum likewise, though capable of killing other animals and eating and digesting their flesh, both prefer a diet of vegetables, nuts, and honey, only lapsing into carnivorous habits when compelled to do so by the absence of other food.

From these facts it seems fair to draw the inference that carnivorous animals have become such by force of circumstances; that they were not originally created carnivorous, but have in some way acquired an appetite for flesh, the habitual use of which has so modified their digestive organs as to adapt them to their altered habits of diet.

The same observation which has been made with reference to the influence of diet upon the structure of the digestive organs seems to justify this view. For example, it has been found that the average length of the alimentary canal of the vegetarian Russians is several feet more than that of the carnivorous Germans, the inference from which is that the carnivorous habits of the German have modified his digestive organs, by shortening them, and thus rendering them more like the alimentary canal of the carnivora, which is much shorter in proportion than that of herbivorous animals.

Henton has made some interesting experiments upon sea-gulls. He found that by keeping the bird captive, and compelling it to subsist upon a grain diet, its stomach gradually became changed until it resembled in structure that of an ordinary grain-feeding bird like the pigeon. Russell, Wallace, and others have made similar experiments.

These two observations indicate that the alimentary canal may be modified in either direction, from which, together with other facts noted, it seems fair to conclude that the carnivorous appetite of so-called carnivorous animals is an acquired, and not a natural, appetite.

Fatal Sausage Poisoning.— Since sausage is so frequently the cause of fatal poisoning, it is truly surprising that intelligent persons will continue the use of so questionable an article of diet. Doctors Mitchell and Wesener, of Chicago, recently reported two cases of fatal poisoning from the use of sausage, one, that of a little girl aged five, the other a boy aged three. The two children ate raw a quarter of a pound of Frankfort sausage. Within half an hour after eating the sausage, the children were taken sick, became unconscious, and were blue in the face. The mother and three other children were also taken sick at the same time, but these vomited and recovered. The two children, however, did not vomit, and died within three or four hours after partaking of the sausage.

A Lesson from the Habits of Napoleon I.— Leading journals have recently published interesting essays upon the private life of Napoleon, which seems to have been regulated by rule even to the nicest detail. One writer asserts that Napoleon was so sensitive to cold that a fire was prepared in every room in his palace even in midsummer. The reason for this we find in the fact that it was his custom every morning on rising, to take a hot bath, which lasted about an hour, after which he was rubbed with eau de Cologne. A cold instead of a hot bath would have improved the surface circulation and fortified his system, and possibly have so improved his health as to make him a more humane and loveable character. It would be difficult to imagine a more effective means of lowering one's vitality and inviting disease than that employed by Napoleon,— daily hot bathing, without the subsequent application of cold water as a means of toning the skin. A cold daily bath is a most invigorating tonic measure, but a hot bath, not followed by the application of cold, is relaxing and debilitating.

Dogs and Consumption.— Dr. Megnin, of the Paris Academy of Science, asserts that lap-dogs are one of the great agencies in the spread of consumption or tuberculosis. Ladies who are in the habit of kissing their lap-dogs should remember this.

PREVENTION OF TYPHOID FEVER.

THE State Board of Health of Michigan publishes the following excellent instructions respecting the prevention of typhoid fever, a disease which prevails more or less at all seasons of the year, especially in the spring and fall: —

"*Personal Precaution.* — Do not drink water which has a bad taste or odor, or which comes from a source that renders it likely to be impure, especially if there is reason to believe that it may contain anything derived from a person sick with typhoid fever.

"*Disinfect the Bowel Discharges of the Sick.* — This is a measure of prime importance. The bowel discharges should, in all cases, be received upon papers or old cloths and promptly burned, or if received in vessels, should at once be thoroughly disinfected as follows: With each discharge from the bowels thoroughly mix at least one ounce of chlorinated lime in powder, or one quart of 'Standard Solution No. 1,'* recommended by the American Public Health Association's committee. In country districts, villages, and small cities, where the privy is not far distant from a well, discharges should not be thrown into a privy-vault; but, after being disinfected, they should be carried a great distance from any source of drinking-water, and then covered with earth.

"Rags, closet paper, or other similar material used about the patient, should be immediately burned.

"*Disinfect the Urine.* — The urine of typhoid patients has been found to contain large numbers of the germs of the disease. Not only the urine should be disinfected, but any shirt, garment, or cloth upon which even small quantities of urine have come, should be carefully disinfected, and preferably before it has been permitted to dry, and the germs given a chance to float off as atmospheric dust.

"*Soiled clothing, towels, bed-linen, etc.*, on removal from the patient, should be placed as soon as possible in a pail or a tub of boiling-hot zinc solution, made in proportions as follows: Water, one gallon; sulphate of zinc, four ounces; common salt, two ounces. Soiled clothing should, in all cases, be disinfected before sending away to a laundry, either by boiling for at least half an hour (it may be boiled in the zinc solution), or by soaking in a strong solution of chlorinated soda.*

"*Bodies of those dead from typhoid fever* should be wrapped in cloths wet with a strong solution of chlorinated soda, or with "Standard Solution No. 1," or with zinc solution. The zinc solution should be made in proportions of one-half pound of chloride of zinc to one gallon of water, or: Water, one gallon; sulphate of zinc, eight ounces; common salt, four ounces.

"No public funeral should be held in a house where there is or has recently been a case of typhoid fever.

"*After a death or recovery from typhoid fever*, the room in which there has been a case of typhoid fever, whether fatal or not, may well, with all its contents, be thoroughly disinfected by strong fumes of burning sulphur.

"*Rooms to be disinfected* by sulphurous fumes must be vacated. For a room ten feet square, at least three pounds of sulphur should be used; for larger rooms, proportionately increased quantities, at the

*"Standard Solution No. 1" is made by adding to each gallon of soft water, four ounces of chloride of lime of the best quality, which contains at least twenty-five per cent of available chlorine. Use one quart of this solution for the disinfection of each discharge in cholera, typhoid fever, etc. Mix well, and leave in vessel for at least one hour before throwing into privy-vault or water-closet.

*To one part of Labarraque's Solution (liquor sodæ chlorinatæ), add five parts of soft water.

rate of three pounds for each one thousand cubic feet of air space.

"Hang up and spread out as much as possible all blankets and other articles to be disinfected; turn pockets in clothing inside out, and otherwise facilitate the access of the sulphurous fumes to all infected places.

"Close the room tight, place the sulphur in iron pots or pans which will not leak, supported upon bricks over a sheet of zinc or in a tub containing water, so that in case melted sulphur should leak out of the pot, the floor may not be burned; set the sulphur on fire by hot coals or by the aid of a spoonful of alcohol lighted by a match; be careful not to breathe the fumes of the burning sulphur; and when certain the sulphur is burning well, leave the room, close the door, and allow the room to be closed for twenty-four hours.

"*Disinfect the Privy.*— It is especially important that the *contents* of the privy be disinfected. For this purpose use four ounces of the best quality of 'chloride of lime' to each gallon of material in the vault.

"*Boil the Drinking Water.*— Immediately on the appearance of typhoid fever, a careful examination should be made of the surroundings of the house, and particularly of the source of the water used, to determine, if possible, whether it has been contaminated by leachings from a privy, or other source of filth. If the sick person has been at home, and not away where the disease might be contracted, it will be safest that water from the same source as that used by the sick person immediately before having been taken sick should not be used for drinking or culinary purposes unless it is boiled. Thorough boiling will destroy the germs of the disease. Ordinary filtering will not do so.

"*Isolation of the Sick.*— This is not always necessary if extreme care is taken; but as typhoid fever is sometimes transmitted through the air, also directly from one person to another, it is wise for all who can properly do so, to keep away from the premises.

"*Perfect cleanliness* of nurses and attendants should be enjoined and secured. As the hands of nurses may become contaminated by the poison of the disease, a good supply of towels and basins, one containing a solution of chlorinated soda, chlorinated lime, or the zinc solution, and another for plain soap and water, should always be at hand, and freely used."

