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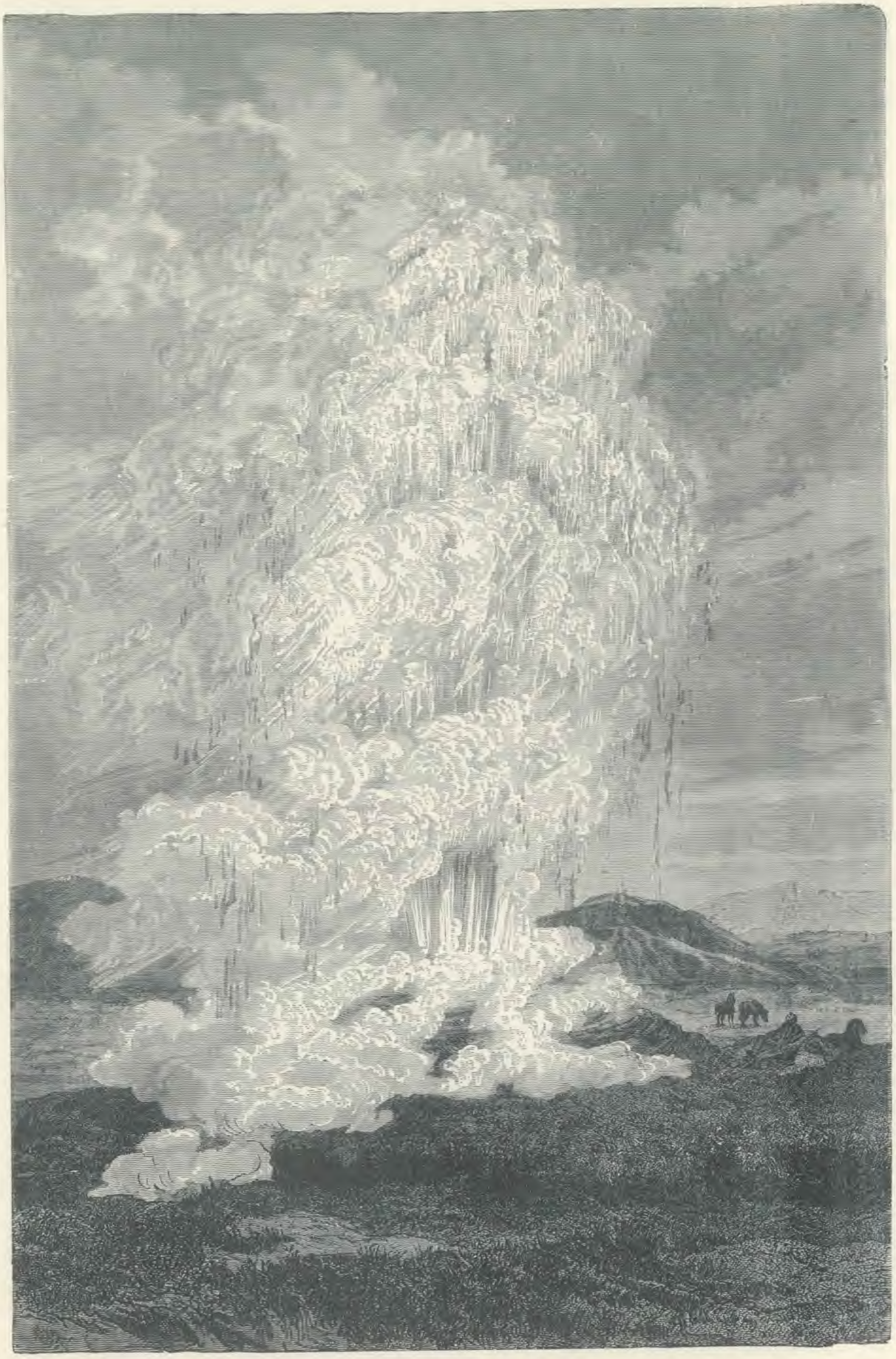

THE GIANT GEYSER.

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INTERNATIONAL HEALTH STUDIES.

BY FELIX L. OSWALD, M. D.
Author of "Physical Education;" "The Bible of Nature," Etc.

18.—Senegambia.

A FEW years years ago, I attended a convention in honor of Dr. Priessnitz, the founder of the water-cure school of hygiene, whose disciples were greatly amused by the reading of the following "specimen verdict of medical orthodoxy": "Hydropathy," said the inexorable critic, "is a mixture of self-delusions and audacious paradoxes, and the circumstance that its apostles have managed to effect a certain number of lucky cures, should not for a moment reconcile us to their nonsense." In other words: "You may be excellent sanitarians, but you are heretics, and your practical success should noways modify the condemnation of your doctrines."

A similar principle of criticism seems often to dictate the tirades against the "unsanitary habits" of the West-African natives, especially the "gluttonous and self-indulging" negroes of Guinea and Senegambia. There is no doubt that the dietetic habits of those savages are incompatible with some of the oldest and most widely propagated dogmas of medical hearsay philosophy, and from a stand-point of an orthodox exponent of those dogmas, it is perhaps hardly a mitigating circumstance that the practices in question are less irreconcilable with the instincts of our nature-taught fellow-creatures. Nevertheless, the "poor, ignorant heathens" can plead the evidence of practical results; for in spite of their sanitary heresies, they undoubtedly manage to survive in a climate that proves deadly to nearly all other nations, and the fact remains that their despised race has produced some of the finest specimens of physical manhood, and many of the oldest individuals of the human species. Are those facts not strongly suggestive of a conjecture that our traditional code of health and longevity must be sadly in need of revision?

Nature's own health-laws cannot be habitually violated with impunity, and we must admit that thousands of Senegambian low-landers, enjoying an abundance of robust health, gorge themselves to repletion on such things as unripe maize, milk, rancid oil, and over-ripe squashes and melons, and make the late evening their favorite time for the principal meal of the day.

"Long after dark," says the traveler Barth, "I could hear the sound of munching jaws, and smell the fumes of broiling fat at an open fire where half a dozen men, and certainly not more than two score of women and children, managed to dispose of a quantum of comestibles that would have satisfied the hunger of half a hundred European mechanics for a week. It is true that those swarthy gluttons could fast a couple of days, without betraying the consequences of anything like an appreciable decrease of vigor; but the difficulty of procuring three meals a day have been greatly over-rated by former visitors of this region. . . . The land is non-productive, rather than incapable of production, and if the natives do not gather a sufficiency of field-crops for a day of scarcity, the cause is not the aridity of the fields, but the laziness of the cultivators, who seem really to prefer an occasional gluttonous feast to a larger number of moderate meals. The idea of sav-

ing a bite while that bite can possibly be forced through the trap-door of the stomach, does never seem to enter their minds, and the task upon their digestive organs is aggravated by the circumstance that they devour their viands without salt. Directly after finishing an enormous meal, they will wrap themselves up and sleep like animals in a state of hibernation, and awaken next day, physically and mentally prepared to undergo another forty-eight hours' fast. Where the spontaneous products of nature are sufficient to supply one meal a day, the persuasions of our missionaries are mostly unavailing in cultivating habits of industry. 'Work and pray? what for? I'm not in need of anything in particular just now,' the two-legged animal would be apt to answer."

NEGRO CHIEFTAIN.

Captain Burton, in his graphic pen-pictures of African men and manners, describes the representative negro as a creature swayed by instincts and momentary impulses; as incapable as a monkey of denying himself physical gratifications obtainable without severe labor, and risking life and health in the satisfaction of incidental appurtenances; and mentions, among other instances, the case of a lot of black soldiers who, in spite of the captain's warning, would drink their fill at a cold spring without waiting to cool off from the effects of a laborious march.

There is nothing abnormal in the fact that a gluttonous fondness for such vegetable products as half-ripe corn or melons can be indulged with long impunity. Children (in spite of melon-patch guards) share that impunity to an unsuspected, and many animals to an almost incredible, degree: and it is certain that summer epidemics are due to calorific food and defective ventilation much more than to the temptations of the fruit-market. In the swamp-delta of the Senegal, a diet of saccharine vegetables would probably prevent fevers that can neither be prevented nor cured by quinine.

A far more curious circumstance is the fact that, in one of the hottest climates on earth, the inhabitants of Senegambia have inured their digestive organs to large quantities of fat meat. Six pounds of pork, or ten pounds of broiled ox-liver, would not be considered more than a fair ration for a full-grown Joloff negro on his return from a two days' cattle hunt; and on special festive occasions, individuals of carnivorous propensities might manage to devour — and somehow to digest — a still larger quantum. Their habit of postponing their feasts to the cool of the evening may assist the performance of such feats, which, however, on the whole, justify the conclusion that physical activity will invigorate our alimentary apparatus sufficiently to digest meat in almost any climate. For in spite of their constitutional aversion to habits of steady industry, Sambo's African kinsmen can hardly be charged with physical indolence. They are good runners and swimmers, are passionately fond of dancing, and, like our plantation "darkeys," will walk a dozen miles to attend a wrestling match or a musical rough-and-tumble *soiree*. Their girls often participate in the athletic sports of the young men; and Prof. Hardenberg's theory of degeneration could be practically tested in the kingdom of Dahomey. The gradual decline of vigor among the nations of the Caucasian race, he holds to be due chiefly to the almost total neglect of physical culture in the education of our girls, whose debility afterwards tends to neutralize the constitutional strength transmitted from the father's side. The spear-guard of the Dahomey autocrat consists of two regiments of women trained in all sorts of gymnastic exercises, and only a month

ago, the commander of a French military expedition forwarded a report testifying to the prowess and valor of that Amazon brigade who twice charged his platoon of sharp-shooters, with a resolute disregard of danger hardly surpassed by the fanatical followers of the Mahdi. Among the Senegambian Joloffs and Mandingoes, too, women are often employed as home-guards, and as a reward of their partiality for athletic sports, enjoy an almost total immunity from the pangs of child-birth.

A NEGRO VILLAGE.

The dietetic excesses of the Ethiopian race can, indeed, scarcely be said to have resulted in a loss of physical vigor; but it must be admitted that their effect can be traced in the truculent propensities of these carnivorous Southlanders. There can, indeed, hardly be a more striking contrast than that between the guileless, and, it would seem, almost gall-less disposition of the Hindoo peasants, and the ferocity of certain negro tribes inhabiting regions of a very similar climate. In Hindoostan, millions of vegetarians endure the ravages of wild beasts and the outrageous familiarities of their frugivorous fellow-creatures, the sacred apes, rather than purchase relief by incurring the sin of blood-shed, even in that decidedly excusable form; while among the natives of Western Africa, innumerable acts of cruelty seem to be practiced for their own sake. Killing, wounding, and torturing helpless animals is considered a pleasure second only to the privilege of homicide, and even the idlers who throng the Tyburn spectacles of our northern cities, or the bull rings of Spain, would be shocked by the ostentatious inhumanity of the spectators applauding the butcheries of an Ethiopian executioner.

That truculence, however, is closely proportioned to the prevalence of carnivorous habits, and has not been noticed among the frugivorous negroes of Zanzibar, who, by the way, are likewise remarkably free from the malodorous characteristics of their Western kinsmen. The gregariousness and the mirth-loving disposition of the Ethiopian race, are, indeed, hardly compatible with instinctive cruelty.

(To be continued.)

SHORT TALKS ABOUT THE BODY, AND HOW TO CARE FOR IT.

BY A DOCTOR.

Nerve Sensation and Tone.

In all forms of animal life, the nerves are the most interesting and highly vitalized parts. Every variety of animal life has some form of nerve structure. The jelly-like polyp has nerve cells which appreciate light, although it has no eyes. Under the influence of clouds or darkness, it will fold up its arms, while it stretches them out for enjoyment of the sunshine. There are some who suppose that even vegetables have something in their organization akin to nerves. How can we understand otherwise the action of the sensitive plant, and of the insectivorous species? No one has ever been able to find nerves in vegetables, and we cannot say that they exist, notwithstanding the curious behavior of certain plants. Yet the living cells of vegetables and the living cells of animals are very much alike. In studying the hair of a nettle under a powerful microscope, one can see what looks very much like blood corpuscles, there being two currents in circulation just as in the circulation of the capillaries. There is a large class of

plants which are so nearly like animals that scientists have been greatly puzzled to know how to classify them; and there is one kind which seems to spend half its life as a vegetable, and the other half as an animal.

In human beings, the most highly vitalized and active parts are in the brain and spinal cord, and these control and use the rest of the body. The eyes make miniature pictures like a camera, and the nerve cells recognize them. Nerves from the brain to the ears recognize sounds, and others leading to the skin carry sensations of touch; and so with all the other senses. These senses are of the greatest service to a physician, for by interrogating the nerves of various parts, he is able to find out what is going on inside the nervous system. In tracing obscure diseases, the senses may be the only available clue. Suppose we examine the eyes of a such a patient to see if one pupil is larger than the other. We ask him if he sees double. He says, "Yes." The slightest thing which this may mean is that the patient's nerve tone is low, perhaps from loss of sleep, or from disturbances of the stomach. It may be that the eyes are a little out of focus in consequence; for perfect balance of the muscular action of the eyes is dependent upon perfect nerve activity, which may be disturbed by mal-nutrition. If the defect is organic, it can be determined by proper examination and tests.

Suppose we find the patient is a little giddy upon rising in the morning. This means that the nerves do not have perfect control of the muscular system. As test for this, stand with your feet close together, shut your eyes, and if the tendency is to reel, it is another evidence of lowered nerve tone. Or, stand with the arms extended, shut your eyes, and then try to bring the tips of your forefingers together in front of you. If they pass by or meet imperfectly, it shows the same thing.

There are a great many perversions of the senses which are purely subjective. A man may complain that his side is numb, or his arm is numb, and if on testing the tactile sense with a proper instrument, there is found to be no lack of sensation, the conclusion is that the fault is in the lowering of nerve tone. The sense of temperature may also be perverted. If a patient complains of chills along his spine, or of cold knees, and examination shows these parts to be as warm as the rest of the body, or if he complains that the soles of his feet are hot, when in reality there is no undue heat in them, it is evident that the sense of temperature is disordered. Crawling sensations are of the same class. These disturbances usually mean a loss of nerve tone. An examination of the spine will often result in the discovery of tender spots along the nerves, a condition the symptoms arising from which are almost infinite.

Again, the sense of feeling may be less acute than it should be, and the individual not able to receive intelligence of contact as speedily as he should. This symptom is of such importance that there has been a little instrument made which is so delicately adjusted that by the opening and closing of an electrical circuit, it registers the time that it takes for a person to feel. Or, the person may not be able to think as quickly as he should. To test this, I sometimes ask patients three simple questions in rapid succession, as, Where were you just before you came into this room? What were you doing? How long did you remain? The rapidity with which the answers are given indicate the rapidity of brain action.

All these things show that it is of the utmost importance that the nervous system should be kept in tone. Otherwise, every part of the body languishes. A slow or imperfect digestion is more often than anything else the primary cause of loss of nerve tone. Lack of digestion is one of the most prevalent morbid conditions of the present time, and lays the foundation of a great many physical and moral ills. Bad digestion means lowered nerve tone, bad blood, and everything wrong in the body. Good digestion means good blood and vigorous nerve tone.

Americans waste nerve force by unnecessary expenditure. They eat too much; they sleep too little; read exciting books, and enter into excited discussions; wear themselves out in exciting forms of recreation, and, in short, cannot enjoy themselves unless they get excited in some way. Children are growing up to think they cannot be happy without some form of excitement, and they make it, unless furnished from outside. Women squander nerve force on tea, and men on nicotine, and then take a sedative to make them sleep. Quieting the nerves with bromide of potash or the like, is like piling on sand-bags for ballast. In this way the medicine habit is formed. Tonics are taken to tone the nerves up for the day, and sleeping potions must follow at night. How many people are there who do not swallow some kind of medicine every day? I saw a picture once of a farmer who brought in produce for barter, and had taken in exchange tea and tobacco in about equal quantities, condiments and a moderate supply of sugar and salt, while a large basket was being piled up with patent medicines! This is but a slightly exaggerated representation, and everybody whose eyes are opened, should be a missionary to tell people the harm of continual dosing. Tonics do not make

the nerve tone any better; they only take a little more nerve tone out of the fund. They give no strength, but take strength out of the body, by inducing the patient to expend more strength than he can spare.

The great need, then, is to save nervous energy in every way possible. Do not squander it in useless talking, or useless reading, or needless excitement. Keep away from exciting games, and shun exciting papers and books. Go into a gymnasium daily, and take systematic exercise; this is an expenditure that will bring return in increasing nerve capital, which can be turned into useful channels. If you are already an invalid, consider yourself in the condition of a run-down farm, which must be allowed to lie fallow, and be tilled und enriched in various ways; and remember that these processes all require time, and that Nature will not be hurried. Give her a fair chance, and she will deal generously with you.

THE ROOT OF THE TEMPERANCE QUESTION.

FROM A KINDERGARTEN STAND-POINT.

[Continuation of an abstract of a lecture on the right and wrong training of the senses, given before the Mothers' Department of the Chicago Kindergarten Training-School, by the Principal, Miss Elizabeth Harrison.]

