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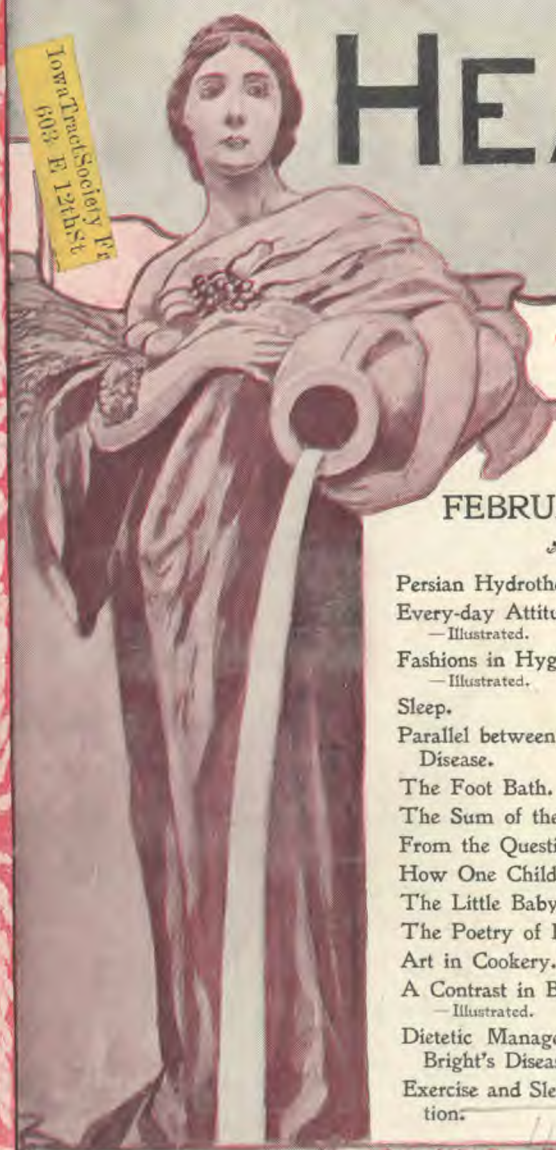
GOOD HEALTH



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FEBRUARY, 1900.

G.W.B.

VOL. XXXV. EDITED BY J. H. KELLOGG, M.D. NO. 2.

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CHRIST IN THE GARDEN.

"Who healeth all thy diseases."— Psalm 103 : 3.

GOOD HEALTH

A Journal of Hygiene.

VOL. XXXV. FEBRUARY, 1900. NO. 2.

PERSIAN HYDROTHERAPY IN 1674.

BY J. H. KELLOGG, M. D.

IN these modern times, when we are inclined to boast so much of the great progress of medical science and of our prodigious achievements in therapeutics, it is perhaps profitable to take occasional glances backward, and to note the wonderful good sense and sagacity not infrequently exhibited by those whose fund of scientific knowledge was infinitely less than that possessed by the practitioner of the present time, but who nevertheless won therapeutic triumphs which would at the present day be called achievements.

Sir John Chardin, a French Protestant refugee, who was knighted by Charles II, and who made numerous journeys into Asia in the seventeenth century, gives an interesting account of an attack of fever from which he suffered in Persia, together with an accurate description of the methods employed for his relief by the native Persian physician whom he consulted after the French surgeon accompanying him had practically abandoned his case.

The Persian physicians, he informs us, were then, as they probably are still, religiously disciples of Galen, whom they supposed to have been contemporary with Jesus Christ, and to have had much intercourse with him. For the dysentery, their most common remedy was sour milk mixed with rice previously washed in water and left till it had become quite dry. Bathing was one of their great remedies, especially in fever, as appears from his own remarkable case, often referred to erroneously, of which the following is an abridgment. We quote from Currie's "Medical Reports: "—

"On the 20th of May, 1674, Chardin had reached Bender-Abassi on the Persian Gulf, opposite to the Isle of Ormus, in the twenty-seventh degree of north latitude, where he waited for the arrival of a ship from Surat, which was to carry him to India. The place at this season was very unhealthful, and being himself and most of his people affected by it, he was advised by the physicians not to remain, but to return through Persia by land. He set out on his return accordingly, and on the 23d was seized with a violent attack of fever, with delirium followed by stupor, from which he recovered with difficulty. He had a French surgeon with him, who gave him every assistance in his power. The air of the country where he was taken ill was so bad that he resolved to be carried forward in spite of his weakness; and for this purpose eight men were to be hired, who made a sort of litter, or bier, of canes and branches of trees, on which they undertook to carry him on their shoulders to the village of Laar. For the first two days of this mode of traveling the fever continued, with frequent faintings, but on the third day he 'had a crisis,' and was relieved.

"He arrived at Laar at daybreak on

the 27th, for they traveled by night only, on account of the excessive heat. There he obtained the assistance of the governor's physician, for the fever had returned with violence. The French surgeon and himself thought the case desperate, but the Persian physician treated it as of no consequence. 'You have,' said he, gravely, 'the fever of Bender, but do not be uneasy, for, with God's blessing, I will relieve you from it this very day.' Chardin called out, 'I am dying of heat.' 'I know it,' said the physician, 'but you shall soon be cooled.' He prescribed a great quantity of medicine, consisting of two emulsions, a cooling confection, and at least a quart of some bitter decoction or infusion, with four bottles of willow water, and a teapotful of prisan. These arrived by an apothecary about nine o'clock. Chardin swallowed the medicines with extreme difficulty and reluctance, but without apparent benefit. About ten his heat and thirst increased rapidly, and the apothecary told him he should have been happy to give him snow water to drink, but that snow being scarce, no one could procure any but the governor.

"'In the extreme heat of my fever,' says Chardin, 'I thought nothing could be so delicious as drinking snow water, and I sent to beg a little snow of the governor, who sent me some about eleven o'clock, and as I then had the most raving thirst, I drank with more pleasure and avidity than I had ever done in my life. My apothecary was always near me. It was he who administered the liquid to me. He filled a large vase with barley water and willow water, put a large lump of snow into it, and when it was half melted, gave me the vessel, and desired me to drink my fill. The pleasure I had in drinking was the greater because the liquor was very agreeable to the taste, and I took it by the physician's desire. I was lying on the ground floor in a cool room, my bed stretched on the ground. Every hour the floor was watered, so that it might be said to have been quite covered with water. But nothing could allay the heat of my malignant fever, which seemed to be irritated rather than abated by so many cooling remedies. My apothecary then ordered my bed to be taken up, saying it heated me; and he spread a thin mat in its place, upon which he made me lie down in my shirt, without any other covering, and then made two men come and fan me. But this was of no avail; the heat continued as oppressive as ever. The apothecary, who paid me the most constant attention, then procured two buckets of cold water, and having placed me on a chair, on which I was supported by two men, poured the water over my body little by little, from the haunches downward, and then taking a large bottle of rose water, bathed in the same manner my head, face, arms, and breast. I blessed, in my heart, the Persian practice of medicine, which treated sick persons so voluptuously. But our French surgeon, who was always by me, could not contain his indignation. "The man is killing you, sir," said he to me, in a compassionate tone. "What! *bathe* you with cold water in the heat of a malignant fever, with a pint of emulsion, two pints of decoction, and a pound of confection in your belly, and I do not know how many draughts of snow water. Depend upon it," added he, "that instead of being very soon without fever, as he has promised you, your death will be the end of the business." "I do not know what will happen," answered I, "but at any rate I do not feel as if I were about to die, as you suppose." Indeed, at that moment I felt the heat within me diminish, and my senses return; upon which my apothecary, having felt my pulse, said, "Your fever is abating." It went off

from that time so quickly that by one o'clock in the afternoon I was quite free from it, even in the opinion of the French surgeon. He was quite astonished, and I was transported with joy. After having offered up my devotions to God as the first cause of my recovery, I said to the apothecary, that to complete my happiness I must see my physician. "He will return," said he, "by the time the medicines have operated." In the evening the physician came, and I received him as a prophet, or as Esculapius himself. He had learned from the apothecary how I had spent the day, and he ordered me a mess of rice boiled in water, with cinnamon and the bark of dried pomegranate pounded together. I had taken no nourishment whatever for five days.

"'On the 28th, when I awoke, I was a little feverish, on which account the physician, when he came to see me, ordered me an emulsion of the *cold seeds* (melon, cucumber, gourds, and pompions), and a dose of the confection, as the day before, recommending that I should eat raw cucumbers. These remedies were given to me at nine o'clock in the morning, and I did nothing all day but drink, most deliciously, willow water and barley water cooled with snow, eating raw cucumbers, watermelons, and pears. Verjuice, in considerable quantity, was put into the mess which I took at noon and in the evening, to give it an agreeable taste, and it most wonderfully lessened my thirst.

"'The next morning, the physician, having found me still rather feverish, ordered me medicines similar to those I had taken on the 27th. These purged me during the whole day with so much violence that I had nearly sunk several times under the effects. The night was still worse than the day, as I passed it in pain, with a violent increase of fever. My physician found me in that state, and as usual filled me with consolation; for, after having felt my pulse attentively, he told me he was going to give me some draughts which would carry off what fever remained, and deliver me from it entirely. This certainly took place, but I do not know how he accomplished it. I only know that about nine o'clock in the morning I took two pints of emulsion, with a large dose of confection, as on the preceding days, and half an hour afterward a julep; after which I fell asleep, and when I awoke in the afternoon my head was clear, I was without fever, perfectly tranquil, and, as I thought, entirely restored to health.

"'I was so much transported with joy that I could not find utterance to my feelings, relying on the word of my physician, whom I thought an oracle, that the fever would return no more.

"'On the morning of the 31st he confirmed this opinion, and ordered me to live ten days together on chicken and rice, without anything else; at the end of which time he said I might live as usual. I asked him how many days it would be before I could pursue my journey. He told me that two more days of repose would be sufficient, and that then I might set out on horseback. He once more ordered me a great dose of emulsions and cordials, as before.

"'On the first of June he came to see me for the last time, saying that I was not any longer in need of his visits; that he had ordered the apothecary to bring me the materials for ten emulsions, and to teach my servant how to prepare them; also a box of salts, and thirty-five drams of cooling confection, of which I was to take one dram daily when I awoke, and to drink after it a glass of water. He said it was to warm and fortify my stomach, which so many emulsions and cooling medicines had considerably weakened.'"

The fever from which John Chardin suffered was without doubt due to malarial infection, and of the remittent type. Several points in his account are of sufficient interest to be worth emphasizing. Attention is especially called to the free use of cold water, and its influence upon the temperature, also the good sense exhibited by the "apothecary" in wetting the floor so as to cool the air by evaporation; in removing the patient from his bed and placing him, covered only by one thin garment, upon a thin mat upon the floor; and finally, the administration of cold by the method of affusion, and the promotion of evaporation by fanning. It is also interesting to note that notwithstanding the protests of the French surgeon, who represented the established methods of the time, the patient persisted in permitting the application of the rational methods which caused his fever to abate.

The dietary arranged by the Persian physician affords a useful lesson in fever dietetics,— watermelons, pears, barley water. Who can suggest anything more delicious or appropriate? and how preferable in every way to the cramming of meat extracts, with milk and beef tea, and the administration of toddies, punches, and other drinks so common at the present time. Even raw cucumbers could scarcely be considered altogether objectionable, if taken without vinegar or salt — the real cause of their unwholesomeness.

It is interesting to note that Sir John Chardin reached his journey's end without relapse, and was ever afterward an advocate of the Persian method of dealing with fever.

Bruce, the famous African traveler, reports that similar cases were treated in tropical Africa by drinking water only, and by throwing a quantity of cold water over the patient, even in his bed, where he was permitted to lie without attempt to make him dry, until another deluge was added to the first.

In the face of such facts it is very strange that now, after the lapse of two and a quarter centuries, it is just beginning to dawn upon us that water is the great febrifuge, and that it will accomplish more in the treatment of both acute and chronic disorders than all other remedies combined.

EVERY-DAY ATTITUDES OF WOMEN.

BY JEAN HARRIS WHITNEY, M. D.

EVERY woman, no matter how fine her physique, needs to be able to do her work, or to play, as the case may be, with the least possible waste of energy. If she is not one of the fortunate few possessed of abundant vigor, the need becomes imperative, and if, as so often seems the case, her work increases as her strength and power to work diminish, anything that may lighten the strain and ease the burden of physical living somewhat, answers the need.

The restless, nervous schoolgirl, the tired, worried mother, even the dear old grandmother, has each been the subject of admonitions from different members of the family, and has given them in turn, to "Straighten up," "Throw back your shoulders," and still the tired shoulders droop, the lowered chest moves slightly, and the hanging head and forward hips each tell their story of weakness and ill health coming, if not already present. The fretful girl finally declares in des-

peration, "I can't;" to herself she says, "I won't." The mother, busy with the cares of life, thinks it the proverbial last straw, and grandmother sinks back contentedly, feeling that her age should render her immune to any criticism on that point. So each goes her way, missing just so much of the fullness of life as can be rightly measured only by the one whose full, uplifted chest, well-poised head, waist muscles strong and finely held, with easy use of limb and hand, give evidence of the "perfect woman nobly planned."

eration, we should have a right to expect of every woman that she be physically as perfect as possible.

Correct position is essential in that it gives to the individual greater power in the saving of strength. The wise use of a given amount of energy, making it possible for a limited amount of strength to do much work, may almost equal, in the results attained, an unlimited power carelessly used. It is exactly this economy of force which results from the correction of wrong attitudes. The incorrect position means constant added strain, and

The woman who stands long on her feet, whether a hostess receiving, a saleswoman, a housewife in her kitchen, or the laundress at her tubs,— each has the same lesson to learn of the uplifted chest and well-held abdominal muscles, or her work will become more and more an effort and strain.

Lightness of poise and erectness are considered by most people desirable things, certainly, but with which some are blessed naturally, while they are impossible to most, it not being realized that they are essential to good carriage and possible to almost every woman. This is not important as a matter of beauty alone, though even were beauty the only consid-

in work the body acts at a disadvantage mechanically.

Whatever the position, it should be such as to allow perfect freedom — so that the lungs may be fully expanded by wide movements of the ribs; so that the heart with its great blood vessels may not suffer compression and the blood current thus be hindered; so that the stomach may be given a chance to remain in its proper relation to its surroundings, instead of being pressed down, dragging to its own low level the spirits of its possessor.

The attitude of the average woman, with or without the corset, who takes what she calls a "comfortable" position, permits none of these things. She is

tired, perhaps, and forgetting that heart and lungs are equal sharers in her fatigue, she allows the chest to drop down, the shoulders to droop forward, relaxing till there is a sharp bend at the waist line, and the stomach and other abdominal organs are huddled together in a most uncomfortable way. Let the tired housewife take up the sewing, or possibly the writing, that she feels must be done at once, and matters are yet more aggravated. She crosses her knees, perhaps, and bending over her work makes such a thing as full circulation or a deep breath an impossibility. A little relief comes once in a while as she straightens, and draws a deep breath, ending in a sigh as the old position and work are resumed. Is it not strange that backaches, with the customary pain under the shoulders, are not more often complained of, when the incorrect positions are so universally taken in work of this kind?

At the sewing machine it is hardly better, for the same drooping attitude is seen, and the effect of the position is aggravated by the foot movement necessary. Very many of the women who find themselves unable to run a sewing machine could do so without injury if they would constantly remember to keep the chest lifted and the abdominal muscles well drawn in, as this would give them a feeling that everything below the diaphragm is being lifted and supported by the muscles forming the abdominal wall. It is largely the relaxation and weakness of these muscles, with the resultant letting down of sensitive structure, that makes this kind of work hurtful.

Stair climbing, thought by so many to be injurious, becomes instead an excellent form of exercise when properly done. We stay-at-home mortals can rarely experience the delights of mountain climbing, so we may consider ourselves fortunate that this imitation is left us. The injury comes in the manner of taking it rather than in the exercise itself. One very helpful teacher gave me this thought in regard to it: The poise once assured, make the thought center in the chest, feeling that the body is lifted by the chest. Associate with this a sense of lightness. Do not allow yourself to think that the body is a great weight to be dragged up the stairs. In taking each step, imagine that you press the step down rather than drag yourself up to it. It may seem a little mechanical at first, but practice will soon dispel the dread of stair climbing.

Many women are advised by friends, and even

by their physicians, not to do any reaching, and when one realizes the injury that is possible or even probable when it is done in the customary manner, the advice seems very wisely given. Yet hardly an exercise can be taken which will prove so valuable as stretching or reaching upward rightly. There is an invigoration about it that is given by nothing else, and whether taken as an exercise

or as actual work in reaching up after something, pushing up a window, or putting a box on a high shelf, the principle will always be the same,— the slight leaning forward with hips well back, that the upward push or reach may come in a straight, not a bent line.

Do you say that my lady of the wash-tub carries herself too straight? I asked her this question, and she assured me that if allowed to hold herself thus she could wash all day long with but little fatigue. It is not that she can not assume the relaxed position. When I asked her to take it, she said, "Isn't it dreadful? Don't make me hold it long," and then again presently, as she straightened up to relieve herself from the moment's bad position, "It doesn't seem possible, but that is the way I used to do."

Instances might be continued almost indefinitely were we to consider every-day attitudes in full, but it is not needful, since the same principles apply to all positions alike, and the errors are sure to be very much the same.

Let me give you a final suggestion; it may be a help: When you are not sure of your position, take it before a generous mirror, and maybe it will show you the things that others have seen, but of which you have not dreamed. The mirror will be kind to you, as well as frank, for it will acknowledge improvement as quickly as faults.

"Oh, wad some power the giftie gie us,
To see oursels as ithers see us."

FASHIONS IN HYGIENE.

BY F. L. OSWALD, M. D.

I.

RICHARD BURTON, the "British Sindbad," once laid a wager that he could initiate a pilgrimage to the tomb of a Hindu horse doctor. Experiments of that sort had succeeded before, and the mystificator contrived to circulate rumors to the effect that preternatural lights had been seen near the place where the heirs of the old liniment peddler had deposited his mortal remains.

The result surprised him. Crowds did collect, and marvelous visions were reported by the usual number of intelligent eyewitnesses, but it became known also that competent ears had caught a sound of strange raps and clicks, and public opinion finally agreed on the verdict that the luminous wraith was not the spirit of the transfigured veterinarian, but that of his cousin, an orthodox old cobbler, who had been buried in the same neighborhood. Reliable witnesses then remembered that the defunct shooster had for years diffused an odor of sanctity, mingled with the perfume of oil-tanned leather, and could have saved souls and soles with equal success.

Captain Burton enjoyed the harangues of the devotees too much to mind his partial failure, but took a pledge not to bet any more rupees on the freaks of superstition.

The caprices of sanitary fads are almost equally unpredictable. A Tennessee doctor of my acquaintance spent several thousand dollars in an attempt to establish an air-cure resort on a promontory of the southern Alleghanies, but succeeded only in popularizing a nauseous sulphur spring, which, much to his regret, had been discovered in a wayside gully of his climatic sanitarium. Liberally and persistently advertized spas have been as persistently neglected, while in an adjoining county, springs with precisely the same ingredients have accomplished yearly miracles and attracted health seekers from distant continents.

Like fairies, hygienic fashions appear and disappear in a manner that defies ordinary methods of explanation. If the Prince of Wales should instruct an advertisement agency to inform his countrymen that he could cure rheumatism by kicking the patients' shins, all his mother's household troops could not save him from being dragged to a lunatic asylum; yet the belief in the efficacy of a similar procedure as a scrofula specific once prevailed all over Christian Europe, and as late as 1668 had influence enough to crowd the approaches to St. James with thousands of pilgrims.