A DANGEROUS SOURCE OF CONSUMPTION. — The State Board of Health, which, under the able leadership of the executive officer, Dr. Henry B. Baker, has always been foremost in the promotion of measures for the protection of the public health, recently published the following extract from a letter: —

"———, Mich., Nov. 8, 1895.

"Late in the year 1893, ——— of this place, was taken with consumption, and after a lingering illness, died of this disease in the spring of 1894. A companion was with him, and looked after him more or less during the last few weeks of his illness. In a few months after ———'s death, his former companion began to complain of feeling poorly; and shortly after, the doctors decided that his lungs were affected. Then the brother of said companion was taken with the same trouble. During July of this year both these young men died.

"The father of these boys is postmaster here, and the boys both worked in the office under him. Now it appears that the father is stricken with the same malady, and also his remaining child, a girl of twelve years. Common report has it that the wife of the postmaster, the mother of the three children before mentioned, also has consumption. Apparently all these classes can be clearly enough traced to the first-mentioned case.

"Now if consumption is contagious, this entire community is being daily exposed, for the postmaster still attends to the duties of his office, and people going to the post-office for and with mail are endangered.

"It occurs to me that vigorous methods should be adopted here, and at once."

It must be apparent to every one that the danger to which attention is called in this letter is a very great one. A consumptive postmaster might diffuse a disease more widely and certainly than any other person in the community. Probably almost every one who has called at the post-office for a letter has seen the post-office clerk touch his thumb or his finger to his lip while rapidly running over the letters at the general delivery department. By this means every letter may become infected with the germs of tuberculosis, should the clerk or other person handling the letters be suffering from consumption. The letters becoming thus infected may readily communicate infection through the fingers and the mouth of the receiver of the letter in a variety of ways which can be easily imagined.

ANSWERS TO CORRESPONDENTS.

HOME PRESCRIPTIONS — BANANAS — BEST TIME TO EAT FRUIT, ETC. — H. W., Cal., asks the following questions: "1. Do you furnish home prescriptions to patients at a distance who cannot come to the Sanitarium? 2. Are ripe bananas a healthful fruit? 3. At what meal is the best time to eat fruit? 4. Does a bitter taste in the morning indicate a diseased liver or indigestion, or both? 5. I am troubled at times with burning in the stomach after meals, and fruit seems to aggravate it; but if I take part of a cup of weak coffee and boiled milk, it always prevents the burning. Would you advise me to continue the use of the coffee and milk? 6. Does bakers' bread usually contain alum? 7. Is it injurious to the health in such small quantities? 8. Is there any method by which to detect it?"

Ans.— 1. Yes.

2. Yes.

3. At each meal.

4. The bitter taste in the mouth indicates indigestion. Indigestion is usually accompanied by more or less disturbance of the liver.

5. No.

6. No.

7. Alum is injurious to the health in all quantities.

8. A weak solution of logwood is a test for alum.

NERVOUS PROSTRATION — DESPONDENCY — UNREFRESHING SLEEP, ETC. — M. M., Mexico, writes as follows: "1. My constitution was originally very strong and hardy, but more than six years ago I almost suddenly changed from excellent health and spirits to a state of nervous prostration and of absolute despondency, without any apparent cause, as my age at that time was only a little over fifty. My sleep is bad — interrupted, and does not refresh me. My appetite is indifferent or poor. My circulation is very bad. After sitting for a time, I feel very stiff upon getting up, and have to walk about some time to get rid of the stiffness. This latter symptom and a heavy, dull feeling around the waist alarm me more than anything. I am so nervous that the least noise affects me, and my hands are often unsteady; when there is cloudy weather, my nervousness becomes unbearable. I am gradually losing in weight, and my vitality is evidently lowered far more than it ought to be at my age. In winter I feel a little better, but never feel well. I am looking healthy generally, and can walk if necessary for several hours, but feel very nervous after prolonged exertion. I have passed the greater portion of my life in Mexico, in a rather hot temperature. Could it be that a chronic liver disease is at the bottom of my trouble? 2. My stomach does not appear to be out of order; my tongue is not coated. Is it possible that my bad state of health may be caused by nervous dyspepsia? 3. Can a man of more than fifty years of age hope to get rid of nervous prostration and of this weariness about the waist and lower limbs, evidently caused by bad circulation? 4. Please give me advice."

Ans.— 1. You are doubtless suffering from gastric neurasthenia. You should have a test breakfast, or at least have a careful examination made of the stomach fluid, and should put yourself under rational treatment. Your liver is doubtless disturbed in connection with the indigestion.

2. Yes.

3. Yes. There is also probably a prolapse of some of the viscera.

4. You ought to wear an abdominal supporter. (See advertising column of this number.)

A SENSITIVE STOMACH — INDIGESTION, ETC. — L. L. T., Ala., writes thus: "1. My physician tells me I have gastritis. For several years I have suffered with a sensitive, tender stomach, indigestion, and stubborn constipation, all of which have gradually grown worse during the last four years, and rapidly worse during the last six months, until last month I had to lie in bed. I take nothing for food except Horlick's malted milk, and use in connection the antiseptic digestive tablets of the Modern Medicine Co. I have tried samples of granola and granose, which agreed with me as far as I could tell, except that they produced a nervous, restless feeling in limbs and spine. I am out of bed now, but am reduced to skin and bones, with a very sore, sensitive stomach, and the same soreness and dull pains in nose, eyes, and head, as in stomach, also many slight achings and disagreeable sensations in limbs and body, all of which are greatly increased by sitting erect, standing, walking, talking, thinking, or any exertion, mental or physical. There are heavy, dull, throbbing pains in stomach, with some flatulency, sour stomach at times with bad taste, especially in the morning. My appetite is good, slight nausea only when bowels act. Stomach is sore to pressure, and becomes greatly disturbed by an evacuation of the bowels. What is my trouble, and what is the proper treatment? 2. Which of the Sanitarium health foods is best for my case?"

Ans.— 1. You are evidently suffering from chronic gastritis, as your physician suggests. Your case is one that requires more exact and careful treatment than we are able to suggest to you for administration at home.

2. Boiled or browned rice is about the only cereal preparation which will be likely to agree with you. Buttermilk would perhaps prove serviceable. Granola, granose, granose grits, kumyzoon, and especially bromose, may be properly recommended for you. You evidently require also an abdominal supporter. The Natural Abdominal Supporter mentioned in our advertising column generally gives great relief in such cases.

SCIATICA. — Mrs. J. R., Mich., writes: "1. I am a great sufferer from sciatica. I have an almost constant pain extending across my back and down the right leg, with a trembling sensation throughout the whole body. Please give directions for home treatment, as I cannot leave home. 2. I am very nervous. Would a nerve tonic be of use? 3. Would electricity applied to the affected parts be a benefit?"

Ans.— 1. Rest in bed and hot applications will be most likely to give relief.

2. No.

3. Yes.

GRANITE-WARE — DYSENTERY — HONEY, ETC.— D. T., Ill., asks: "1. Is it unwholesome to use granite-ware for cooking and household purposes? 2. Is 'Wakefield's Blackberry Balsam' good for dysentery? 3. If not, what is a remedy? 4. Are vessels of paper pulp highly varnished and polished fit for domestic use? 5. Is honey wholesome to use in the place of sugar?"

Ans.— 1. No.

2. Probably not.

3. Rest in bed and hot or cold water enemata are the best remedies.

4. Yes.

5. Pure honey is probably a more wholesome sweet than cane-sugar.

MILK — WHOLE-WHEAT FLOUR.— L. H. M., Ala., asks: "1. Is sweet milk constipating in its effects? 2. Which is the more so, boiled or unboiled milk? 3. From what kind of wheat is the whole-wheat flour made which is advertised by the Sanitarium Health Food Co.?"

Ans.— 1. Yes, for some persons.