THAT children are easily trained to prefer wholesome to unwholesome food, even when all the home influences are against the training, almost any kindergartner can tell you. I had charge one year of a class of children who were indulged in almost every respect in their home life. On one occasion an injudicious mother sent to the kindergarten a very large birthday cake, richly ornamented with candied fruits and other sweets. In cutting the cake, I quite incidentally said: "We do not want to upset any of our stomachs with these sweets, so we will just lay them aside," suiting the action to the word. After each child had eaten a good-sized slice of the cake (a privilege always allowed on birthday), there was at least one third of it left. Not a child out of the twenty asked for a second piece, nor for a bit of the confectionery. This was not because they were in any way suppressed, or afraid to make their wishes known, as they had almost absolute freedom, and were accustomed to ask for anything they desired. It was simply that, through previous plays and talks and stories, they had learned that I did not approve of such things for children; so, when with me, they did not either. Thus easily and almost imperceptibly is a little child molded. The mother who holds herself responsible for what her child shall wear, — and what mother does not? — and yet does not feel that she is answerable for what he shall eat, simply shows that she regards his outer appearance as a more important matter than his health of body or moral strength.

The danger of wrong training lies not alone in the indulgence of the sense of taste. Testimony is not wanting of the evil effects of the cultivation of the relish side of the other senses also. After giving a lesson on the training of the senses to a class in Chicago, a stranger walked up to me, and introduced herself as having formerly been a missionary to the Sandwich Islands. "This lesson has explained to me," said she, "a custom among the Sandwich Islanders which I never before understood. When the natives begin their religious rites and ceremonies, which, you know, are very licentious, the women are in the habit of decking themselves with wreaths of orange blossoms, and other flowers which have a strongly agreeable scent, until the air is heavy with the odor." "Do you not know who are the over-perfumed women of our own land?" asked I. "And yet I know mothers who deliberately train their children to revel in excessive indulgence in perfumery."

Mr. Wm. Tomlins, a man who has almost regenerated the musical world for children, once said, in a talk on musical education: "If music ends only in fitting us to enjoy it ourselves, it becomes selfishly enervating, *and this reacts on the musical tone.*" Therefore, he has long made a habit of teaching the hundreds of children who come under his instruction to sing sweetly, and to enunciate clearly, that they may be worthy of singing at this or that concert for the benefit of some grand charity. The dissipation which is seen in the lives of so many of this most ennobling profession, is thus easily explained.

Nor does this far-reaching thought stop with the right and wrong training of the senses. The mother who praises her child's curls or rosy cheeks rather than the child's actions or inner motives, is developing the relish side of the character — placing beauty of appearance over and above beauty of conduct. The father who takes his boy to the circus, and, passing by the menagerie and the acrobat's skill, teaches the boy to enjoy the clown and like parts of the exhibition, is leading to the development of the relish side of amusement, and is training the child to regard excitement and recreation as necessarily one and the same thing.

Fashionable parties for children, those abominations upon the face of the earth, are but seasoned condi-

ments of that most wholesome food for the young soul,— social contact with its peers. That so simple, so sweet, so holy, and so necessary a thing as the commingling of little children in play and work with those of their own age and ability, should be twisted and turned into an artificial, fashionable party, seems to the real lover of childhood as incredible, save for the sad fact that it is.

Even our Sunday-schools, with their prizes, and exhibitions, and sensational programs, are not exempt from the crime. I have seen the Easter festival so celebrated by Sunday-schools that, so far as its effects upon the younger children were concerned, they might each one as well have been given a glass of intoxicating liquor, so upset was their digestion, so excited their brains, so demoralized the unused emotions.

Need I speak of the relish side of the dress of children? John Ruskin, the great apostle of the beautiful, claims that no ornament is beautiful which has not a use.

The relish, perhaps, whose demoralizing influence is beginning to be suspected, is that of highly seasoned literature, if we may call such writing by the name of that which stands for all that is best of the thoughts and experiences of the human race. Mothers and teachers can not too earnestly sift the reading matter of the children over whom they have charge. There are, aside from the text books needed in their school work, some few great books which have stood the test of time and critic. Teach your children to understand and to love these. Above all, as a means of culture, as well as a means of inspiration and a guide to conduct, would I recommend that book of books, the Bible, to be the constant companion of mother and child.

Some may fall into the minor danger of teaching the child too great discrimination, until he becomes an epicure. The child who pushes away his oatmeal because it has milk on it instead of cream, is in a fair way to grow into the man who will push away the mass of humanity because they are so unwashed. God pity him if he does!

I once knew of a call which came from a large and needy district to a young woman who longed with all her heart to be of use in the world. "But," said she to me, "I cannot possibly go; the salary is only seven hundred dollars, and that would not even pay for the necessities of life with me." So she continued to live a barren,unsatisfied life. I knew another fine-brained, beautiful woman, whose insight was far beyond her times, to whom there came a grand opportunity to advance a great cause. "I cannot," she said despairingly, "do without my china and cut glass; the *disease of luxury* has fast hold upon me."

WOMAN'S CAPABILITIES AND OPPORTUNITIES AT THE AGE OF FIFTY YEARS.

BY KATE LINDSAY, M. D.

A WOMAN'S life may be divided naturally into three periods. The first, or developing period, extends to the age of twelve or fifteen years; the second covers the time devoted to the acquiring of an education, and to business activities, if she thus elects, or to the cares and duties of maternity, if she be a wife and mother; the third embraces what remains of life beyond this period, and should be, in most respects, the ripest and richest of her years. But the condition in which she finds herself in this third period, both physically and mentally, depends altogether upon the foundation laid in her youth, and the care with which she has guarded her gifts during her maturer years. Whether she finds herself worn out in mind and body, perhaps a bed-ridden invalid, or reaches this period with the ripened wisdom of years and strength that shall make her influence wide, it lies with herself to decide; only the decision must be made while she is yet young enough to make the best things possible.

At this age, woman should have twenty of the best years of her life in which to make herself felt for good in the world. Whether or not this is the case, depends upon how her younger years have been spent. A girl whose figure has been shaped to the notion of a French *modiste*, and whose highest ambition is to make a sensation in the ball-room and attend to the fashionable nothings of society, quite probably will never reach the age of fifty years but as a broken-down woman — an invalid both in mind and body. Those who thus fritter away their time in youth are wasting the vitality and energy nature intended for the reserve power of mature years,— forces that once exhausted, can never be replaced. Youth is the preparatory period, not the period of prime usefulness; the time when energy is to be gathered and stored for the important years ahead, not the time when it can be ruthlessly expended, and the capital stock drawn upon. The woman who does her living in youth, must expect to do her dying as soon as youth is past; perhaps not the real passing

away from life, but from all the activities and opportunities that constitute the pleasures of true living. She is but the dry and withered branch of a root through which still pulses the vital tide.

If a woman has lived a sensible girlhood, it is not true, as many hold, that if she marries and assumes the duties of motherhood, she is incapacitated for any further usefulness in the world. It is true that if she remains unmarried, she may, if she will, put the energy of her whole life into intellectual and philanthropic pursuits, devoting the time otherwise demanded for the training and rearing of children, to these purposes; but at the same time, in the successful management of a family, there is an experience gained that can be obtained in no other way, which a wise woman can put to most noble uses, to say nothing of honor reflected from the good deeds of the wisely trained son or daughter. The duties of motherhood need not compel a woman to allow her mind to run to waste; and she need not break down bodily, if she gives herself proper care. If she is united to a man who respects the higher laws of marital purity, she may bear and rear a family of children, and still continue in health, if she has not ruined her physique by tight-lacing and lack of healthful exercise. But the woman who bears children too frequently, or who to avoid it, resorts to common crimes against the unborn, or who does not properly care for her health,—that woman may expect nature's retribution. In cases where there is a predisposition to consumption, insanity, and other hereditary diseases, then is the time in which outraged nature will succumb to their ravages, unless guarded against with special care.

A very common cause of much of the ill health and mental inability of women at this critical age, is the use of stimulants and narcotics, under the mistaken notion of tiding over the difficulties of this period by drugging poor weak nerves and an impoverished system. There is no time in life when the use of these substances should be so carefully avoided. Morphine, liquor, tea, and coffee have each very bad effects upon the delicate mechanism of the female frame. Tea and coffee especially derange the nervous system. Much is said about the large number of men who are victims of the liquor habit; yet the number of women who suffer from inebriety from the use of tea and coffee, and from taking morphine, is equally large, and the effect of these drugs is, through them, very pernicious to the human race. There are millions of morphine-takers whose vice is carefully concealed from even their intimate friends, and four-fifths of these are women.

In respect to the increased activity of the intellect during this third period of woman's life, it can be shown that most of our justly famous women have won their honors and done their best work at about this age. Fanny Fern was forty-two before she published her first book, and Harriet Beecher Stowe was forty-four. Frances Willard said recently, on her fiftieth birthday, that she felt as if she had yet another fifty years of hard work before her. No woman ought to feel as if her life-work was ended at the turning of a well-rounded half century. There are many reasons why the period just entered upon is most desirable. The drains upon her system by the fulfillment of womanhood are past; she has now more of leisure, and the experience of the years behind her; and if she has lived as a rational being ought, she has acquired considerable wisdom by which she will be able to help her children and friends, and widen her influence for good in society at large. Of course, during the time when family cares and responsibilities were pressing, she could not be expected to labor in public work. Her task was then the noble one of training up the laborers of the future. But if by economy of time and strength she cultivated her mind and body, she laid a foundation for a good work to be done when her family no longer required her constant care. Then may come the crowning work of her life. Such a woman will be looked up to and revered by her sons and daughters. She will not be crowded into the background and forgotten, or looked upon simply as a person to be tolerated and charitably dealt with. There is nothing more pitiable than a mother who has allowed herself to fall behind and grow rusty, in consequence of which her children look upon her as an old fogy who knows nothing of what is going on in the world, and whose opinions are not worth heeding. Opinions change, thoughts and tastes change, with the changing generations. She is a wise mother who keeps abreast of the times, and thus holds her true position as the head of the household, the rightful leader and director; she will never grow old to her children.

This is the beautiful picture of advancing age we have in the Scriptures, which hold many words of praise for the woman who grows wise with advancing years. "Strength and honor are her clothing," and "her children rise up and call her blessed." She is a business woman, too; for "she considereth a field, and buyeth it." The closing years of life should be the peaceful harvest wherein a woman reaps the fruitage of well-spent years, and should be, in every sense of the word, the best and richest of any she has known.

FIRST PRINCIPLES IN DRESS.

DRESS reform no longer means the abolishing of all beauty and grace in a woman's costume, and substituting something that may leave her body unhampered, but puts her sensibility upon the rack, makes her conspicuous, and destroys forever that serenity which proverbially flows from the consciousness of being well dressed. Women themselves have come to the rescue with their ingenuity and their artistic sense, and the results of their experiments are as valuable to the devotees of grace and beauty, as to the earnest seeker after health and freedom. The great gain has been that, instead of one distinctive dress, which aimed only at banishing certain evils in costume, women of brains have applied themselves to the problem how to reach and combine first principles in dress,—*health, comfort, adaptability, beauty, simplicity.*

Perhaps it is too much to say that the problem is solved, but certainly it has been so simplified that any intelligent woman may try her hand at it with the prospect of being fairly successful in her own case. The trouble is "reform garments" have so multiplied, each one so warmly and confidently commended by its advocates, that a timid woman is perplexed, and half inclined to accept present evils rather than risk those she knows not of. But the same difficulty attends the choice of food, the selection of a sewing-machine, the planning of a house; and we have only to remember that circumstances alter cases, and therefore there may be a best for your neighbor that is not best for you, or half a dozen equally good styles, if in the end they secure what they aim at.

First there comes *health*, because it not simply a grace, but a virtue, and your dress must be so modeled as never to transgress its laws. Here is a form, well called divine, but every muscle has its work and its necessities of motion, every inch of yielding surface makes imperious demand; and delicate framework, elastic muscle, and satiny skin are built about a mechanism marvelous in its possibilities of pleasure and pain. How are you to meet its requirements, how escape wrecking and ruining it by your careless or clumsy handling, unless you will make a study of it, and know something more of your own and your child's body than its outside surface? A dress that compresses, constricts, or burdens any part of the body, violates a fundamental law, and is a wholly unnecessary evil.

Comfort might be supposed to be synonymous with health, but unfortunately for us, it is not; these long-suffering bodies may be sorely abused before they cry out audibly, and many a woman insists that her dress is comfortable because she does not know what comfort is. She is like a person with defective vision, who spends half his life in partial twilight without discovering that healthy eyes distinguish flowers and leaves and features. She does not connect her weary, uncomfortable feelings, her fatigue in walking or working, her lack of zest in amusement and recreation, with a burdensome and inconvenient style of dress to which she has been accustomed. And right here comes in *adaptability.*

Your dress must not only be healthful and comfortable, but it must be suited to your business. Garments that are admirable in the parlor, are wholly out of place in the carriage, or may be suited to the carriage, and worse than absurd on the side-walk; charming for a reception or an afternoon tea, but utterly ridiculous for a shopping excursion. It shows a lack of thought in our women that one so constantly sees garments worn grotesquely out of place, and that women who can compass but one new gown for a season, should choose it for fanciful prettiness, in spite of the fact that it must serve for work-days as well as holidays.

Just as legitimate a consideration as any of the others is this next principle, *beauty.* Dress ought to be beautiful so far as it can; to please the eye, to gratify the artistic sense, to harmonize with womanhood, which was meant in itself to be beautiful. There is no virtue in ugliness, or any safeguard against vanity in an uncouth, unbecoming garment; and a beautiful woman in a beautiful dress is as pure a source of delight as the exquisite shape and hue and fragrance of the blossoms of June.

Simplicity, so far as being at variance with beauty, is often its chief element, and the perfection of art is reached in costumes that show fewest traces of construction, but by simple and graceful lines suggest the growth of the flower rather than the building of an ornate house. And while the simple garment is more likely to harmonize with the laws of health and comfort, it is sure to be more adaptable for purposes where any attempt at the picturesque results most disasterously.

Some day our women will learn that to be beautiful, they must be healthy ; that to be healthy, they must make a study of rational dress ; that the human form as God made it is lovelier than any device of the dressmaker. There will be more individuality in dress, but less violation of fundamental law ; just as many beautiful gowns, but a great many more plain, simple, substantial ones to take the place of the flimsy creations of an uneducated taste.— *Emily Huntington Miller, in Home Magazine.*

THE NORMAL FOOT.

THE study of ancient statuary is interesting as well to the student of nature as to the student of art. In it can be traced the successive steps of degeneracy of the human race, and also, we regret to say, some tokens of a higher development, all going to sustain the theory of growth by activity and freedom, and deterioration by inertia and restriction.

Taking the sculptured likeness of some female model for our study, we are struck with the smallness of the head and eyes, and the superior development of the waist, hands, and feet, as compared with those of a nineteenth-century type. The gradual calling into play of the mental powers of women, unrecognized in the centuries of the past, has added greatly to the size of the head, especially in those parts designated as the seat of the higher intelligencies. The eye has partaken of this development, and instead of a small, narrow, and sleepy organ, we have the full, round, wide-awake optics that characterize the far-seeing, observant woman of to-day.

Alas that this progressiveness should walk hand in hand with most marked retrogression ! The waist of the woman who enjoys honorable recognition in this era of general advancement, is a marvel of deformity that only centuries of vicious dressing could produce ; and the feet she totters about upon are better only in that they interfere with no vital function. The story of the evolution of the modern waist,— or rather its involution,— is familiar from much telling ; but there are few who are really aware of the marked effect modern fashions in foot wear have inflicted upon the members they were supposed to protect and nourish. And in this respect man has been no more wise than his sister.

The foot that wore the sandal and the calcea (sort of moccasin), was long, broad, and firmly planted, indicated by the square (not tapering), wide-spreading toes, and sturdy ankles. To be fitted to a modern shoe, a medium-sized woman, say five feet three inches in hight, would require a number six of probably the widest last, if she could at all conform her foot to the unnatural shape shoes have come to take. Unlike the present sentiment which relegates a lady, irrespective of size, to shoes of the short range of from two's to four's, the feet of the ancients were proportioned to the size of the body. The tall, majestically formed did not attempt at a sandal to emulate her petite sisters, and because she could not accomplish it, refuse to appear but in garments that would totally exclude a glimpse of those extremities. It is a fact often commented upon, that the feet are most conspicuously posed in ancient sculpture, and no attempt to conceal, or to effect what we term artistic arrangement, is made. They show for all they are, prominently and forcibly planted,— but there are no unsightly bulges or blemishes, no crowding out of narrow toes which already over-ride each other.

The average masculine foot is nowadays easily slipped inside a number eight shoe ; but its Greek ancestor, if it had one, found a number twelve and a half none too large,— a difference of one and a half inches in length alone. No doubt many would pronounce the change one for the better, from an esthetical point of view ; but as the taste which would thus dictate is but the outcome of perverted education, it will have to be conceded that Nature's intentions were based on wise forethought, since in falling from the original standard, we have lost the symmetry that graces all her original plans, as well as all beauty of motion. The cause is not hard to discern ; it rests alone with the restrictions imposed by this perversion of ideals.