Scrofula, at that time, was popularly known as the "king's evil." Drugs might palliate the disorder, but the only radical cure was a tap or touch of the royal hand. It did not matter if His Majesty himself violated all the health laws of nature. It made no difference if he happened to be a saint or a sinner. So long as there was no doubt about the legitimacy of his descent the success of the prescription could be guaranteed, unless, perchance, the archbishop of Canterbury had neglected an important item of the coronation ceremony. Scrofulous Britons could be cured only by a touch of the "Lord's anointed."

In the year named, the crowds of relief seekers became so troublesome that Charles II had to limit their privilege of admission to special days of the week. On those days he had to work like a cattle brander

of a large Mexican stock farm. Hundreds and hundreds of true believers thronged the reception hall, the corridors, the outchamber, terraces, and courtyards, and it took a dozen ushers to keep the crowd in order and straighten them out into single file. Some had come from Wales and distant North Scotland. Multitudes had crossed the Irish Channel. There are records of families who had performed long journeys afoot, and begged their way from town to town. They were all absolutely sincere, and nearly all disfigured and dirty. Was there no risk of contagion? — Oh, no. The king could touch scrofula, but scrofula could never touch a king. The mere attempt would have been high treason. What would be the use of coronation oil if it could not obviate such risks?

CHARLES II.

In the consciousness of his prerogatives, the royal immune went to work resolutely, resolved also to get done as soon as possible and return to his boon companions in Buckingham Arbor. He often kept chatting while the miracle was in progress, and touched scores of the file marchers with half-averted face. What did it matter if the ceremonial became somewhat perfunctory, so long as the effect remained the same?

And the reality of that effect can not possibly be doubted. As an alternative of a three-hundred-mile journey almost any drug would have been cheap, but drugs were apt to fail, and the king's touch cured. There were exceptions, but they were so rare that they created far-spread surprise, and were liable to be disputed, like records of a portent. Dr. Thomas Taylor states the average of success as ninety-five in a hundred cases. Out of twenty pilgrims to the court of the crowned Don Juan, nineteen recovered.

Was it a faith cure? a semimiraculous reward of belief under special difficulties? It would be worth knowing if the occasional exceptions did not refer to cases of persons who had been saved the trouble of protracted pedestrian exercise — patients from the London riverside slums.

The probability is that the chief remedial factors of the cure were exercise, fresh air, and change of diet. Scrofula results from the combined effects of foul air and unwholesome food, and a long journey might be expected to cure the evil by a direct removal of the cause. The sovereign specific was the sunlight of the fields and hills; the healing touch was the kiss of the morning wind.

Yet, — who knows? Pilgrims disappointed in their hope of a royal audience would perhaps have sickened with grief and experienced the physical after effects of mental agitation in the way illustrated by the anecdote about Frederick the Great's chamberlain, the Marquis d' Argens. Mischievous Berliners had horrified him with the assertion that he had the cholera, and that his salvation depended upon the

chance of catching the next stagecoach for the Saxon border. He missed the coach, and was taken seriously sick, the symptoms actually resembling those of Asiatic cholera.

From that point of view it can not be denied that a legitimate monarch earned his salary.

In fashion-fickle France the craze lasted till 1720, and then abated all of a sudden, perhaps because no proper person could be persuaded to touch the Regent d'Orleans with a ten-foot pole. Health seekers pilgrimaged to Loretto, and by and by to Lourdes in the upper Pyrenees, where faith was seconded by bracing breezes the year round.

Loretto is a chapel village in a swamp. In midsummer the gnat plague gets so formidable that many of the natives nail up their doors and start out to seek employment in the harvest fields of the uplands, and take care not to return until late in October. The water, too, is sickening; but such trifles did not scare the devotees of the eighteenth century, and the Abbé Bastiani saw women and cripples crying in the misery of hope deferred, after waiting for days to squeeze their way through the crowd. The little frail chapel weathered the shock of the Revolution. Long after the period of convent education hundreds of thousands came to brave the malaria of the Adriatic fens and camp in a mosquito cloud, on the chance of getting access to the miraculous shrine. They were mostly volunteers in quest of health, for the era of church penances was then gone by, and, indeed, soon after a purely secular cure-epidemic broke out in the highlands of the Silesian Mountains.

That refrigeration is nature's panacea must be admitted as a fact likely to become the keystone of the healing art of the future; but farmer Priessnitz, of Graefenberg, Silesia, took it into his head to apply that tonic in its most afflictive form, —by showers and plunge baths of ice-cold water. No hydropathic appliances of the best modern sanitarium would have satisfied his mania for heroic methods. He wanted to see his patients gasp and shiver, and to shout out his encouragements to "fight out the brave fight to the end, and shame the panders of modern effeminacy." His converts felt quite proud of themselves, but they could not help feeling almost paralyzed with discomfort at the same time. As compared with the lancets, blue pills, and sweatbox methods of the old school, the Graefenberg plan was a step in the right direction; but Squire Priessnitz might as well have inaugurated a movement cure by making invalids trot all day in shoes filled with buckshot.

For all one can tell, the old granger may, however, have recognized the necessity of compromising with prevalent prejudices. Of all the superstitions of ancient and modern times the most deep rooted is, indeed, the idea that a medical prescription can not be efficacious unless it is decidedly repulsive. Remedial drugs have to be bitter or nauseous. The coldest, purest mountain spring has no chance alongside of a puddle of sulphur water. Sanitary underwear is appreciated only if it is hairy and scratchy. It must inflame the skin of the patient with red welts and his mind with struggles against the temptation of lurid anathemas. Perhaps Priessnitz knew all that. He possibly recognized the hopelessness of the plan to refrigerate his patrons by pleasant methods, by drafts of cold water and cool night air, by camps under the mountain firs of the neighboring highlands. He could not risk to steer too straight against the current of prejudice, and thus may have conceived a scheme for combining the efficacy of a new prescription with the bitterness of the old ones.

Beans (or peas) are first-class bowel regulators, but will perhaps never take

rank with popular specifics till some speculator in patent medicines advertizes a plan for canning them with tincture of quassia. Unalloyed blessings are voted down as snares of the tempter. Even cheap railway excursions were never wholly popular till passengers began to be tortured with reclining chairs.

The Graefenberg ice-water horrors, at all events, soon attracted the attention of salvation seekers. Their afflictiveness could not be denied any more than their cheapness, their novelty, and the enthusiasm of their inventor. The language of personal conviction is, after all, not so easy to counterfeit. Priessnitz knew a good deal about drug-monger scandals, and could turn loose shower baths of red-hot invectives as well as of snow water. He impressed his guests as an indisputable departure from the custom of feeding the sick on poison and technical jargon. Besides, it was the time of the century when all western Europe was stirred by a revival of physical culture. The shouts of the Turnerbund mingled with the cheers of tourists and mountain climbers. Hardiness and vigor go hand in hand, and the latter-day athletes had no objection to a test of staying powers in a torrent of drift ice.

They all agreed that the ordeal was frightful enough to compete with sulphate of quinine, though they were not sure if the establishment was not too primitive to rival the fashionable health resorts of the Rhineland.

Those doubts, however, vanished when Squire Priessnitz raised his terms. There has to be something exclusive about a fad calculated to attract the aristocracy of birth and boodle. With the exception of the bath houses, Graefenberg could boast few claims to the name of a sanitarium in the modern sense of the word; there was no hospital, no operating room, no dispensary, no gymnasium, no teacher of gymnastics, no trained nurses. The patients boarded wherever they could find shelter, but soon came in such numbers that hundreds had to camp in tents and barns.

The fame of the water-cure doctor eventually spread beyond the borders of Europe. Letters of inquiry arrived from British India, from several cities of the United States, and even from parts of Canada, where refrigerating breezes clamored for admittance at every dwelling-house window. Charles Lamb's Chinese gormand happened to find a hunk of roast pork under a pile of charred timber, and for years after thought it necessary to burn down a house every time he felt a hankering after spare ribs. For years the health seekers of Europe traveled to Graefenberg whenever they wished to abate their microbes by a reduction of temperature.

The little Silesian mountain village even lost the attraction of its shade trees, the woods having been cleared to make room for new boarding barracks; but patients continued to arrive from great distances to pay a high price for a disagreeable method of reaching a result which they could have attained at home with comfort and less expense.

(To be continued.)

FOR I have learned
To look on nature not as in the hour
Of thoughtless youth; but hearing oftentimes
The still, sad music of humanity,
Nor harsh, nor grating, though of ample power
To chasten and subdue. And I have felt
A presence that disturbs me with the joy
Of elevated thoughts: a sense sublime
Of something far more deeply interfused
Whose dwelling is the light of setting suns,
And the round ocean, and the living air,
And the blue sky, and in the mind of man
A motion, and a spirit, that impels
All thinking things, all objects of all thoughts,
And rolls through all things.

—*Wordsworth.*

SLEEP.[1]

BY DUDLEY FULTON, M. D.

THE subject of sleep and its disorders has occupied great minds since early times. Aristotle gave much attention to its study.

The cause of sleep, what it is, how and why one awakes from it, furnish one of the most interesting subjects for speculation among all the phenomena of nature. If it were an unusual event, its appearance would occasion intense interest, but ordinary things are treated with indifference, irrespective of their importance. The subject has been studied much, yet many of its problems are still unsolved.

Whether it is a physiological or a psychological process, or both, is not yet fully determined. There is some evidence pointing to a center for sleep somewhere in the central nervous system corresponding to the center that presides over circulation or the act of respiration; indicating also that through the stimulation of this center or its inhibition, sleep results, and by the opposite action, wakening occurs. Some investigators explain sleep as resulting from the inherent property of the brain tissue itself, following the law of rise and fall in its irritability.

Bouchard, the eminent French physiologist, advances the idea that sleep results from "fatigue poisons;" that the action of these poisons upon the cerebral center generated by the muscular activities of the day is comparable to the action of an anesthetic, benumbing the consciousness, the patient falling asleep, as it were, as the result of his own self-poisoning. The effect of the poisons worn away, the individual awakes.

The observation that during sleep the brain is slightly anemic has been made by other investigators, and this fact has been taken to be the cause of sleep, but whether this lessened blood supply is the cause or the effect of the sleep is still disputed.

Through improved laboratory methods, technique, and microscopical study much has been learned, within the last few years, of the finer anatomy and histology of the nervous system, and of its physiology.

Certain new facts have suggested a theory of the cause of sleep which has its basis in the neuron doctrine. The explanation offered is a most fascinating one for speculation; whether or not its claims will be realized depends upon future study.

It is now well known that the nervous system is made up of neurons and neuroglia, the latter being a tissue that gives form and support to the former. The neurons, or nerve cells, are made up of a cell body, containing its nucleus, and several processes which branch out and come in contact with the processes of other neurons, or nerve cells. Most neurons, particularly those that send to and receive nervous impulses from the periphery, for instance, the arm, have one large process, which for convenience and because of previous usage we call the nerve fiber. A nervous impulse passing from the foot to the brain, travels over a nerve fiber to the cell body, and is then transmitted to another neuron, the medium of exchange being the small processes, which must be in contact if the impulse is transmitted; otherwise the current is broken, and the message from the foot fails to reach the brain. The idea is, that during the waking hours, contiguity exists between these neurons, and consequently impulses and sensations are continually pouring into the brain, and consciousness

[1] Abstract of a lecture delivered before the patients of the Battle Creek Sanitarium.

reigns; in other words, the circuit is closed. During sleep, and as a cause of it, the opposite condition exists. Some influence, probably the shrinking of the nerve cell occasioned by fatigue, causes a retraction of these processes from each other, and the circuit is broken. Fewer impulses reach the brain, and the unconsciousness of sleep results. The rest afforded by sleep allows the processes once more to assume contiguity with those of other cells, and consciousness begins and the sleeper awakes.

Sleep is more essential to life than food. A man can go longer without food than without sleep. Experiments have been made confirming this conclusion. Animals were forcibly deprived of food for twenty days, during which time they lost half their weight, yet death did not result when, after the experiments, they were carefully fed.

In another instance puppies were deprived of sleep four or five days, during which time they were well fed. As a result of the loss of sleep, irreparable damage was done. In the latter case the brain suffered most, while in the former the brain and nervous system longest preserved their normal weight and constitution; but the other tissues, as the blood, the muscles, suffered profound modification.

Investigations on this subject have been carried a step farther in the laboratory of psychology of the University of Iowa, by Professor Patrick and Dr. Gilbert. Healthy, able-bodied men were kept awake ninety hours, and observations were taken every six hours to note the reaction time of the reflexes, the power of the memory, the attention, the general effects of the insomnia, and the depth, amount, and character of the sleep that resulted.

The first subject, an assistant professor, suffered most from drowsiness the second night; less the third. He had marked hallucinations of sight; differently colored lights, balls, specks, and gnats which he tried to catch, were continually before him. These disappeared after he had regained his sleep. In all the subjects during the experiment there was a steady increase in weight, followed by a loss after the experiment. Dynamometric tests taken before, during, and after the experiment showed a gradual loss of muscular strength and endurance, which were regained after sleeping. Acuteness of vision increased during the tests. Memory became very defective, and attention was almost lost. One subject found it impossible to commit to memory in twenty minutes what he normally could in two minutes.

The most interesting feature of these experiments was the ease and rapidity with which the subjects returned to their normal condition after they had regained their sleep.

They needed to make up only from sixteen to thirty-five per cent of time lost from sleep, due, no doubt, to the greater soundness of the resulting sleep, and also to the fact that during the experiments, while apparently awake, they were often partially asleep.

Sleep is the great restorer of bodily wear. It repairs the damage work has done. He who suffers from insomnia ages prematurely, as it is during the sleeping hours that repair and nutrition are greatest. In early life nutrition exceeds, and later balances, the waste processes of the body. Senility is that condition in which the repair of the body fails to keep pace with the wear.

During sleep the heart beats from six to ten times a minute less frequently than during waking moments. One has only to compute the tremendous amount of work done by the heart during the twenty-four hours to realize the physical need

of its lessened work during the sleeping period. Each beat of the heart represents about seventy-five pounds of work done. It is seen, therefore, that during eight sleeping hours the heart does many tons of work less than during a corresponding number of waking hours.

Normally, the heart obtains from six to eight hours' rest between beats, during the twenty-four hours. Any one who, either ignorantly or from choice, by the use of alcohol or tobacco, because of insomnia or from any other cause, increases the action of the heart, hastens senility.

Respiration and other physiological functions are correspondingly lessened during sleeping hours. There is a diminished flow of saliva and of the other digestive juices; the digestion is proportionately slowed. Hence the evils of late suppers and midnight luncheons, which produce coated tongue and foul breath, putrefaction and fermentation in the stomach, and lay the foundation of chronic dyspepsia and insomnia.

Insomnia has long been on the increase. Civilized life, with its luxuries, its competition, its struggles for existence, tends directly toward debility, worry, sleeplessness. Sedentary life develops irregularities of the circulatory activities, and is an immediate cause of wakefulness.

Insomnia can be cultivated. Those who take worry and business matters to bed are sowing seed for it. Society that dances all night and sleeps all day, or tries to, either dies when young or has insomnia and other chronic functional nervous disorders when old.

Primary causes of insomnia are comparatively rare; those secondary to some other condition or disease are the rule; for example, one of the most common symptoms of nervous exhaustion is insomnia in some one of its forms.

Vasomotor disturbances cause abnormal wakefulness by creating either a hyperemia or an excessive anemia of the brain.

Various gastrointestinal disorders are frequent causative factors, as is irritation of the peripheral or central nervous system.

The loss of sleep from pain, acute diseases, trauma, etc., is not considered at this time, but only those chronic, persistent insomnias the causes of which are more or less obscure.

The treatment of the condition depends, of course, upon its cause, which must be carefully sought, and removed if possible. If the patient is suffering from the insomnia of neurasthenia or hysteria, the condition is purely symptomatic, and will disappear with the correction of the primary difficulty. The same principle holds true in nine tenths of all cases suffering from sleeplessness.

The promiscuous drugging for insomnious conditions can not be too forcibly condemned. Such treatment is purely symptomatic, and not rational, and does nothing toward the correction of the evil. The sleep of the hypnotic is artificial, eight hours of it failing to equal an hour and a half of natural sleep in beneficial results to the body.

The successful treatment of insomnia is often very difficult for the physician to manage, since he is frequently ignorant of its cause, and since the whole subject is more or less of a mystery.

If he could have the privilege of taking a specimen of disordered sleep to the laboratory, and could there analyze and dissect it, he might secure the desired information and data which would give the correct basis for treatment; but our methods of investigation and study are even yet crude as compared with those that the future will probably furnish. Experience has, however, yielded much. Hydrotherapy, electro-therapeutics, massage, exercise,

and other rational measures, when skillfully and systematically applied, can overcome most obstinate cases. The neutral bath, which is given by placing the patient in a bath at the temperature of his body or one or two degrees lower, is most effective. The body is surrounded by a neutral medium; thus the disturbing influences of environment, such as changes of temperature, friction of clothing, are avoided, and the irritability of the nerve centers is lessened.

Many persons are kept awake by a condition of hyperemia of the brain — too much blood is in its vessels and the functional activities persist, thus keeping the mind active. In such cases sleep will result from treatment that tends to draw the blood away from the brain, for instance, to the extremities or to the blood vessels of the skin. Hence the value of the hot foot bath before retiring, and the wearing of an ice cap, or the effectiveness of the cold wet-sheet pack, which at first contracts, then dilates, the blood vessels of the periphery.

Space will not permit a detailed discussion of the various forms of treatment that successfully combat this disorder. It is correct, I believe, to say that the best treatment for insomnia is not to have it. Counteract the tendency to it by regular habits and good hygiene. Eat proper food, take exercise, don't worry, sleep eight hours every night, and you will never be troubled with sleeplessness. Go to bed on time. The old adage, "Early to bed," etc., is a good one, but, as has been remarked, it is not always "the early bird that gets the worm," but the bird that sleeps well.

The bed should not be too soft, and should be placed out of the way of drafts. The sleeping room should be cool, preferably at about 60° F., and should be well ventilated. Cultivate the gospel of relaxation. Enjoy repose. When you lie down upon your bed at night, trust to gravity to hold you up. Let go. Lie on the bed as heavily as possible, then relax all your joints and muscles systematically, beginning with the toes. Don't try too hard to go to sleep; the effort keeps one awake. Just go to sleep.

PARALLEL BETWEEN PHYSICAL AND SPIRITUAL DISEASE.

BY DAVID PAULSON, M. D.

THEY have healed also the hurt of the daughter of my people slightly, saying, Peace, peace; when there is no peace."

This method of treatment, merely to heal slightly, is quite popular in the world to-day. The effort to make people feel well when they are not well, is manifest in the treatment of physical as well as spiritual diseases. It produces an immediate effect, and that is what many want. The man who can preach something that will ease the consciences of men, and allow them to do things that are wrong, often becomes immensely popular. The doctor who can prescribe something that will instantly cure a headache while at the same time allowing the individual to continue indulging the appetite in things which produce it, is not the man who is likely to look in vain for business. In each case it is simply saying, "Peace, peace," when there is no peace. The hurt is healed but *slightly*.

The promptings of conscience are merely indicators, showing that the man is sinning. Pain is the physical conscience, which tells a man that he is violating physical law. Symptoms are simply indicators of the condition. To smother them arbitrarily, without removing their cause, is like removing the red signal light that has been put out to stop a passenger train from plunging into a terrible chasm. Without doubt the sight of such a danger signal would cause considerable anxiety to both engineer and conductor, and to such of the passengers as might see it; they would feel much more comfortable if it were removed, but how woeful would be the consequences. It would certainly be much easier to take down the lantern than to rebuild the bridge, but rebuilding the bridge is the only safe thing to do. So when a man has wrecked his health, and nature begins to hang out warnings and danger signals in the form of aches and pains and sleepless nights, simply to smother these is as absurd as to remove the lantern. The man must set to work to rebuild the wreck. This can not be done by swallowing sundry pills and drops. The remedy must be more potent.