2. Boiled.

3. The best red wheat.

MENTAL WEAKNESS — MELANCHOLY — LOSS OF WILL-POWER, ETC.— P. G., Pa., writes as follows: "I would be grateful for advice as to the best hygienic home treatment for my invalid son. His complaint is mental weakness, melancholy, etc. He is not insane nor helpless, though incapable or unwilling to do anything except to attend to his own dressing and eating at meals. Although not physically disabled, he cannot be induced to do any work or any service of any kind. He speaks only when absolutely necessary, sits constantly in one spot, and only moves when obliged to do so, and then very suddenly; he first hesitates as though he either could not or would not, and then starts off with a rush. His age is nineteen. It is now about two years since his mental trouble commenced; he was then obliged to quit school. His case did not then seem serious; he would read books and papers, ride the bicycle, and was then willing and able to work, none of which he now seems willing or able to do. Our physician has treated him for enlarged liver and spleen, and heart failure, but with no permanent effect. He is very temperate, eats nothing between meals, uses no tobacco, tea, nor coffee, and scarcely any meat. He takes no exercise, of course, and no regular baths. His trouble is not hereditary. I have nine other children all older (except one) than this one, and their minds are exceptionally bright."

Ans.— This case is not likely to be cured by home treatment. The patient needs the facilities and the discipline of a well-conducted institution.

TO TOUGHEN THE SKIN.— Mrs. V., Ky., writes thus: "My son is learning to play the violin, and complains at times of his fingers' being so tender and sore that he must rest from practice for days at a time. I will be grateful if you will suggest some remedy which would have a tendency to toughen the skin."

Ans.— Printers sometimes toughen the ends of their fingers by rubbing upon them the creosote, or oil of smoke, obtained by burning a piece of paper upon a piece of cold steel.

TREATMENT FOR NASAL CATARRH.— E. L. K., Mich., asks as follows: "1. What preparation would you advise for catarrh, to be used with the atomizer? 2. What is the difference between the 'watery' and the 'oily' solutions used by specialists in the treatment of catarrh?"

Ans.— 1. A solution of benzoin, menthol, cinnamon, and other essential oils, used with the Perfection Vaporizer, is one of the best remedies for nasal catarrh with which we are acquainted.

2. Watery preparations are generally used for cleansing; oily preparations for protection.

ERUPTION ON THE BREAST.— J. K., Wash., asks: "1. What is the probable cause of an eruption on the breast, accompanied by itching? 2. There are also red spots on either side of the nose that scale off at times, and then appear red and smooth afterward. Do you think it is eczema? 3. What treatment would you advise?"

Ans.— 1. Probably eczema.

2. This eruption may be either eczema or psoriasis.

3. Paint the parts with ichthyol, after bathing with a hot solution of soda.

STERILIZED MILK — OATMEAL — CORN-MEAL, ETC.— R. K., Wis., asks: "1. Would sterilized milk be constipating in cases where ordinary boiled milk is so? 2. When foods prepared from oatmeal or corn-meal disagree with a person, will the milk of cows fed largely upon these two grains have a similar effect?"

Ans.— 1. This correspondent probably requires what is known as Pasteurized milk, or milk which is partially sterilized by boiling at about 160° F. When sterilized in this manner, milk is somewhat less constipating in its tendency than when boiled, but milk in any form produces a tendency to constipation and biliousness and other unpleasant symptoms in many cases. We are more and more convinced that milk is not a very wholesome food for adults.

2. Not necessarily.

PIMPLES — COMEDONES.— Mrs. L. R. N., Mo., asks: "1. What is the cause of pimples and blackheads on the face? 2. What will cure them?"

Ans.— 1. Disturbance of the sympathetic nerve, probably from indigestion and germs.

2. A simple dietary, abundance of out-of-door exercise, thorough cleanliness of the skin, and, if necessary, the use of an antiseptic lotion.

CATARRH.— Mrs. Mc M., Winnipeg, asks: "1. Is catarrh hereditary? 2. How many forms does catarrh develop? 3. What is a remedy?"

Ans.— 1. No.

2. There are generally said to be three stages of catarrh.

3. See answer to E. L. K., on this page.

RELIEF DEPARTMENT.

[THIS department has been organized in the interest of two classes: —

1. Young orphan children, and
2. The worthy sick poor.

The purposes of this department, as regards these two classes, are are follows: —

1. To obtain intelligence respecting young and friendless orphan children, and to find suitable homes for them.

2. To obtain information respecting persons in indigent or very limited circumstances who are suffering from serious, though curable, maladies, but are unable to obtain the skilled medical attention which their cases may require, and to secure for them an opportunity to obtain relief by visiting the Sanitarium Hospital. The generous policy of the managers of the Medical and Surgical Sanitarium has provided in the Hospital connected with this institution a number of beds, in which suitable cases are treated without charge for the medical services rendered. Hundreds have already enjoyed the advantages of this beneficent work, and it is hoped that many thousands more may participate in these advantages. Cases belonging to either class may be reported in writing to the editor of this journal.

It should be plainly stated and clearly understood that neither orphan children nor sick persons should be sent to the Sanitarium or to Battle Creek with the expectation of being received by us, unless previous arrangement has been made by correspondence or otherwise, as it is not infrequently the case that our accommodations are filled to their utmost capacity, and hence additional cases cannot be received until special provision has been made.

Persons desiring further information concerning cases mentioned in this department, or wishing to present cases for notice in these columns, should address their communications to the editor, Dr. J. H. Kellogg, Battle Creek, Mich.

☞He wishes especially to state that those who apply for children will be expected to accompany their applications by satisfactory letters of introduction or recommendation.]

NOS. 262 AND 263.— A little boy and girl eight and six years old living in Pennsylvania have been brought to our attention. They are motherless, and their father, being in very poor circumstances, needs assistance. He desires to place his children in the homes of Christian people. We learn that they are good children, easy to teach, and of good appearance. They are now with their aged grandparents, who cannot care for them longer.

NO. 282 is a boy seven years of age. He has blue eyes and light hair. His father and mother are both dead, and he has been cared for by his grandparents for three years. They cannot provide for him longer, and rather than place him in the poorhouse, they apply for a home in a Christian family.

NOS. 285 and 286 are boys living in Pennsylvania. Their condition is like several that have been referred to us before; and from what we learn of them we are satisfied that they are worthy of help. Their father is dead and the mother not able to care for them. She has tried for the past few years to keep them with her, not wanting to part them, but has now reached the point where she can see no other way than to place the children in homes. The boys are seven and eight years old, have blue eyes and brown hair, and are in good health. The mother has kept them with her most of the time.

NOS. 293 and 294 are girls living in Pennsylvania. Their mother is dead, and the father is an inmate of the poorhouse. He is unable to provide for the children, and is very anxious to secure good homes for them. The girls are twelve and nine years old, and have dark eyes and hair, are in good health, and have good dispositions. Is there not a home in one of the Eastern States that will open its doors to these children who are in such great need?

NOS. 296 AND 297 are two little girls living in Kansas. They are five and six years of age, and are in need of a home. They have dark eyes and light hair, and are said to be well behaved and very quiet. Their father is dead, and the mother, not being able to provide for them, is very anxious to find good homes for them. She would prefer to find a home for herself with them. Will not some one offer them a home?

NOS. 298 and 299 are two little girls aged eight and six years respectively, who are living in one of the New England States. They have blue eyes and light hair, and have had the best of training while their mother was alive. The father is very anxious to find good homes for them, as he does not feel competent to give them proper care and training. Here is a chance to do real missionary work.

NOS. 301 AND 303.— These are two children living in Indiana, whose father has deserted them, and the mother, rapidly failing in health, is very anxious to find good Christian homes for them. The oldest is a girl of eleven years, with brown eyes and light hair. Her brother is eight years old, with brown eyes and hair. They have been under their mother's control, and not allowed to run in the streets. Who will relieve this mother's anxiety by offering homes for these children?

NO. 306.—Here is a baby boy only four months old who is sadly in need of a home. His father has abandoned him, and the mother is anxious to place him in a good Christian home. He has dark blue eyes and light hair and is in good health. The mother and child are at present staying with friends, but will soon have to look for shelter elsewhere. Will not some one offer to take this little one and give him the influence of a Christian home?