S. I. M.

THE Maori women, in New Zealand, are killing themselves in their efforts to wear corsets, since they have seen them on the missionary women, and think virtue lies in imitating them in everything.

THE PROTEST OF THE SILENT.

ONE need not go far from home for strange happenings. Listen to what befell that matter-of-fact young lady, Miss Geraldine Banks, as she lay upon the couch by the library fire, one sunny autumn afternoon. It was a large, luxuriously furnished room. The sun flickered through the curtains pleasantly. There was a fragrance of hot-house flowers, which Geraldine was noticing with pleasure. She noticed also that the house was delightfully quiet; the gentle ticking of the clock sounded cozily in the stillness. Geraldine closed her eyes, the better to take in these pleasant sensations.

Close upon that she observed some queer, unusual sounds. Sweep — sweep — sweep! There was a trail, a rustle, a flutter, a creak. Something was drawing near; something was closing ranks all about her; something gentle, something hushing and soft, yet something that had come with a *demand*. Geraldine felt that before she opened her eyes!

"Oh!" she said, as she glanced bewildered at the phalanx gathered around her. "My gowns!"

Yes, there they were, each with some faint lady-shadow filling its outlines, swaying, bending, closing in with folds, soft, rich, and bright, around the couch where Geraldine lay.

"My white silk!" she said, eyeing the soft, pale robe nearest her elbow. "I always thought it a lovely dress, but too cold for one so colorless as I. It proved so unbecoming that I have really never worn it since it came home."

"That Scotch plaid!" she reflected. "I was so delighted with it when I bought it, and then I fancied it was too school-girlish. I looked well in it, yet I have worn it only twice this winter."

"My black *faille-francaise!*" she mused. "I thought I was ruined when I got the bill for that. But it's horrid to wear. Those jet ornaments and the train make it so heavy, and it is so stiff, and squeaks when I breathe. I never wear it when I can help it."

The silk and jet loomed and flashed ominously, as Geraldine, with these comments, turned her glance to the pretty combination of pink silk and cashmere half hidden at its elbow.

"I always liked that so," mused Geraldine, "but it didn't seem as much like a new one as I hoped it would after it was made over."

There was a jaunty stripe making itself obnoxious against the pink; a fine brown cloth in severe folds beyond that; then a black, clinging riding-habit, with much-stiffened body; then some delicate gauzes of blue, and silver, and white, and yellow, and black.

"I never really played tennis enough to want that suit," mused Geraldine. "That brown tailor-made would have been worth its cost if I ever walked, I suppose. There's my dear Redfern habit. I *hope* the moths won't get into that. Really, I must have another canter with Paris some day. Those old evening dresses — what are they here for? What did you all want?" she asked, realizing again the pressure of that gentle yet forcible *demand*.

It was the black silk which gloomed and flashed in answer. "Dismiss us," she creaked, "and let us go."

"Dismiss you?" said Geraldine.

"Yes; we are tired of imprisonment. Dismiss us to the service of some maiden who needs us. Dismiss us, or dissolve us."

"Dissolve you?" asked Geraldine.

"Yes, dissolve us. Let us become gases and residuum so we may be free. Let us be dust and ashes, buried in the ground, blown in the winds, mingled with the elements, so we may receive some new form, and at last find the end of our being."

"What do you mean?" cried the bewildered Geraldine.

"Service, worthy service," creaked the silk. "What else should be the end of our being? What is five dollars a yard shut everlastingly in a wardrobe to five cents a yard in a clean gingham apron upon an orphan child?"

"Don't you know the law of material things, Miss

Banks?" said the tailor-made, with a gentle, measured little courtesy. "When God has no more service for his material things, he quietly dissolves them, and they pass into some other form."

"Oh!" said Geraldine.

"Yes, and we are praying for speedy dissolution. If you will not set us free, we must cry to the moth and the buffalo-bug; they will not listen in vain.

And now a startling break occurred in this strange interview. Through the throng of fairy evening dress an uncouth form was elbowing its way. Two poles of stiff yet earnest demeanor, wrapped about and about in a garment of rough netting, were presently facing Geraldine, and from their knees two rackets started forward, turned a lively somersault, and laid themselves in entreaty at her feet.

"Oh!" said Geraldine. "My tennis set!"

"Yes," said the twin poles; "how long will you keep us bound hand and foot, the lodging places of spiders in the stable loft? We had gifts for you. We hoped to bring you firmer muscles and rosier cheeks, warmer hands and feet, and a pleasant interest to knit you to your young companions. But you put us by. We are only a temptation to covetousness to the coachman's little boys. Better take the stumbling-block out of their sight. Make us theirs, or somebody's, by right, that we may be set out in the blessed sunshine, and somebody may grow by us."

"Really!" gasped Geraldine.

And then her eyes were riveted by a pair of large brown ones looking mournfully over the shoulder of the tennis net. A long brown nose, also, was thrust forward with a gentle whinny.

"O Paris, you dear horse, are you there, too?' said Geraldine. "It's a long time since I've given you a lump of sugar. Did you come for that now?"

Paris shook his head impatiently, and thrust one slender hoof from behind the net.

"I remember," mused Geraldine, "that William said once your hoofs would soften unless you had more exercise. But father said it was his business to see to that."

"Was I born only to consume the time of a groom?" said Paris, reproachfully. "'Tis a weary, useless task for him and me, this pacing out just for exercise. Come, free us both from bondage. Are food and exercise enough for the soul of a true horse? I had better hopes. I hope to give you a quicker, stronger pulse, long breaths of pure air on the hills about here. I hoped to make you acquainted with the fields and by-paths, all the beautiful country around your home. But you love your hammock and your couch better than me."

"Oh, no!" cried Geraldine. "Only — only" —

"There 's the pale minister," said Paris; "the doctor told him to try riding, and he shook his head at a prescription so impossible. At least send me down there for an hour or two daily."

This suggestion gave a painful wrench to Geraldine's selfish heart, but she had no time to consider it then. A stir among the gowns betokened other visitants.

"My phaeton!" murmured Geraldine, "and my village cart!"

The phaeton sulked in olive green, the village cart was aggressive in black and yellow.

"Have we not wheels?" said the latter. "Come, it is four weeks since I was out of the carriage house."

"And it is two years since you had done with me," said the aggrieved phaeton. "I would rather dissolve in dust like the deacon's one-horse shay than bear it longer."

"Really, I think you were more comfortable than the village cart," said Geraldine. "I might like to use you again, perhaps."

"But meantime the moths are in my cushions. Meantime, William has promised to take his sweetheart out in me the first moonlight night."

"How dare he?" cried Geraldine, angrily.

"No wonder he forgets I have lawful ownership to see me lying so unused," said the phaeton.

But there was no more time to discuss William's blame. Suddenly the gowns, the wagons, and all the rest began to scurry away before the falling of a shower. No, it was not a shower of rain, but of small articles — shoes, high and low, gloves, picture-cards, games, fans; last of all, books. They flew out from the shelves and landed upon the heaped floor, upon the couch, upon Geraldine's helpless hands and feet. "Oh, how good the air feels!" cried some, fluttering all their leaves, and respiring with deep breaths. Some laid back their covers and stared full and long at Geraldine, with decorated title-pages. One with clasped lids lay heavy on her chest, and murmured hoarsely, "Where are the thirsty souls for whom we are keeping our wells of living water?"

Thick and fast this alarming shower continued to fall; trinkets were in it, china, silver, scent-bottles,— who knows what? — till Geraldine in terror leaped from her couch.

"My unused treasures!" she cried, "my unused treasures!"

Then, behold, all was still and orderly about her. There was no trace of Paris or the village cart. The books stood in silent rows upon the shelves. The clock ticked peacefully. Only from an engraving upon the wall a thorn-crowned head looked down upon Gerald-

ine, and it seemed to whisper: "Thou oughtest therefore to have put my money to the *exchangers*, that at my coming I should have received mine own with usury."

"My unused treasures!" sighed Geraldine, softly in penitential reply.— *Elizabeth Glover, in Congregationalist.*

PANAMA.

BY E. L. SHAW.

THE Isthmus of Panama, by reason of its peculiar geographical location, must always possess paramount interest for the politician, the commercial man, and the student of history; and while forming the connecting link between two mighty continents, in its importance it almost realizes the ancient idea of the center of the world. Wonderful indeed is the part which this little crescent-shaped belt of land, only about two hundred miles long, and nowhere more than forty miles in breadth, plays in the transactions of the great, out-lying earth. Vessels from the bosom of every ocean under the sun ride at anchor in its harbors, or unload their stores at its wharves; and the little railway from Aspinwall to Panama, is a highway across which much of the traffic of the world passes. One advantage, too, of site Panama possesses, other than financial or commercial: from the summit of its low-lying central hills, one may look off, on either side, into a panorama of infinitude which sinks man, with his petty schemes and "ant-hill bustle," into nothingness beside it,—the spectacle of two mighty oceans in their onward rush and roar, balked and forever held at bay by a tiny strip of earth, a mere rainbow-hued ribbon of tropical flowers and verdure!

But, unfortunately, in this spot so rich in story and association, human life, at present, is reckoned an exceedingly precarious thing. Such a thing as any sanitary provision or regulation is unknown upon the Isthmus. Under the scorching rays of a nearly vertical sun, the cities of this diminutive "Key to the Universe," as it has been called, with their "open drains of stagnant water covered with green scum," have a fearful monoply of epidemic and fever. The writer from whom we quote, detailing his experience during a temporary sojourn there, takes the following view of the case: "It is astounding, not that epidemics should visit and devastate these cities, but that any epidemic should ever leave them while a single inhabitant remained unburied." These conditions operated as a great factor in the difficulty experienced in the building of the Panama Railway. Panama has a proverb that "every tie of the railway across the Isthmus cost a corpse," which, if not literally true, is at least approximately so. It was, without doubt, the costliest fifty miles of railway ever constructed, and it is still maintained at great expense, feeding and housing along its route a gang of some 3,000 laborers. The passenger fare across is twenty-five dollars, an unheard-of extortion, but which, in connection with its immense freight-traffic, enables its shareholders to pocket some very neat dividends.

Panama city is an old, old town. Even in 1514, when Balboa took formal possession of the sea, the coast, and the surrounding country in the name of his royal master, the king of Spain, a considerable Indian village existed on or near its present site. Modern Panama, rebuilt after its demolition by the buccaneers in 1671, is over two centuries old. In the long-gone days when Spain ruled the seas, this spot was her colonial fortress in the New World. It was re-built a walled city, and to-day, its huge piles of masonry still standing, attest the workmanship of its early builders.

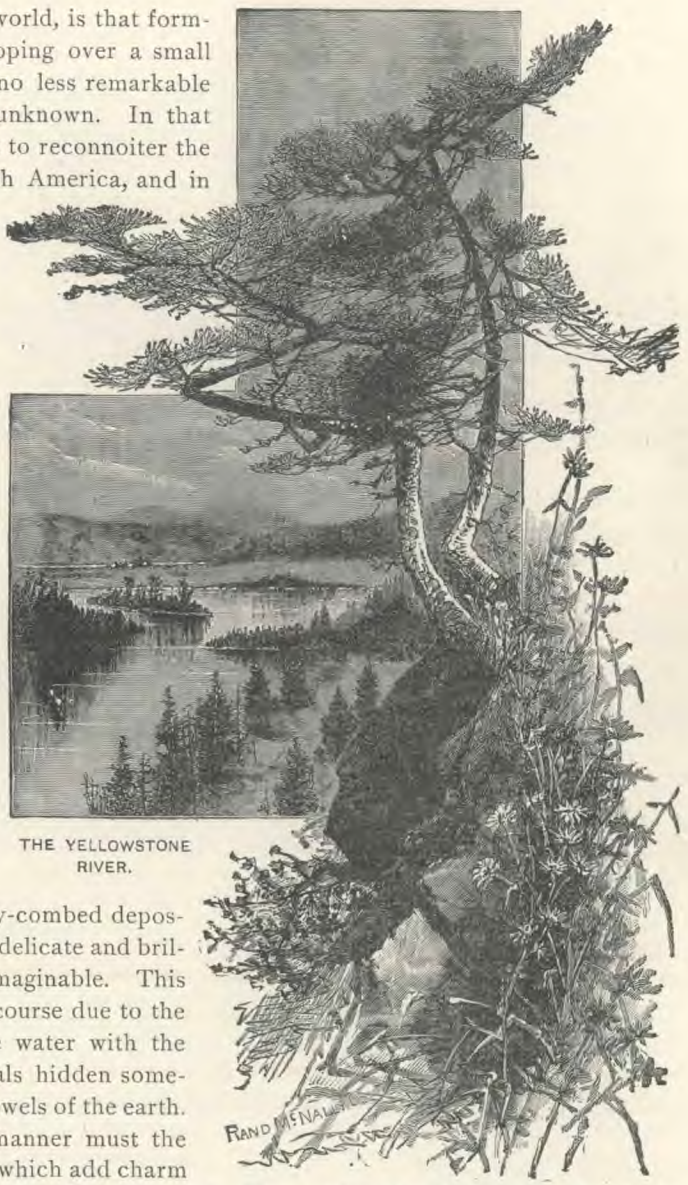
There are still the remains of much ecclesiastical architecture of the olden time. Fine modern buildings have been erected in these latter days, since the construction of the Panama railway and its later rival, the "impossible canal" of M. De Lesseps', brought for a brief period such fabulous financial prosperity to Panama. Many of the principal buildings are built wholly of iron, having been shipped hither in sections, all ready to be set up. Notable among these are the hospital buildings of the Canal company, as well as several bridges. One of these latter, on the line of the Trans-Isthmian canal, at Barbacoas, cost $500,000.

But in the Panama of to-day, all business has stagnated. The $300,000,000 expended by the Canal Company in the prosecution of their fruitless work, built up the city and poured wealth into the coffers of her citizens; but when the bubble collapsed, and the rollicking, riotous, motley throng of laborers—1,500 strong, scarcely more than a year ago—departed, half the stores and shops were closed. After the immense expenditure of human life and treasure, to find their inter-oceanic canal upon which hung so many hopes, scarcely more than one fourth completed, one would expect the Panamaians to lose heart; but they do not. They still have unbounded faith in the final success of the great scheme. "Soon the big crowd will come clattering back," they say hopefully, and who that is at all interested in Panama's future could wish it otherwise?

IN THE PARK OF THE YELLOWSTONE.

BY S. ISADORE MINER.

A REGION probably the most wonderful in the world, is that forming the north-west corner of Wyoming, and lapping over a small portion each of Idaho and Montana,—a region no less remarkable from the fact that until 1871 its existence was unknown. In that year, a party of United States explorers, sent out to reconnoiter the Great Divide,—the geographical center of North America, and in which the park is located, entered this wonderful basin, the source of the Yellowstone River, and sent back such glowing accounts of its beauties and marvels that Congress, the next year, did what it had already done for the Yosemite Valley — made it a National Park. This tract, sixty-five by fifty-five miles, and containing 3,575 acres, is therefore open to all tourists and visitors, but reserved from private settlement or habitation, accommodations for the vast throng that annually pay tribute to its wonders, alone being permitted in its borders.



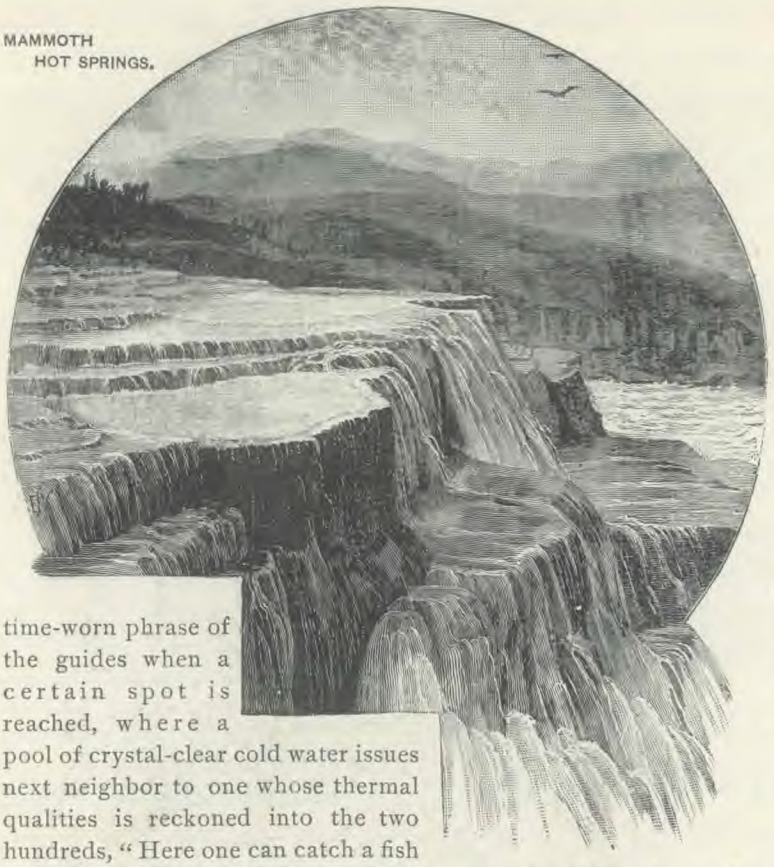
THE YELLOWSTONE RIVER.