It is true that there is a multiplicity of diseases and innumerable symptoms. If we were to deal with each one separately, it would indeed be a well-nigh hopeless task; but when we realize that there are only a few ways of becoming sick, and that if we will live strictly in accordance with a few simple principles, health is an assured thing, the problem is much simplified. All that is necessary to cure any case that is curable at all is to bring that person, by the application of a few simple principles, into harmony with the law that is violated.

In order to understand this fully, we must recognize that physical and spiritual laws are parallel; and a glance at the spiritual side of the question will help us to understand the physical.

Before Martin Luther's time, every spiritual disease had a separate remedy. If a man had stolen, he went to the priest to find out the remedy, and was told to do this or that as a penance. If he had borne false witness against his neighbor, this required an altogether different treatment. Thus there grew up a colossal system of spiritual therapeutics; and none but the spiritual doctors, who were called priests, were supposed to know what to do for the various cases of sin. The subject was so complicated that the common people did not feel that they could ever understand it.

But in the fullness of time Martin Luther and other reformers arose, and stated that while there were hundreds of ways of being spiritually sick, there were only a few principles that were violated, and the principles underlying the cure were simple. Luther prescribed justification by faith in Christ, and suggested the reading of God's Word, prayer, doing good to others, and meeting together to recount their experiences. The priests ridiculed the simplicity of this treatment, and tried to draw a veil of mystery before God's plan for the forgiveness of sin; but God's simple methods of treating spiritual diseases finally triumphed.

Exactly the same principle is applicable in physical disease. There are more than sixteen hundred ways of *being* sick, but only a few ways of *becoming* sick. It is the violation of a few plain principles that brings on this host of diseases; as, lack of fresh air and exercise, improper dress and diet, impure water, worry, and distrust of God. To effect a cure, we must bring the patient back into harmony with the laws he has violated, by cooperating with nature and by the use of her simple remedies. This brings the patient into harmony with God, who

works mightily in him, and restores him physically, even as he does spiritually under similar conditions.

There has been a tendency to treat physical symptoms as the priests in the Dark Ages treated spiritual symptoms, the same effort to keep from the people the simplicity of getting well as there was then to keep from them the simplicity of spiritual restoration. But we are now in a time when there is abroad in the land a physical reform, even as there was spiritual reform. Recognizing that God works in disease as well as in health, all that it is necessary to do is to remove the obstacles, and unless the man has committed the physical unpardonable sin, so to speak, he will recover, as verily as he does spiritually when he comes into moral harmony with God.

THE FOOT BATH.[1]

BY J. H. KELLOGG, M. D.

THE foot bath may be cold, hot, or alternately hot and cold.

The cold foot bath, at from 45° to 55° F., from one to five minutes in duration, though less useful than the hot foot bath, is often of service in producing reflex, revulsive, and other effects. The sole of the foot is one of the most important vasomotor areas in the body, having direct communication with the centers which control the circulation of the pelvic and abdominal viscera as well as those which control the circulation of the brain.

For administering this bath, the water at the proper temperature should be placed in a small tub adapted to the purpose, to a depth of three or four inches. The feet, previously warmed, are immersed in the tub for from one to five minutes. Friction should be applied to the feet continuously during the bath, either by the hand of the attendant or by the patient's rubbing one foot against the other in alternation.

Among the most interesting effects of the cold foot bath are the vasomotor and other reflex effects set up in the pelvic viscera, causing contraction of the vessels and muscles of the uterus and the organs connected therewith. The blood vessels of the brain, the stomach, the liver, and the intestines are made to contract at the same time. Intestinal peristalsis is also excited. To attain this effect the temperature must be very low, 45° to 50°, and the application very brief, not more than five seconds.

The revulsive effects of the cold foot bath are very decided, and continue for a long time, much longer than those obtained from a hot bath or similar applications As a derivative or revulsive application, the short cold foot bath is useful in cerebral congestion, in uterine hemorrhage, in cases in which the feet are constantly cold, and in persistent sweating of the feet. For these purposes, however, the application must be very short, from three to five seconds only.

The prolonged cold foot bath, from 65° to 75°, may sometimes be employed in cases of injury to the feet, such as sprains, inflamed bunions, and similar conditions. There are other measures of greater value, however, for cases of this sort. Great care must be taken in the employment of the cold foot bath to see that the feet are warm before the application is made.

[1] The material for this article was selected from Dr. Kellogg's forthcoming work, "Rational Hydrotherapy."

The Shallow Foot Bath.

The shallow foot bath is a variety of the cold foot bath in which the amount of water employed is small, barely sufficient to cover the toes. After being held in the bath for one minute, one foot is taken out and rubbed for half a minute and returned to the water, the other being then treated in like manner. The treatment is continued until each foot has been thoroughly rubbed three or four times.

The shallow foot bath produces powerful reaction effects in the feet, and is thus of great service in chronic cases of cold feet and sweating of the feet.

The running foot bath is a modification of a shallow foot bath in which, through the constant change of water by means of suitable arrangements, the initial temperature is maintained. Water from a natural source, at as low a temperature as can be obtained, is commonly employed. The foot bath should be so constructed that the water can not accumulate to a depth greater than one inch. Circulatory reaction is promoted by the movement of the water, and by constant rubbing of the feet each against the other.

The Hot Foot Bath.

The requisites are a suitable receptacle for the feet and a supply of boiling water, with cold water for tempering.

The temperature required for positive effects is from 104° to 122°. The bath should begin at from 102° to 104°, and should be gradually increased until by the end of two or three minutes a maximum temperature of from 115° to 122° is reached. The duration may be from five minutes to half an hour. The feet should be completely immersed for half an hour, and the effect may be heightened by increasing the depth of water and the amount of skin surface exposed to the bath.

After the very hot foot bath the feet should be dashed with cold water sufficiently to produce the true revulsive effect by removing the heat from the skin, and encouraging circulatory reaction.

The hot foot bath produces, in a diminutive way, the same effect as the general hot bath. At first the pulse is slowed and the brain congested, but after three or four minutes the pulse range is increased and the brain becomes anemic, this condition persisting for some time after the bath is terminated.

As a derivative measure, this bath is more commonly used, perhaps, than any other. At a temperature of from 103° to 106°, the foot bath is an exceedingly useful means of aiding the regulation of the systemic circulation, the blood vessels of the lower extremities relieving the congestion of the brain and other organs in the upper half of the body.

The hot foot bath is also of very great service as a means of relieving or preventing a cold resulting from exposure of the feet to dampness.

The very hot foot bath is exceedingly useful in cases of sprain of the ankle joint. The bath is begun at a temperature of about 104°, and then gradually raised by the addition of hot water until it is as hot as the patient can bear — 120° to 130°. Neuralgia of the feet is likewise relieved by the very hot foot bath. The application should be made two or three times a day, and continued for twenty or thirty minutes each time.

The Hot and Cold Foot Bath.

In this bath the feet are placed in hot water for three or four minutes, then in cold water for from twenty seconds to one minute. They are then returned to the hot water for two or three minutes, and again placed in the cold, this operation being repeated a number of times.

The hot and cold foot bath is especially useful for chilblains, habitual coldness of the feet, and sweating of the feet.

THE SUM OF THE HUMAN BODY.

BY F. M. ROSSITER, M. D.

THE framework of the house in which we live is made up of 206 distinct bones.

In order to perform all the movements incident to daily life these 206 bones are acted upon by 522 voluntary muscles, each having a Latin name varying in length from the simple *biceps* to the formidable *levator labii superioris alæque nasi.*

The heart dispenses blessings to the bones, the muscles, the nerves, and the organs through nearly 1,000 arteries, 550 of which are of sufficient importance to be entitled to a foreign name. The arterioles and capillaries are innumerable, for it is impossible to prick any part of the body without causing bleeding.

Life is action. Action in the body is made possible only by the nervous system. The nerves are the avenues to the soul. More than 600 nerves are engaged in carrying messages to or from the brain and spinal cord. Thousands of sympathetic nerves are engaged in the same work.

If the skin of an adult man were spread out on a smooth surface, it would cover fifteen square feet.

In the skin there are 2,500,000 sweat glands. These glands empty their secretions upon the skin through a spiral channel. There are 2,500 pores to the square inch in the palm of the hand. If all these pores were united end to end, they would form a sewer from three to five miles long.

If the breathing surface of the lungs were spread out flat, it would cover 2,000 square feet, or an area equal to that of a piece of land fifty feet long and forty feet wide.

The lungs are made up of lobes; the lobes, of lobules; and the lobules, all told, of 1,700,000,000 air cells.

Food, after it has entered the small intestine, is ready for absorption, and this process is carried on principally by little structures in the mucous membrane called villi. There are about 10,000,000 villi in the small intestine.

There are 500,000 fibers in the optic nerve.

The retina, the thinnest coat of the eyeball, is composed of ten layers. The ninth layer, which is especially concerned with vision, is made up of rods and cones standing like bricks placed on end; 3,000,000 cones have been estimated, and the rods are still more numerous.

The most interesting part of the ear is the organ of Corti, found in the spiral portion of the internal ear. It is especially concerned in receiving and transmitting sounds. The organ of Corti consists of two rows of rods united at their upper ends, but each rests upon a broad base, enclosing a space between them called a tunnel. From a side view it looks like a harp; seen from above, it bears a striking resemblance to the keyboard of a piano. The inner row of the organ of Corti contains 10,000 cells, and the outer part, 16,000 cells. All these cells rest upon a membrane made up of 24,000 fibers.

In a normal head of hair there are about 250,000 hairs.

In the brain and spinal cord there are 3,000,000,000 nerve cells.

It has been estimated that in the average man there are 22,500,000,000 red blood cells, and 53,000,000 white cells.

According to a German writer there are, all told, 26,500,000,000,000 cells in the adult human body.

FROM THE QUESTION BOX.[1]

A New View of Cosmetics.

A preparation of apples, grapes, cherries, peaches, figs, bananas, and all other kinds of fruit, combined with nuts of various kinds,—almonds, pecans, hickory nuts,—and with well-cooked grains, applied to the inside of the stomach, is the best possible preparation for whitening the skin. The trouble with the skin when it is dingy and dirty, is that the dirt is more than skin deep. There are also dirty muscles and a dirty brain, dirty glands, dirty blood; the whole body is contaminated; the dingy color of the skin is merely a sign of the condition of the whole body. Simply to bleach the dirt off the face is a very hypocritical procedure. We may make the skin of the face clean while the rest of the body is filled with organic dirt, tissue débris, and effete, worn-out, and diseased matter which has accumulated as the result of vital work and improper diet. We should be interested in the whole skin rather than in the skin of the face alone.

I do not object to an interest in cosmetics, provided they are of the right sort, and the interest extends to the whole body. If one were so to educate himself as to have perfectly clean blood, he would have a clean skin over his entire body. If his whole body is full of light, his face will be clean. This is a practical truth. It is of no use to doctor the face with cosmetics or to poultice and steam it when the whole body is full of dirt, because the dirt keeps coming back.

It is right to cultivate physical beauty. If we could have seen Adam and Eve passing up and down here I imagine we would have seen the finest-looking people the world has known. God made man upright and beautiful, and it is right to cultivate beauty, but not in a deceptive way; we should cultivate a beauty that is more than skin deep,—a beauty that is born within, and that blossoms outward. To be beautiful we must eat beautiful things. What a beautiful cheek a ripe peach has! Who could wish a complexion more beautiful than the bloom of a peach? The way to get such a bloom is to use the peach itself.

Now look upon another picture—oysters, snails, sprawling frogs, clawing crabs, wriggling shrimps. People eat such things, and then want something to spread on the outside of their faces to make them appear beautiful. If we make the stomach the hold of unclean things, we must expect that the body will be unclean and ugly. There is nothing beautiful in a dead creature—in the corpse of a pig or an ox or a hen lying upon the table. If we eat such things, we must abide the consequences.

Puffing up Sunken Cheeks.

The kind of oil or skin food that dermatologists use to puff up sunken cheeks is a sort of extract of greenbacks which certain people use when advertising such things. There is no oil that can feed sunken cheeks. These people are deceivers; they make believe that they are applying a kind of oil that soaks into the skin, but the only way to get oil into the skin would be by the aid of a hypodermic syringe. Certain people were once arrested in England for making children too fat. These children were exhibited as monstrosities. Those who exhibited them had given them this appearance by inserting a little pipe under the skin and blowing them up every morning. It is only by some such arrangement that

[1] The remarks made under this title were taken from a lecture to the patients of the Battle Creek Sanitarium, by Dr. J. H Kellogg, in which he answered informally different questions presented by the company.

sunken cheeks can be filled out. So long as it is healthy and alive, the skin is impervious to oil. The philosophy of the matter is simply this, that the kneading and rubbing of the cheek bring the blood into that part, and this extra amount of blood deposits the materials which make the cheek plump. Rubbing the cheeks makes them thicker because it develops the tissues; so it is simply the rubbing that benefits the patient, and not the oil, except as it facilitates the rubbing.

Whitening the Teeth.

The best preparation for whitening the teeth is a combination of good bristles and an ivory handle, with a little pure water added. Any chemical substance that will whiten the teeth will destroy them. Precipitated chalk is the only preparation that is needed to scour the teeth. If one eats only clean foods, after the teeth are once thoroughly polished they can easily be kept clean.

Hardening of the Liver.

Perfect digestion is possible only when germs are not active in the alimentary canal. The presence of germs gives rise to conditions which are certain to be followed by poisoning, not only of the stomach and intestines, but of the whole body as well. Dr. Voit, of Paris, has been conducting some interesting experiments in this line. It has been generally supposed that hardening of the liver comes from a septic condition of the alimentary canal, but Voit has found that it comes from indigestion more often than from any other cause; that it is due, not to poisons normally produced by the body, but to poisons produced by indigestion.

The poisons resulting from indigestion are lactic acid, acetic acid, and butyric acid. Lactic acid is the acid of sour milk; butyric acid is that produced by "frowy" or strong-tasting butter; and acetic acid is the acid of vinegar. All these kinds of fermentation take place in the stomach through the action of germs, provided the other conditions are present. Dr. Voit found that by adding lactic acid to the bran upon which a rabbit was fed for a few weeks, he could enlarge and harden its liver; and he found the same thing to be true when he applied butyric acid to the bran and other things upon which the rabbit fed. The rabbit died in about six weeks, and examination showed that it had an inflamed and hardened liver.

Dr. Voit also found in another experiment that when pure acetic acid was added to the food upon which the animal was fed, in about six days the rabbit had a very highly inflamed and greatly hardened liver; in other words, acetic acid, or vinegar, was the most poisonous thing that he could give the animal, and had the most active influence in producing hardened or "hobnailed" liver, as the English call it. This condition is generally supposed to be caused by alcohol, but he found that alcohol produced fatty degeneration of the liver; also that acetic acid produced a closing up of the liver, so that dropsy was the result.

It is very common to find a dyspeptic with enlarged liver,— a liver falling down an inch below the lower border of the ribs on the right side. Ordinarily the lower border of the liver reaches a point only about half an inch or a finger's breadth above the lower border of the rib, while in dyspeptics it is common to find it as much as two finger breadths below the lower border. In one case I found it half a hand breadth below the lower border of the rib on the right side. I once knew a man who had never used whisky or tobacco and who had an enormously large liver. It was found after his death that it weighed twenty-eight pounds, whereas the natural weight is three and a half pounds.

The only cause to which this unnatural weight could be attributed was dyspepsia and fermentation. It is well to know that disorders of the liver are more frequently due to indigestion than to any other cause, and that indigestion comes almost altogether from fermentation produced by germs.

Temperature of Drinking Water.

For general drinking purposes cool water, from 60° to 70° temperature, is the most wholesome. Water is cold when below 60°; tepid, when from 92° to 98°. Above that, water is hot. Hot water drinking, although a temporary stimulus, in the end has the effect to debilitate the stomach.

Drinking from the Same Cup.

As we go along the streets of a large city, we are constantly inhaling germs of every description from the clouds of dust raised by teams in passing. We often see a housekeeper sweeping and raising clouds of dust swarming with germs and microbes. The old house cat has sense enough to go outdoors when the sweeping begins; but men and women do not generally hesitate to inhale such germ-polluted air. Yet we are afraid to drink out of a cup that some one else has used.

When we sit down at the table, how careful we are that our plates, knives, and forks shall be clean; the spoons must be polished so brightly that we can see our faces in them,— and then what do we put on our plates? Perhaps the first thing is a piece of roasted ox or stewed sheep, or a roasted hen or duck likely to be far advanced in decomposition, and by eating which we would be polluted ten times as much as by drinking from the same cup out of which some one else had drunk. One doctor insists that beefsteak should be ripened for a month in a refrigerator before being eaten; that fish are not sufficiently ripened when first caught, but that they should be allowed to hang outdoors until their heads drop off; then, he claims, they are fit to be eaten. Now if the head drops off, is it not supposable that the rest of the animal is about ready to fall to pieces from putrefaction? Or it may be that we put on our plate some Brie or Switzer cheese,— nothing more or less than milk swarming with microbes and wrigglers and maggots.

I have known people who were so particular that they would not allow the servants to touch a morsel of their food, and yet those servants handled the knives, forks, spoons, and all other table utensils. We get to be hypercritical in some matters which are not very essential.

The fact is, the germs we get from drinking water are much more likely to do us harm than would the practice of drinking from the same cup. During my twenty-five years' practice in medicine I have never encountered any disease which was communicated by a drinking cup, with one exception: A boy once drank from a cup which had just been used by a man who had diphtheria, and the result was that the child became ill; but that is the only case which I have ever known of, positively, in which disease was communicated in that way.

It is well for each person to have his own cup, but it is far more important that each individual have his own room to breathe in, for it is much more dangerous to breathe poisoned air than to use a cup which has been merely touched by the lips of another.

Army Dietetics.

It is very strange that our government does not find out what is good for its soldiers to eat, instead of giving them rations of pork and bacon; that it designates for their use the very worst possible selection of food for a very hot as well as a malari-

ous and infectious climate. It is very strange, also, that in the late war the government selected one hundred thousand vigorous, healthy men in the prime of life, and took them into camp,—for comparatively few of them went to Cuba,—and fed them in such a way that when they came home, more than half of them were sick. One soldier told me that he did not know a man in his company who had not been sick. Certainly an enlightened government should be able to put at least five or ten thousand men together and keep them healthy, if they were healthy when they enlisted. But when healthy men get sick in camp and remain sick, something must certainly be wrong. The principal causes of this state of things are bad diet and bad water. I asked one of the government surgeons if the plan of boiling the water for the soldiers in camp had been tried, and he said, "No; it is impracticable." It was too much trouble. I asked the boys about it, and they said that as soon as they could get kettles, they would boil the water for themselves, but as they had nothing but tin cups, it was not an easy thing to do. These matters have been neglected, and I think our government is responsible for allowing twenty-five or thirty thousand men to get sick on its hands — men who were thoroughly healthy when they enlisted. No private individual is responsible for this calamity, but the government, the States, and the counties.

OPEN THE SHUTTERS.

A Plea for Light.

BY MRS. S. M. I. HENRY.

OPEN the shutters! the sunlight sweet,
With its golden robe, and dainty feet
Just from the field the stars have trod,
Will not defile the house of God.

Open the shutters! the room looks cold,
The children's faces are pinched and old;
And from the door they look away
At laughing fields where sunbeams play,

Then turn again to the darkened room,
With eyes that shrink from the shades of gloom,
And long and ache for the bright "outdoor,"
For a dance in the precious light once more.

Open the shutters, and let the light
Flood all the room with billows bright,
And list how the notes of song shall spring
Like a bird when morn hath touched its wing.

How the ready lip and dancing eye
Will to each question make reply;
And the beams of joy and love and grace
Shall kindle and burn in every face.

Open the shutters! our Jesus taught
Where the light into the lily-bells was wrought;
On hillsides where the marriage wine
The sun distilled from Judah's vine.