NOS. 312 AND 313 are two little boys aged eight and five years respectively, whose father has deserted them. The mother being away from home all day to earn a living, they are thus left to themselves. The older one has brown eyes and hair, and the younger one blue eyes and light hair. Will not some one offer them a home, and train them for usefulness? They are now living in New York State.

No. 314 is a little girl nine years old, with brown eyes and hair, living in Michigan. Her father is dead, and the mother feels as though she could not properly care for her. She is bright and quick to learn, and no doubt would prove a blessing to some home.

No. 315 is an orphan boy living in Michigan, who is sadly in need of a home. His stepfather is no longer able to provide for him, and he is staying with whoever is willing to keep him for a day or two at a time. He is eleven years of age, and has blue eyes and light hair. He has not been neglected, and no doubt, if he is surrounded by good influences, and receives proper instruction, he will be an honor to those who will thus direct his steps in the right path.

NOS. 318–321. This is a group of four little boys living in Michigan aged ten, eight, six, and three years respectively, whose mother has abandoned them, and whose father is not able to support and care for them. They are said to be obedient and well-behaved, and to have acquired no bad habits. They have dark eyes and light hair and are all in good health. Will not some mother open her heart, and take them into her home?

NOS. 325 AND 326 are two little boys aged seven and six years, who are staying with friends in Pennsylvania. Their mother is dead, and the friends who have cared for them thus far are no longer able to provide for them. They have brown eyes and hair, and are said to be eager to learn of spiritual things. They have no bad habits, and with proper care and training, would no doubt prove a blessing to some home. Will not some kind friends in the East offer them a home?

No. 327 is a little German girl ten years of age, with brown eyes and hair. Her father is dead, and the mother having to work out by the day, is not able to properly provide for her. She is in good health, and is easily controlled. The mother is very anxious to have her under Christian influences, where she may be trained for usefulness.

CLOTHING FOR THE STEELE ORPHAN HOME.— Mrs. A. S. Steele, the founder and superintendent of the Steele Orphan Home, Chattanooga, Tenn., tells us that many demands are made upon her for clothing, and it would be of great assistance to her if the friends who can do so will collect and send to her, partly worn garments which are still in a serviceable condition. Ragged or badly soiled garments should not be sent, neither those infected by scarlet fever, diphtheria, or any other infectious disease. This is a most worthy enterprise, and we know of no place where help of this sort could be more worthily bestowed.

PERSONS intending to visit the Haskell Home will please note that the visiting days are Sundays and Wednesdays, from 4 to 6 P. M. J. H. KELLOGG.

CLOTHING FOR THE POOR.

THE call for clothing of all kinds and the numerous offers to supply assistance of this sort, have led us to organize a Clothing Department to receive and properly distribute new or partly worn garments which can be utilized for the relief of the very poor. In connection with this work it is very important that a few points should be kept in mind and carefully observed: —

1. Clothes that are so badly worn that repairs will cost more in money or labor than the garment is worth, will of course be of no service. Garments that are old, though faded, or which may be easily repaired by sewing up seams, or made presentable by a few stitches judiciously taken at some point in which the fabric is nearly worn through, may be utilized to most excellent advantage. But garments so badly worn that they need extensive patching, or clothes which have become much soiled and grimy by long use in some dirty occupation, should find their way to the rag bag instead of the missionary box.

2. Freight must always be prepaid. It costs as much to send 25 pounds or any amount less than 100 pounds as to send the full 100 pounds; consequently it would be well for those who think of sending clothes to be used in this department, to put their contributions together in one shipment, so as to get the benefit of the 100-pound rates. *We are obliged to ask that freight should be prepaid as a means of preventing loss to the work in the payment of freight upon useless packages.*

3. Clothes that have been worn by patients suffering from any contagious disease — such as typhoid fever, erysipelas, consumption, and skin disorders of all sorts, as well as scarlet fever, measles, mumps, diphtheria, and smallpox — should not be sent. Infected clothes may be rendered safe by disinfection, but we cannot trust to the proper disinfection of such garments by those sending them, who, in the majority of cases, are quite inexperienced in such work; neither should those who unpack the clothes be exposed to the risk of contamination while preparing them for disinfection at this end of the line. Such clothes should, as a rule, be destroyed. If they are not destroyed, almost infinite pains is required to render their use perfectly safe.

4. All articles received here are carefully assorted and classified, and are then placed as called for, where they will do the most good.

5. Clothing intended for the Chicago mission should be sent to Chicago Medical Mission, 40 Custom House Place, Chicago, Ill.

LITERARY NOTICES.

THE FUNK AND WAGNALLS STANDARD DICTIONARY. —The matter of correct pronunciation was referred to an advisory committee of fifty persons, composed of representative scholars in all parts of the world. This committee was selected to aid in the work, thus giving the editor in charge of the department the advantage of the widest possible consensus of opinion. Only after an examination of the opinion of each of these persons was any pronunciation decided upon. In the case of disputed words, by an ingenious system of numbering, the preference of every member of the committee was indicated; so that the reader has first the decision of the editor, after a consideration of all the fifty opinions; and if that should prove unacceptable to him, he is able to determine at a glance the precise weight of authority attached to any other pronunciation that seems to him preferable.

The Pilgrim (Holiday Number).— Full of fine sketches—prose, poetry, and illustrations—by bright writers and artists. Entirely original, new, and entertaining. Mailed free to any address on receipt of six cents in postage stamps. Write to Geo. H. Heafford, Publisher, 415 Old Colony Building, Chicago, Ill.

THE *Independent*, New York.— A religious, literary, and family newspaper. Undenominational, unbiased, and impartial. A paper for clergymen, scholars, teachers, business men, and families. It discusses every topic of the day—religious, theological, political, literary, social, artistic and scientific. Its contributed articles are by the most eminent writers of the English language.

Good Housekeeping is a woman's journal, both in birth and being, and bred for women of the most intelligent and useful classes of their sex. But home interests, including housekeeping, good or bad, touch the party of the other part with equal force. For this reason, the January number of *Good Housekeeping* has been prepared entirely by the men-folk, giving the men opportunity to have their say as to what the elements, make-up, and outcome of good housekeeping should be, and what poor or indifferent housekeeping should not be. The pens of men distinguished in the various walks of life into which they have been respectively drawn, have been secured to open the ball. The discussion will be continued throughout the year, according to the time-honored custom of giving "the women the last word," and it may be safely predicted that much good will follow in the homes of the world. The Clark W. Bryan Publishing Co., Springfield, Mass.

THE reader might be puzzled to know how such a magazine as the December number of the *Cosmopolitan* can be made at the price of ten cents. But the magazine itself affords the solution. It contains 139 pages of advertising, which, as the publishers announce, is from $4000 to $8000 more net cash advertising than was ever before printed in any magazine, of any kind, and in any country. It breaks the world's record in the publishing business. Moreover, the cost of the artists and authors who appear in this number is divided among 400,000 copies, bringing the cost per copy proportionately low. The *Cosmopolitan* thinks that the ten-cent magazine, bringing, as it does, the best in art and literature into all classes, is an educational movement second in importance only to that of the public schools. The *Cosmopolitan*, Irvington, New York.

WITH the December issue, the *Arena* is reduced in price to twenty-five cents per copy, and to $3 per year, but this reduction in price is accompanied by no diminution in the excellence of this great, liberal, progressive, and reformative review; indeed, this issue is exceptionally strong. The Arena Publishing Co., Boston, Mass.

LOVERS of girls' stories (and their name is legion) will welcome Mrs. L. T. Mead's new volume entitled, "Girls, New and Old," just announced by the Cassell Publishing Co., New York. Mrs. Mead is well known as a writer of strong and healthy stories for budding girlhood, as she thoroughly understands girls, and is in full sympathy with the longings, aspirations, and impulses that govern them.