The attractions of the region are chiefly due to the action of subterranean reservoirs of hot water, resulting in the phenomena of geysers, boiling springs of various hues, and peculiar and beautiful formations of the calcareous deposits held in solution by the escaping flow. Of the springs alone there are from five to ten thousand, new ones constantly breaking out, and others becoming extinct, the latter leaving behind them reminders of their presence in beautiful honey-combed deposits of the most delicate and brilliant shades imaginable. This coloring is of course due to the contact of the water with the various minerals hidden somewhere in the bowels of the earth. In the same manner must the many terraces which add charm to the region have been formed. These step-like formations, though of rock-like solidity, present the appearance of cascades of a milky color, so perfectly do they retain the evidences of their origin.

FAN GEYSER.

Among the many varieties of hot springs, those aptly dubbed the "paint pots" are peculiarly interesting. Here bubble and boil liquids of mud-like consistency, partaking also of the rainbow hues for which the park is noted. Pools of water one is constantly stumbling upon and into, and exclaiming not only of their warmth, but of the most beautiful shades in sapphire, emerald, amethyst, and topaz, fairly outrivaling the gems themselves in purity and intenseness. Nowhere, indeed, in all the world, could artist's colors more fitly exclaim, "Who can paint the lily or gild refined gold?"

The hot springs vary in temperature from 160° to 200° F., and it is a



MAMMOTH HOT SPRINGS.

time-worn phrase of the guides when a certain spot is reached, where a pool of crystal-clear cold water issues next neighbor to one whose thermal qualities is reckoned into the two hundreds, "Here one can catch a fish and cook it without once changing his position." But it is when the springs combine their intensity with the unseen, unknown forces of nature far beneath the surface, that wonder and admiration swell into awe. There are at least fifty of these huge water-spouts, varying much in size and shape. The largest of these is the Excelsior, which only broke its bounds two years ago, until that time the Giantess having carried off the honors. The mouth of the Excelsior is 250 feet across, from whence issues at times a column of water and spray 75 feet in diameter, rising majestically to a hight of 300 feet. The favorite geyser with tourists is the Old Faithful, from the fact that it discharges with clock-like regularity every hour. Nearly all the others are irregular in action, varying from a few moments to weeks, so that a view of them during eruption is extremely uncertain. Old Faithful discharges a jet of water about a hundred feet into the air, where it continues to play for a number of minutes, throwing a shower of mist and fine spray for some distance around. Other geysers take still more beautiful forms, as their names indicate, — Bee-Hive, Fan, Saw-Mill, Turban, Grotto, etc., that of the Castle being very picturesque indeed, ascending as it does from a huge calcareous deposit surmounted by turrets and towers like those of some mediæval pile.

The Firehole River, which drains this basin of hot springs and geysers, is itself one of the most remarkable features of the region. Its bed and banks, entirely composed of hot-spring deposit, are honey-combed and scooped out by geyser springs and pools, and resemble a canal through a country of limekilns covered with slag-heaps and refuse of old smelting-works. Its borders are dotted in all directions with mud ponds, boiling springs, and remains of extinct geysers.

The Yellowstone Lake, too, is a most attractive body of water, while minor sheets afford most desirable warm baths to the travel-worn sightseer. Yellowstone Falls, though much less in volume than Niagara, is over twice the hight, and makes up in picturesque surroundings what it may lack in grandeur by comparison with its Eastern rival.

Among other of the natural formations that command considerable notice are the crevices at various points of the basin extending far down into the earth, and almost unbearable to explore, from the intense heat; hoodoo land, also, a tract embracing some of the most curious designs in natural monumental art possible to conceive. They are clearly of volcanic origin, the hot lava, perhaps, having flowed into crevices and breaks in common sandstone or clay, which the erosion of years has released, leaving the defiant lava to rear its head in the uncouth shapes in which it was first molded.

TEMPERANCE NOTES.

THE Governor of Maryland has signified his intention to approve the bill for prohibiting the sale of cigarettes to minors, which has just passed the legislature.

AN Alabama editor has lately become violently insane from cigarette smoking, and has been removed to the State insane asylum. It is said that he smoked as high as twenty packages of cigarettes daily.

A BELGIAN shipping-paper states that a steamer recently bound for the West Coast of Africa, had on board fourteen missionaries, four hundred and sixty tons of gunpowder, eleven cases of gin, and ten thousand casks of rum.

THE King of Samoa strictly prohibits, in his dominions, the sale or use, as a beverage, of "any spirituous, vinous, or fermented liquors, or intoxicating drinks," by any of his subjects. Any violation of this law involves either fine or imprisonment, and in some cases both.

A CONTEMPORARY calls attention to the fact that in a temperance hospital in London, according to a late report, only five per cent of the pneumonia patients die, while in New York City Hospital, where liquors are used as medicines, *sixty-five* per cent of that class of patients die. No doubt these figures could be repeated in the treatment of any disease by alcohol.

ETHER-DRINKING IN IRELAND.— It is authoritatively stated that in certain portions of Ireland methylated ether is largely used by the common people as an intoxicant, in place of whisky. A medical correspondent to an English paper writes thus, in relation to it: "It is brought thither, in large Winchester quarts, and is sold by grocers, etc., principally to women, who retail it through the country. It is called into requisition frequently at balls, lodge meetings, etc., when the public-houses are closed or the drink runs short. The intoxicating effects come on speedily, and pass away with equal rapidity, so that one can get drunk and sober several times in the course of an afternoon or evening."

POPULAR SCIENCE.

IN addition to the convenience or the completed horse-car line extending from Cairo to the Pyramids, the modern traveler, when landed at their base, will now find an elevator which will convey him to the top of the venerable pile in ease and comfort.

THERE has lately been invented a rope that will float. It has a core of cork, around which is braided a network of cotton twine; this is in turn surrounded by another layer of strong cotton, making a rope exceedingly soft and pliable, and one, it is said, that will stand an immense strain. This rope will no doubt be found to be very valuable for use on shipboard, as well as in life-saving service.

AN archæological discovery of considerable interest has lately been made in France, during the cutting of a railway from Argenteuil to Nantes. One hundred and eight-five plaster tombs of the Merovingian epoch were excavated, the skeleton occupants being well preserved. An official French commission of the Department of the Seine-et-Oise, has been sent to visit the scene of the discovery, for the purpose of securing for preservation its remarkable historical curiosities.

RECORDED information relative to the famous "Sinking Mountain" in Georgia, goes to show that while gradually sinking all the time, its disquiet is remarkably augmented during periods of earthquake disturbances occuring in some portion of the globe. It is said that memoranda show that at the time of the great earthquake in Java, a few years since, Sinking Mountain lowered itself at least ten feet.

LIGHT OF THE FIRE-FLY.— Professors Longley and Berry have been making some investigations of the light of the fire-fly, by which they have determined that this peculiar light is not accompanied by any appreciable amount of heat. In other words, the entire energy exerted by the animal is converted into light. This is very different from the conditions in the ordinary gas-burner, in which less than one per cent of the energy expended is converted into light, the great remainder being transformed into heat, and so wasted. If some method could be devised by which the energy derived from the consumption of oil or coal conld be all or nearly all converted into light, the cost of illumination would be reduced to an almost infinitesimal sum.

RELATION OF PHYSICAL TRAINING TO MENTAL AND MORAL IMPROVEMENT.

DR. H. D. WEY, physician to the New York State Reformatory at Elmira, has been trying the effects of physical training as a means of reforming vicious boys, and with the most happy results. We quote a few paragraphs from an interesting report of his work, embodied in a paper read before the American Association for the Advancement of Physical Education :—

"Physical training, in its most literal sense, is the cultivation of organic perfection of the human body in its entirety, and an approximation to the physical proportions of a typical man. It is the correction of disparities in accordance with the law of adaptation and harmonious adjustment of parts.

"Prison officials recognize a class of dullards and illiterates in whom body and mind, instead of acting reciprocally and for mutual benefit, seemingly have operated as a drag the one upon the other. Prison methods of the past have accomplished with such, little more than a specified number of hours of work per day and the observance of certain rules of government.

"The physical culture of these behind-hand ones should be undertaken during the period of bodily growth, when every organ, limb, and tissue is in a plastic state, changing and capable of being changed. A systematic and rational education of the body causes improved blood to take the place of poor and vitiated, enabling the various organs to perform more and better work, begetting strong limbs and a shapely frame. The physical reconstruction of these dullards and sluggards becomes something more than the mere acquisition of muscle and brawn. It is the modification and change to a better form of a frame handicapped by the transmission of criminal tendencies, or stunted and embarrassed in its growth by vicious habits and surroundings that finally found expression in crime.

"That physical training has not been made part of the scheme in the management of this class of defects, I believe to be due simply to the fact that the laws of physiology have either been lost sight of or ignored; and the mental side of the question of their readjustment has obscured and hidden the physical. 'Mind and body should be viewed as the two well-fitting halves of a perfect whole, designed in true accord mutually to sustain and support each other.' Physical education looking to mental quickening is in accordance with the laws of physiology. Mental development and culture, ignoring the fact of a physical basis, soon resolves itself into a study of pathology and morbid anatomy. The performance of gymnastic feats and tricks is neither desired nor aimed at. The object of physical training is not to make these men strong, so much as to make them healthy and enduring. . . .

"Our reformatories, houses of refuge and correction, and orphan asylums are the schools in which a class, not numerically small if physically so, are receiving their education. These children of the public are greatly in arrears physically, due to conditions they are in no wise responsible for, but if properly treated, possess capacity for improvement in comparison with their requirements. It is not sufficient to train them in habits of industry, with attention to mental and moral needs; but of paramount importance is the systematic culture of the body, that is, exercise and training most suitable for individual requirements, systematized and carried out under the supervision of a competent teacher.

"The actual demands of such a course need not interfere with the routine and discipline of any institution. Four lessons a week of a half-hour each, continued for a period of six months, will cause the caved-in abdomen, the half-used lungs, the pipe-stem legs, and arms to match, the pimply and unhealthy skin, to all recede before the evolution of the vigorous boy, well built and self-confident, whose brain is fed by rich and life-giving blood.

"The reply to Maclaren of the soldier who had passed through a brief course of training at the gymnasium at Warley Barracks, is as pregnant in the meaning as many a sermon. 'I asked him if he felt any stronger for his practice? "I feel twice the man I did, sir," was the reply. On my further asking him what he meant by that — "I feel twice the man I did for anything a man can be set to do."' . . .

"The primary education of many criminals and defects should be the education of the body and the building up and strengthening of the brain. To force or develop a brain whose habitation is attenuated and architecturally inharmonious, whose nervous system is vitiated, is to produce a mental dyspeptic, who, while he may by the brightness of his work, give evidence for a time of promise, yet under the pressure of so-called education and contact with the crowding world, will be but the flame that flickers and gives an increased light before it dies down and is extinguished. The mental foundation of such an one is builded upon the sand and not the enduring rock. Poorly fitted for the work of life, and embarrassed physically, when the day of tension and trial comes it finds the mind, crammed with scholastic lore and moral platitudes in excess of its physical strength, illy prepared to meet the exigencies of the hour; and a lapsing back into a condition sevenfold worse than the first state, or insanity and suicide, as in the case of the poet Chatterton, terminate the scene.

THE STUDY OF HIGHER MATHEMATICS.

BY S. ISADORE MINER.

THE "fad" in educational thought just now is to confine girls and boys mainly to the channels in which their future work will lie. The effort is a laudable one; it will give us what we most need,— specialists, instead of superficial generalists.

But in their efforts for improvement in educational standards, many are crying out against higher mathematics as a study for those who do not expect to follow as a calling the quantitative sciences. While we admit that this is true in principle, and true, perhaps, in the abstract, of this particular study, we believe that there is a side to the question which we cannot afford to ignore; and that is, its cogency as a brain-developer,— as mental gymnastics, if we may be allowed this use of the word.

The Delsarte movement now absorbing the attention of physical-culture enthusiasts, presents the subject of development in its truest, highest phase; yet many of its disciples lose sight of the master's far-reaching intention, and fail to recognize that mental growth is encompassed in the work. Many entertain an altogether too vague a conception of what the brain really is; they conceive it to be an intangible something, entirely independent and separable from the physical organization. But the mind is not an etherial vapor. The brain is as materialistic as bone or sinew or muscle; like them is of cellular tissue, is nourished in the same way, and needs in the main the same sort of usage to maintain it in sound health.

Like the merely muscular tissues of the body, the intellectual tissues require exercise to keep them in tone. The college student may not intend to row for a living, nor swing Indian clubs, nor do trapeze tricks; he may not even design being a blacksmith. Nevertheless, he spends much time and thought in acquiring a good deal of brawn, and finds it serves him well, in whatever calling his after-work may lie.

Just so the brain must be trained to alertness and endurance — staying powers; and it matters not so much whether the line of exercise made to serve one's turn will be used in a professional way, as that it is *the* one best suited for the purpose. Every educator is bound to admit that mathematics afford the best mental drill in the school curriculum. Unlike other studies, it has no "exceptions to general rules." It rests on the immutability of figures, and the differences in opinion of this or that critic casts not a shade of color on its unalterable proportions. Reasoning alone is the solution of its problems, and the student once master of its principles, can reason its darkness into daylight with a certainty that needs no commentator to assure.

The girl or boy who to-day is struggling with some involved algebraic equation, may never again have occasion to find the value of the unknown; but the brain tissue is all the stronger for it, the gray matter a little firmer, and the whole being better prepared to grasp with keen comprehension intricate problems of an altogether different sort. Had one the power to look inside the brain and note its wonderful processes, he could see the effects of these mental gymnastics, — the filling out of this inequality, the strengthening of that cell, the growing as an entirety more symmetrical and enduring.

SOCIAL PURITY WORK IN THE PUBLIC SCHOOLS.

BEFORE the National Educational Association, which met at St. Paul, Minn., in July last, Miss Frances E. Willard made use of the following words in a telling speech on the need of White Cross work in the public schools :—

"That German professor did a service to all men who recently declared that the young men of chaste life in his university were by far the best scholars; that as impurities not carried from the system tend to poison it throughout, so vital forces conserved, build up the whole being, and especially the brain. When parents and teachers once make up their minds to help the young people by stating to them truths like these; when we older ones discover that in presence of their danger speech is no more silver and silence golden, but speech is golden and silence criminal, then will ten youths be virtuous where one is now. For not because of set purpose to be base are the best beloved of Christian homes given over to wrong ways of living, but largely, now as always, is it true that lack of knowledge lies at the root of physical degeneracy.

"The White Cross comes, with its pure, specific precepts, to supply just what has been lacking in the training of our youth. It appeals to all that is noblest in a young man's heart, and by his love of mother, sister, and home, pleads with him to be as pure as those who love him are; to speak no word that would bring a blush to his sister's cheek, and suffer no allusion to be made to any woman in his hearing which he would not tolerate in reference to his mother. It points out great Nature's law of equal purity and truth of life for each of the two fractions that make up the human intêger.

"The principle on which this movement rests is that to be forewarned is the only way to be forearmed; that virtue based upon knowledge is safer than innocence based upon ignorance; and the recital of the creative mysteries from a mother's or a teacher's lips, imparts to the child's mind such a sense of solemnity and sacredness as cannot be otherwise obtained. The girl, and even more especially the boy, who feels a confidential freedom in bringing to the home sanctuary the mysterious questions sure to be asked and answered somewhere, will be likely to maintain purity of word and deed even amid youth's manifold temptations. Happy the child whose mother has his entire confidence all his life long. I have been told by many a fortunate mother that her son indignantly repelled the degradation of the common school-boy talk upon subjects he had learned to regard as sacred by reason of confidences exchanged between himself and her who bore him.

"But here comes in the motto, '*Noblesse oblige;*' for all mothers are not what we could wish. The average teacher is greatly superior in character and culture to the average parent whose children are placed under her care. She knows far better what to say and how to say it. Every school-house has its three classes of children — those from homes celestial, terrestrial, and diabolical. It is so much easier to sink than to climb that in seeking an equilibrium, the lowest minds spread out their contagion widest.

"Now, the public school teacher can here do a mighty work for children worse than orphans, who come out of homes that are impure, and for other children whose parents are too thoughtless or too much prejudiced to help them. To the teaching that begins at six years old to train the children against the drink and tobacco habits, I would add the lessons of the White Cross. The White Cross pledge is based on the belief that you cannot in mature years get out of a character what was not built into it when the youthful nature was like 'clay in the hands of the potter;' that the arrest of thought must be secured by mother, minister, and teacher, before the common talk of street and play-ground has wrenched that thought away from the white line of purity and truth. Innocence may be founded upon ignorance, but virtue is evermore based upon knowledge. In the presence of temptation, one is a rope of sand, and the other a keen Damascus blade. To be forewarned is the only way to be forearmed. A precipice lies before every boy and girl when they emerge

beyond the sheltering fortress of their home, but a safe, sure path leads around it. We must gently warn them of the one; we must tenderly point them to the other.