No "pale religious light" for Him;
No shaded temple grand and dim;
But fields of light that he had sown,
To whom the spirit's needs are known.

Open the shutters! if we sit
At Jesus' feet, it seemeth fit
That in the light we read his Word,
So shall we better know the Lord.

HOW ONE CHILD WAS SPOILED.

BY ADÈLE L. SINGER.

THEY were a well-meaning family, consisting of the grandparents, several aunts, and the mother of the child. One of the aunts had been in a sanitarium which stood for health reform, and she was thoroughly imbued with the truths taught in this sensible institution.

For the benefit of those unfortunates who do not know the principles which lie at the bottom of healthful living, let it be briefly stated that vegetarianism (not "vegetableism") is the corner stone of the principles underlying the healing methods used there. To adopt vegetarianism in its true sense does not mean that one sees the danger of meat eating and attempts to sustain life on turnips, potatoes, and lettuce, but that he recognizes the fact that the nitrogenous element of his diet can best be supplied by something from the vegetable kingdom, preeminently nuts and legumes, containing this necessary part. Nuts and legumes, with fruits and grains, form the perfect diet, in the use of which, connected with exercise and sleep, and the employment of proper hydrotherapeutic measures, life, health, usefulness, and consequently happiness, can be restored to suffering adults and preserved in innocent children.

When the little one entered the family we speak of, there was every reason to hope that she would be properly nourished, bathed, and exercised. The young mother understood the importance of a good foundation in the children who are to be the young men and women of the future. Therefore the little one began life as many children do in these days of advanced thought in the care of infants.

The modern hygienic mother is enthusiastic, well instructed, determined that her baby shall be fed at regular intervals and no oftener, that it shall not be rocked, that it shall be gradually hardened to all reasonable temperatures of air and water, and that walking the floor, dancing and tossing, with all the various forms of playing with young children indulged in by foolish relatives, shall be strictly interdicted. Her child is safe so long as it is a babe in arms fed by the mother only. When that comparatively safe and easy period is over, commences the insidious process of spoiling the child by yielding this little point or that through fear of being called a crank, or through false love, which can not bear to withhold the desired harmful indulgence; in short, a whole catalogue of small defects leads to the ruin of baby's favorable beginnings and makes of it the weak, appetite-indulging, uncertain-tempered man or woman that defective digestion seldom fails to produce.

Bringing up a child well is almost entirely a matter of sufficient strength of character on the part of the parents, especially the mother, to carry straight through principles believed in, and of honesty on the part of (we could almost call them necessary evils) surrounding relatives.

The relations sustained toward each other by the particular family in question were rather unusual. The grandmother, for instance, was a sensible woman who did not believe in spoiling her grandchild, and who advocated by word and deed the course pursued by the advanced young mother. The grandfather was very submissive, and the aunts were in accord with their sister.

Well, what was the trouble? Surely a happy situation for the child not to have a grandmother who expressed her love by

stuffing sugarplums into its rosy mouth at any and all hours; not to have aunts bent on taking it up every time it cried, or a grandfather heedless enough to toss its dinner up its little esophagus just before nap time. Yes; it had all these advantages, but the trouble began when the milk diet of infancy was abandoned, and eating at other than the home table, spending a few weeks with relatives or friends not in sympathy with the home training, was allowed. When Talleyrand exclaimed, "Defend me from my friends, and I shall know how to protect myself against my enemies," he voiced the unuttered protest of many a helpless child. "A man's foes shall be they of his own household" could well imply other than religious persecution.

This child was known as "The Vegetarian Baby." She never had colic, she did not easily catch cold, and she was never overfed. Her mother best described her in a negative way, "She is not a meat baby." This expression was used in reply to remarks made on the baby's somewhat slender proportions, for although a perfectly healthy child, she was not fat. Her mother declared that the excessive fat possessed by most babies renders them less able to resist disease. The fact is tnat this slender baby had genuine strength, and her disease-resisting power was not known, for she never caught anything beyond a cold after severe exposure.

Alas, "'t is true, and pity 't is 't is true," that this splendid foundation now has a faulty superstructure, and it began in the house of some loving relatives where the baby stayed for a time. Strict injunctions not to "give her meat" were (honestly?) carried out by letting her "suck just a bone, you know;" "do not give her anything sweet" was obeyed by giving her "just a taste" of candy,—letting her slide her small tongue over a piece; "don't give her water at meals" was easily satisfied by letting her have just a sip "out of grandpa's glass." Dry food with a little fruit juice degenerated into mushes with cream and sugar; in short, the fatal "just a taste, just a sip, a little sugar, just a crumb of cake, a swallow of chocolate" started this splendid baby on the road to indigestion, and has already done its work, for the weakening of will power to resist appetite started a craving for sweets that demands a little chocolate at any time, and created a thirst for little sips of cold water between mouthfuls o food. Surely "touch not, taste not" applies to unwholesome articles of food and methods of nourishment as truly as it does to alcoholic drinks.

It would have been an interesting study for any one doubting the reliability of unspoiled child nature to do the right thing for itself, to have watched this infant from birth to little girlhood. She had a healthy appetite and enjoyed her simple diet, but nothing could induce her to swallow one mouthful more than nature called for. She chewed so well that indigestible portions of her food were naturally sifted out by that infallible guide, the tongue, and were rejected. She would not swallow what she could not dissolve by thorough mastication.

The good work, however, has been marred. The fatal "just a taste, just a sip, only a tiny piece" have been the serpent in this little Eden of unspoiled, God-given instincts, and the eating of the forbidden fruit has opened the eyes of the unperverted appetite and made way for a flood of dietetic sins, a sowing rich in a future harvest of disease.

VIOLENT delights have violent ends,
And in their triumph die.

— *Shakespeare.*

THE CHILD.

THE child-heart is so strange a little thing,
So mild, so timorously shy, and small,
When grown-up hearts throb, it goes scampering
Behind the wall, nor dares peer out at all.

It is the veriest mouse
That hides in any house—
So wild a little thing is any child-heart.

Child-heart—mild heart!
Ho, my little wild heart!—
Come up here to me out o' the dark,
Or, let me come to you?

—*James Whitcomb Riley*

THE LITTLE BABY.

BY ELIZABETH IRISH.

IF you are twenty years old, you may think the adjective superfluous. If you are forty, you will know it is not; for by this time you will have had experience with babies of all sizes, from eighteen inches long by four wide to five feet ten by twenty inches.

There are many disillusions in a young mother's experience. Novels and poems are largely responsible for this. As a girl or a young wife she has often read with longing of the arrival of a baby in some happy home. The picture was always the same. The mother lay white and sweet, with her soft hair falling about her face, and pleased anticipation in her eyes. The little babe, robed in white, and warm and clinging, was put to her breast and began to nurse. Its tiny hand upon her bosom and the gentle pulling of the baby lips thrilled her whole being, and she said in her heart, "This is the fullness of human joy."

Or the author dwelt with loving though indefinite enthusiasm upon the general happiness of motherhood, the ineffable charm that attaches to baby smiles, baby caresses, baby ways, baby life *in toto*.

These experiences do indeed come to mothers; but they are not necessarily overwhelming in the beginning. If there were a few more mothers qualified and inclined to deal with the first stern difficulties, to teach young parents how to train their children into right habits before they have had a chance to form wrong ones, to remind them that little babies are neither toys nor dolls, that they are not brought into the world for one's own selfish pleasure, but are sacred treasures intrusted to our care, for whose future we are responsible, there would be fewer of the disillusions referred to, and mothers would know better how to meet and to lighten those that are inevitable.

Most, if not all, of the discomfort or the positive suffering that often attends the establishment of the function of nursing between mother and child could be avoided if the prospective mother were to observe conscientiously a few simple precautions. It sounds like a trifling thing to say, "Pull out the nipples every night and morning for three months before the baby is born; pull them out strongly, yet carefully; manipulate them gently

with the fingers, rubbing in witch-hazel or tannin." Tannin was the prescription of our grandmothers, but the modern woman doctor declares that witch-hazel is just as good and better, because it does not soil the clothing. All this sounds simple, but it often saves a world of trouble.

It is frequently a shock to young mothers to find that their babies have to be taught to take their natural food, instead of falling upon it as suggested by the writers. But in this, as in all other dealings with even the youngest infants, one must exercise firmness as well as patience; one must be regular and not spasmodic in attempting to teach the child.

That mother is kindest and truest to her baby's interests who devotes the first few months of its life to training it into perfectly regular and normal physical habits. The hours for feeding should be carefully considered and definitely established; then there should be no variation from the rule except under extraordinary circumstances. For the first six weeks the baby should not be fed oftener than once in two hours; after that once in three hours is often enough until the baby is three months old; then the time may be lengthened to once in three and one-half hours until five months. From this age on until the baby is nine or ten months old he does not need more than five meals a day, say at 6 A. M., 10 A. M., 2 P. M., 6 P. M., and 10 P. M.

There is a great difference of opinion as to feeding babies at night. Some leave out the night meals altogether after the first few weeks. Others give two meals at night for several months. Of course far too many mothers still fail to see the moral as well as the physical bearing of the food question, and persist in feeding their little ones whenever they demand it, especially at night, when there are fewer ways of diverting the child's attention. The writer's experience goes to show that two meals at night are enough for the very youngest babe; that between the sixth and eighth weeks, one of these meals should be dropped; while after the baby is three months old it should not be fed at all after ten o'clock at night until five or six in the morning. Feeding at night is almost entirely a matter of habit, and what the baby becomes accustomed to, it will accept or demand.

When the night meal is discontinued, it will be found a help to give the baby a few sips of water for a night or two, but it is not advisable to establish the habit of taking a drink in the dead of night. The little baby should learn to sleep all night, with only occasional attention.

It is the constant cry of physicians and nurses to-day that babies are overfed. Mothers have but the crudest ideas about the capacity and needs of their children's stomachs. At birth the average baby's stomach holds an ounce and a half, or about three tablespoonfuls. The average gain in capacity for the first few months is an ounce, or two tablespoonfuls, a month. Probably the stomach of a six-months-old baby could hold six ounces of food; but it is not the design of nature that this worthy organ shall be crammed to its utmost limit at every meal. When this mode of procedure is followed, the baby invariably suffers from dilatation of the stomach, and the foundation is laid for a lifelong course in dyspepsia.

If the baby is deprived of its natural food, the diet question for it is a serious problem. No rule can be laid down for all infants, inasmuch as some thrive on food that would not do at all for others. Every mother must not only study the digestion of her child, but also inform herself as to the food elements and the quantities required for an infant of the age and characteristics in question. One six-months-old babe, who had to be weaned

at that age, was put upon a diet of granose and milk, with most excellent results. The prescription of the physician was as follows: Two tablespoonfuls of cream, four of milk, two of water, one heaping tablespoonful of granose flakes powdered fine, one teaspoonful of sugar of milk. The cream was taken from the top of the milk and the milk dipped from under.

This baby, while nursing, had always suffered from constipation, and passed green stools with curds. After the change of diet, the stools became normal and the constipation soon disappeared.

It is absolutely necessary that the little baby's bowels move regularly,— at first from four to six times a day, gradually coming to once or twice. Under no circumstances should the baby be allowed to go more than twenty-four hours without performing this function. The enema is the best means of securing a movement. It should be given regularly and at a certain time. The temperature of the water should be from 101° to 105°. The small end of the glass tube should be used, or better still, a soft catheter may be employed. The water bag or can should not be hung more than a foot above the baby, or there is danger that the pressure will be too great for the delicate membranes.

Sometimes, if there is only a slight difficulty in securing a regular movement, a soap suppository may be used. If the passages are hard and large, it is a good plan to give a small injection of sweet oil after the last feeding at night. From a teaspoonful to a tablespoonful, slightly warmed, should be used, in a small barrel syringe. It can be administered without hurting the baby, and serves to soften the contents of the intestines so that a natural and painless movement will take place early in the morning.

Giving the baby water to drink is an excellent means of regulating the bowels. Even the youngest infants need water, and as they grow older, the necessity for it becomes still more imperative. How much better to give the baby a few spoonfuls of water when he seems hungry before his mealtime than to surprise his stomach and the glands thereof by sending down food before they are ready for it. The baby's body needs water just as certainly as does the adult's.

The little baby must be kept warm, but not too warm. It should never be so warmly dressed or covered as to make it perspire. A baby accustomed to a fairly cool temperature will not take cold so easily as one that is kept in a heated room. More mothers bundle up their babies too much than too little, and more keep the baby's room, or the whole house for that matter, too warm than too cool. The baby needs fresh air just as much as his mother. He should be taken out of doors every sunny day, even in cold weather. In very cold weather care must be taken not to keep him out too long, but the baby himself will help to determine that, for if he is uncomfortable he will cry. In pleasant weather do not cover the baby's face. In winter especial pains should be taken to protect the forehead, ears, and neck, but let the little nose and mouth be free to inhale the pure life-giving air, and do not dim the brightness of the tender eyes by covering them with a veil.

Be sure that the baby does not go out wearing a wet bib or any damp clothing about the neck and chest. If he is dry and well wrapped up, he will enjoy the outdoor air even on quite cold days. Often a child that has fretted for hours, will become happy and smiling at once upon feeling the refreshing outdoor breeze. Of course no little child ought to be out of doors after sundown.

The very little baby, if normal and well, sleeps almost all the time. Physi-

cians tell us that the year-old child needs from sixteen to eighteen hours' sleep out of the twenty-four. That means from six at night to six or seven in the morning, with two long day naps or several shorter ones. If the baby is put to bed regularly at certain times, without rocking or fussing, he will almost invariably form regular habits of sleep, and be much better natured than if allowed to stay up and fret until he falls asleep from exhaustion.

Of course babies differ. Some have highly strung nerves, and it is difficult for them to go to sleep, however tired they may be. But such babies, of all others, have the right to be aided by their parents in overcoming a tendency that will work more and more mischief as time goes by. It is better for such a child to be put quietly to bed and left with only nature to struggle against than to rock him and cajole him and try to impose one's own will upon him, thereby giving him two things to fight instead of one. The baby in forming all his physical habits should be simply trained in harmony with natural laws. He should never be subjected to the process of "breaking in."

TABLE TALK.

That the blood normally contains stimulants, that these stimulants exercise a favoring influence in function, and may even be a necessary factor in the production of the feeling of well-being, is contended by Campbell, in the *Lancet*. The author claims that this explains the widespread liking in man and beast for stimulating substances. This liking, amounting often to a craving, is the expression of a great physiological principle. When health is perfect, when the blood is well provided with its proper stimulants and not overcharged with depressants, there is no craving for extraneous stimulants, such as alcohol, tea, or coffee; but when the blood is defective in the one, or surcharged with the other, then is felt the desire for the glass of wine or the cup of tea. In order to obviate this desire the body should be kept at the highest level of health. The more perfect the health the more perfect will be the composition of the blood, in respect to both physiological stimulants and deleterious toxins. A blood properly constituted in these and other respects will exercise a gentle stimulant action on the nervous system, and induce a condition of mild physiological intoxication, which expresses itself in a feeling of well-being and happiness — a condition that can not be bettered.

Abnormal redness of the nose in consequence of wearing a veil in winter has been remarked by a German writer.

"The discoloration is most pronounced," says the New York *Medical Record*, "at those points where the veil is most intimately applied to the face. The effect is due partly to the mechanical action of the sharp and rough texture upon a sensitive skin, and to the influence of the watery vapor that collects within its meshes and prevents evaporation. Blood is thus driven from the tip of the nose to adjacent parts, the blood vessels of which consequently become enlarged and conspicuous. The condition is aggravated if the use of the veil is persisted in on passing from a cold to a warm atmosphere. The alterations tend to become permanent the longer the veil is worn without airing, the longer its injurious action is maintained by compression, the colder the season, and the greater the exposure. Sometimes the cheeks are also affected similarly.

The treatment of the condition consists in discarding the veil, avoiding for a time sharp winds and great cold, and when exposure to cold air is unavoidable, sudden changes from a cold to a warmer temperature. Gentle massage should be practiced, and applications of a thin layer of lanolin, vaseline, or cold cream may be made, followed by that of some simple powder such as talcum or starch. When the use of a veil is necessary, it should not extend below the nasal orifices so as to permit the escape of watery vapor. Further, it should not be too heavy, nor should it be too tight."

"Dr. Wiley, of the Agricultural Department," says *Table Talk*, "is authority for the statement that fresh meats are not desirable articles of food, and that they should be kept before cooking until they are ready to decay. In his own words, 'They should not be eaten until they are properly ripened.' It may be a question of taste as to how long it takes various meats to ripen. Some would consider meat a few days old decidedly ripe; but Dr. Wiley thinks about three weeks after killing is the right time. Even poultry should be kept three weeks before prepared for the table. Meat properly ripened, he claims, is free from all disease germs. Expert cooks have heretofore insisted that in order to make meats thoroughly tender and delicious they should be kept until ready to decay; but this is the first time that any one has ventured to assert that such stale meats are healthier than fresh meats."

Women, as they grow older, according to John Hartley, are apt to live too much indoors. He says: "I believe the fat, flabby, paunchy woman, whether purple or pale, with feeble, irritable heart and 'inadequate' kidneys, is usually the victim of rebreathed air. It must sooner or later be recognized that many of the increasing ills which it has been the fashion to charge to the 'hurry and brain fag' incidental to the high state of civilization and the large population, are in reality due to the greater contamination of the air we breathe by the waste products of that population, and that toxins excreted by the lungs will in time take high rank among these as both potent and insidious."

The medical officer of the city corporation, according to the *Vegetarian*, has been talking to an interviewer of the London *Argus* on the subject of meat inspection. Speaking of the onerous duties of meat inspectors ("our staff is not so large as it ought to be"), Dr. Sanders said: "We have generally several men on the sick list from the effects of handling putrid meat." This from mere "handling." "What the effects of *mouthing* meat are," comments the *Vegetarian*, "may be seen in our hospitals and on the king's highway in the blotched and stricken faces of a diseased humanity.

"And how much meat do you imagine was condemned during the hot weather? — Three hundred and eight tons. Tons! mind you. Three hundred and eight tons."

The death rate for consumption in the State of New York, according to the *Medical Record*, for the first eight months of 1899 showed an increase over the same period in 1898 of 669. "Should this rate of increase prove to have continued the remaining four months," says the *Scientific American*, "when the statistics have been compiled, the increase in 1899 will be about 1,000 deaths, and will reach 14,000 deaths from pulmonary tuberculosis in the year, the highest rate ever known in the State. Dr. John H.

Pryor favors the appropriation by the Legislature of $200,000 for establishing a State sanitarium for incipient consumptives, believing that in caring for them at the proper place and time until they are well or improved, they can be saved."

Twenty million dollars' worth of candy has been manufactured in New York alone since the first of last July, and the total product of the year in that city will exceed $25,000,000. There are now one hundred and twenty-five manufacturers of confectionery in New York, an increase of twelve since last year. Chocolate is used for confectionery more extensively than any other material except sugar. The total imports this year thus far amount to 25,512,364 pounds of raw cocoa and 926,219 pounds of prepared chocolate. This is an increase of more than 10,000,000 pounds over last year, and yet some people still wonder at the increase of dyspepsia.

General Sir Redvers Buller, in addition to being the wealthiest man in the British army, is also a noted gormand. Before leaving England his chef planned for him a different dinner daily for three months ahead, the menus comprising the rarest and costliest delicacies French and English comestible makers could provide.

Each dinner was packed in a separate case, with the date on which it was to be eaten, on the cover, and the menu inside. The chef has instructions to keep on providing his master with Lucullian feasts so long as he remains in the campaign.

A plan for giving massage to rheumatic joints has been devised by a German doctor. He takes the patient's hand, and puts it in a deep glass which is two thirds full of quicksilver. The mercury exerts an equal pressure on every portion of the fingers, and the pressure increases rapidly as the fingers sink farther into it. The hand is alternately plunged and raised about twenty or thirty times at each treatment, and after a second visit there is a marked diminution of the swelling.