THOMAS CURTIS CLARK says in the January *Scribner's* that the recent vote of New York in behalf of canal improvement is almost as important to the prosperity of the country as the original decision to build the Erie Canal. His article will be an eye-opener to most readers in regard to the stupendous magnitude of our internal commerce.

PUBLISHERS' DEPARTMENT.

AN EXCELLENT WINTER RESORT.—The Battle Creek Sanitarium is an excellent place for chronic invalids for the winter. It is admirably equipped, steam heated, ventilated in the most approved manner, with separate ventilating ducts for each room and a supply of from six thousand to ten thousand cubic feet of warmed air for each patient. This institution has grown up within the last twenty years from a small wooden building to an immense establishment capable of accommodating over a thousand persons. The patronage has steadily grown from year to year until it has come to be by far the largest institution of the kind in the world. The Battle Creek Sanitarium owes its reputation to the fact that its large medical corps, numbering twenty or more well-educated physicians, give careful, conscientious attention to a study of their cases. A large bacteriological and chemical laboratory supplies the means for special researches in relation to cases of peculiar interest. A laboratory especially devoted to the study of foods and the development of new food preparations particularly adapted to the wants of invalids, affords special facilities in this line. The central idea in the institution is that chronic invalids must be trained into health; that medicinal agents alone are not sufficient to effect a radical change in constitutional conditions which are acquired as the result of wrong habits of life. A special feature in the institution is the education of patients in health habits. The gymnasium and large swimming-bath afford facilities for physical exercise of all suitable forms. Under competent trainers, feeble invalids often gain a thousand pounds in total strength within a month, and sometimes more. It is not an uncommon thing for patients to double their strength within three or four weeks. There is no other institution in the United States in which medical work is carried on in a more thoroughgoing and scientific manner than at the Battle Creek Sanitarium.

***

THE Sanitarium patients enjoyed their first sleigh-ride the morning of November 22. A sleigh-ride in November is a rare thing in Michigan, but with a bright sun overhead, a genial atmosphere, and snow enough to cover the ground well and set the sleigh-bells jingling, no one has occasion to find fault with cold weather. Everybody is beginning to find out what wise physicians have long known,—that cold weather is not a thing to be dreaded, but a most valuable, and, indeed, incomparable vital tonic. The managers of the Sanitarium believe in the cold-weather cure, and encourage all of their patients to spend one or two hours each day in the open air (well protected, of course, from the cold), breathing the dense oxygen which is afforded at

no other season of the year. There is nothing like cold air for creating an appetite, clearing the cobwebs from the brain, and impurities from the liver and the general tissues. Most of those who run away from cold weather at the first signs of Jack Frost, leave behind their best friend. The winter season is the most favorable of all times for the successful treatment of most classes of invalids. The Battle Creek Sanitarium has been enjoying during the autumn, as well as during the preceding summer, the largest patronage in its history. The great array of rational facilities afforded for the treatment of the sick at this institution places it far ahead of the most famous establishments in Europe as a place for the successful treatment of chronic invalids.

* * *

THE inaugural holiday banquet of the Chicago Vegetarian Society, to be given Saturday evening, December 28, at the Great Northern Hotel, promises to be one of the most notable gatherings of vegetarians ever held in this country. It will be more than a local affair. Members of out-of-town societies will be present, and the prospects for a very large attendance are encouraging indeed.

The president of the Vegetarian Society of America, Rev. Henry S. Clubb, of Philadelphia, will respond to a toast. A number of prominent speakers will be present to help enliven the occasion. Among those expected to speak are Mayor Swift, Annie Jenness-Miller, Clarence S. Darrow, Captain Wm. P. Black, Elizabeth Boynton Harbert, Dr. N. D. Hillis (Professor Swing's successor), Rev. Francis H. Rowley, secretary of the American Humane Society, Matilda B. Carse, president of the Chicago Woman's Christian Temperance Union, etc.

The menu is an elaborate one, including many rare and dainty dishes.

Those wishing to attend the banquet are requested to write the treasurer, Miss Frances L. Dusenberry, Mc Vicker's Theater Building, Chicago, enclosing two dollars and fifty cents for each ticket desired.

* * *

THE Good Health Publishing Company has recently entered into an arrangement whereby the International Tract Society becomes a general agent for their publications, and it will at once begin an active campaign for placing them in the hands of the reading public. Mr. A. O. Tait's wide personal acquaintance, acquired as manager of the International Tract Society, and the extensive experience in the publishing business, of Mr. John I. Gibson, the treasurer and financier of the Society, together with the native push, tact, and enthusiasm of both gentlemen, will, without doubt, insure success to this new effort in behalf of the promulgation of sanitary principles.

* * *

GERMS IN THE STOMACH.— The recent investigations of medical savants, both in Europe and in this country, have shown that poisonous substances produced by germs in the stomach, are the real cause of Bright's disease, and of many nervous maladies, such as nervous headache, neuralgia, spinal irritation, hysteria, and even paralysis, and locomotor ataxia. Organic diseases of the liver, and probably also cancer of the stomach and the liver, are due to the growth of germs in the stomach and the poisons produced by them. Germs are introduced into the stomach with the food. The only way to get rid of stomach germs and to keep rid of them is to eat pure, wholesome food which contains no germs. Granose and granola are perfectly sterilized foods, and have been shown to be capable of eradicating germs from the stomach.

* * *

WINTER TOURS.— The Michigan Central has placed on sale winter tourist tickets to all the principal Southern winter resorts at reduced rates. For full particulars, address, Geo. J. Sadler, Pass. Agt., Battle Creek, Mich.

* * *

ARE YOU GOING North, South, East or West; if so, write me. I can interest any one desiring a new location to build a home, or engage in fruit raising, or diversified farming; send a postal card giving your address, and I know you will be interested. Harry Mercer, Mich. Passenger Agent Chicago, Milwaukee & St. Paul Railway, 7 Fort Street West, Detroit, Mich.

* * *

AN enigmatical bill of fare for a dinner served on the Dining Cars of the Chicago, Milwaukee & St. Paul Railway, will be sent to any address on receipt of a two-cent postage stamp. Apply to Geo. H. Heafford, General Passenger Agent, Old Colony Building, Chicago, Ill.

* * *

FROM now until spring, overcoats and winter wraps will be in fashion. They can be discarded, temporarily, while traveling in the steam-heated trains of the Chicago, Milwaukee & St. Paul Railway. For solid comfort, for speed, and for safety, no other line can compare with this great railway of the West.

* * *

CHRISTMAS AND NEW YEAR'S HOLIDAY EXCURSION RATES. — The Chicago & Grand Trunk Railway, Cincinnati, Saginaw & Mackinaw R. R. and Michigan Air Line and Detroit Divisions G. T. Ry. have arranged to sell special holiday excursion tickets at ONE AND ONE-THIRD FARE FOR THE ROUND TRIP between stations on their lines and also to points on Detroit, Grand Haven & Milwaukee Ry., and Toledo, Saginaw & Muskegon Ry., and connecting lines in Indiana, under the following arrangement: —

Christmas tickets will be on sale December 24 and 25, good to return up to and including Jan. 2, 1896.

New Year's tickets will be on sale Dec. 31, 1895, and Jan. 1, 1896, good to return up to and including Jan. 2, 1896.

Special Return tickets to all CANADIAN POINTS west of and including Toronto, Niagara Falls and Buffalo, will be sold on the above dates and limits at ONE AND ONE-THIRD FARE from all stations on the above lines.

GOOD HEALTH

EDITED BY J. H. KELLOGG, M. D.

VOLUME XXX

GOOD HEALTH PUBLISHING COMPANY
LONDON, ENGLAND; NEW YORK CITY; BATTLE CREEK, MICH.
1895

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GENERAL HYGIENE.

THE HOME GYMNASIUM.

HOME CULTURE.

HOME TRAINING SCHOOL.

EDITORIAL.

CHATS.

RELIEF DEPARTMENT.

LITERARY NOTICES.

Nut Butter.