"How early shall we teach these lessons? The age will vary, but be sure to let purity have the first word. The child will ask questions early; let not the coarse reply get in its work before the chaste one comes. Science is like fire; it burns away dross; tell him what science says. God's laws are all equally clean and holy; tell him of the laws of God. But in what way shall we teach? — According to the truth of things. The bird in its nest, the flower on its stalk, the minerals in its crystals — all show forth one law. The sanctities of parentage might best be the key-note. As a rule, no one is reverenced and beloved by the child like the mother who bore him. Teach a little boy to revere and protect all women for her sake, and teach the little girl to shield as the 'eminent jewel of her soul' the potentiality of motherhood. A noble young woman of my acquaintance, teacher in a country school, wrote me that she saw such impurity carried on before her very eyes in her little schoolhouse that she could not forbear speaking with her pupils one by one, and noticing how they gathered in groups at recess in a mysterious fashion, she went out with them to their plays.

"Would it not be better to abolish recess altogether, and let gymnastic exercises under the teacher's supervision take its place? This seems to be one of the best practical means to a higher civilization in our public schools. Such is the opinion of experts in education with whom I very generally consulted before preparing my address. A distinguished high school principal sent me these hopeful lines: 'The public school is a composite of lawn and back alley, parlor and saloon, hovel and home. But its atmosphere is sweeter, both indoors and out, than in my boyhood days, and this comes through the inheritance of better traits of character, the introduction of better methods of discipline, the abolition of the promiscuous outdoor recess, the control of children's reading, the giving of fewer children to each teacher, and by a higher moral idea among young teachers themselves.'

"We send missionaries to the Fijis, but we leave the play-ground of our common schools practically in the hands of a pagan influence, and doom little children out of sheltered homes to the malaria of associations as harmful to them spiritually as the small-pox would be physically. We turn them out to take their chances with the rest. We know the imitative faculty of the child naturally takes hold of what is easiest imitated; that impure literature is circulated freely, and marks that are the insignia of baseness are often on the walls.

"What we must have in all large schools is a guardian of the play-ground; a moral horticulturist whose specialty is physical ethics; an apostle of health whose gospel outranks that of head or hand; for without it the head is apt to swim, the hand to tremble, and the heart to be a cage of unclean birds.

"I hardly need say that the offering of any pledge in schools should be a personal matter, not involving publicity, and that the sexes should be wholly separate in the instruction given. The affirmative teaching of purity is what we want, not the negative teaching of impurity. The pupil's life should be lifted towards the hights, not lowered to the slums. If our educational journals would have a department of the 'White Cross and Healthful Habits,' through which teachers could obtain help in these high duties, a great impetus would be given to this reform.

"I have written to, and have received letters from, many educators, on the subject under consideration, and I have two sentences to quote in this connection: 'I take it for granted that you know, even to the extent of being heart-sick over it, the frightful condition of most schools in respect to impurity in language, actions, and defacement of school-buildings and grounds.' Another leader contrasts the condition of things in an ordinary town with one where women are on the school-board, and give careful attention to the condition of the school-buildings in this regard. Sixteen States have now given women power to be school-officers, and in the name of health and holiness let them be up and doing as house-cleaners for the commonwealth.

"Finally, let us, one and all, be strong in the Lord and in the power of his might. Let us keep our hearts will all diligence, for out of the heart are the issues of life. In pioneering such a work for tempted childhood and bewildered boyhood, contradiction will follow us, perhaps, and criticisms not easy for gentle hearts to bear. But the discords and jargon of the shore are well nigh silenced to the ear of him who hears the solemn anthem of the sea, and with eternity so near us, its waves rolling at our very feet, its breath upon our foreheads, let us be not disconcerted, knowing that if bad men curse and vilify our names, good men will defend and bless them; knowing that our good work shall gladden hearts and homes now sorrowful and dark; knowing that God is with us, and when we go forward with the patient courage he imparts, 'all discords, met by harmonies, die in the large and charitable air.'"

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

HYGIENE OF THE BOWELS.

SINCE the publication of our articles exposing the fraudulent claims of Wilford Hall, in professing to sell as a secret, information which has long been well known to medical men, we have received many inquiries relating to the proper use of water in connection with disordered conditions of the bowels, and in other conditions in which it may be useful. In part answer to these inquiries, we cannot do better than to quote the following paragraphs from a little work written by us, and published fourteen years ago, entitled "Uses of Water." We quote from pages 149 and 150 of the work referred to:—

"*The Enema.*—Fecal accumulations in the lower bowel are more quickly and easily removed by an enema of warm water than by any purgative, laxative, or cathartic ever discovered or invented; and the use of this remedy is never accompanied by the unpleasant and painful griping and tenesmus which often accompany the use of cathartics. The administration is a trifle more troublesome, but the results are enough superior to more than repay the inconvenience. The fountain syringe is far preferable to any other for administering injections. Water about blood-warm should be used when the purpose is to relieve constipation, and a considerable quantity — one to three pints, or more — may be used. The water should be retained for a few minutes, while the bowels are kneaded and shaken. In hemorrhage and inflammation of the lower bowel, cool or cold clysters should be employed, and should be retained as long as possible. The copious cool enema is a valuable antiphlogistic remedy, used in conjunction with the cool bath, in cases of violent febrile excitement, as typhoid fever, when the temperature rises above 103° F.

"The enema is a most perfect substitute for purgatives in general. Cases are very rare in which a cathartic drug will be found necessary if the enema is properly used. But the enema may become a source of mischief if abused. If habitually relied upon to secure the movement of the bowels for a long time, the bowels lose their activity and the most obstinate constipation sometimes results, precisely as from the prolonged used of purgatives."

There can be no doubt that many persons are suffering from the retention of fecal matters in the large intestine. We have frequently met cases in which large accumulations of poisonous matters had been retained for weeks. The removal of these poisonous accumulations frequently gives great relief to headache, and various other nervous symptoms which arise through absorption of poisonous matters from the bowels. We have found the use of a large enemata very valuable in cases of this sort, as well as in cases of intestinal catarrh, jaundice, inactive liver, and a variety of other conditions involving the bowels, liver, and kidneys.

We have employed large enemata, administered either in the ordinary way, or with the hips elevated, or with the patient supported upon knees and shoulders, for fifteen years. We do not condemn, by any means, the use of the large enema in appropriate cases. What we have claimed in this matter is that the continued use of the enema, as pointed out in the above quotation from "Uses of Water," published in 1876, may result in mischief by producing inability to evacuate the bowels in the natural way. The prolonged use of enema, especially in large quantities, destroys the natural sensibility of the lower bowel, and may also so distend the intestine as to lessen the contractibility of its muscular walls, and as a result produce a half paralyzed condition of the bowels. We have met many cases in which this state of things existed, and have found it necessary to apply such measures as would restore the normal activity of the bowels, and thus make the patient independent of the enema or any other artificial mode of assisting a

function which properly should be performed without any such assistance. Our charges against Dr. Hall are not that the enema is universally harmful, but—

1. That water used in large or small quantities, by enema, is not a panacea for any disease, instead of being a "cure all" for all maladies, as claimed by Dr. Hall.

2. That it is not an efficient preventative against small pox, yellow fever, and other infectious diseases, as claimed by Dr. Hall.

3. That it is a measure which should not be employed by persons in good health, as recommended by Dr. Hall.

4. That its prolonged use may result in much harm, even in cases where it may be temporarily beneficial.

5. That Dr. Hall is not the discoverer of the fact that the human colon is capable of holding more than a pint of water, as is claimed by him.

6. That Dr. Hall is not the discoverer of the fact that the use of water in considerable quantities, by enema, is a valuable means of relieving various morbid conditions of the bowels and other abdominal organs.

7. That Dr. Hall probably obtained the information which he publishes as his own discovery, from hydropathic works published prior to the date at which he claims to have made his discovery, and which contain all that he claims to have discovered.

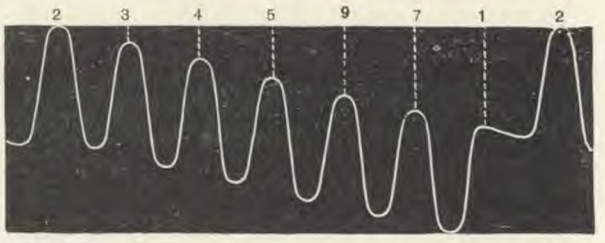
8. That in publishing as a secret, information which has been in the hands of the medical profession some scores of years, at least, and which Dr. Hall himself confesses to have made public more than twenty years ago, and in placing each purchaser under bonds not to reveal the information communicated, Dr. Hall places himself on a level with the various charlatans, and knowingly perpetrates a fraud upon the public.

A PHYSICAL BASIS FOR THE SABBATH.

A QUESTION which has been argued by theologians and scientists is, Is there a physical or scientific basis for the regular observance of the weekly Sabbath? Dr. H. Napias, an eminent French physician, in a recent number of *Revue D'Hygiene*, offers arguments by which he undertakes to support the view that there is for the laboring man a physiological requirement for rest from labor on one day in seven. Our readers may be interested in the following free translation of a few paragraphs from the article referred to:—

"The forces which a man can employ in labor, have limits which have been calculated. Pettenkofer and Voit placed a vigorous laborer in a chamber of glass, which was hermetically sealed. The man was fed with a mixed diet similar to that to which he had been accustomed, and made to engage in labor requiring vigorous muscular effort for nine consecutive hours, with only such interruptions as were occasioned by taking food. The workman was weighed before entering the glass cage and on coming out of it. The food which he ate was also weighed and analyzed, and an analysis was made of the air which entered the cage while he occupied it. A current of air was made to pass through the cage during its occupancy by the workman, being analyzed before and after its passage through the cage.

"We cannot here enter into the details of this experiment, but it is sufficient to say that as a result it was determined that the man, during nine hours labor, had thrown off in the form of carbonic acid gas, 192 grams (six ounces) of oxygen more than he had taken from the air during the same time. By a calculation it was determined that the deficit referred to, represented one fifth of the entire amount of oxygen stored in the workman's body. Happily during the night and sleep, the body stores more oxygen than it loses; but respiration being less active during sleep, the deficit is not completely made up, so that complete provision is not made for the undertaking of a new period of work. Pettenkofer and Voit estimated that the



daily loss of oxygen is not compensated by a night of repose when the work is very fatiguing, and the daily loss may be so great that the deficit which is not made good by the accumulation of oxygen during the night, may amount to as much as ten or twenty per cent."

It is upon these experiments that Prof. Hoeger, of Basel, relies to demonstrate the necessity for a weekly day of rest. By means of an ingenious curve which is here presented, he claims that each day numbers a deficit, which requires, once a week, a complete day of rest to return to the point of departure; that is to say, to recuperate the quantity of oxygen necessary to support the vital functions.

REFINED CRUELTY.

An Indianapolis paper gives an account of the means employed by an Indianapolis poultry-vender to fatten and prepare chickens for market, which does not differ much from the process which has been in vogue in Strasburg for many years in producing the *pate de foie gras* for which that city is famous. According to the journal referred to, there is to be found in a shed on the premises where the fowls are kept, "a contrivance that might be taken for an infernal machine, a patent ballot-box, or an automatic corn-sheller. But it is none of these. It is a chicken-feeder. An unsuspecting fowl is driven onto a trap-door. The level floor folds up and incloses her, except at the top. A device not unlike a base-ball mask swoops down, and completes her imprisonment.

"An operator then comes forward, puts the hen into a strait-jacket that stretches the gallinaceous neck, and holds the head erect, mouth open, beak pointed toward the ceiling. Then a spring of automatic action is touched. It sets in motion a light metallic arm, acting as a lever. Starting from a box overhead, it descends to the open beak of the fowl, drops in a small quantity of prepared food, and forces it down into the throat. This operation is repeated until the hen is 'chock full.' An apparatus may also be attached by which liquid food may be put into the bird. Stuffing stupefies the bird, but it does not interfere with the workings of its digestive apparatus.

"'Birds fattened by the stuffing process,' said the manager of this apparatus, 'may actually be made to order. We can vary the food so as to produce the desired flavor. The foods are prepared to suit the demands of our patrons. By fattening a bird in ten days or less, it is made very tender, as all the new flesh is the product of the rich, clean food, and is not toughened by age or exercise.'

"'Do you mean to say that you can control the quality of the bird's flesh?'

"'Certainly; that is the glory of this method, We can impart a dainty pork flavor, mingle the extract of bustard with the delicious dream of quail on toast, throw a touch of celery into the mint, or imitate the delicacies of reed-birds, canvass-back ducks, or frog-hams. Besides, we can make the meat black or white, according as we want to represent delicate white flesh or the dark meats of wild fowl. Of course, prepared chicken like this is worth more in the pea-green market than the ordinary barn-yard chanticleer. We can also feed turkeys and ducks to good advantage, but we have had the best results with chickens.'"

The Indianapolis chicken-vender referred to will no doubt make a fortune out of his apparatus for stuffing live fowls, for there will doubtless be no lack of patrons who are willing to satisfy their depraved palates without any concern as to the means employed for the purpose. The suffering of the poor fowls is evidently not regarded as worth considering. Such obtusion to the rights of animals is one of the evidences of the demoralizing and conscience-blunting influences of flesh-eating. An East India heathen would look with horror upon such a proceeding. Yet we send missionaries to India, while making no effort to reform the still more benighted heathen at home.

THE INCREASE OF LUNATICS.

According to the Springfield *Republican*, insanity is increasing everywhere in the civilized world. In England, the increase is at the rate of two per cent per annum; in Scotland, the rate of increase is three per cent, and in this country, four per cent, which is one per cent greater than the gain in population. Our State authorities are beginning to be troubled seriously regarding the best means of disposing of this growing class of mentally deformed persons, in such manner as to be the least burden to the State. Hospitals capable of accommodating from 500 to 1,500 inmates are found in nearly all the older States, some States requiring several such buildings to accommodate their insane population. From recent statistics, it seems that there are in this country, at the present time, not less than 150,000 insane persons.

What is being done to check the development of this new species of human being, the lunatic? America seems to be a favorite spot for the development of this class, as insanity is increasing here more rapidly than in any other part of the civilized world. The fact must be regarded as an indication that some prevailing habits of life or condition of climate has an important bearing upon this deteriorating tendency. That the climate is not properly chargeable as being the cause for this disposition to degeneration, must be admitted in view of the fact that there is no evidence that insanity was to any degree prevalent

among the aborigines of this continent. It is probable that the causes of this alarming increase in mental unbalance, are to be found in the prevailing disposition to speculation, and to the indulgence of exciting recreations and amusements, the use of stimulants, and to luxurious and stimulating diet. The subject is one which should receive the consideration of sanitarians and all interested in the welfare of the race.

ACCORDING to the New York *Saturday Review*, there is more warmth in a handsome diamond ring than in the thickest cloth. At any rate, the writer saw nothing but a diamond ring upon a young lady's hand on a cold day when everybody else was muffled in furs.

ACCORDING to the London *Lancet*, drinking is on the increase among all classes of English women. When we were in England a year or so ago, we frequently observed fairly well-dressed women visiting ale-houses and other public drinking-places, without any appearance of shame. According to the *Lancet*, old men assert that this is quite a modern thing — something which they never saw in their youth. Certainly there is need of the employment of the most vigorous measures in combatting the development of the drink habit, which has long stood as one of the greatest obstacles in the way of the advancement of Christian civilization.

THE SKIN AS A MEDIUM OF SIGHT. — A Russian physician has invented an intrument by which persons totally blind are able to perceive light through the sense of touch. The instrument consists of an apparatus which converts light rays into thermo-electric current, which is perceived by the nerves of the skin covering the forehead, when the instrument is placed upon this part of the body. The sensations produced by the instrument are thus described by the inventor: "The presence of a light-giving or of an illuminated object is manifested in the perceptive field as a sensation of warmth. A light object on a dark background is perceived as a peripherally warm sensation, with a sensationless center. The degree of the sensation of warmth increases with the approach of the illuminating object, and *vice versa*. A movement of the feeling of warmth toward the right shows that the light has moved to the left, and *vice versa*. If the warm area moves downwards, the illuminating object is moving upwards, and *vice versa*."

EXTENSIVE SALE OF DISEASED MEAT. — According to recent disclosures of the employees of a slaughtering firm in Chicago, employed to butcher diseased animals, it appears that for months back a large business has been done in that city in the sale of the flesh of lumpy-jawed animals. The firm referred to was employed by the State to slaughter animals condemned by the inspectors. The carcasses were to be rendered for the tallow, much of which, it is to be presumed, was afterwards converted into oleomargarine butter. The flesh, instead of being converted into fertilizer, has been disposed of to retail dealers, and consumed by Chicago beef-lovers.