That appendicitis is caused by the habit of crossing the legs, which restricts the action of the digestive apparatus, is suggested by a foreign surgeon. The appendix is only loosely attached to the cæcum, and there is always some half-digested food in the cæcal bag. By crossing the legs there is liability that the undigested food may pass into the vermiform appendix and set up an inflammation; in a few hours pathological processes set in, and an attack of appendicitis is developed.

"**One of the greatest wits** and wags yet produced by this country," says the New York *World*, "was once requested by an editor to write a good article on milk. He replied by return mail, 'The best article on milk I can think of is cream. What more do you want?' In the same fashion it may be said of cheese that the best article on cheese is mold, or chemical corruption. In truth, cheese owes its value to degeneration and the presence of bacterial life. In a word, cheese is the glorification of decay."

"**Nutrition is the result** of the cooperation of three distinct processes,—digestion, assimilation, and elimination," states G. H. Patchen, M. D., in the *Dietetic and Hygienic Gazette*. "Food is only a passive element of nutrition; the active one is oxygen. The latter, by means of the chemical process called oxidation, is associated with, and responsible for, all nutritive changes."

The beer consumed throughout the world in a single year would make a lake six feet deep, three and three-fourths miles long, and a mile wide, or 2,319 acres in area. In it a beer bath could be given to every man, woman, and child on the American continent at one time, while all the people of England, Scotland, Ireland, and France could find standing room in its bed.

With the rising of cream in milk ninety-nine per cent of the germs are found in the cream. Removing, sterilizing, and returning the cream, then, makes a comparatively germ-free milk.

The total work product of a muscle is greater without alcohol. This has been clearly demonstrated by more than one authority.

A great French doctor prescribes three health rules for children: —

1. Let them live in the open air.
2. Encourage them to live in the open air.
3. Make them live in the open air.

THE POETRY OF DIETETICS.

BY MRS. S. M. I. HENRY.

BYRON once said that no woman should ever be seen to eat, by which he intended to imply that eating is so gross a process that it can not be harmonized with the poet's estimate of the nature and mission of woman. And this Byronic idea, in so far as it regards the gastronomic function, still prevails more or less, so that it is considered vulgar even for a man to bring hunger into society, or for a woman to acknowledge a good hearty every-day appetite for substantial food. But if some social favorite has become so far emancipated from the tyranny of custom as to dare to say in the hearing of society, "I am ravenously hungry," this declaration must be followed by such daintiness in the attempt to satisfy herself as to make it at least appear that her appetite is only a most innocent lamb in a lion's skin.

Its absolute necessity is the only thing that prevents the expulsion of food from good society by those who would affect the artistic in manner. But since people must eat to live, and since no exemption law has been enacted by nature in favor of anyone, however angelic or spirituelle she would be regarded, and since for the men who run the business of the world, almost all the time that can be given to social enjoyment is while they must stop to eat, the world has considered itself compelled to make an occasion of necessity, and has accordingly endeavored to surround the eating process with just as much that can minister grace and charm as the utmost of elegant culture and esthetic refinement can devise. Hence at a dinner, as accessory to the most pleasing preparation of food possible, we have a display of china, silver, napery, flowers, and the perpetual flow of music and wit — anything, all things, that can serve to draw the attention from actual eating; all of which is a tacit declaration that while we must do this vulgar thing, and must do it before one another instead of behind the pantry door, we will make out of these elegant accessories a covering, under the protection of which we can eat without shame or reproach.

This is all off the same piece of repudiation that would deny that God is mani-

fested in nature or in the affairs of men, and that he ever was made of human flesh. It is a result of a failure to apprehend what it is to eat, to appreciate the beauty of the divine plan, and of that substitution of the less for the greater, of the human for the divine, that has given us the impracticable for the perfect in ideals.

Since the meaning of the word "vulgar" is "common," the idea that it is vulgar to eat is true. But the falsehood is found in the misapplication of the word "vulgar," as well as in those efforts which are made by a select class to override the will of Him who made, and insists on keeping, all humanity on the one level; who will not admit any class distinction in nature or in grace; who in every physical function from birth to death, in every intellectual and spiritual process from ignorance to culture, from sin to salvation, constantly reiterates the great truth, "Ye be brethren."

It is right that eating, like everything else, should be done decently and in order; that, like everything else, it should be done in its proper place, and be surrounded by all that can make it a most wholesome and dainty process.

Byron would have come nearer to the truth if he had said, No eating should be done in public. The place to eat is at home. The family table, with its occasional guest brought in from among the homeless, is the ideal. The social meal, like the social glass, would, in the light of true temperance, be entirely abolished.

The only sense in which eating, when properly done, can be considered vulgar, is in that it is common. In the ordinary acceptation of this much misunderstood word (which is, cheap, mean, low, disreputable), nothing is vulgar that is common. The fact that anything is so common that it must be shared alike by king and slave, by holy and impure, by the wise and the foolish, lifts it to the level of life itself, than which nothing is more costly, more exquisite, more desirable.

"But," some one may object, "it seems so like an animal to eat." Yes, and this is another beauty of it, for this brings it to a still more common level; and since that is highest which is most common, it lifts instead of degrading it.

This necessity for food reveals the unity of the entire kingdom of all living things, for even the rose and the lily must eat. It is by eating that we are to take and to keep hold of the life of God; and in harmony with this fact we are taught to choose for our food those things that can be vehicles of life instead of death.

One of the most beautiful and inspiring facts of nature is that life shall be sustained by life; that God has provided life for us to eat; that the natural food for man and beast is such as can be eaten, digested, and assimilated without even a vestige of decay or the touch of death; that, full of life and life-giving power, it shall pass on the way marked out for it by the wisdom of God until it becomes changed from the fruit, the grain, the nut, the vegetable, into blood, bone, tissue; into action, impulse, purpose; into thought, word, song; into love, praise, worship, life,— life eternal, full of a satisfaction here, which is but a premonition of the joy of immortality.

This is what the prophetic poet means when he says, "Eat ye that which is good, and let your soul delight itself in fatness. Incline your ear, and come unto me: hear, and your soul shall live."

To assure man a safe passage "from death unto life" is the office of the truth which is wrapped up in his proper food.

God our Father has counted no food as suitable for his children excepting that which he has himself especially prepared, and filled with his own life,— the same life

which he has breathed into his children, which was manifested in his eternal Son, and which, when we had been discovered as nigh unto death, if not quite dead, he, our Elder Brother, gave for our regeneration.

For the life of the Son of God is manifested not only in human flesh, but in human food. "For the bread of God is he which cometh down from heaven, and giveth life unto the world." "I am that bread of life," said Jesus. "If any man eat of this bread, he shall live forever."

Like a sweet poem set to the music of a chime of bells, this truth rings with hope all through the gospel story; and without losing one note of its sweetness it should be made as practical as prose in every morsel of food that is placed on our tables or that passes our lips.

ART IN COOKERY.

BY EVORA BUCKNUM.

ANY one can give a taste to foods by adding condiments and flavorings, but to develop the fine flavors of the foods themselves is an art." The foregoing were words used by a lady visitor after sampling some of the dishes prepared by our cooking class at Detroit, a few years ago.

As I think of it, I can see that I received my first ideas in this line (not realizing it was "art") from my mother. At one time we had a cook who was so anxious to have everything "good" (she gave a peculiar "goo" sound to the word good) that she always used large quantities of butter, sugar, and other rich ingredients in the foods. I remember my mother's saying one day, while giving me some instruction in cooking, "Adeline is so afraid she will not have things 'good' [and she said good just as Adeline did] that she spoils them all by putting in too much." I never forgot the lesson. If the world had produced more real mothers,— those who carefully instructed their children,— we should not find in it such an army of dyspeptics, diabetics, rheumatics, and neurasthenics as we do to-day, or the great host of those suffering from Bright's disease, gout, dropsy, obesity, and cancer.

I am going to tell you how I have learned to leave out even the piece of butter my mother used to put into her bean soup and baked beans. In the latter she never used pork, for my father was a doctor, and knew that swine's flesh is a great cause of scrofula, consumption, and cancer, but she did use a piece of butter, because she followed that ancient custom of parboiling beans.

A long time ago people had the idea that they must let beans boil up in from one to three waters, sometimes with soda, when they first put them to cooking, and pour each water off to get rid of some poisonous properties they had been taught to believe our loving Father had put into the bean. Of course by the time this process was finished, some of the nutritive value and nearly all the rich flavor were gone, and they had to put in something to give them a taste. Within the last ten years I have found a few people still adhering to this custom.

After a lecture, in which I had touched upon this subject, a lady came up to me, and said, "That is just the way we do. We parboil our beans in two or three waters, and then, as you say, they are flat and tasteless; so we have to add some meat or butter to give them a flavor."

If any one has indigestion after eating beans baked according to the following method, it is either because he overate, or on account of the hulls.

There are some who can not eat any of the legumes without having the hulls removed.

For beans to bake, I always select the largest size I can get of the common white ones, because I find they are richer in flavor. Of course, the marrowfats are richer still, but if you can not do any better, the greatly overestimated "navy" will do.

Wash the beans and get them into boiling salted water in the bean pot as quickly as possible.

For each pint of beans use one and one-fourth to one and three-fourths teaspoonfuls of salt, according to its saltness, the spoons rounded (not heaping nor level). Use plenty of water, perhaps about three times the quantity of beans. Put them into a hot oven until they begin to boil; then reduce the temperature to such a degree as will keep them just simmering for from twelve to twenty-four hours. The old-fashioned New England baked beans were kept in the brick oven for three days. Baked beans are a winter dish. In the summer we can prepare them in other ways.

Do not stir them after the skins begin to break. If necessary to add more water, pour it, boiling, over the top, and let it settle in gradually. A gentle shaking may be helpful.

They are most universally liked slightly juicy when served,—not too wet nor too dry, but juicy.

There is everything in having things just right. One good, tasty dish of baked beans is more satisfying than a great variety of foods that are too wet or too dry, too salt or too fresh, too thick or too thin.

"But," you ask, "don't you think it improves them to put in a little molasses or cream or nut butter or tomato?"

Beans have a rich, characteristic flavor which is destroyed by any of these things. They are all good in their place, but that is not in baked beans, if we attain to the keenest enjoyment of the bean flavor. We get the rich, red color, without the rank molasses taste, by the prolonged baking. Cream or milk deadens the flavor, and nut butter and tomato change the flavor.

The beans may be served with lemon juice or tomato sauce, if one's taste is educated to desire the acid with the beans, but so long as he eats them that way, there will be one flavor the Lord has given us to enjoy which he will never know anything about.

Those who taste our baked beans for the first time, exclaim, "I would not have believed it." One old auntie said, "I know dey's po'k in dose beans, I can see de grease." And it is hard for all to believe there is not meat of some kind in them.

When it is desirable to use flavorings, have a variety. Do not use the same ones in everything. I have known some so-called cooks to put sage or onion or both into almost every dish they prepared. Some mothers have turned their whole families against the delightful flavor of nut butter by having it in everything, from soup to dessert.

Above all things, avoid strong flavors. A fine colored cook expressed it the other day when she said, in telling me about a certain dish, "I put in just a trifle of sage, not enough to make it vulgar."

The true secret of seasoning is so to combine flavors that no *one* will predominate, just as in a chorus no one voice should be heard above the others.

A newspaper man from New York City said of our Swiss lentil soup, "The cook that made that soup understood her busi-

ness, for, while it is most delicious, you can not tell any one thing that is in it."

If you would like to try it, put one pint of brown, German, or Austrian (different names for the same variety) lentils into a large flat colander (which you can buy for ten cents at almost any of the house-furnishing stores). Give them a shake or two, to remove the fine dirt. Slide them to one side of the dish; then with the fingers quickly draw a few at a time toward you, looking for small particles of sand or gravel. Pick these out, but do not pay any attention to the wheat, chaff, or poor lentils. These will come out in the washing in much less time than it takes to pick them out, and if a grain or two of wheat is left, it will do no harm. I think, with sorrow, of the hours I have had my assistants waste in looking over lentils before I learned this quick way.

When you are sure all the gravel is out, set the colander into a dishpan and pour cold water over the lentils. Stir with the hand until all except the waste matter has settled to the bottom; then carefully pour the water off. Repeat the process until all the objectionable substances are removed. Rinse up and down in the water, drain, and put immediately into a large quantity of boiling water in a broad-bottomed vessel, either a granite basin, a kettle, or a copper stew pan. The shape of the utensil has much to do with the drying out without scorching.

Let the lentils boil rapidly for a short time, then simmer without stirring. When they begin to get tender, while yet quite moist, take a large onion, sliced thin, and press down, carefully, into the lentils, until covered. If the lentils are stirred after they begin to soften, they will be sure to scorch. Now keep the vessel over a slow, even fire until the lentils are well dried out. The drying may be finished in the oven, if the dish is covered, so they will not harden on the top. This drying is imperative. It develops a rich flavor which we do not get without it. When well dried, add a little water, and rub the lentils, a few at a time, because you can do it more quickly, through a fine colander, with a potato masher. Throw the hulls, as they get dry, into a dish of boiling water.

At the last stir the hulls well and rub them through the colander again. Of course, you would not use the same knife or spoon in scraping off the bottom of the colander that you did on the inside, where the hulls were. Now into this thick pulp stir four rounded tablespoonfuls of browned flour, number three (to be explained later on). Beat until smooth, then add two or three teaspoonfuls of salt and gradually boiling water to make of the consistency of soup. If you have not wasted any of the pulp, there will be from two and one half to two and three fourths quarts of soup.

Let the soup boil up well, stirring at first to keep the pulp from settling. Then place it where it will keep hot from twenty minutes to an hour. This also is important, that the ingredients may be well blended.

If you want the soup especially fine, rub it through a medium Chinese soup strainer after it boils.

Any soup made of legumes thickens by standing. So you will need to see that it is not too thick when you come to serve it. If it is, it will have merely a porridge taste, but the addition of sufficient water will develop a meaty flavor. To be sure, it must not be so thin as to taste of the water.

I always have three shades of browned flour on hand.

In browning any kind of oil,—nut oil, olive oil, or butter,—a poisonous acid is developed which is very irritating to the stomach (that is one of the objections to fried foods), but flour, which

is rendered more digestible by browning, gives the rich flavor without the harmful effects. For browning, take any good spring wheat flour. If you are skeptical about its making any difference what kind of flour you use, try some of each — spring wheat and winter wheat,— and note the results. Sift it into a clean dripper or a broad, flat pan. Put it into a warm, not hot, oven; stir it often while about your other work, to prevent lumping, until it is well dried out. Then gradually increase the heat of the oven, stir the flour more often, and bring it to the degree of brownness you desire. Be sure to brown it evenly. Do not let a small portion become burned, for that will give a bitter flavor to the whole.

The flour I call number one is a delicate cream color, so light that you can hardly tell it is browned at all, except by comparing it with some that has not been in the oven.

This, when used with rich milk for a gravy, tastes very much like the "milk gravy" made with pork fryings we used to think so delicious when visiting in the country. This gravy is to be used in dishes where a rich, creamy, but not strong flavor is desired. Number two is of a dark cream or light brown color, and number three is a dark chestnut. It requires a very hot oven and constant watching and stirring for the last half hour, to bring number three to perfection. You will need to watch that you do not burn it on the bottom of the pan as well as on the top.

Never put off browning flour until you are ready to use it. That is one of the things you can not hurry. If you try to brown it before it is thoroughly and evenly dried, it will burn and assume an ugly color as well as flavor.

It is just as easy to keep flour browned ahead as to have bread always on hand, and it will keep much longer. I never knew any to spoil when put into clean, dry receptacles. Sift it before putting it away. Number three flour will not thicken anything. The browner the flour the less it thickens. Use that for flavoring only; a very little of it makes a strong flavor.

If you make a gravy with a little nut or olive oil in boiling water, with number three browned flour to flavor and white flour to thicken, and serve it over plain boiled rice, you will almost imagine you have your favorite "rice with roast beef gravy."

Of course these suggestions are not for those who have already attained to living for months on graham crackers and apples or Brazil nuts and apples, but for those who are, perhaps, still in the mire of beefsteak and coffee, mustard, pickles, and mince pie.

While you have the flour browned, do not use it in everything. Here will be an opportunity to display your artistic skill. I can not think of any one's ruining the fine flavor of green peas with it, or of sweet corn, stewed celery, or asparagus. These vegetables, which have their own personality in delicate flavors, should be prepared in such a way as to cause these flavors to be retained or intensified.

For instance, I have seen a skillful chef take a can of hard, tasteless peas, turn them with the liquid into a copper stew pan, throw in a sprig of three or four leaves of mint, and possibly a teaspoonful of sugar, with salt if necessary, simmer them until tender and nearly dry, and serve them to connoisseurs who pronounced them "fresh peas right from the vine." That small amount of mint intensified the pease flavor, while if he had used twice the quantity, the flavor of the mint would have predominated, and the peas would have been spoiled.

(To be continued.)

EATING THEIR WAY TO FAME.

NOT all on books their criticism waste:
The genius of a dish some justly taste,
And eat their way to fame; with anxious thought
The salmon is refused, the turbot bought.
Impatient art rebukes the sun's delay,
And bids December yield the fruits of May;
Their various cares in one great point combine
The business of their lives, that is — to dine.
Half of their precious day they give the feast,
And to a kind digestion spare the rest.

— *Edward Young.*

A CONTRAST IN BREAKFASTS.

BY ANNA CLIFF WHITE.

THE question of how, what, and when we shall eat has been slowly but surely coming to the front for some time, until now it is one of the many and much discussed topics of the day.

Principals and teachers have preached the evil effects of five- and ten-cent mid-day lunches for school children; physicians have lectured and warned of the unhappy results of late suppers and hot dinners in the evening; health reformers have written of the unwholesomeness of badly cooked foods and of meals hastily swallowed, and the public in general have talked of the many pros and cons of this, that, and the other in connection with this important theme.

But the breakfast has not been so minutely discussed as the other meals of the day, perhaps because we are not in the habit of preparing as elaborate menus in connection with this meal; perhaps because we think a full morning's hard work lies before us, and we shall be able to work off the effects of any mistakes or transgressions in hygiene. Or it may be we have given it no thought because we are accustomed to take only a cup of coffee and a bite or two of something, hoping to have a better appetite at dinner time. For some reason or other the breakfast, in the minds of a great many people, is certainly the least important meal of the day, and is consequently prepared accordingly and partaken of with the same spirit.

What a scene the breakfast hour presents in a great many homes! The husband, in haste to get to his office, and preoccupied with business matters, hurriedly swallows his food while glancing over his morning papers. The children, preparing for school, chatter tumultuously of lessons, lost books, and garments, and follow their father's example in eating. The mother hunts up one child's mittens, another's muffler, puts on the rubbers of a third, and produces the books of a fourth, attending meanwhile to the numerous wants of the baby, the servant girl, and the grocery man, and eats her own breakfast in installments.

Breakfast, in so far as it is possible, should be one of the best prepared, best cooked, and best combined meals of the day. Slight the evening meal if you must be negligent in any, but start the family out in the morning with a well-cooked, well-ordered meal, merrily eaten, and it will be well digested.

If a man partakes of the nature of that which he eats, as so many reformers strenuously maintain, what a terrible composition of sweet mushiness, oily stubbornness, and stimulated hilarious energy must the average man be after eating his morning portion.

When we think of the mush deluged with cream and sugar, the smoking toast and coffee, the well-buttered warmed-over potatoes, the shining slices of greasy bacon, the pancakes smothered in a sweet coat of maple syrup or accompanied by a dish of rich preserves, which find lodgment in the long-suffering stomachs of so many people every morning, we may certainly be thankful that mankind is at last making scientific and hygienic progress along the line of food and food combinations, and that the prospect for the future in the matter of breakfasts is at last a little brighter.