A CAPITAL SUBSTITUTE FOR ANIMAL FATS OF ALL SORTS IN THE **Seasoning or Shortening of Foods, in the Preparation of Gravies, Sauces, etc.**

THOROUGHLY COOKED AND EMULSIFIED, so it dissolves readily in water; has a rich, nutty flavor; is exceedingly **palatable and digestible, keeps well, is thoroughly sterilized,** and free from all objections which can be urged against animal fats. It gives a meaty flavor to soups.

SANITAS FOOD COMPANY,

BATTLE CREEK, - - MICHIGAN.

GRANOLA

A HEALTHFUL FOOD

AN INVALID FOOD prepared by a combination of grains so treated as to retain in the preparation the **Highest Degree of Nutrient Qualities,** while eliminating every element of an irritating character.

THOROUGHLY COOKED AND PARTIALLY DIGESTED,

This food preparation is admirably adapted to the use of all persons with weak digestion, defective assimilation, general or nervous debility, brain workers, feeble children, and invalids generally, as well as travelers and excursionists, who often need to carry the *Largest Amount of Nutriment in the Smallest Bulk,* which is afforded by Granola in a pre-eminent degree.

ONE POUND MORE THAN EQUALS THREE POUNDS OF BEST BEEF

In nutrient value, as determined by chemical analysis, besides affording a better quality of nutriment. Thoroughly cooked, and ready for use in one minute.

Send for illustrated and descriptive circular of Granola and other healthful foods to the

BATTLE CREEK SANITARIUM HEALTH FOOD CO., Battle Creek, Mich.

Sunbeams of Health and Temperance,

Which is just the thing for a Valuable and Entertaining **PRESENT** for the Young Folks.

The following are the titles of the principal sections of the work:—

The House We Live In,

Some Strange People,

Hygiene for Young Folks,

The Habitations of Men,

Dame Fashion and Her Slaves,

The World's Bill of Fare,

Health and Temperance Miscellany.

ONE OF THE MOST UNIQUE AND INTERESTING VOLUMES EVER PUBLISHED.

240 Quarto Pages. * Profusely Illustrated. * Cloth, Gilt-Edge.

GOOD HEALTH PUBLISHING CO., BATTLE CREEK, MICH.

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Makes Fat and Blood.

BROMOSE, an exceedingly palatable food preparation, consists of cereals and nuts, in which the starch is completely digested, the nuts perfectly cooked, and their fat emulsified. It is thus ready for immediate assimilation. It is the most easily digested and most fattening of all foods, and at the same time rich in proteids, and hence **unequaled as a tissue builder.**

BROMOSE makes fat and blood more rapidly than any other food. It is the food par excellence for blood, brain, and nerves. Invalids whose troubles are due to the fact that they cannot digest the starch of cereals and vegetables, find in **BROMOSE A PANACEA.**

BROMOSE is rich in salts, as well as proteids and food elements. It is excellent for invalids who are thin in flesh, those who cannot digest starch, old people, feeble infants, consumptives, convalescents, fever patients, neurasthenics, and those who wish to **gain in flesh.**

SANITAS FOOD COMPANY

Battle Creek, Mich.

ESTABLISHED 1844.

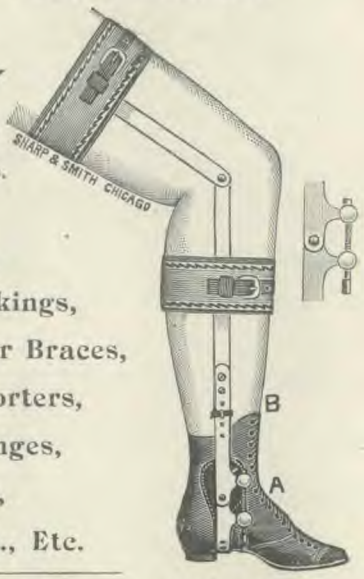
SHARP & SMITH,

73 Randolph Street, CHICAGO, ILL.

Manufacturers of....

DEFORMITY APPARATUS

....Of all Descriptions.



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Elastic Stockings,
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Abdominal Supporters,
Family Syringes,
Trusses,
Etc., Etc.

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Three Highest Awards Received at World's Columbian Exposition.

The "Natural Abdominal Supporter"

Especially designed for persons of both sexes who are suffering from prolapse of the bowels or stomach, floating kidney, and other abdominal or pelvic displacements. The "Natural Abdominal Supporter" is more

Efficient, Comfortable, and Convenient

than any other which has been devised, and supports the organs of the abdomen in a natural way. No other single measure is so valuable in the treatment of the diseases of women and many forms of dyspepsia and constipation. Obviates the necessity for internal supports, and for surgical operations in many cases.

Does not interfere in any way with any bodily movement nor with the clothing. For descriptive circular, address,

MODERN MEDICINE COMPANY, Battle Creek, Mich.

PERFECTION VAPORIZER.

A New Instrument which has No Equal as a Means of Applying Medicaments to the Nose, Throat, and Lungs.

The **Perfection Vaporizer** has the following advantages over all others: —

1. It furnishes a continuous stream of medicated air, without the necessity of continuously working the bulb.

2. By its aid, medicated air may be introduced into the nasal cavity with sufficient force to cause it to enter the ears, frontal sinuses, and other connecting cavities.

3. It permits thorough treatment of the coats of the nose and throat at the same time, and so economizes time.

4. It is strong, does not upset easily, is durable and efficient. It embodies all the good qualities of any other volatilizer or vaporizer in addition to the above.

The **Perfection Vaporizer** is indispensable in the successful treatment of **Colds, Bronchitis, Nasal and Throat Catarrh,** diseases of the **Ears,** and in all other affections of the nose, throat, and lungs.

PRICE, $3.

MODERN MEDICINE CO., BATTLE CREEK, MICH.

CHICAGO & GRAND TRUNK R. R.

Time Table, in Effect Nov. 18, 1894.

GOING EAST. Read Down.					STATIONS.	GOING WEST. Read up.				
10 Mail Ex.	4 L't'd Ex.	6 Atl. Ex.	42 Mixd Tr'n.	2 Pt. H Pass		11 Mail Ex.	1 Day Ex.	3 R'd L'v'd	23 E. C. Pass.	5 P'ne Ex.
a m	p m	p m				p m	p m	pm		a m
9.00	3.10	8.15	a m	.....	.....D.Chicago A.....	6.45	1.50	9.10	.....	7.50
11.25	5.05	10.30	6.00	.....	.....Valparaiso.....	5.05	11.35	7.10	.....	5.45
p m										
1.05	6.30	12.00	10.05	.....	.....South Bend.....	3.10	10.15	5.44	.....	4.10
1.46	7.12	12.45	12.40	.....	.....Cassopolis	2.15	9.40	5.13	.....	3.28
2.33	.....	†1.33	3.42	.....	.....Schoolcraft.....	1.20	.....	.....	.....	.....
2.44	7.55	1.48	4.30	a m	.....Vicksburg.....	1.10	8.52	.....	p m	2.37
3.30	8.36	2.40	6.20	7.00	.....Battle Creek.....	12.15	8.15	3.55	9.35	1.50
4.33	9.26	3.25	.....	7.47	.....Charlotte.....	11.14	7.23	3.07	8.40	12.53
5.10	9.55	4.00	.....	8.20	.....Lansing.....	10.40	6.53	2.40	8.00	12.20
6.30	10.45	5.03	.....	9.30	.....Durand.....	9.35	6.05	1.55	6.50	11.28
7.30	11.17	5.40	.....	10.05	.....Flint.....	8.35	5.35	1.28	5.47	10.35
8.15	11.50	6.15	.....	10.43	..... Lapeer.....	7.49	5.02	1.00	5.10	10.01
8.42	a m	6.35	.....	11.06	.....Imlay City.....	7.28	.....	.....	4.48	.....
9.50	1.00	7.30	.....	12.05	.....Pt. H'n Tunnel.....	6.50	3.50	11.55	3.50	8.45
	p m					a m	a m	a m	p m	p m
9.25	.....	.....	.....	.....	..... Detroit.....	.....	.....	10.40	4.05	8.45
	a m	p m					p m			p m
.....	8.15	5.25	.....	.....	.....Toronto.....	.....	9.20	.....	.....	1.00
	p m	a m					a m			
.....	8.15	7.25	.....	.....	..... Montreal	.....	9.15	.....	.....	.....
	a m	p m					a m			
.....	8.12	7.15	.....	.....	.....Boston.....	.....	8.30	.....	.....	.....
	a m	p m					p m	a m		p m
.....	7.50	4.25	.....	.....	.....Susp'n Bridge.....	.....	10.15	7.05	.....	2.25
	a m	p m								p m
.....	7.00	5.40	.....	.....	.....Buffalo.....	.....	.....	.....	.....	1.00
	p m	a m					a m	p m		p m
.....	8.58	8.03	.....	.....	.....New York.....	.....	8.15	6.10	.....	8.00
		a m								p m
.....	.....	10.20	.....	.....	.....Boston.....	.....	.....	.....	.....	7.00

Trains No. 1, 3, 4, 6, run daily ; Nos. 10, 11, 2. 23, 42, daily except Sunday.