POISONOUS BAKING-POWDERS. — All baking-powders are more or less harmful. The cheaper grades of baking-powders, nearly all of which contain alum, are exceedingly deleterious in character, producing, when used even for a short time, serious trouble with the stomach and bowels. But still a more dangerous powder, sold under the name of "French Tartar," has recently appeared. An analysis of this tartar, published by the *American Analyst*, shows that it contains sometimes as much as 40 per cent of oxalic acid, an extremely poisonous substance. The safest way is to avoid the use of baking-powders altogether. The lightest and sweetest of bread can be made without baking-powder or rising material other than pure air. Recipes for such bread have often been published in the household department of this journal, and have been submitted to hundreds of satisfactory tests.

GRATNERA, a German scientist, has recently discovered in canned flesh a microbe which he names *bacilli enterilidis*, which proves to be a most deadly germ, capable of killing a man in thirty-six hours. Experiments with the bacilli at the Institute Jenna have shown that it is capable of producing most frightful destruction to life. Dr. Cossedebot publishes, in a recent French medical journal, a report of his investigation of a large number of samples of preserved meats, in many of which he found this bacilli, and others nearly as deadly, present in considerable quantities. Not infrequently these microbes are present in canned meats which give no evidence, either to taste or smell, that decomposition has taken place. It should be remembered that canned meats take on poisonous properties very quickly after exposure to air, probably for the reason that some germs are present which have not been killed in the process of canning, and which only require exposure to air to enable them to develop their poisonous properties with great deadliness.

Sir William Gull on Wine-Drinking.— This famous English physician does not hesitate, even in a country where wine-drinking is so prevalent and customary, to express in the following emphatic language his condemnation of even the so-called moderate use of wine: "I think that instead of flying to alcohol, as some people do when they are exhausted, they might very well take food, and would be very much better without the alcohol. If I am fatigued with overwork, personally, my food is very simple; I eat the raisins instead of drinking the wine. I have had a very large experience in that practice for thirty years. This is my own personal experience. I should enjoin issue at once with those who believe that intellectual work cannot be so well done without wine or alcohol. I should deny that proposition, and hold the very opposite. There is a great deal of injury done to health by the habitual use of wines in their various kinds, and alcohol in its various shapes, even in so-called moderate quantities. It leads to the degeneration of the tissues; it spoils the health, and it spoils the intellect."

Voluntary Exposure of Children to Disease.— Although there has been an old fogy sentiment abroad for years that if children escape diseases in their youth it will go all the worse with them later in life, we hold that it is certainly right to protect everybody from disease so far as possible, and that children, of all others, should be carefully guarded from all forms of contagion. There is none of the so-called children's diseases, unless it be chicken-pox, but which is liable to be followed by a train of serious consequences, besides being sometimes fatal. Measles are very apt to produce diseases of the eyes, and scarlet fever, diseases of the ears, and also cause inflammation of the kidneys, so that afterward Bright's disease may set in. In every way it is better to avoid all contagious diseases as long as possible, and it is quite probable that in adult life persons may escape these diseases altogether, or if they have them, it will be in a lighter form. The popular idea that grown persons have these diseases harder than children is fallacious. Adults are better developed, and have the judgment necessary to co-operate in the treatment, which is lacking in children.

Poisoning from Cayenne Pepper.— According to the *Druggist's Circular*, a good authority, an English boy was recently killed by a dose of cayenne pepper, which his mother gave him as a remedy for a cold. In a few minutes the boy was found on his knees gasping for breath. After struggling for several minutes, he expired. The physician who was called, decided that death was due to the poisonous action of the cayenne pepper upon the heart. Probably few of those who use cayenne pepper understand that it is a poison. According to Prof. Grant Allen, of England, the oil of cayenne pepper is almost as deadly a poison as prussic acid. What is true of cayenne is true, although in a lesser degree, of the essential oils which constitute most of the irritating condiments, such as mustard, black pepper, capsicum, and similar substances. Nature has given to these substances a flavor which is repulsive to the unperverted palate, as danger signals to indicate their poisonous character. It is difficult to comprehend how a taste for substances which smart, burn, and blister as they go down one's throat, could ever have been acquired by human beings. All lower animals, as well as savages, reject these substances most vigorously when they are presented to them.

Vaccination for Consumption.— The possibility of preventing small-pox by vaccination with the virus of kine-pox, has suggested the possibility of protecting the body against other diseases by similar means. Since the discovery of the infectious and contagious character of consumption, many investigators have been engaged in the search for some means by which this deadly disease might be combatted. Dr. Koch, the discoverer of bacilli, announced before the Medical Congress recently held at Berlin, Germany, the discovery of a method by which guinea-pigs, which are known to be peculiarly liable to consumption, can be perfectly protected from the disease. Prof. Koch has also discovered, as he announced, a means of preventing the growth and development of the tubercular bacilli after it has been introduced into the body of the animal by inoculation. The question now to be answered is, Are the means of protection against tuberculosis, and of destruction of the germ when once introduced into the system, applicable to the human body? If so, Dr. Koch's name will go down to posterity as the originator of one of the greatest of all human discoveries; for consumption is undoubtedly the most deadly of all maladies. It slays every year, on the average, one seventh of all human beings who die, destroying more lives annually than war, pestilence, and famine combined. Further development of Prof. Koch's discovery will be watched with great interest.

Hygiene for Brain-Workers.— The *Scientific American* has been collating some medical ideas upon the subject, and after quoting a paragraph from the

Medical Age, relating to the brain-worker's frequent fault, excessive application to work, it gives its readers some brief comments of its own. The following are the paragraph and the comments: "'The most intense and fatiguing of toils is pursued almost uninterruptedly, food is neglected, and the claims of exercise and sleep are but imperfectly admitted. Two hours' exercise in the open air, daily, is probably a mininium, and might prudently be exceeded. The brain-worker must live sparingly rather than luxuriantly; he must prefer the lighter classes of food to the heavier, and he must be very prudent in the use of alcohol. Tobacco and tea are apt to be favorites with him, and their immoderate use may require to be guarded against. It is a nice question whether he needs more or less sleep than other men. Many men of genius are light sleepers, probably in some cases a misfortune; but there seems some grounds for the notion that more than a moderate indulgence in sleep is unfavorable to successful mental effort.' A commentator upon the above remarks says that he cannot fully agree with them. Mental effort, he says, and the Cincinnati *Medical News* agrees with him, causes waste of tissue elements quite as much as bodily exertion, and this demands a full supply of food. What with dyspepsia and absence of appetite, the results of deficient exercise, and the influence of preconceived ideas as to the use or disuse of special articles of food, the brain-worker is very apt to receive too little nutriment to make up for the waste. Especially is this the case when he, unconsciously, perhaps, replaces food by the use of tobacco, tea, alcohol, or opium."

Horse Hygiene.— The marvelous results which have been attained by the attention given to the hygiene of horses, as relates to their breeding, rearing, feeding, and training, are well illustrated by the achievement of the horse Salvator, which recently covered a mile (running) in one minute thirty-five and one half seconds. The wonderful character of this achievement will be appreciated when it is remembered that this speed is at the rate of forty miles an hour, which is in excess of the average speed of our fast railway trains. There are in a mile more than five thousand feet. By a little computation it will appear that this wonderful horse sped around the race course with a velocity of more than fifty feet a second. Compare the speed of this magnificent animal with that of the neglected nag which drags its slow length along at the rate of four or five miles an hour, and a proper conception may be formed of the advantages which have accrued to horses as the result of careful attention to the lines which relate to horse health. If an equal amount of "horse sense" was displayed in the culture of human beings, an equal or even greater amount of improvement in the human race might be exhibited, since it must be supposed that man, the most highly developed of all animals, is quite as capable of improvement as any of the inferior members of the animal kingdom. If as much interest was taken in the improvement of human beings as in the development of fine horse flesh, a quarter of a century would exhibit some wonderful results in the direction of the development of a better race of human beings. Unfortunately, the well-being of members of the human family is left mostly to chance.

Hay Baths. — We are indebted to *Demorest's Family Magazine* for the following description of the hay bath, which may be of interest to the readers of Good Health, although we are unable to see any particular advantage in the hay bath over other more convenient forms of bathing. "Water, steam, sand, air, and sun baths, we are all familiar with; but hay baths are a specialty in the Tyrol, though they have not yet been adopted elsewhere. Among baths they are so peculiar that they are worthy of mention. The peasants are very fond of taking hay baths, and those which are the most desirable are of the newly-mown short mountain-hay, which must be still 'baking.' So popular are they and so simple, that upon many of the Alpine hights there are small huts belonging to the mountaineers, which they have built especially for the purpose. The bather, having completely divested himself of his clothing, lies down in a nest of the hay, and an attendant covers him with hay to the neck. Some one must be on the watch during the hay bath, which many invalids take to restore failure of the bodily functions, notably that of the heart. When the patient has copiously perspired, he is 'dug out' and dried by the 'bathing' attendant; he himself is seldom in a condition to do this, owing to the extreme lassitude produced by his 'bath.' He can generally manage to dress himself, however. So many patronize these baths that they often lie in the hay head to head, as many as the place will hold. How dirty and crushed the hay is at the end of the 'season,' any one can imagine. The hay-bath cure is not without its dangers. In August, 1886, two bathers fainted on emerging from the steaming-hot mountain-hay, which would indicate a powerful effect on the vital functions that is not observable in ordinary cases of fainting from the heat of an over-crowded room, which, as every one knows, is not dangerous."

DISINFECTION AND DISINFECTANTS.

THE following summarized directions for disinfection and the use of disinfectants, we quote from the *Trained Nurse*. It is, of course, important to observe that nearly all disinfectants are poisonous, and must be handled with great care :—

"The most useful agents for the destruction of germs contained in infectious material are—

1. Fire. Complete destruction by burning.
2. Steam under pressure, 105° C., 221° F., for 10 minutes.
3. Boiling in water for 30 minutes.
4. Chloride of lime, 4 per cent solution.
5. Mercuric chloride, 1-500 solution.

For the destruction of infectious material which owes its infecting power to the presence of micro-organisms not containing spores :—

1. Fire. Complete destruction by burning.
2. Boiling in water for 10 minutes.
3. Dry heat, 110° C., 230° F., for 2 hours.
4. Chloride of lime, 2 per cent solution.
5. Solution chlorinated soda, diluted 1 1-10.
6. Mercuric chloride solution, 1-2000.
7. Carbolic acid solution, 5 per cent.
8. Sulphate of copper solution, 5 per cent.
9. Chloride of zinc solution, 10 per cent.
10. Sulphur dioxide. Exposure for 12 hours to an atmosphere containing at least 4 volumes (per cent) of this gas in presence of moisture. This will require the combustion of between three and four pounds of sulphur for every 1,000 cubic feet of air space.

"FOR EXCRETA.

(*a*) In the sick-room :—

1. Chloride of lime solution, 4 per cent.

In absence of spores :—

2. Carbolic acid, 5 per cent.
3. Sulphate of copper, 5 per cent solution.

(*b*) In privy vaults :—

1. Mercuric chloride, 1-400.
2. Carbolic acid, 5 per cent solution.
3. Sulphate of copper 5 per cent.

(*c*) For the disinfection and deodorization of masses of organic material, privy vaults, etc.:—

1. Chloride of lime in powder.

"FOR CLOTHING, BEDDING, ETC.

(*a*) Soiled underclothing, bedding, etc.:—

1. Destruction by fire is of little value.
2. Boiling for 30 minutes.
3. Immersion in a solution of mercuric chloride of the strength of 1-2000, for 4 hours.
4. Immersion in a 2 per cent carbolic acid solution, for 4 hours.

(*b*) Outer garments of wool or silk, and similar articles which would be injured by immersion in boiling water or in a disinfecting solution :—

1. Exposure in a suitable apparatus to a current of steam, for 10 minutes.
2. Exposure to a dry heat at a temperature of 110° C., 230° F., for 2 hours.

(*c*) Mattresses and blankets soiled by the discharges of the sick :—

1. Destruction by fire.
2. Exposure to super-heated steam, 105° C., 221° F., for 10 minutes.

Mattresses to have the cover removed, freely opened, immersion in boiling water for 30 minutes.

Furniture, articles of wood, leather, and porcelain, washing several times repeated with —

1. Solution acid carbolic, 2 per cent.

"FOR THE PERSON.

The hands and general surface of the body of attendants of the sick and of convalescents should be washed with —

1. Solution of chlorinated soda, diluted with 9 parts of water, 1-10.
2. Carbolic acid solution, 2 per cent.
3. Mercuric chloride, 1-1000.

"FOR THE HEAD.

Envelope in sheet thoroughly saturated with—

1. Chloride of lime solution, 4 per cent.
2. Mercuric chlor., solution 1-500.

3. Carbolic acid solution, 5 per cent.

"FOR SICK-ROOMS AND HOSPITAL WARDS.

(*a*) While occupied, wash all surfaces with —

1. Mercuric chloride, 1-1000.

2. Carbolic acid solution, 2 per cent.

(*b*) When vacated, fumigate with sulphur dioxide for twelve hours, burning at least three pounds of sulphur for every 1,000 cubic feet of air space in the room; then wash all the surfaces with one of the above mentioned solutions, and afterwards with soap and hot water; finally, throw open the doors and windows, and ventilate freely.

"GENERAL DIRECTIONS.

In cholera, diphtheria, yellow fever, scarlet fever, tuberculosis, all vomited matter and sputa should be disinfected or at once destroyed by fire.

It seems advisable also that the urine be disinfected.

Chloride of lime or bleaching powder is entitled to the first place for disinfecting sputa, on account of the rapidity of its action.

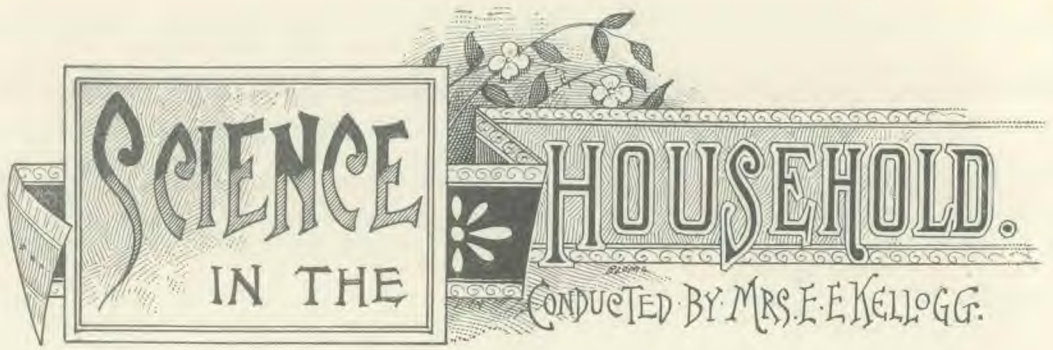
The following standard solution is to be recommended :—

Dissolve chloride of lime of the best quality in pure water, six ounces to the gallon.

To Prevent Curdy Stools.— Curdy stools in children are often due to the acidity of the milk upon which the child is fed. This is especially true in cases of children nursed by the bottle. Cow's milk, when in its best condition as neutral, is very likely to be acid, the acidity being either due to the milk's having stood for sometime after being received from the cow, or to excessive acidity of the food upon which the cow is fed. It is probable, also, that digestive derangements in a cow may give rise to acidity in the milk. When this is the cause of curdy stools, the proper remedy is the addition of a little carbonate of soda to the milk. Every mother should keep constantly on hand a supply of litmus paper, which can be obtained at any drug-store. Both the blue and the red paper are needed. Blue paper becomes red when the milk is acid; the red paper is turned blue if the milk is alkaline. A sufficient amount of carbonate of soda should be added to the milk to neutralize the acidity, and to give it a slight degree of alkalinity.

Hot Water for Sleeplessness.— We have often recommended hot water drinking as a remedy for sleeplessness, with good results. The remedy is valuable except in cases in which there is soreness of the stomach or excessive excitability of the heart, when hot water either produces great excitability or excessive palpitation. We quote in conformity to our own experience, the following from the *Medical Age* : "A most wretched lier-awake of twenty-five years' standing, who for ten years thought himself happy if he could get twenty minutes' sleep in twenty-four hours, said : 'I took hot water — a pint comfortably hot, one good hour before each of my meals, and one the last thing at night — naturally unmixed with anything else. The very first night I slept for three hours steadily, turned around and slept again till morning. I have faithfully and regularly continued the hot water, and have never had one bad night since. Pain gradually lessened and went; the shattered nerves became calm and strong, and instead of each night being one long misery spent in wearying for the morning, it is all too short for the sweet, refreshing sleep I now enjoy.'"