The following menu is typical of the average breakfast table: —

Mush with Cream and Sugar
Crisp Breakfast Bacon or Beefsteak
Potatoes Radishes
Toast or Hot Rolls Bread and Butter
Coffee Fruit

To a great many this would seem a pretty good meal. Let us see.

We will suppose the breakfast hour to be seven o'clock. The thrifty housewife gets up and is ready for work, say, about six o'clock. She shakes down the fire, puts on the teakettle, and if she has a good start, is ready in twenty minutes to prepare breakfast.

The cooker is brought out and filled with boiling water salted to taste, and the oatmeal, corn meal, or wheat, as the case may be, is stirred in and allowed to cook vigorously for ten or fifteen minutes. It is then set back where it will not burn, and Mrs. B. can turn her attention to frying the bacon. This operation is usually accomplished in five minutes. The slices are placed upon a platter, and the cupful of pure grease in the pan is poured over it, the whole being then set away in the warming closet.

The potatoes come next. The pan in which the bacon has been fried is greasy enough, with the addition of a spoonful of the fat gravy or a little butter, and the potatoes, plentifully besprinkled with pepper and salt, are sliced into it. After they are well fried, the pan is tightly covered, and set back on the stove.

The coffee and toast are made and the table set, and at ten minutes to seven the family sit down to breakfast. The whole process has been completed in less than an hour.

"But," some one exclaims, "I think that sounds like a good breakfast, very systematically and well prepared." Again let us see.

In the first place, grains, rice excepted, which is nearly all starch, are perfect foods, containing all the elements of nutrition. They are carbonaceous; *i. e.*, they include starch, sugar, and fat, which supply the heat and force required by our bodies. They are nitrogenous, containing albumin, gluten, and casein, which are to build tissue. These foods contain also the mineral elements necessary to make bones, nerves, etc.

In the second place, grains, being from three to four fifths starch, require to be slowly and well cooked, because starch, if not thoroughly cooked, is difficult of digestion, as is the fibrous tissue, or cellulose, also found in grains.

It has been proved by chemical and microscopical tests that to be thoroughly and entirely cooked, —

Oatmeal requires five hours,
Cracked wheat requires five hours,
Rolled oats requires four hours,
Corn meal requires four hours,
Hulled wheat requires eight hours,
Pearled barley requires six hours,

Rice requires one hour,

Hominy requires six hours,

Cerealine requires one hour of steady and continuous cooking.

It is plain, then, that grains as usually cooked, from ten to thirty minutes, are in no condition to be eaten. Then when milk and sugar, which when combined are very likely to cause fermentation, are added, the danger of indigestion is increased.

Without going into the details of the evils of pork or other meat eating, the second number on this menu may be disposed of with a very few words. Food cooked in animal fat or grease is rendered exceedingly difficult of digestion, and forces the organs of the body to unnecessary and unnatural activity, causing a waste of energy and giving no real or natural strength in the end.

Toast, as it is usually made, consists of slices of yeast bread browned on both sides, and thickly buttered. These are then put into the oven or warming closet, where the heat soon causes the butter to penetrate the bread. In this condition it is totally unfit for food, too indigestible to be put into the human stomach.

Coffee is a stimulating poison, containing not one element of nutrition, and causing an unnatural stimulus to the nervous system, which later on leaves one prostrated, exhausted, and irritable. This beverage does not add one iota to the nourishment of the system. It augments the action of the brain, irritates the nerves of the stomach, and incites the heart to increased motion. To the same degree that it first uplifts and stimulates above the normal, it later prostrates its victim. The false strength it imparts to the whole system is short lived, and the drinking must become a habit which eventually ruins the entire system and often leads to more dangerous practices.

No liquid should be taken during the meal hour or for at least two hours after eating. The more liquid there is taken into the stomach with the food, the more difficult does digestion become, for not only has the excess of liquid to be absorbed and disposed of, but in case the drinks are either very cold or very hot the stomach must resume its normal temperature before it can continue its work of digestion. An effective demonstration of this difficulty in digesting food accompanied by an excess of liquid can be made as follows: Place a few grains of rice in an ice bag, and then pour in three or four cups of water. Tie the bag tightly, and laying it on the table, try to crush the rice by rolling it with a pastry roller or any other convenient article. You will find that the water makes a perfect protection for the grain. Now pour off the water and crush the grains; it is easily accomplished this time.

This is exactly what takes place in the stomach when the food is washed down by so much liquid. The compression of the sides of the stomach is simply wasted energy, because the water, coffee, or tea forms a complete barrier to the process of digestion. If the food is well masticated, thus becoming mixed with the saliva, the first agent in digestion, the desire for liquid will pass away, and nature will resume her work undisturbed.

"But," exclaims our friend again, "what shall we substitute for these things? We must eat and drink something."

Certainly; and why not, while we are about it, eat the purest, best things Mother Earth so bountifully gives us? Suppose we enjoy to-morrow morning's breakfast together. Then let us have the following menu:—

Corn Meal with Milk or Cream
Zwieback and Almond Cream
Protose Croquettes Baked Bananas
Fresh Fruits Nuts

We will prepare nearly all of it the evening before, and then we can have the extra half hour for sleep in the morning.

For the corn-meal mush, pour four or four and a half cups of boiling water into a double boiler, and salt to suit the taste. Mix one cup of corn meal with milk, making it thin enough to pour; then

PROTOSE CROQUETTES.

stir the mixture into the boiling water. Place the double boiler where the mush can cook until bedtime. Then see that the under part of the boiler is well filled with boiling water, and remove the whole to the back part of the stove, where the grain can slowly cook until morning.

To make protose croquettes, beat well together one-half pound of protose, two eggs, and one-half teaspoonful of salt. Roll two slices of zwieback very fine; form the protose mixture into patties, and roll them in the crumbs. Place on an oiled pan, and in the morning put them in a hot oven and bake for twenty minutes. They should be served hot, and eaten at once. A little sage, onion, or sweet marjoram may be added as seasoning, if desired.

To bake bananas, skin as many bananas as are required for breakfast. Dip them in lemon juice and granulated sugar, roll in zwieback crumbs, and place on an oiled pan. Bake in a hot oven for ten or fifteen minutes, and serve hot.

Such a menu, served on a daintily arranged table, will satisfy not only the hungry appetite but all the physical needs of all the family. The mush is well cooked; the protose, a prepared nut food, is a splendid substitute for meat, and makes a very inviting dish when served in this way; bananas prepared after this recipe, in their daintily browned coats, would tempt the most capricious appetite; and the almond cream toast will be found very appetizing. The whole breakfast is tempting in appearance, wholesome and nutritious, and amply sufficient to supply every physical need of the body. Not a living creature has been destroyed or tortured to provide it; not an unpleasant odor has been wafted from the kitchen in its preparation; and it is all pure, simple, wholesome, and inexpensive.

The zwieback as used for toast is infinitely better than toasted bread, because, as indicated by its name, it has been "twice baked," once in the loaf, and then thoroughly browned and toasted in slices. The starch is thus cooked perfectly, and ready for instant digestion. For all kinds of scalloped dishes, zwieback surpasses bread, because it crumbles so evenly and finely.

BAKED BANANAS.

Changes in the menu can easily be made even when using the same articles of food. The protose can be cut in slices, salted, and broiled; or it may be cut in dice and stewed. The ingenious cook will experience no difficulty in presenting these same foods in ever-varying, yet none the less pleasant and palatable forms.

THE CRAMMING SYSTEM.

A NATIONAL Crime at the Feet of American Parents" is the subject of a striking article in the *Ladies' Home Journal*, by Edward Bok, the editor of that popular periodical. He says in part: —

"Do American men and women realize that in five cities of our country alone there were during the last school term over sixteen thousand children between the ages of eight and fourteen taken out of the public schools because their nervous systems were wrecked, and their minds were incapable of going on any further in the infernal cramming system which exists to-day in our schools? And these sixteen thousand helpless little wrecks are simply the children we know about. Conservative medical men who have given their lives to the study of children, place the number whose health is shattered by overstudy at more than fifty thousand each year. It is putting the truth mildly to state that of all American institutions, that which deals with the public education of our children is at once the most faulty, the most unintelligent, and the most cruel.

"Just see what is being done to our children, and with our consent as parents; or, if not with our consent, with a shameful negligence of the matter on our part.

"The most rapid growth in the human brain takes place during the first seven years of a child's life. This is a settled fact. Hence, all that is required at this period is simply to direct into the right channels this outpouring of natural mental energy, and to nourish the body properly to stand the strain of rapid mental and physical growth. Therefore, no child should be sent to school before the age of seven. Fortunately, this is becoming the general rule. But where it is not, it should be. Froebel's teachings are perfectly in accord with this fact, for the kindergarten simply directs natural energy through natural methods of play, etc., and is scarcely to be reckoned as a school.

"During the second seven years of a child's life the marvelous brain growth begins to slacken. It was planned by nature that between the years of seven and fifteen the child should have rest — not rest which will stop all mental and physical growth, of course, for when growth ceases in the natural or physical world, decay begins; but the child's pace should be checked so as to allow him to recover from the strain which his system has just undergone.

"But what really happens to the average child at the age of seven? Is he given this period of rest? — Verily, no. He enters the schoolroom and becomes a victim of long hours of confinement — the first mental application, mind you, that the child has ever known. The nervous wear and tear begin: the child is fairly launched upon his enjoyment (God save the mark!) of the great educational system of America. The warning has been again and again sounded that the fresh mental interest of a child of seven can not be advantageously held for more than eight consecutive minutes at a time on any one subject. It has been proved that the health of a child between seven and ten can not stand more than thirty-five minutes of study during any single twenty-four hours.

"Here is a very recent demonstration of this fact: In Chicago they have started, at the Alcott School, a common-sense experiment in education, which, if persisted in, will do a great deal for American education. On the theory, not by any means new, that brain growth is affected through, if not entirely by, physical vitality, a

child is carefully examined physically, and his mental capacity is thus established. It has been found that a number of children who are sent to school should, instead, be at home and under a physician's care, and they have been returned to their homes. It has also been found that the physical force of a child varies tremendously throughout the day. At nine o'clock, for instance, it is fair; at ten it is strong; but from that point it decreases until at twelve it is very low. At one o'clock there is a slight revival; at two it is fairly good, and at three it is again low. Thus it is demonstrated that there is barely one brief hour in a day's study when a child's mind is actually fresh.

"Now, these discoveries are not new. Their value lies in the fact that they have been found out once more, brought into publicity in another way, and given a new emphasis. But the question is: When will the warning they sound be heeded — when will parents learn the lesson?

"For how are these conditions met? —In the majority of cases by the little tots' being compelled to study or to hang over their books from one hour and a half to three hours each day. There 's education for you!

"The child is made to study far, far beyond his physical strength, and consequently his mental good. Into what nature planned should be a period of rest, a time of moderate study, an immense amount of learning is crammed which is absolutely valueless, because not even one tenth of it is absorbed, and the child is physically injured. The noonday meal is hastily eaten for fear of 'tardy' marks, or to make time for recess in the playground. The child goes back to another two hours in the schoolroom, when his mind has lost its freshness, and is given another dose of the cramming system, and of the bad air, which in the average schoolroom is enough to sicken any one who enters it from outside.

"Special systems of 'marks,' which amount to prizes, are started, serving only to overstimulate the preternaturally bright child, who needs relaxation most of all, and to discourage the child who happens to be below the average intelligence. It is cramming, cramming, cramming! A certain amount of 'ground must be gone over,' as it is usually called. Whether the child is physically able to work the 'ground' does not enter into the question.

"And we do not stop even there! The poor children are compelled to carry home a pile of books to study, usually after supper, and just before going to bed. And that is about the most barbarous part of the whole system.

"We are constantly admonishing business men that they must not continue their work after nightfall. Physicians warn men of this, and wives echo the warning to their husbands. 'Burning the candle at both ends' has killed almost as many men as liquor, say investigators. No one will dispute the assertion. Men of common sense know that night work after a day of business is vitally injurious. Yet in their own homes is presented almost every evening the sublime picture of children poring from one to two hours over lessons for the next day. And while the lesson is to the child exactly what the business problem is to the man, we warn men of mature growth against the very thing which we allow children to do. What a superbly consistent people we are, to be sure!

"The merest novice in mental science knows that the last work given the brain to do often continues to exercise it during sleep. And yet there are thousands of mothers and fathers throughout this enlightened land of ours who wonder why their children toss themselves about in

bed, why they mumble and talk in their sleep, why they are frightened in their dreams, and why they are so afraid of the dark. Now, all these are simply the results of unsettled nervous conditions. Is it any wonder that children have to be called over and over again in the morning, and that they at length rise unrefreshed and without appetites for their breakfast? When are parents going to open their eyes to this fearful evil? Are they as blind as bats, that they do not see what is being wrought by this crowning folly of night study? Is all the book learning in the world worth this inevitable weakening of the physical and mental powers?

"Take the average child between, say, seven and fifteen years of age, and what time has he for play? The hours of study vary in different schools, but let us take the average set of from nine to twelve o'clock, and from one to three. It is quite a bit after three before the child can reach home, put away his books, and be on the playground. In winter it is dark by five. Barely two hours; and can any reasonable parent expect a healthy child to rob himself of one of these two hours and give it over to study? And after play, is the child in a condition to return to his books? Naturally, then, the child waits until the evening hours, when he is not allowed to go out.

"It is unreasonable to expect a child between the ages of seven and fifteen to devote more than four hours each day to school work, and these four hours should include an hour of study either at school or at home, as seems most advisable.

"But educators and parents will say the children can not learn all they should in such short hours. They can, and trials have proved it.

"Last year the board of education of Greater New York found so great a pressure on the schools that it was obliged to take one half the children from nine o'clock until one, and the other half from one until five. A cry went up from the press and the people that children could never make progress at that rate. But what was supposed to be an evil proved to be a blessing in disguise. The children were so much fresher for the shorter hours that they actually accomplished almost twice as much as they did with the former longer hours.

"In a private school it was decided to do away with home study altogether. An hour of study was included in the regular four school hours. It was found that during a whole term about a month was lost, but when the time lost under previous rules, resulting from illness from overwork, dullness of brain from fatigue, and lack of interest in study from too close and long application, was taken into account, it was seen by the teachers, after a year's experiment, that the children were the actual gainers — and home study is now abolished altogether by that school. Thus the new method has proved an aid instead of a hindrance.

"The evil of night study, or of afternoon study at the expense of play hours in the open air, can not be overcome by early morning study, for study before partaking of food in the morning is one of the most injurious practices to a growing child, while if study is persisted in after breakfast the mind is tired before it reaches its work in the schoolroom. In any event, the child who crams his brain in the morning just before recitation, and then recites parrot fashion, can not be said to have learned his lessons.

"The solution of the home-study question is simple enough when common sense is applied to it. No child under fifteen years of age should be given any home study whatever by his teachers. He should have not more than from one hour to four of schooling each day, the

hours increasing with his years. Outside of school hours he should have at least three hours of play. Even where the necessities of the family call for the assistance of the children in domestic work it is a wise mother who so adjusts the home machinery that her child can have three hours of play and freedom for the natural expression of his spirits.

"After fourteen the brain has another period of rapid development, with special increase of the higher faculties. If too much strain has not been put upon brain and body during the previous years, then the child begins to learn with beneficial effects. Four hours of schooling, then, is not too much, provided the child's physical being is capable of it, and in time an hour of isolated study may be added. But that is enough. Five hours of brain work a day is the most that we should ask of our children. The mind can not remain fresh after that strain. And even then, study during evening hours should be positively prohibited, and the hour of isolated study be so arranged that the child may pass at least two hours a day in the open air. One reason, other than improper diet, why the majority of our boys and girls do not enter maturity with that share of health of mind and body which they should have, lies right here, in that they do not get enough fresh air and sunshine into their bodies and natures. It is a sad reflection upon American home training that we hear it said so often by young people that they never knew what it was to study hard without physical injury until after they left home and entered college. The higher institutions of learning understand this need of physical development for brain growth far better than do our lesser schools and our homes — sad as it is to admit it.

"Some educators will claim that the hours of home study are already arranged much as here suggested. But these rules, even where they do exist, go for naught where the pressure of lessons is so great that the child feels he must pursue home study in order to 'keep up' with the class and 'pass.' There is where the fault lies. The number of required studies in the vast majority of schools is far beyond all needs and beyond all learning within the time allotted for their study. The ambitious child, anxious to learn, and thinking that these lessons are necessary to a full education, takes them home and gives them the study there for which time is denied at school. There is too much given to our children to learn, and a great deal of it is absolutely useless to them either for the present or the future. The most casual investigation into the studies of our children reveals this. The crying need of our school system is fewer studies and more time given to those studies which are essential.

"But no material change can be hoped for in this matter until the American parent throws off his or her present indifference and demands reform. No change can come from within the system or the school: it must come from without — from the parent. There must be a closer co-operation between the home and the school.

"What to demand of our school system is the first step, and if a child, when he reaches the age of fifteen, has been taught —

"To read aloud pleasantly and intelligently,

"To write legibly,

"To spell correctly,

"To express himself clearly in a letter,

"To count accurately,

"To use his mind himself,

"To use his fingers so that his hands will be a help to him in earning his living —

"That is all that should be expected of the child, either boy or girl. That is

enough for seven years' learning in the great formative period of life.

"There must be shorter hours and an absolute abolishment of home study before the age of fifteen and even after fifteen no evening study beyond an hour.

"Our children must no longer be the prey of ignorant and conscienceless politicians who either control our boards of education or are a part of them,— men absolutely unfit for such works as that intrusted to them.

"How to get these reforms from the parents for their children is the next step. They can come only through closer co-operation of home and school. The teacher and the parent must come closer together. That is the root of the present evil. One means toward this end lies in frequent conferences between mother and teacher, as is the practice in one school of which I know. The teacher must better know the timber she is seasoning."

ANIMAL MEDICINE.

ANIMAL Doctors and Animal Patients" was the subject of an article by Dr. James Weir, Jr., in the Denver *Medical Times* last summer. The New York *Medical Journal* gives the substance of this article, as follows:—

"The honeybee when attacked by diarrhea (a disease to which under certain conditions it is very liable) will immediately begin to suck the astringent juices of the dogwood, poplar, wild cherry, or hickory, and will soon effect a cure of this distressing and often fatal malady. Indeed, such is the intelligence of these little creatures, that, in winter, when they become sick with this disease, they will readily drink a decoction of wild-cherry bark if it is placed in the hive. When we remember that the bee's taste is even more discriminating than our own, and that it is by no means fond of bitter substances, this instance of its intelligence becomes all the more remarkable. These insects seem to be aware of the fact that filth is a source of disease; hence, when ill in winter, they select a spot as far from the combs as possible, at which all of the sick members of the hive deposit their dejecta. As soon as warm weather arrives, the accumulated filth is removed and the spot carefully cleansed. In summer all excrementitious matter is deposited without the hive.

"The author next records remarkable observations of the way in which the crawfish deals with its parasitic leeches, and says that many of the higher animals have discovered and use a materia medica that is not recognized by human physicians, but one which seems to be exceedingly efficacious so far as they are concerned. Dogs will seek out and devour the long lanceolate blades of couch grass when they are constipated; horses and mules will eat clay when they have 'scours;' cattle with the 'scratches' have been seen by him to plaster hoof and joint with mud, and then to stand still until the protecting and healing coating dried and became firm. He saw a cow not long ago break the thin ice on a pond, and treat her itching joints to a mud poultice. Several travelers and hunters of big game declare that they have seen elephants in the act of plugging shot holes with moistened clay. A gentleman recently informed him that a short time ago, after a severe snowstorm, he was hunting rabbits, when he saw his house cat plowing through the deep snow some distance in advance of him. He thought at first that she was out on the same business as himself, —

i. e., rabbit hunting, — but soon concluded that something of much greater importance had impelled her to abandon the warm kitchen on such a cold and inclement day.