All meals will be served on through trains in Chicago and Grand Trunk dining cars.

Valparaiso Accommodation daily except Sunday.

Way freights leave Nichols eastward 7 : 15 a. m.; from Battle Creek westward 7 : 05 a. m.

† Stop only on signal.

A. R. Mc INTYRE,
Asst. Supt., Battle Creek.

A. S. PARKER,
Pass. Agent, Battle Creek.

MICHIGAN CENTRAL

"The Niagara Falls Route."

Corrected Nov. 24, 1895.

EAST.	*Night Express.	†Detroit Accom.	†Mail & Express.	*N. Y. & Bos. Spl.	*Eastern Express.		*Atl'ntic Express.
STATIONS.							
Chicago.....	pm 9.30		am 6.50	am 10.30	pm 3.00		pm 11.30
Michigan City.	11.36		8.48	pm 12.08	4.50		am 1.19
Niles.....	am 12.45		10.15	1.02	5.56		2.45
Kalamazoo	2.05	am 7.20	11.52	2.16	7.21		4.25
Battle Creek...	2.55	8.10	pm 12.50	2.50	7.58		5.05
Jackson.....	4.30	10.00	2.40	4.10	9.20		6.30
Ann Arbor.....	5.40	11.05	3.50	5.00	10.12		7.30
Detroit.....	7.10	pm 12.20	5.30	6.00	11.15		9.00
Buffalo.....				am 12.10	am 6.45		pm 5.30
Rochester.....				3.00	9.55		8.40
Syracuse				5.00	pm 12.15		10.45
New York.....				pm 1.45	8.45		am 7.00
Boston				3.00	11.35		10.50
WEST.	*Night Express.	*N.Y.Bos. &Chi.Sp.	†Mail & Express.	*N.Shore Limited.	*Weste'n Express.	† Kalam. Accom.	*Pacific Express.
STATIONS.							
Boston		am 10.30		pm 2.00	pm 3.00		pm 7.15
New York.....		pm 1.00		4.30	6.00		9.15
Syracuse		8.30		11.30	am 2.15		am 7.20
Rochester.....		10.37		am 1.20	4.10		9.55
Buffalo.....		11.45		2.20	5.30		pm 3.30
Detroit.....	pm 8.45	am 6.30	am 7.15	8.30	pm 1.00	pm 4.45	11.05
Ann Arbor.....	10.28	7.30	8.58	9.25	2.00	5.55	am 12.15
Jackson.....	11.50	8.35	10.43	10.30	3.02	7.35	1.25
Battle Creek...	am 1.20	9.48	pm 12.15	11.43	4.18	9.11	2.55
Kalamazoo	2.10	10.27	1.05	pm 12.21	4.57	10.00	3.36
Niles.....	3.55	11.48	3.00	1.45	6.27		5.00
Michigan City.	5.09	pm 12.50	4.25	2.45	7.22		6.00
Chicago.....	7.10	2.40	6.35	4.30	9.05		7.50

*Daily. †Daily except Sunday.

Kalamazoo accommodation train goes west at 8.05 a.m. daily except Sunday.
Jackson " " east at 7.27 p. m. "

Trains on Battle Creek Division depart at 8.10 a. m. and 4.35 p. m., and arrive at 12.40 p. m. and 6.35 p. m. daily except Sunday.

O. W. RUGGLES,
General Pass. & Ticket Agent, Chicago.

GEO. J. SADLER,
Ticket Agent, Battle Creek.

INVALID CHAIR CUSHION.

This cushion adds all the comfortable effects of upholstering to any ordinary chair, as it covers both the seat and the back. Will adjust itself readily to a wheel-chair, as well as to ordinary chairs and rockers.

CARRIAGE

CUSHIONS.

RUBBER BATH TUBS.

When a bath tub is obtainable that can be folded up and carried in an overcoat pocket, no one need be without the facilities for bathing. When inflated, this tub is perfectly stable, although made entirely of rubber. Its many advantages will be apparent when it is considered that it may be used in any room, and afterward folded up and tucked away in a drawer.

Prices on Application.

SANITARY AND ELECTRICAL SUPPLY CO., BATTLE CREEK, MICH.

Absolutely Pure Water

PRODUCED BY THE NEW

FAMILY AND PHARMACEUTICAL STILLS OF THE BOSTON DISTILLED WATER COMPANY.

Prices within the Reach of Everybody.

The Family Still will produce about five gallons, and the Pharmaceutical, about 15 gallons of pure water per day of ten hours. They are made of heavy planished copper, block-tin lined, and will last for years; are thoroughly automatic in operation, and after having been started, will, without further attention, continue the distillation process until the power is turned off.

PRICE OF FAMILY STILL, IN COPPER, - - - - - -	$12.00
PRICE OF FAMILY STILL, IN NICKEL PLATE, - - - - -	15.00
PRICE OF PHARMACEUTICAL STILL, - - - - - - -	30.00

Also Steam Stills with capacities ranging from 50 to 1000 gallons per day. Prices from $75.00 to $500.00. **Send for Circulars.**

BOSTON DISTILLED WATER COMPANY,
140-144 OLIVER ST.. BOSTON, MASS.

Antiseptic-Corrective Tablets

VEGETABLE CHARCOAL, SULPHUR, DIASTASE

The ingredients of which these tablets are composed constitute the most valuable known means of establishing an aseptic condition of the stomach and intestines. The great objection to their use heretofore has been the inconvenience of their administration. The discovery of a special form of vegetable charcoal, and of the method of combining it with other valuable ingredients, has enabled us to overcome the objections heretofore existing, and to present these most valuable agents in an efficient and agreeable form. These tablets, while they contain no foreign substances or excipient whatever, may be taken as easily and agreeably as a caramel.

ANTISEPTIC, DEODORANT, DIGESTANT.

Antiseptic-Corrective Tablets cure sour stomach, or acid fermentation, heartburn, bloating, flatulence of the stomach or bowels, foul tongue, bad breath, "nasty" taste in the mouth, biliousness, sick headache, nervous headache, constipation, and a variety of other conditions growing out of the action of microbes in the stomach and intestines.

Address for sample and circular, the

MODERN MEDICINE CO., Battle Creek, Michigan.

HOT-WATER BAGS.

Style A.
WHITE RUBBER.

As a foot-warmer, or for applications of either moist or dry heat, this bag is invaluable. For moist heat, wring a flannel cloth from hot water, and lay on the bag. It is a durable article, and one not willingly dispensed with after once using.

STYLE B. FLANNEL COVERED.

The same bag covered with flannel or sateen, which to many makes it much more agreeable as a foot-warmer.

SPINE BAGS.