Acidity of the Stomach.— This condition is due to germs, and the cure lies in getting rid of the germs. Germs of fermentation in the stomach produce first alcohol, then carbonic acid, and then acetic acid. A person troubled with this form of dyspepsia should be careful to take only such articles of food as do not favor the development of germs, and thus starve them out. The worst articles are all fat foods and sugar and all forms of sweets, including ice cream and cake. Boiled milk and unfermented breads are excellent foods to take. Another thing to do is to wash the germs out of the stomach by drinking freely of hot water an hour before meals. If food is put into a stomach already sour, of course fermentation will be set up immediately. It is just like straining new milk into unwashed pans from which sour milk has been emptied. Some persons notice that just as soon as they eat, their stomachs become sour. The third important thing to do is to stimulate the stomach to make more gastric juice, which is a natural antiseptic, and prevents fermentation and also hastens absorption. The glands may be stimulated by applying hot fomentations to the stomach for half an hour immediately after the close of a meal, or, easier still, by wearing a rubber bag filled with hot water, directly over the stomach for half an hour or an hour. Heat is a natural stimulant, and there are no possible ill effects from its use in this way.



HELPS FOR THE INEXPERIENCED. — 10.

One of the difficulties very commonly encountered by the inexperienced housewife, is to know the length of time required for the cooking of food by any of the various methods employed for this purpose. Much is dependent upon the degree of heat maintained throughout the cooking process; and in the cooking of meats, vegetables, and fruits, the length of time will vary with the quality, age, quantity, and size of the articles. The following table gives the approximate time for cooking some of the more commonly used foods :—

To Cook by Boiling.— Potatoes (in jackets), 20 to 25 minutes after the water comes to the boiling point; potatoes (peeled), 20 min.; very large potatoes will need from 25 to 45 minutes to become thoroughly done. Green corn, 5 to 10 min.; peas, asparagus, and tomatoes, 15 to 20 min.; string beans and shelled beans, 45 to 60 min.; young beets, parsnips, and turnips, 45 min.; new cabbage and winter squash, 1 hour; winter cabbage, parsnips, and turnips, 2 hrs.; macaroni, 20 to 60 min., according to age.

To Cook by Baking.— Loaf bread, 40 to 60 minutes; gems (whole wheat or graham), 30 to 60 min.; rolls (fermented), 10 to 20 min.; rolls (unfermented), 30 to 40 min.; pastry, about 30 min.; apples, 30 to 50 min.; potatoes, 30 to 45 min.; beans, 6 to 8 hours.

To Cook by Steaming.— Potatoes, 20 to 40 minutes; rice, 1 hour.

To Cook in Double Boiler.— Cracked, pearl, or rolled wheat, 3 hours; rolled oats, 2 hrs.; oatmeal, pearl barley, and graham grits, 3 to 4 hrs.; hominy, 4 hrs.

BAKED APPLES.

Some General Hints. — Moderately tart apples or very juicy sweet ones, are best for baking. Select good ripe apples, free from imperfections, and of nearly equal size. Wipe carefully, to remove all dirt and the blossom ends. Water sufficient to cover the bottom of the baking dish should be added, if the fruit is not very juicy. If the apples are sour and quite firm, a nice way is to pare them before baking, and place them in an earthen pie dish, with a little hot water. If they brown too quickly, cover the tops with a granite-ware pie tin. If the syrup dries out, add a little more hot water. When done, set them away till nearly cold, then transfer to a glass dish turning the syrup, which should be thick and amber colored, over them. Sour apples are excellent pared and cored, and baked with the centers filled with sugar, jelly, or a mixture of chopped raisins and dates. They should be put into a shallow earthen dish, with water sufficient to cover the bottom, and baked in a quick oven, basting often with the syrup. Sweet apples are best baked without paring. Baked apples are usually served as a relish, but with a dressing of cream, they make a most delicious dessert.

Lemon Apples.— Prepare nice tart apples the same as for citron apples. Fill the cavities made by removing the cores, with a mixture of grated lemon and sugar. Squeeze a few drops of lemon juice over each apple, and bake. Serve with whipped cream and sugar.

Citron Apples.— Select some nice tart apples, of the same degree of hardness, so that they will cook alike, and dig out the cores. Unless the skins are very tender, it is better to pare them. Stuff the cavities with sugar, first placing in each apple a few bits of chopped citron. If the skins have been removed, place the stuffed apples on a flat earthen dish, with a tablespoonful of water on the bottom; cover closely, and bake till perfectly tender, but not till they have fallen to pieces. If the skins are left on, they may be baked without covering. When cold, serve in separate dishes, with a spoonful or two of whipped cream on each apple.

AN EASILY PREPARED UNFERMENTED BREAD.

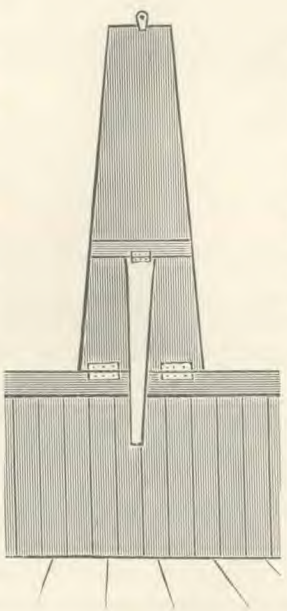
In the preparation of unfermented breads made light by means of air, it is well to remember that the lightness of the bread is dependent not only upon the amount of air incorporated during the preparatory process, but also upon its expansion during the baking; and that the colder the air thus incorporated, the greater will be the expansion, and, in consequence, the lighter will be the bread. It is for this reason that it is usually recommended to employ ice-cold liquids in the preparation of unfermented breads; but even though the liquid may be ice cold, the flour added is likely to lower its temperature more or less, and we consider the following simple method a preferable one:—

Take one cup of rich unskimmed milk (one third cream and two thirds milk is to be preferred); add one and one half cups of best graham flour, and beat together until smooth; then set the dish in the refrigerator, directly on the ice, for about one hour. When ready to use, beat thoroughly for ten minutes, put into well-heated irons, and bake at once. Shallow irons are preferable for this purpose.

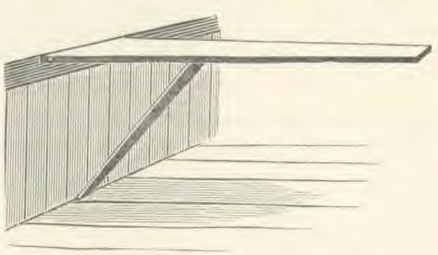
To mend a very large hole in socks or woven underwear, tack a piece of strong net over it, and darn through the meshes. Thus mended, the garment will be stronger than when new, and look far neater than if darned in the ordinary way.

In dampening clothes for ironing, use water as hot as you can bear the hand in; sprinkle fine, fold smooth, and roll up tight, and they will iron much easier. The hot water penetrates more readily, and you do not have to dampen so much as with cold water. A clean brush-broom makes a fine sprinkle.

French Economy.— The French are noted for excelling all other nations in matters pertaining to domestic economies. A skillful Frenchman can prepare a dinner for a whole family with a penny's worth of charcoal or a few cent's worth of alcohol, and not a morsel of food is ever wasted; not even the fragments from the table are thrown away. The servants sell them to certain dealers, who are called *boulangers en vieuz*, and who turn their acquisitions to good account. They first pick out all the tolerable pieces, which they heat in an oven, and then rasp clean. Thus prepared, these bits re-appear in the market in the shape of toast for soup. Most of the *croutons* cut into lozenges and served with spinach on the tables of the rich, have no other origin. As for the crumbs and refuse left after the picking, they are pounded in a mortar, and sold to butchers as *chapelure*, with which they cover the cutlets and knuckles of ham. The remainder, which is too bad even for *chapelure*, is blackened over a fire, pounded, and then mixed with a few drops of essence of peppermint. This is sold as an opiate for the toothache.



A Kitchen Convenience. The ordinary ironing-board is oftentimes very much in the way in the household. An idea for making a stationary article which has given great satisfaction, both from its simplicity and utility, is illustrated in *Farm and Fireside* by means of the cuts here reproduced. The board is secured to the wainscoting at any desired hight, the length of the brace underneath being proportioned accordingly. When not in use, it is held securely against the wall by means of a catch.



IRONING-BOARD LET DOWN FOR USE.

A Gentle Hint.— *Mrs. Binks* (to her neighbor): Oh, I do so like your house! It seems so homelike.

Mrs. Jinks: Do you think so?

Mrs. Binks: Yes, indeed; you 've got so many of my cooking dishes borrowed, you know, that your kitchen seems ever so much more natural than mine does.

QUESTION BOX.

[All questions must be accompanied by the full name and address of the writer, as it is often necessary to address by letter the person asking the question.]

MRS. S. J. R., Wis., wishes to know what disease is indicated by the following symptoms; also wants advice: Wheezing in the throat, tightness in breathing, coming on at or about three o'clock A. M. Sometimes can hardly walk from room to room. Limbs weak and tire easily. Stomach bloats much after eating.

Ans.— Dyspepsia, giving rise to a variety or reflex disturbances in other parts.

L. G. H. asks: "What is the matter with a man who has suffered for years with intense pain in the stomach, which was first preceded by gnawing hunger and craving for raw potatoes, which were freely used? Now suffers from vomiting and chills, and is scarcely able to sit up. Has no bad habits."

Ans.— The patient evidently has serious stomach trouble. It may be simply dyspepsia of an aggravated character, or the difficulty may be more serious. He should have a thorough examination by a competent physician. It is probable the stomach is dilated.

PURIFYING THE BLOOD — WEAK NERVES.— Mrs. T. O. F., Mich., asks for a blood-purifying remedy, and also one to strength the nerves.

Ans.— We know of no medicine which will purify the blood. The blood is purified by getting something out of it, and not by putting something into it. Pure food, copious water drinking, out-of-door exercise, vigorous use of the lungs, and the moderate employment of sweating baths are the best means of purifying the blood. The means suggested are also the most excellent for increasing nerve tone, as they tend to the development of better nerve tissue.

ACUTE PAIN IN SIDE.— Mrs. E. M. L., says: "About a year ago I had pneumonia. My health has been failing ever since. Am troubled by a severe pain in the head, and acute attacks of pain in the side, relieved by fomentations, but leaving side extremely sore. Have had four attacks, the last leaving me with inclination to pitch forward or sideways when walking. Live hygienically. Take sitz baths, packs, and fomentations. What further treatment can you recommend?"

Ans.— You should submit your case to a competent physician for a thorough-going examination. The case is too complicated to admit of prescription without a fuller knowledge of it.

INDIGESTION.— D. L. C., N. Y., is suffering from a peculiar form of indigestion, brought on by the injudicious use of tonic drugs, such as tincture of iron. Suffers from continual, intense thirst, with faulty nutrition. The flow of the digestive secretions are very scant. Now lives hygienically. Has tried hot water in vain. Has been recommended to use Fellow's hypophosphites. Wishes our opinion.

Ans.— A prescription for such a patient is three months at a good sanitarium. The case must be carefully investigated, and the dietetic and other treatment especially managed to secure relief.

DISCHARGE FROM EAR.— J. H., Kan., asks: "What can be done for a three-months-old child who has been suffering from a discharge from the ear since an attack of *la grippe*? Otherwise it has fully recovered, and in some ways enjoys better health than before.

Ans.— Carefully syringe the ear with a warm solution of soda, two teaspoonfuls to the pint of water. Afterwards dry the ear with a little absorbent cotton wound about the end of a tooth-pick, and fill the canal of the ear with powdered boracic acid. As soon as the powder becomes moistened by the discharge, repeat the application, first washing the ear with the soda solution as directed.

DIFFICULTY IN BREATHING, COLD BATHS, ETC.— A lady of sixty-three years writes: "1. When it is only comfortably warm for others, I cannot get my breath except out-of-doors, and when the wind blows. Can I do anything for the relief of this? 2. Is there any harm in the practice I make of taking a cold bath every morning? 3. What is the cause of and cure for what appear to be bags of water which often gather over and under each eye? 4. My husband, who uses much tea and tobacco, is afflicted with piles. Is there a remedy?"

Ans.— 1. You should have an examination of the heart and lungs. Possibly either one or both of these organs may be affected. 2. A short, cold bath every morning is not likely to do any one harm if managed properly, and if a good reaction is secured. 3. The symptoms indicate a possible affection of the heart or kidneys. A careful medical examination should be secured at once. 4. Yes. Probably a surgical operation is needed. The patient should discontinue the use of tobacco at once.

SCIATIC RHEUMATISM — DIET IN SCROFULA.— A subscriber, N. Y., asks: 1. "What treatment would you recommend for sciatic rheumatism? 2. What is the proper regimen for a person who has acquired a tendency toward scrofula? 3. What is the cause of a person's experiencing a chilliness on the approach of cool weather, notwithstanding proper protection?"

Ans.—1. A person suffering from sciatic rheumatism should give the affected limb absolute rest, by lying in bed or in a horizontal position. Thorough application of heat to the seat of pain, and such attention to the general health as will secure good digestion, activity of the bowels, and proper action of the kidneys and other eliminative organs, is in many cases indispensable. 2. A diet of fruits, grains, and milk. Great care should be taken to maintain perfect digestion. 3. Deficient activity of the skin circulation. It may be a lowered tone of the entire system.

LITERARY NOTICES.

THE *Missionary Review of the World*, for October, is a worthy number. In addition to all the valuable papers it contains, by eminent contributors, there is no little correspondence, and many striking editorials; also many pages of general missionary intelligence, and the latest news from all lands. It is invaluable to all interested in the general spread of the gospel. Funk & Wagnalls, New York.

"ENGLISH SANITARY INSTITUTIONS, REVIEWED IN THEIR COURSE OF DEVELOPMENT, AND IN SOME OF THEIR POLITICAL AND SOCIAL RELATIONS," by Sir John Simon, K. C. B. Cassell Publishing Co., New York. This book is the result of some twenty-eight years' experience, and of various official relations to the business of Sanitary Government. It is an important book, and will become a standard on the subject of which it treats.

IN the October number of *The Ladies' Home Journal* there is begun a new department, called "The King's Daughters," edited by Mrs. Margaret Bottome, of New York City, a large-brained, energetic, and influential Christian woman, herself the President, as she is the original founder, of the order of "King's Daughters," which now numbers 200,000. This department will be devoted to the best interests of the order, to which its establishment, in a journal of such wide circulation, will no doubt give fresh impetus.

THE October number of the *Domestic Monthly* is an extra large number, and has also a special supplement of autumn costumes, in addition to its complete departments on every topic connected with the newest fashions in dress, millinery, and fancy work. The publishers announce a very attractive trial subscription offer, as follows: For only 25 cents they will send the magazine for 3 months, and a free coupon good for 25 cents' worth of "Domestic" paper patterns. Send direct to the *Domestic Monthly*, 853 Broadway, New York.

Scribner's Magazine for October contains articles of life and adventure, articles of great practical value, good fiction and poetry, and many fine illustrations. Herbert Laws Webb, who writes "With a Cable Expedition," was a member of the technical staff of a cable-ship, and from experience describes the unique life on board one of these vessels; John W. Root, a leading architect of Chicago, contributes "The City House in the West;" Rev. Newman Smyth contributes "The Lake Country of New England;" and Mrs. Sylvanus Reed, out of the depths of her quarter of a century of experience, furnishes "The Private School for Girls." There is also a second paper from Prof. N. S. Shaler, on "Nature and Men in America," as well as much other interesting matter. Charles Scribners' Sons, New York.

"FRUITS AND HOW TO USE THEM," by Mrs. Hester M. Poole, 242 pp., cloth. Fowler and Wells Co., New York. This is a practical manual for housekeepers, containing 700 recipes for the preparation of foreign and domestic fruits, and a reliable kitchen guide, dealing not only with new ways of using well-known fruits, but bringing into notice many varieties somewhat unknown, or that have been deemed of little value. There are hundreds of delicious desserts herein described, which make the old-fashioned crusty and heavy compounds once thought so essential to the completion of a meal, seem poor and unworthy by contrast. This little book will win its own way, and contribute largely toward making the value of fruit as food more generally understood.

PUBLISHERS' PAGE.

THE Sanitarium Training-school for Medical Missionaries, which held its first session last winter, will begin its second annual session about November 1. A large number of young men and women have already signified their intention of attending the school during the coming winter, and a very interesting session is anticipated.

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A SANITARY CONVENTION, under the auspices of the State Board of Health, of Michigan, will be held October 16 and 17, at Holland, Mich. These conventions are always of great practical interest to the community in which they are held, and it is hoped that the citizens of Holland and vicinity will appreciate the advantages offered them in the way of sanitary instruction by this popular gathering. Eminent sanitarians from different parts of the State will be present, as well as several members of the State Board of Health.

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W. H. WAKEHAM, who has been holding Health and Temperance Conventions in various parts of the West during the last summer, reports a very successful meeting in Nebraska. Mr. Wakeham is well qualified for this work, and we are glad to note the eminent success which has attended his efforts.

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THE Sanitarium managers have decided to establish Medical Missions in several foreign countries at an early date. Persons are now in training to assist in the organization of these missions. It is believed that a medical mission, through which the principles taught and practiced at the Sanitarium shall be represented, is much needed at Jerusalem, Palestine, and it is proposed to establish a mission at that point at the earliest possible moment at which it can be made a practical success. Missions are also needed in some of the larger cities in this country, and efforts are now being made to secure their establishment at an early date. Young men and women who are willing to devote their lives to this work are wanted to fit themselves for it. Persons desired for this work are those who have good ability, a liberal education, good health, and an earnest desire to devote themselves to the interests of their fellow-men.