"He resolved to follow her, which he did for three miles, until she finally entered a neighbor's garden, where, after scratching in the snow, she soon uncovered a bunch of catnip, which she at once proceeded to devour. Surely a great and abiding faith in medicine must have dwelt in the bosom of this animal.

"An acquaintance of the author's, a physician, spent the greater portion of last summer at a farmhouse. One day, while walking with the farmer, the latter called his attention to a sow that was confined in a pen. The farmer explained that the animal had been kicked in the abdomen by a mule, and that he feared she would die. The sow seemed to be in great pain, and was continually trying to get out of the pen. The physician suggested that the door be opened; that the sow probably had peritonitis, and would die anyhow. 'The door was opened, and immediately the sow proceeded toward a disused spring, situated some distance from her pen. The spring issued from beneath the roots of a large tree, and the water, being strongly impregnated with iron, was not used for potable purposes, so was fenced about with rails.

"'When the animal arrived at this fence, she stopped and began to grunt, noting which, her owner let down the rails. The hog walked through the gap, at once entered the shallow depression which formed the bowl or bed of the spring, and lay down in the cool water. Here she remained for five days without taking food, though corn in abundance was placed within her reach. At the end of this time she emerged from her self-elected sanitarium completely cured.'

"The saliva of mammals, with the single exception of man, seems to have a distinct curative action. Of course, much of the beneficial result following the continual licking of wounds by animals is due to the resulting cleanliness; yet, beyond the mere matter of cleanliness, there is an undoubted curative property in their saliva. Dogs, cats, cattle, rodents, monkeys, etc., lick their wounds when they can get at them, and soon effect cures.

"It sometimes happens that animals contract wounds on their bodies which they themselves can not get at; then, as Dr. Weir has frequently observed, some good Samaritan in the shape of a fellow dog, cat, or monkey will step in and treat the wounds as if they were personal. His dog Toney is surgeon to all his other dogs, and, what is more to the point, seems to cure his cases much more effectually and in much shorter time than does his rival in the profession — his master. The author records cases in which his dog Toney successfully treated two other wounded dogs, and concludes with describing how a dog-faced ape at St. Louis, in 1882, healed a sore by dressing it with sawdust, while a capuchin in 1889 treated its burned finger with a bread-and-milk poultice from its feeding platter."

Cow's Milk and Odors.

The New York *Medical Journal* contains an interesting note on this subject, credited to the *Echo Médical du Nord*: —

"After referring to the well-known powers of milk for absorbing odors which flavor the milk, — *e. g.*, those of onion, turpentine, tobacco smoke, etc., — if the milk is allowed to stand in an atmosphere impregnated with them, the *Echo* cites a paper by Dr. Virt from the English *Journal of the Royal Society of Agriculture*, in which instances are adduced where a number of milch cows, having to pass a de-

composing calf's body on their road to be milked, apparently imbibed the odor to such an extent as distinctly to taint their milk, and not only theirs, but that of other cows with which they mingled prior to milking. In another case the milk of twenty-five cows was tainted with a horrible odor. On searching for the cause, these cows were found to be pastured near the decomposing body of a horse. In both cases the removal of the carcass sufficed to put an end to the trouble. These observations show not merely the danger of leaving drawn milk in unwholesome places, but the absolute necessity for perfect cleanliness and sanitary environment for milk herds. Further, they suggest the idea that odors may materially influence the vital processes of the body and its secretions, and not merely prove disagreeable sensations and nerve disturbers, but lend color, moreover, to the material doctrine of the olfactory sense."

Minor Immoralities of the Tobacco Habit.

Dr. Matthew Wood, in the *Journal of the American Medical Association*, writes on this subject. If these are the minor immoralities, we should like to inquire what the major ones could be. He says: "The vulgarity and licentiousness of the press, with its mercenary pandering to vice, corrupting as it does that very fountain of national strength, the home; the lubricity, the demoralizing baseness, of the degraded drama; disfigurement of hoardings by the cigarette-soaked indecencies of the variety stage, making it difficult for our children to walk the streets without contamination; the growing fondness for certain social functions with their flimsy vaudeville adornments; the mockery of and attempted obliteration of personal puritanism; the crass things done by tobacco-biased young people; degradation of seats of learning by the introduction of smoking rooms, those hotbeds of vice and agnosticism, of ballet dancing and brainless burlesque — imbecility and irreverence under the auspices of fashion; defilement of public buildings by foul receptacles provided for a people so base that it is necessary to ask them please not to spit on the floor; the negro-minstrel methods of some of our churches; the effeminacy of religious periodicals with their venal advocacy of successful quackery and fraud; the prevalence of the gambling mania among women, leveling all ranks, wasting energy, dissipating time so much needed in more ennobling ways; medieval grotesqueries, euchre and wine parties for the spiritual and physical benefit of the outcast and sick, made so by gambling and drink — what, unless completely engrossed in other things, could induce thoughtful men silently to submit to these but that indiscriminating drowsiness of conscience — 'denying nothing, doubting everything' — so frequently induced by tobacco?"—*Health.*

An Unprofitable Vacation.

Horace Greeley once said: "The word 'rest' is not in my vocabulary," and he died a worn-out man.

There are many men and women who are unwise enough to regard rest as a mere loss of time, and who boast that they are never idle, even when "on a vacation."

"I tell you I put in my time well when we were in the country last summer," said a nervous, restless little woman to a neighbor. "We were there but four weeks, and I did n't lazy around as some of the other boarders did. I made up two winter dresses for my little girl, and made over a dress for myself, made a cloak for my baby, and canned sixty jars of fruit, for berries of all kinds were so

much cheaper and better there than they are here in the city, and the farmer's wife let me use her kitchen at night when she was done with it. Then I made two gallons of sweet pickles and a gallon of watermelon preserves.

"How some folks can sit or lie around reading or just resting for four or five weeks at a time, is a mystery to me."

But there was no mystery about it when this overindustrious mother took to her bed with nervous prostration that made her helpless all winter.

"You would have been spared all this had you, too, simply rested when you were away for that purpose last year," said the worn-out woman's physician. She had learned as others have learned, too late, that "rest is God's medcine." —*The Household.*

Ladies' Dress Skirts.

"Now that the ridiculous and unhygienic fashion of wearing dress skirts so long that they trail in the dust and mire, has again made its appearance," says *Omega*, "it might be well for those women who are not altogether dominated by the dictates of fashion, to ponder over the following remarks by a prominent physician: 'Lately the long dress trains worn in the streets by our ladies suggest another way to carry tubercle and other bacilli into our houses. In walking along the streets we constantly see dresses wipe up portions of sputum from the pavements. From one of these dresses dragged over the streets a few times I was able to demonstrate the presence of seven tubercle bacilli on an inch microscopic slide, on which a little dirt off the dress was dusted. Knowing, therefore, that these long dresses have dried tuberculous sputum on them for the maids to dust off in our ladies' dressing rooms, most of which are poorly ventilated, we can quite understand how a sufficient number of bacilli can be collected in small compartments to an extent dangerous to at least those predisposed to tuberculosis.'"

A Young Man of Eighty-One.

Walking into a tradesman's shop at Chatham the other day, I expressed my surprise at seeing the principal still at work, "Oh, I am only a young man," he exclaimed; "I am only eighty-one." I asked the secret. My friend said he was asked that question at the bank the other day, where they told him he was the oldest customer the London and County Bank had in Chatham, having become a customer in 1844. Some of the clerks wanted to know the recipe for his great age and wonderful activity. "I will give it to you," he said. "It is only three things.—no alcohol, no tobacco, and a cold bath every morning."—*Temperance Record.*

An Early Vegetarian Sermon.

In 1836, according to one of our exchanges, the Rev. Edward Hitchcock, professor of chemistry and natural history in Amherst College, preached a very practical sermon on the blessings of temperance in food. His text was from Daniel 1:12–15. Unlike many other divines, Professor Hitchcock saw only the working of natural laws in the circumstance of Daniel and the others being "fairer and fatter" after ten days of vegetable diet. "The man," he says, "who has perseveringly tried such a diet, after using one of a more stimulating character, sees, in its effects upon these Jewish youths, nothing but the natural consequences of a return to the proper course of living." Professor Hitchcock was eminent as a geologist, a chemist, and an educator, being for many years president of Amherst College.

EDITORIAL.

THE DIETETIC MANAGEMENT OF DIABETES AND BRIGHT'S DISEASE.

If we had in a room a quantity of clothing for men, women, and children, and if we invited the poor in the city to come and help themselves, each would naturally select such garments as he individually needed. So it is with the different tissue cells of the body. Each extracts from the blood what it individually needs. A nerve cell will take from the blood the substance necessary to build it up. Bone will take lime. How is it that each cell knows what to appropriate for itself? The cells evidently have a divine intelligence which suggests to them what to do. But suppose these cells were chloroformed; then they would not have the intelligence to choose for themselves.

When a man is drinking tea and coffee regularly, or using tobacco all the time, every part of his system must necessarily become more or less poisoned. In this case when sugar which has been made from starch is brought by the blood to the muscle cells, they may refuse to recognize it as a necessary element, and it may fail to be burned up in useful work; consequently it accumulates in the blood, and is finally carried off with the secretion from the kidneys, thus giving rise to one of the leading symptoms of diabetes.

There is a right and a wrong way to cure diabetes. It is not to put the patient on a strict meat diet, for this would merely add to the work of the already overwhelmed liver. We may place him on a diet consisting of an abundance of fruit, which tends to create an aseptic condition of the stomach, and at the same time introduces into the system no poisonous waste products. Gluten, in various forms, is another safe article of diet, as well as various nut preparations. If these suggestions are carried out, it is rarely necessary absolutely to exclude starchy foods, but they should be thoroughly toasted, so as to convert the starch as nearly as possible into dextrin. When eaten, they should be thoroughly masticated, to assure a perfect mingling of the saliva and thus facilitate the complete conversion of the starch into sugar. Half-cooked and poorly masticated starch always aggravates diabetes. If, however, one has suffered from this disease for years, even if he adheres strictly to the very best diet, he will still continue to eliminate a certain amount of sugar, and it will then remain a question whether even by appropriate treatment the cells can ever again be coaxed to do their normal work.

Bright's disease is a condition in which albumin, instead of sugar, as in diabetes, is being carried off by the kidneys. The chief food elements necessary for our bodies are starch, fat, and albumin. When the secretion of the kidneys contains albumin and other abnormal elements that generally accompany it, one is said to have "Bright's disease."

The first step healthward in this condition is to withdraw from the patient's dietary all such articles as have a tendency to poison the cells of the body. Flesh foods and tea and coffee, especially, should be proscribed, and the patient should guard against overeating and using such food combinations as readily produce fermentation in the stomach,—for instance, milk and sugar, or fruit and vegetables at the same meal. If the patient is addicted to the alcohol and tobacco habits and persists in them, he is certainly driving nails into his own coffin.

In the very earliest stage of the disease, the patient will generally make a good recovery by adhering for several weeks to a diet consisting largely of fruit. Meanwhile, he should remain in bed most of the time. This

will give nature an opportunity to repair the various damages that wrong and vicious habits of life have inflicted upon other parts of the body as well as upon the kidneys.

An acute disease is practically cured as soon as the cause is removed, but this does not hold true in chronic cases, for here the body cells have so long been compelled to act in an abnormal manner that they really continue to do so even after the cause is removed. The primary object of treatment is to influence the cells in such a way that they will return to their normal working condition after the aggravating cause has been removed.

The objectionable way to treat these disorders is to withdraw necessary food elements, such as starch, albumin, and sugar, and to give the patient some such sedative drug as morphine. Under this treatment he will live comfortably, and the dangerous symptoms will necessarily disappear, but in most cases the patient is rapidly getting nearer the grave.

EXERCISE AND SLEEP IN RELATION TO DIGESTION.

CAREFULLY conducted experiments have shown that gentle exercise favors digestion by increasing the amount of hydrochloric acid produced. Exercise also aids the stomach in moving forward the food into the intestines, while sedentary habits, especially sitting in a cramped position, interfere with important processes.

Bouchard has shown that if food remains in the stomach more than four or five hours, putrefaction always takes place, through the influence of germs. The gastric juice ceases to exert its antiseptic power, probably through its disappearance by absorption; and the germs swallowed with the saliva, which always swarms with microbes, as well as those received with the food, undergo rapid development with disastrous consequences. It should be remembered also that the period of incubation for the development of microbes in the stomach and elsewhere is between three and five hours; therefore it is apparent that it is in accordance with nature's plan that the food should leave the stomach while the gastric juice is still active, and before the microbes have had a chance to multiply to a harmful extent. The digestion of the food being thus hastened on to completion, the wholly elaborated products are absorbed before destructive changes begin.

Mental activity is likewise favorable to digestion. The solar plexus, the great abdominal brain, so-called, which presides over the digestive process as well as other functions of organic life, is very intimately connected with the cranial brain, the center of all nervous activity in the body, through the sympathetic branches and also through the pneumogastric, or vagus nerve. Through these two nervous channels, a reciprocal play of nervous influence is constantly taking place between the sympathetic brain on the one hand, and the intellectual brain on the other. Each serves to modify the action of the other. The cranial brain by its activity stimulates the solar plexus to exhilarated action, while the solar plexus, through the play of reflex influence which it transmits to the brain, likewise increases the flow of blood to this great mass of nerves, and provokes activity, sometimes even to a most distressing extent, as when one desires to sleep after having eaten a late supper. Or, if he is favored with sleep, he is constantly disturbed and startled by that peculiar and disordered action of the brain which we commonly call "dreams."

No physiological fact is better established than that a certain degree of mental activity is necessary for sound digestion; and that mental rest or sound sleep is incompatible with the activity of the digestive organs. Notwithstanding that this fact is universally admitted in all scientific text-books on physiology, the fallacy is still propagated that eating just before retiring is conducive to good sleep. This idea doubtless grows out of the fact that in many persons a certain drowsiness follows hearty eating. This

drowsiness, however, is not natural sleep. The after-dinner sleep is often nothing more than a semicomatose stupor resulting from a passive congestion of the brain, or from poisoning of the nerve centers with the products of decomposition developed in the stomach. The writer has carefully studied this subject for more than twenty-five years, and while recognizing the fact that many persons blessed with especially sound digestive organs may for a long time indulge in the unwholesome practice of eating just before retiring, or taking heavy dinners at six or seven o'clock in the evening, he is thoroughly convinced that the ultimate results are always in the highest degree detrimental to the interests of the stomach and the body at large. In not a few instances has it been possible to trace chronic insomnia to this cause. For sound, refreshing sleep the stomach should be empty; in other words, no food should be taken within four or five hours before retiring.

OUR PARASITES.

NUTTALL, a professor in the University of Cambridge, England, in a paper recently read before the British Medical Association, gave a most interesting account of the rôle played by insects, spiders, and myriapods in introducing to us the various parasites which take up their abode in human bodies. Here are some of the remarkable and interesting facts to which attention is called :—

First of all, the fly is charged with being the chief agent in spreading bacterial disorders. The fly can not bite, but it can "blow," and a flyblow is likely to contain everything in the way of bacterial parasites that the insect has swallowed. It has been proved that the plague, cholera, typhoid fever, and the intractable ophthalmia of Egypt and Florida, with various other infectious disorders, are communicated by the domestic fly. This little insect, as it flits about through the air, gathers the germs of various maladies, together with sundry other minute particles, upon its wings. These it industriously scrapes off with its legs, and swallows ; the fly feeds upon germs. The spores, however, resist the animal's digestive juice, so they are discharged with its excreta, and can be proved to exist in the little black speck the fly leaves behind it. As bacteriological investigations have often shown, certain flies are capable of sucking blood, and blood-poisoning, pyemia, and erysipelas have been charged to the account of the bites of flies capable of inflicting wounds, although experiments have not yet confirmed these claims.

Certain insects act the part of the intermediary host; that is, they entertain the parasites in their bodies, which multiply, and finally destroy their host. They then invade the human body ; while other insects, as the mosquito, carrying malarial and possibly yellow fever parasites with them, inoculate human beings when perforating the skin by means of their awl-like proboscis, which serves both as a weapon and an infecting tube. The tick has been shown to be, in like manner, an active agent in the communication of Texas fever by inoculation. The mosquito becomes itself infected by sucking the blood of a person affected with a malarial disease, and it then deposits the parasite in water, in which it multiplies in preparation for the renewed infection of those who may make use of the water as a beverage.

Insects often attach to themselves the eggs of animal parasites, and deposit them upon food. The eggs of the tapeworm and other intestinal parasites have been demonstrated to be present in food. The tsetse fly becomes inoculated by biting a diseased animal ; then by biting another animal, the infection is transmitted to the latter. The tapeworm finds its way into the human body directly from the measly ox. Trichinæ go straight from the ham sandwich into the muscles of their victim ; and the patron of the vinegar bottle furnishes to his alimentary canal a supply without the intermediary assistance of those six-legged little beasts which seem to act the rôle of public vaccinators in reference to so many maladies.

Professor Mosso on Race Decay.

Dr. Angelo Mosso, Professor of Physiology in the University of Turin, according to the *London Lancet*, one of the leading medical journals of the world, has recently discussed with great earnestness the causes of the evident decadence of the Latin race. He admits that the Spanish and Italian nations, as well as the French nation, are deteriorating. He assigns various causes for this, such as sexual precocity, neglect of physical exercise, defective mental training, all of which doubtless have something to do with the present rapid deterioration of civilized races in all parts of the world.

That this deterioration is not confined to France, Italy, and Spain, where it is perhaps most conspicuous, is evidenced by a vast number of facts which might easily be brought forward; for example, statistics recently published by Dr. Henry May show that the birth rate has steadily declined in England during the last twenty-two years, and to the extent of two hundred thousand births per annum. The real significance of this decline in the birth rate is not dwelt upon by the writer mentioned. The fact that the civilized race is deteriorating and rapidly traveling toward race extinction is not a palatable and hence not a popular theme. It is of no use, however, to disguise the fact that national decay is in the world, and that one nation after another is taking on marked evidences of senility; the older the nation, the more marked are the evidences of degeneration which it presents.

In a recent visit to Egypt, the writer was particularly struck with the complete lack of national spirit which is apparent among the native inhabitants of that ancient land. Egypt is ruled by Turks and Englishmen. In Syria the indications of complete race decay are even greater than in Egypt. Italy is an old country, but not so old as Egypt, hence not so far advanced in decay. Spain comes next in order in the scale of national decadence, and the next is France, each indicating a stage on the downward road. England and Wales are following hard after France, and the eastern parts of the United States, particularly New England, are almost even with England in the downward race. It is only at the border line where civilization touches savagery, that anything like racial virility can be found. At the present time, however, the telegraph, the telephone, electric transportation, the newspaper, political organizations, and the various devices of civilization press so hard upon the border line that the process of transforming the wilderness into a thoroughly civilized community, which in former times occupied half a century or more, is now completed in half a decade. It is high time for intelligent men and women to pause and consider where we are and what we individually should do to stem the downward tide.

The Area of the Skin.

Whenever we think or speak of a person's size, we conceive or express his dimensions in pounds weight, or in feet of linear height, or possibly lateral amplitude may be expressed in inches of circumference, or by other means of indicating bigness or littleness, as the case may be. It is possibly due only to lack of some convenient method of expressing superficial dimension that we do not undertake to express our ideas respecting a person's size by indicating the number of square feet over which he might be spread. This knowledge is not lacking, however, for anatomists have determined that the skin of a man weighing one hundred and eighty pounds, if removed from his body and uniformly spread over a level surface, would cover an area of seventeen square feet. By the application of a well-known mathematical law, it is easy to determine from this fact the area of a well-proportioned individual of any weight: $180 : W :: 17\frac{3}{2} : X\frac{3}{2}$.

It has also been determined that the area of the small sweat tubes, the valves of which form the so-called "pores" of the skin, contained in this seventeen square feet of cutaneous covering, presents a secreting surface of more than eleven thousand square feet. It thus proves that the skin is very much larger than it looks.