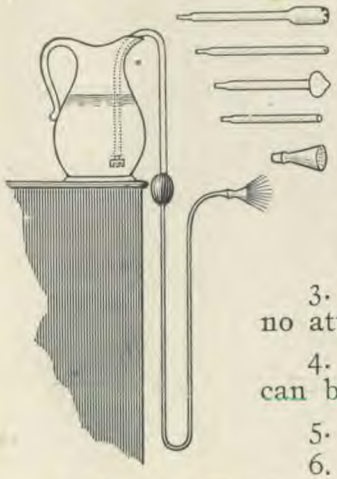
Style B.
FLANNEL COVERED.

RUBBER SPINE BAGS. Very strong and durable; essential in the treatment of some forms of Dyspepsia, Spinal Irritation, and many nervous diseases.

- - - SEND FOR CATALOGUE - - -

SANITARY AND ELECTRICAL SUPPLY CO., Battle Creek, Mich.

Universal Syphon Syringe



THE accompanying cut is a representation of a new form of syringe recently perfected, which possesses the following excellences:—

1. Requires no fountain, as it can be used with a pitcher, a pail, a basin, or a washbowl,—anything that will hold water.
2. It has no valves or other fixtures to get out of order, no bag to become leaky, never injects air, and is always ready for instant use.
3. It is automatic in action. After being once started, it requires no attention while in use.
4. It is the most compact automatic syringe ever devised. It can be carried in the pocket of a dress or coat.
5. It is the simplest of all syringes, and requires no special care.
6. It never fails to work.
7. It is offered at about half the price of ordinary fountain syringes, and is superior to any of them.

PRICE, including all fixtures, in a small box, $1.50. If sent by mail, 14 cents extra for postage.

SANITARY AND ELECTRICAL SUPPLY CO., BATTLE CREEK, MICH.

J. FEHR'S

"COMPOUND TALCUM"

"BABY POWDER,"

The "Hygienic Dermal Powder" for Infants and Adults.

Originally investigated and its therapeutic properties discovered in the year 1868 by Dr. Fehr and introduced to the Medical and the Pharmaceutical Professions in the year 1873.

COMPOSITION.—Silicate of Magnesia with Carbolic and **Salicylic Acid.**

PROPERTIES.—Antiseptic, Antizymotic, and Disinfectant.

USEFUL AS A GENERAL SPRINKLING POWDER,

With positive Hygienic, Prophylactic, and Therapeutic properties.

GOOD IN ALL AFFECTIONS OF THE SKIN.

Sold by the Drug Trade generally. Per Box, plain, 25c.; perfumed, 50c.; Per Dozen, plain, $1.75; perfumed, $3.50.

THE MANUFACTURER:

JULIUS FEHR, M. D., Ancient Pharmacist,

HOBOKEN, N. J.

Only advertised in Medical and Pharmaceutical prints.

THE CYCLONE WASHER

THE CYCLONE STILL WHIRLS,

Washing Everything Clean that Comes in Its Way.

See What the People Say.

The following is from one of the most thoroughly equipped steam laundries in the city.

BATTLE CREEK, MICH., Dec. 21, 1895.

COON BROS.:—

Dear Sirs: I am glad to have an opportunity to say something in praise of the Cyclone Washer. We are using one in the Sanitarium laundry, and could not get along without it. We find it to be all you claim for it. For washing heavy quilts it is unsurpassed. I have been in the laundry business a number of years, and can say that the Cyclone is the best all-round machine, and on all kinds of goods gives the most satisfactory results of any hand-washer I have ever used.

Respectfully yours, GEORGE ODEKIRT.

MILTON JUNCTION, WIS., Dec. 19, 1895.

MESSRS. COON BROS.:—

Gentlemen: I have got hold of a good seller; have sold six already, and have only been out six days. Yours truly,

J. H. BRAMHALL.

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Battle Creek (Mich.) Sanitarium

HEALTH FOODS.

EAT GRANOLA AND GRANOSE
DRINK CARAMEL-CEREAL
Established 1876

Food Cure for Constipation.

AN inactive state of the bowels is one of the most common causes of many serious maladies. Chronic headache, biliousness, hemorrhoids, backache, and perhaps more serious constitutional ailments, may be readily attributed to habitual constipation.

Mineral Waters, Laxatives, "After-Dinner" Pills, do not Cure.
Orificial Surgery does not Cure.

Constipation is due, in the majority of cases, to errors in diet, and hence can be best cured by diet. An excellent remedy for this common malady has been found in **GRANOSE,** a new food recently invented at the Battle Creek Sanitarium, where it is extensively employed as a food remedy in many forms of indigestion, especially in cases of constipation.

GRANOSE CURES CONSTIPATION, not by producing a laxative effect, but by removing the cause of the disease. Granose is prepared from wheat. It is not a medicine, but a food so delightfully crisp, delicate, and delicious, that everybody likes it. **TRY IT.**

A well-known Boston merchant writes of Granose: "The Granose is splendid; everybody is after it at our table."

For Circulars, etc., address BATTLE CREEK SANITARIUM HEALTH FOOD CO., Battle Creek, Mich.

Caramel-Cereal,

for the last twenty years, has been used by the thousands of invalids who annually visit the great Sanitarium at Battle Creek, Mich.

UNCONSCIOUS POISONING.—An old physician of Chicago remarked the other day: "Thousands of people are poisoning themselves daily with tea and coffee without knowing it. A great number of nervous maladies, and indigestion in various forms, are the result of the deleterious effects of the poison of tea and coffee upon the system. I myself made the discovery a good many years ago, that the headaches from which I had suffered for years, were due to the use of tea and coffee. I found whenever I took a cup of strong coffee, I had a headache as the result, and I had headaches now and then in spite of what I considered my great moderation in the use of tea and coffee. I concluded to dispense with them altogether, and when I did so, my headaches disappeared and did not return. I have cured scores of chronic headaches by forbidding the use of tea and coffee."

CARAMEL-CEREAL is a perfect substitute for tea and coffee. It is aromatic, delicious to the taste, and so nearly resembles coffee as to be easily mistaken for veritable Mocha, although, of course, not by a connoisseur.

For illustrated catalogue and prices, address,

BATTLE CREEK SANITARIUM HEALTH FOOD CO., Battle Creek, Mich.

Muscle-Beaters

SIMPLE, cheap, and efficient instruments for securing some of the effects of massage. By their habitual use one can obtain most beneficial results without the aid of an expert.

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SANITARY AND ELECTRICAL SUPPLY CO.,
Battle Creek, Michigan.

Cannon-Ball Massage

CANNON BALLS are effective in combating certain forms of disease, as well as in destroying life. An eminent German physician discovered a few years ago that by means of a cannon ball covered with leather a patient suffering from inactive bowels may often effect a cure by the regular use of the cannon ball, rolling it along the course of the colon, beginning low down at the right side. This remedy has been in successful use for many years at the Battle Creek Sanitarium.

Send for Catalogue. **SANITARY AND ELECTRICAL SUPPLY CO.,** Battle Creek, Mich.

Battle Creek Sanitarium,

The Oldest and Most Extensive Sanitarium Conducted on Rational and Scientific Principles in the United States

BATTLE CREEK, MICH.

Special Advantages:

An Elevated and Picturesque Site.

Remarkably Salubrious Surroundings.

BATHS OF EVERY DESCRIPTION.
ELECTRICITY IN EVERY FORM.
MASSAGE and SWEDISH MOVEMENTS
By Trained Manipulators.
PNEUMATIC AND VACUUM TREATMENT.
MECHANICAL APPLIANCES of All Sorts.
A FINE GYMNASIUM.
With Trained Directors.

CLASSIFIED DIETARIES.
UNEQUALED VENTILATION.
PERFECT SEWERAGE.
ARTIFICIAL CLIMATES created for those needing Special Conditions.
THOROUGHLY ASEPTIC SURGICAL WARDS and OPERATING ROOMS.

All Conveniences and Comforts of a First-class Hotel.
Incurable and Offensive Patients not received.
Not a "Pleasure Resort," but an unrivaled place for chronic invalids who need special conditions and treatment not readily obtainable at home.

For Circulars, address, **SANITARIUM, Battle Creek, Michigan.**