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As stated in the last number of this journal, Dr. A. Wilford Hall, whose fraudulent practices we have recently exposed, in the frenzy of rage at our *expose* of his absurd pretensions as a discoverer, proposed to retaliate by announcing that he would send a copy of his pamphlet to each of our patients who would send him his proper address, accompanied by a two-cent postage stamp. We took pleasure in announcing this liberal offer on the part of Dr. Hall to reduce the price of his precious pamphlet from four dollars to two cents, in the interests of our patients, and have since taken pains to give wide publicity to the fact that we are able to furnish Dr. Hall's secret for a two-cent postage stamp. We now wish to increase the liberality. We have recently made arrangement by which we are able to supply this wonderful secret at a still lower price, and will send any one who desires, a full explanation of the secret on receipt of a *one-cent* postage stamp. This is a discount of $3.99 from Dr. Hall's price, and we think ought to secure us a liberal patronage. Our readers will do the public a favor if, in case any agent of Hall's enters their neighborhood to canvass for his $4.00 pamphlet, they will have inserted in their local papers an item to the effect that Dr. Hall's secret will be supplied to any who may desire it by the Good Health Pub. Co., of Battle Creek, Michigan, on receipt of a one-cent postage stamp.

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WE recently had the privilege of attending a meeting of the American Climatological Association, held at Denver, Colo. A large number of leading medical men from the East were present at the meeting, which was also attended by a good representation of the physicians of Colorado and adjoining States. The papers read, and the discussions which followed many of them, were all of very great interest, and the volume of proceedings which will be published in due time, will be a very valuable contribution to medical literature, especially upon climatology in relation to pulmonary diseases. The Association was very cordially received by the citizens of Denver, and was given a free excursion "around the circle," as well as excursions to various parts of the State. We also had the honor of presenting two papers on important subjects before the Association, one of which will appear in due time in the columns of this journal.

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THE growing prevalence of dyspepsia in this country, with the accompanying inactive state of the bowels commonly known as constipation, has induced us to issue a pamphlet on this subject, which contains an explanation of the causes of this chronic disorder and the most efficient means of treatment. Dr. Kellogg, the author of the pamphlet, which is now nearly ready, has had unrivaled experience in the treatment of a vast number of these cases. In this pamphlet is given the result of many years' observation in the successful treatment of this disease. This invaluable little work contains an amount of information which is inaccessible to the public by other means, in addition to a large number of original suggestions with observations of great practical interest to all sufferers from this common ailment. The pamphlet is well worth the price charged for it. It will be sent to any address, postpaid, on receipt of twenty-five cents.

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THE Sanitarium has undertaken to educate and support a number of medical missionaries in foreign fields. At a recent meeting in the interest of missionary effort, held in the Sanitarium gymnasium, fifty-one persons signed the pledge to devote themselves to foreign missionary work. With the exception of two or three persons, these are all members of the Sanitarium family, or as they are termed in that institution, "helpers." The demand for such work as can be done by persons thoroughly trained in the methods and principles of the Sanitarium, is increasing everywhere. Just such work is needed to supplement that of the ordinary evangelical missionary. Missionary effort sometimes fails, through the fact that while it converts the heathen, it introduces him to habits of life which destroy his health.

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IN connection with the above paragraph, we are glad to call special attention to the work already being done in this line by Miss Emma O. Ambrose, a missionary among the Karens of Burmah, who has recently returned to her work, after spending several months as a patient at the Sanitarium. We have just received a very interesting letter from her, a portion of which we will take pleasure in presenting to our readers next month.

THE CHANCE OF A LIFE TIME.—To those contemplating moving west, a grand opportunity to visit the vast territory west of the Missouri River will be given on October 14th, 1890, via the Union Pacific, "The Overland Route." On the above date, very low rates will be made to points in Nebraska, Kansas, Colorado, New Mexico, Texas, Wyoming, Utah, Idaho, and Montana. This country, with its millions of acres of farming, grazing, timber, and mining lands, presents unequaled opportunities for the accumulation of wealth. The climates and soils are among the best in the world. Agriculture, manufacture, stock raising, and mining, properly pursued, produce rapid and satisfactory results. Many important towns are rapidly becoming cities, and their future importance and growth is assured. Parties desiring to visit these lands, and wishing further information, can obtain the same by applying to their nearest ticket agent, any agent of this Company, or by addressing E. L. Lomax, G. P. Agt., Omaha, Neb.

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CHICAGO, MILWAUKEE & ST. PAUL R'Y. — Electric-Lighted and Steam-Heated Vestibuled Trains, with Westinghouse Air Signals, between Chicago, St. Paul, and Minneapolis, daily. Through Parlor Cars on day trains between Chicago, St. Paul, and Minneapolis. Electric Lighted and Steam Heated Vestibuled Trains between Chicago, Council Bluffs, and Omaha, daily. Through Pullman Vestibuled Sleeping-Cars, daily, between Chicago, the Yellowstone Park, Tacoma, and Portland, Oregon. Solid Vestibuled Trains, daily, between St. Paul, Minneapolis, and Kansas City, via the Hedrick Route. Through Pullman Sleeping-Cars, daily between St. Louis, St. Paul, and Minneapolis. Finest Dining-Cars in the World. The best Pullman Sleepers. Electric Reading-Lamps in Berths. 5,700 miles of road in Illinois, Wisconsin, Iowa, Minnesota, Missouri, South Dakota, and North Dakota. Everything First-Class. First-Class People patronize First-Class Lines. Ticket Agents everywhere sell Tickets over the Chicago, Milwaukee, and St. Paul Railway. A. V. H. Carpenter, G. P. & T. Agent, Chicago, Ill. Harry Mercer, Mich. Pass. Agt., 90 Griswold St., Detroit, Mich.

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MONTANA, OREGON, AND WASHINGTON. — The Northern Pacific Railroad passing through Minnesota, Dakota, Montana, Idaho, Oregon, and Washington, was the first line to bring the region occupied by these States into communication with the east. Its main line and branches penetrate all sections of these States, reaching nine-tenths of the chief cities. It is the short line to Helena and Butte, Mont., Spokane Falls, Tacoma, and Seattle, Wash., and Portland, Ore., and the only line running through train service from the east through the States of Montana and Washington. Pullman Sleepers and furnished Tourist Sleeping-Cars are run via the Wisconsin Central and Northern Pacific, and Pullman Palace Sleeping-Cars via Chicago, Milwaukee & St. Paul, and Northern Pacific, from Chicago through to the Pacific Coast without change. This is the Dining-Car and Yellowstone Park route. The large travel on the Northern Pacific line necessitated the inauguration in June, 1890, of a second through train to the Pacific Coast, thus enabling this road to offer the public the advantage of two through trains daily to Montana and points in the Pacific Northwest, carrying complete service of sleeping-cars, dining-cars, and regular day coaches. The train leaving St. Paul in the morning runs via the recently completed Air Line of the Northern Pacific through Butte, Mont., making this the shortest line to the latter point by 120 miles. Colonists for Washington, Oregon, and British Columbia points should take no other line than the Northern Pacific, as by this line only, can all portions of the State of Washington be seen. Stop-overs are allowed on second-class tickets at Spokane Falls and all points west, enabling settlers to inspect the country without extra expense. For Maps, Time Tables, and Illustrated Pamphlets, or any special information desired, address your nearest ticket agent, or Chas. S. Fee, G. P. & T. Agt., St. Paul, Minn.

ADVERTISEMENTS.

Chicago & Grand Trunk R. R.

Time Table, in Effect Jan 19, 1890.

GOING WEST.						STATIONS.	GOING EAST.					
.....	p m 3.00	.....	p m 7.00	.....	.....	.....Boston.....	.....	a m 8.30	p m 7.30	p m 7.30	p m 7.30
.....	p m 5.00	.....	p m 8.00	.....	.....	.....New York	.....	p m 11.10	a m 7.40	a m 10.10	a m 10.10
.....	a m 6.20	a m 6.32	p m 1.00	.....	.....	.....Buffalo.....	.....	a m 9.50	p m 5.40	p m 7.30	p m 9.00
.....	a m 7.45	a m 7.35	p m 2.45	.....	.....	....Niagara Falls....	.....	a m 8.15	p m 3.17	p m 5.30	p m 7.10
.....	.....	a m 8.30	.....	p m 1.00	.....	.....Boston	.....	.....	a m 9.50	p m 12.10	p m 12.10
.....	p m 8.30	p m 8.30	.....	p m 11.55	.....	.....Montreal	.....	p m 8.00	a m 7.45	a m 7.45	a m 7.45
.....	.....	.....	.....	p m 1.00	.....	..... Toronto	.....	a m 8 40	p m 7.25	p m 7.25	p m 7.25
.....	.....	.....	.....	.....	.....	.....Detroit.....	a m 9.45	.....	a m 7.45	.....	a m 11.50
Chi. Pass.	B. C. Pass.	Lmtd Exp	Pacific Exp.	Pacific Exp.	Mail Exp.		Mail.	Lmtd Exp.	Atlc Exp.	Night Exp.	Prt. H Pass.
am	pm	pm	pm	pm	am	Dep. Arr.	pm	am	am	am	am
5.55	4.10	12.45	8.55	7.45	7.15	.....Port Huron	10.20	1.05	7.35	10.00	10.50
7.28	5.40	1.55	10.20	9.08	8.31	.....Lapeer.....	8.40	11.48	6.17	8.31	9.17
8.05	6.20	2.25	10.50	9.45	9.03	.....Flint.....	7.55	11.17	5.40	7.45	8.35
8.48	7.15	2.53	11.28	10.30	9.35	.....Durand.....	7.15	10.48	5.03	7.15	8.00
10.00	8.25	3.45	12.37	11.35	10.30	.....Lansing.....	5.35	9.57	4.00	6.05	6.35
10.37	9.00	4.18	1.09	12.08	11.00	..... Charlotte.....	4.57	9.27	3.25	5.36	6.02
1.00	10.00	5.00	2.00	1.00	12.05	....BATTLE CREEK....	4.05	8.45	2.35	4.55	5.15
1.49	pm	.....	2.50	1.48	12.48	.....Vicksburg	3.19	8.01	1.48	.....	am
2.00	.....	.....	.....	1.58	12.58	.....Schoolcraft.....	3.05	.....	1.33	.....	.....
2.52	.....	6.19	3.43	2.45	1.42	.....Cassopolis.....	2.15	7.16	12.45	3.25	.....
3.40	.....	6.50	4.25	3.35	2.25	.....South Bend.....	1.25	6.40	12.00	2.50	.....
5.00	.....	.....	.....	4.52	.....	..... Haskell's.....	12.05	.....	.....	.....	.....
6.20	.....	8.10	5.55	5.10	4.00	.....Valparaiso.....	11.50	5.20	10.30	1.30	.....
p m	.....	10.10	8.10	7.30	6.25	.....Chicago.....	9.05	3.15	8.15	11.25	.....
.....	.....	pm	am	am	pm	Arr. Dep.	am	pm	pm	pm	

Where no time is given, train does not stop.
Trains run by Central Standard Time.
Valparaiso Accommodation, Battle Creek Passenger, Port Huron Passenger, and Mail trains, daily except Sunday.
Pacific, Limited, Day, and Atlantic Expresses, daily.
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A. S. PARKER,
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Cincinnati, Jackson & Mackinaw
RAILROAD,

W. H. BROWN, RECEIVER.

Time Schedule of Passenger Trains, in effect May 18, 1890.

Going North and West.				STATIONS.	*Going South and East.*			
.....	P.M. 4.25	.....	.....	Ar....Allegan....Lv	.....	.....	A.M. 10.25	.....
A.M. 1.30	P.M. 2.50	.....	P.M. 7.20	Ar..Battle Creek. Lv	.....	A.M. 7.55	A.M. 11.55	A.M. 6.45
P.M. 6.00	A.M. 10.20	.....	.....	Lv.....Toledo ....Ar	.....	.....	P.M. 4.15	P.M. 12.05
.....	.....	P.M. 11.55	P.M. 3.13	Ar.....Bryan.....Lv	A.M. 2.55	P.M. 12.07	.....	.....
.....	.....	P.M. 4.00	A.M. 7.15	Lv...Cincinnati...Ar	A.M. 9.40	P.M. 7.28	.....	.....

Direct connections at Cincinnati with all roads diverging. Trains arrive and depart at Grand Central depot, Cincinnati.

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TOLEDO, OHIO.

MICHIGAN CENTRAL

"The Niagara Falls Route."

Corrected May 18, 1890

EAST.	† Mail.	†Day Express.	*N. Shore Limited	*N. Y. Express.	*Atlantic Express.	†Amer. Express.	† Kal. Accom'n
STATIONS.							
Chicago.....	am 7.05	am 9.00	pm 12.20	pm 3.10	pm 10.10	pm 9.00	pm 4.50
Michigan City	9.10	11.10	1.56	4.48	am 12.20	10.53	7.00
Niles.....	10.2)	pm 12. 5	2.53	5.55	1.52	m 12.00	8.25
Kalamazoo	11.50	2.20	3.58	7.04	3.35	am 1.18	pm 10.05 / am 7.10
Battle Creek...	pm 12.55	3.03	4.30	7.37	4.25	2.03	7.55
Jackson.....	3.10	4.39	5.33	8.52	6.15	3.40	9.55
Ann Arbor.....	4.45	5.32	6.29	9.45	7.45	4.55	11.00
Detroit.....	6 15	6 45	7.30	10.45	9.20	6.20	pm 12.10
Buffalo.....	a m 3.25	am 3.25	am 3.25	am 6.25	pm 4.55	pm 2.15	8.30
Rochester.....			6.00	9.20	8.00		11.20
Syracuse.....			8.00	11.35	10.20		am 1.30
New York.....			pm 4.00	pm 8.50	am 7.20		9.42
Boston.....			8.30	10.57	9.35		pm 2.50

WEST.	†Mail.	†Day Express.	*N. Shore Limited.	*Chicago Express	*Pacific Express.	†Kal. Accom'n	†Niles Accom'n
STATIONS.							
Boston.....		am 8.30		pm 8.00	pm 7.00		
New York.....		11.50	pm 4.50	6.00	10.00		
Syracuse.....		pm 8.30	11.55	am 2.10	am 8.00		
Rochester.....		10.40	am 1.42	4.20	10.45		
Buffalo.....	pm 11.30	11.30		5.30	11.50	am 8.45	
S spen. Bridge	am 12. 8	am 12.28	3.05	6.25	pm 12.50		
Detroit.....	9.05	7.50	9.25	pm 1.20	9.15	4.4.	pm 5.55
Ann Arbor.....	10.37	8.55	10.19	2.17	10.30	5.58	7.16
Jackson.....	pm 12.15	10.05	11.18	3.20	11.50	7.15	pm 8.30 / am 6.25
Battle Creek ..	1.50	11.35	pm 12.22	4.30	am 1.23	8.47	7.55
Kalamazoo. ...	2.37	pm 12.12	12.59	5.02	2.17	pm 9.30 / am 6.00	8.36
Niles.....	4.17	1.23	2.0'	6.17	4.05	7.40	10.05
Michigan City	5.42	2.25	3.18	7.20	5.45	8.55	
Chicago.....	7.55	4.15	4.50	9.00	8.05	11.20	

* Daily. † Daily except Sunday.

Accommodation train for Jackson and all intermediate points leaves Battle Creek at 6.16 P. M., arriving at Jackson at 7.55 P. M., daily except Sunday.

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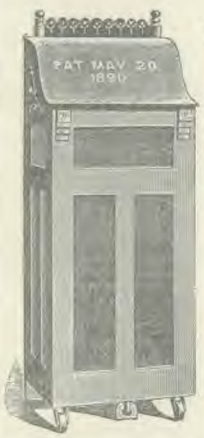

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Medium Oatmeal Crackers	10	*Whole-Wheat Wafers*	10	*Avenola (Bulk 10)*	12
Plain Oatmeal Crackers	10	*Gluten Wafers*	30	*Granola (Bulk 10)*	12
No. 1 Graham Crackers	10	*Rye Wafers*	12	*Gluten Food No. 1*	50
No. 2 Graham Crackers	10	*Fruit Crackers*	20	*Gluten Food No. 2*	20
Plain Gr'h'm Crackers Dyspeptic	10	*Carbon Crackers*	15	*Infant's Food*	40

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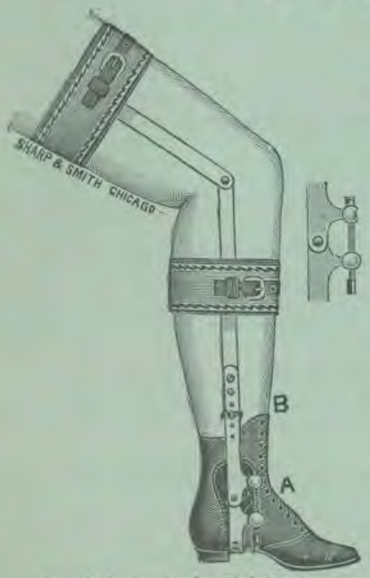

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