Whether these facts will prove of any particular service to the tailor and the dressmaker, whose arts have to do with the

superficial dimensions, is a question yet to be determined. But to the physician, the size of the skin is a matter which must be taken into consideration in the treatment of fevers, for Winternitz, the eminent professor of nervous diseases in the Royal University of Vienna, has demonstrated that a cooling compress, when used for the purpose of allaying the heat of a fever, must, to be effective, cover more than one fourth of the entire surface of the skin. The reason for this is that cold applications, while abstracting heat, at the same time stimulate the production of heat in the tissues, so that the cooling of the surface must be sufficiently large to make the rate of heat abstraction exceed the increase of heat production.

By a little calculation it will thus appear that for a man weighing 180 pounds the compress or compresses used in fever must cover a surface of five square feet or more. For a person weighing 120 pounds, the compress must cover a surface of four square feet; for one of a hundred pounds, three square feet; sixty pounds, two and one-half square feet; thirty pounds, one and one-half square feet; for an eighteen-pound baby, one square foot.

An Awful Scourge.

A threatened visit by the black death would create a tremendous sensation, and might depopulate our seaport towns. How quickly the terrorized inhabitants would flee to the woods and the mountains at the mere arrival of a ship from China or India laden with victims of this plague which cut down so many millions during the Middle Ages. Yet we have with us constantly a plague which has sometimes been called the "great white plague," and which is much more to be feared than any possible invasion of the black death, cholera, leprosy, or any other human malady. Dr. Keen, of Rhode Island, at a recent meeting of the National Conference of Charities and Corrections, read a paper in which he gave the results of recent investigations concerning the prevalence and fatality of consumption. This eminent physician asserted that consumption "has claimed more victims than all the wars and all the plagues and scourges of the human race. Even during the few short years since Koch's discovery, more than 2,000,000 persons on this continent have succumbed to its fatal infection. In the last two decades, in Cincinnati alone, out of a total mortality of 119,089, there have been 17,353 deaths from this dread disease. The annual tribute of the United States to this scourge is more than 100,000 of its inhabitants. Each year the world yields up 1,095,000; each day, 300; each minute, two of its people, as a sacrifice to this plague. Of the 70,000,000 individuals now peopling these United States, 10,000,000 must inevitably die of this disease if the present ratio is kept up."

Even the North American Indians, who were once free from this awful malady, since adopting the habits of civilization, are becoming the victims of consumption. At the Blood Indian Reservation, one hundred and twenty-seven deaths occurred last year in a population of two thousand, constituting twenty-three per cent of the total death rate. So long as the Indians lived chiefly on *tom-fulla*, or hulled corn pounded in a mortar and cooked with roasted acorns, pine nuts, and the simple products of the earth, with an occasional taste of venison, consumption was unknown to them; but since they have been herded in government reservations and fed on government salt beef, they, too, have become victims to race deterioration, and are doomed to speedy extinction. Government beef and reservation management are vastly more fatal to the Indian than bullets and gunpowder ever could have been.

Modern Ideas of the Nature of Disease.

Sydenham believed that "every disease is nothing but an endeavor of nature to expel morbid matter of one kind or another by which her healthy operations are impeded, and needs to be assisted, not obstructed, in her efforts, which should be carefully noted, and the remedial process promoted in every way possible." Sydenham supposed that in fever there was a poison somewhere in the blood, which must be expelled, and regarded the febrile action as not in itself destructive, but curative.

Cullin entertained the same views, though he had apparently less respect for nature than Sydenham, for he is said on one occasion to have declared that he would "drive nature out of the sick room as he would a squalling cat."

After having witnessed the promulgation of a considerable number of novel and opposing theories in relation to fever, in the times of Sydenham and Cullin, the medical world has at last swung round to a recognition of the substantial correctness of the views held by these wise old teachers. For lack of the necessary laboratory methods and means, they could not discover the poison in which they believed, but at the present time we know that the phenomenon of fever is due not to some obscure nervous disturbance, but in the majority of cases to the presence in the body of toxic substances usually produced by some specific pathogenic microbe introduced from without. So, after wandering in the wilderness of ignorance, we are coming back to a recognition of principles which are now susceptible of proof, but which, when first enunciated, were recognized only by the great men whose names are recorded on the tables of history as pioneers in the search for truth.

Monotony in Diet.

If one has found a perfect diet, he can go on in the use of that diet so long as he does not feel an instinctive desire for a change. If, however, he feels a natural longing for something else, it is nature's call for different elements, and a change is necessary. Nature is a wise director; if we follow her, we shall always be safe. If one has an instinctive desire for starch foods, he should take starch foods. If he has a longing for nitrogenous foods, such as nuts, peas, beans, and lentils, he should take such food. If he has a longing for fats, he should take fats. These cravings are the instinctive demands of nature for what we need; they are far more valuable in directing us than are doctor's prescriptions or medical theories. It is best, within certain limits, to eat what one likes, provided his taste is normal; but the difficulty is, our appetites are so perverted that our longings are not always instinctive and natural. The nearer, however, we approach to nature, the more simple will be our tastes, and the more apparently monotonous our diet.

Lavage of the Stomach in Intestinal Obstruction.

A number of interesting cases have been reported in the medical journals in which threatened fatal intestinal obstruction has been promptly and completely relieved by lavage of the stomach. Even when fecal vomiting has occurred, indicating obstruction well down in the intestinal tract, life has been saved. This simple means should certainly be tried in every case before resorting to surgical measures, unless the indications for surgical operation are plain and positive.

The Prevalence of Disease in Sheep.

The use of the thyroid gland of the sheep in the treatment of the peculiar disease known as myxedema has led to the discovery, according to Napier, that "over fifty per cent of sheep's thyroids examined, showed more or less evident deviation from the normal." Great stress is laid upon the necessity for the examination of thyroids, so that diseased tissues may not be used.

The writer suggests that it might not be unwise to employ the same care when the sheep is to be administered by way of the kitchen. If thyroid glands are to be administered as medicine, it is certainly of the greatest importance that the healthy gland shall be obtained; but if the sheep is to be administered as food, is it not of equal importance that the sheep shall be free from disease? If fifty per cent of the glands are diseased, and if these glands are so essential to health that it becomes necessary to administer them to human beings because of the loss of their normal action, is it not evident that a sheep, the thyroid glands of which are diseased, must be also more or less diseased in other parts, and that the rest of the animal is no more fit for food than are its thyroid glands for medicine?

ANSWERS TO CORRESPONDENTS.

The Most Healthful Bed.—W. L., Iowa: "1. What is the most healthful bed to sleep on? 2. Are feathers objectionable in winter? 3. Is a mattress thick enough to unduly heat the body, healthful? 4. For summer use, what is your opinion of woven-wire springs covered with a light quilt or sheet? 5. Is it healthful to sleep in a hammock?"

Ans.—1. A rather hard mattress composed of cotton and wool or hair.

2. Yes, because they are highly hygroscopic. Waste matter is thrown off by the body, and retained by the feathers during the day when the bed is cold, but is thrown off again during the night, thus surrounding the body of the sleeper with an intensely poisonous atmosphere which can not be otherwise than injurious.

3. No.

4. Most persons would require the wires to be covered with a thin cotton mattress, at least for comfort.

5. Yes.

Consumption and a Meat Diet.—G. A. M., Iowa, asks our opinion of the theory that tuberculosis is far more prevalent among vegetarian animals than among the carnivora.

Ans.—The statement is true, but the reason is that the carnivora have been exposed to tuberculosis in their use of diseased flesh food for so long a time that those susceptible to tuberculosis have been weeded out; thus a certain hereditary immunity has been established for those left behind.

Graham Bread and Crackers.—G. A. R., New South Wales, asks our opinion of the theory that the use of graham bread and crackers will ruin the digestive organs.

Ans.—This theory is entirely in error. Man's digestive apparatus is adapted to food having a certain degree of coarseness. It is only in cases of extreme irritation of the gastric and intestinal mucous membrane that whole-wheat preparations, including bran, must be interdicted.

Tobacco for Catarrh—Warts.—A. H. J., Washington: "1. Is it true that tobacco smoking is good for catarrh in any part of the body? 2. If not, what is? 3. What will remove warts?"

Ans.—1. No.

2. Improve the general vital resistance by cold bathing. For the nose and throat the Pocket Vaporizer is the most useful remedy.

3. They may be snipped off, or destroyed by the application of glacial acetic acid.

Bromidrosis.—F. E. F., Illinois, asks for a cure for bromidrosis of four years' standing.

Ans.—Bathe the feet in hot water at night, and then apply a heating compress. See article in the December number entitled "Handy Home Remedies."

Prolapsed Bowels and Floating Kidney.—Mrs. M. C. Mc G., sixty-two years old, Massachusetts, suffers from prolapsed bowels and floating kidney. She observes all the rules of hygienic reform, wears an abdominal supporter, and employs the moist abdominal bandage at night, but experiences great pain when on her feet. What further measures are advisable?

Ans.—If the abdominal supporter is not effective, a better instrument should be obtained. The bandage should be so applied that it will effectually lift the prolapsed organs into position.

Change in Finger and Toe Nails—Peas.—L. A. S., Ohio: "1. Would a change from a flesh to a vegetarian diet cause one's finger nails to be thin and his toe nails to be chalky, and crumble? 2. Does it show deficient nourishment? 3. What is the food value of green peas?"

Ans.—1. No.

2. No.

3. 19.7 per cent.

Germs in Stale Bread.—Mrs. W. T. Z., Kentucky: "In an editorial in June GOOD HEALTH you say that nearly six and a half million germs were found in slightly stale bread. Did this examination apply to sterilized bread?"

Ans.—The bread was made in the usual way. Of course when cut in slices and converted into zwieback, bread is thoroughly sterilized.

Rain Water—President Mc Kinley's Handwriting.—I. D. N., Ohio: "1. What do you think of rain water for drinking purposes? 2. What is your opinion of the idea that our President's handwriting is affected by his smoking?"

Ans.—1. It is excellent if filtered, but in no way superior to distilled water.

2. The writer is not prepared to speak authoritatively on this subject, further than to say that trembling of the hands through unsteadiness of the muscles is not an uncommon result of the habitual use of tobacco.

Professor Atwater's Experiments—Flesh Foods.—L. B. Z., Illinois: "1. What is your opinion of Professor Atwater's experiments with alcohol? 2. Is it true that the system when in a normal state requires the essential food element of meat?"

Ans.— 1. They do not prove that alcohol is a food. If the experiments made, prove that alcohol is a food and not a poison, they prove likewise that hot water is equally a food, also warm clothes. See article in the December number for a complete refutation of what Professor Atwater claims.

2. Yes, most certainly, but the essential food element of meat is not peculiar to meat; it is obtained in meat only at second hand, being derived from the vegetable kingdom. The albumin or proteids found in meat are found in a much more natural and digestible state in cereals, and especially in nuts.

Distilled Water — Lemons — Carbonate of Soda — Twitching of the Limbs.— Mrs. R. B. G., Massachusetts: "1. Will distilling remove any traces of lead which may accumulate in water passing through lead pipes? 2. Do you approve of drinking distilled water in large quantities before meals and at night? 3. Will it remove old-age tendencies? 4. Why are lemons good for rheumatism when the trouble is caused by an excess of acid? 5. Should carbonate of soda be used for acidity of the stomach? 6. Does twitching of the muscles in the feet and numbness in the extremities indicate paralysis? 7. What is a remedy?"

Ans.— 1. Yes.

2. Water drinking should not be indulged in too freely. Much harm is done by filling the stomach with water just before meals. Half a glass of hot water may be taken fifteen or twenty minutes before eating, in cases of hyperpepsia, and an equal quantity of cold water in cases of hypopepsia or slow digestion, half an hour before eating. In cases of gastric catarrh, two or three glasses of hot water may be swallowed with advantage an hour before mealtime. The same quantity may be taken at night without injury.

3. Free water drinking is an excellent means of holding old age at bay.

4. The acid of lemons does not increase the acidity of the blood. This is true of all fruit acids.

5. In cases of hyperpepsia, in which an excess of hydrochloric acid is produced, carbonate of soda may be taken with advantage, but in acidity due to fermentation it is a great injury.

6. Not necessarily, but the symptom is one which should be investigated by a competent physician. The difficulty may be due simply to neurasthenia. These symptoms are very common in nervous dyspepsia.

7. The nature of the case must be investigated, and the cause sought out and removed.

Nuts — Sanitary Still.— Mrs. H. G. W., Iowa: "1. Is a pint of black walnuts (before cracking) eaten daily injurious? 2. What is their food value? 3. Can you state the price of the sanitary still?"

Ans.— 1. No.

2. The walnut has a total nutritive value of 82.2 per cent.

3. $10, $12, $13, and $15, according to size and quality.

Predigested vs. Raw Foods.— W. S. L., Michigan: "You lay great stress on the long cooking of foods or predigested foods for all persons. How do you harmonize this with this statement in GOOD HEALTH: 'Persons have been cured of persistent dyspepsia by eating raw wheat and nothing else. Quite a number of persons have adopted the practice of living upon raw foods, and have proved its practicability'?"

Ans.— Persons eating raw wheat must of necessity masticate the berries very thoroughly, and by so doing the saliva has an opportunity to come in contact with and digest the starch. In cases where starch is taken in the form of mush, it is usually swallowed without thorough mastication, the result being that the starch is not digested by the saliva, and readily undergoes fermentation in the stomach, thereby producing dyspepsia.

Swedish Gymnastics — Starchy Foods — Wet Girdle.— H. W., Minnesota: "1. Can you name a book on Swedish gymnastics? 2. Can you recommend any compound to aid in the digestion of starchy foods? 3. Please describe the wet girdle."

Ans.— 1. Yes, "Swedish Movements or Medical Gymnastics," published by the Modern Medicine Publishing Co., Battle Creek, Mich.

2. No aid is needed. Nothing is better than saliva. It is only necessary to eat dry foods and to chew them thoroughly to obtain all the required assistance.

3. See article in the December number, "Handy Home Remedies."

Linen Underwear — Almonds — Aluminum — Bad Taste in Mouth.— Mrs. J. C. M., California: "1. Would you advise a person forty-six years old, subject to neuralgia, to wear linen next to the skin? 2. Is there any more healthful way of preparing almonds for a dyspeptic than to blanch, roast, and pulverize them? 3. Is aluminum a safe metal to cook in? 4. What causes a brassy taste in the mouth?"

Ans.— 1. Yes. Sufficient warmth may be obtained by wearing an extra woolen garment over the linen, but linen should be worn next the skin.

2. They are more readily digested if slightly cooked.

3. Yes.

4. A growth of germs upon the tongue.

To Remove Impurities from the Air.— W. W., Indiana, asks why something can not be invented to remove the impurities from air.

Ans.— Probably the best way to get rid of the impurities in the air would be to keep one's surroundings in the best possible sanitary condition, and in this way prevent the formation of impurities which may escape into the air.

Pimples — Eczema — Piles — Bad Taste in the Mouth.— Mrs. E. P. S., Illinois: "1. What diet is best for one troubled with pimples? 2. What will cure eczema? 3. What will cure piles? 4. What causes a bad taste in the mouth? 5. Why should oatmeal cause constipation?"

Ans.— 1. A diet consisting of fruits, grains, and nuts.

2. Eczema is a disorder resulting from imperfect nutrition. The best cure is the one which will improve nutrition. The above-mentioned dietary is beneficial in such cases.

3. Ichthyol is a good remedy. Sometimes surgical measures have to be resorted to.

4. Decomposition of food substances in the stomach; also decayed teeth.

5. As a rule, oatmeal is imperfectly cooked, and for this reason is a prolific source of digestive disorders.

Dilatation of the Stomach — Butter — String Beans — Corn — Flour — Buttermilk. — N. D., Kentucky: "1. How can one tell when he is cured of dilatation of the stomach? 2. Should butter be used with a meal of fruits and grains? 3. Should one having dilatation of the stomach discard string beans? 4. Which is preferable as to digestibility — succotash or string beans? 5. How long should corn on the cob be cooked? 6. Do you examine free of charge samples of flour sent you? 7. Which is preferable for one with deficient hydrochloric acid — buttermilk or lemonade?"

Ans.— 1. When the breath is pure and sweet; when the tongue is not coated; when the mind is clear, and there is a feeling of well-being.

2. It may be used.

3. Yes.

4. Succotash.

5. Half an hour.

6. No.

7. Buttermilk.

Hair Tonic.— A subscriber would like our opinion as to the value of the following hair tonic: Eight oz. eau de cologne; one ounce tinct. cantharides; one-half dram oil of rosemary; and asks if a better one can be prescribed.

Ans.— The hair tonic referred to is sometimes used with apparently good results. Cold water applied to the scalp every morning, in conjunction with thorough manipulation of the scalp, is considered one of the best tonics.

Itching of the Body.— Mrs. E. S. O., Ohio: "1. What is the cause of a distressing itching all over the body, beginning first in the head? 2. Can nervous prostration of four years' standing be the cause? Please give a remedy."

Ans.— 1. This disorder is probably due to some impairment of the digestive functions.

2. The nervous prostration is in all probability the result of some digestive disorder. The best remedy is to use such foods as will cure the digestive disorders and elevate the general tone of the system.

Granola.— B. F. S., Ohio, asks if granola, dry, as it comes from the package, is suitable for a weak stomach.

Ans.— Yes.

Professor Atwater's Opinion of Alcohol. —J. H. M., Ohio, asks our comments on the article by Professor Atwater, in *Harper's Weekly*, on the food value of alcohol.

Ans.— See article in the December number, in which Professor Atwater's statements are reviewed at length and his article very completely answered.

Sleepy Feeling in the Afternoon.—W. H. F., a proofreader in Tennessee, asks what treatment will correct a sleepy, numb feeling coming on for an hour or two every afternoon. This person is a vegetarian, sleeps well, gets some exercise, and does not use intoxicating drinks. The sleepy feeling is accompanied by an aching numbness in the lower limbs, and incapacitates him for work.

Ans.— The cause is indigestion due to disturbance of the sympathetic connected with the stomach. Fomentations over the stomach at night, followed by the moist abdominal bandage to be worn during the night, will afford relief. See article entitled "Handy Home Remedies," December number.

Banana Flour — Nuts — Flour — Sugar — Starch.— R. F., Michigan: "1. Where can banana flour be obtained? 2. Do you know of any nut food composed largely of chestnuts? 3. If so, where can it be obtained? 4. Why are roasted peanuts less digestible than boiled or steamed ones? 5. How much more gluten does Western spring-wheat flour contain than our winter wheat? 6. Is potato flour a hygienic food? 7. Where can it be obtained? 8. If cooking sugar with acid fruits converts the sugar into glucose, is not the sugar more easily digested in that form? 9. Does starch require much longer cooking than gluten?"

Ans.— 1. Address the Sanitas Nut Food Co., Battle Creek, Mich.

2. Yes, chestnut flour.

3. It can be obtained through the same company, if desired.

4. For the reason that the oil is set free, and permeates the nut so that it is in the same condition as if it had been fried in fat; besides, some portion of the nut is decomposed, producing cresylic acid.

5. From three to five per cent; in some cases, more.

6. It may be used in such a way as to be a wholesome food.

7. We are not aware that it is to be found in the market. That with which we have experimented we were obliged to have made expressly for the purpose.

8. Possibly, in some slight degree.

9. Yes.

Acid Fruits — Diet — Wheat.— L. W. W., Vermont: "1. Do acid fruits combine well with peas and beans? 2. Are beans and peas, with the best white-flour bread, and fruits, a sufficiently nourishing diet if taken in the right proportion? 3. I expectorate dark mucus, seemingly from the throat, although there is no soreness. My stomach is prolapsed, and I have been a dyspeptic for twenty years. What diet would you advise, and what causes the expectoration?"

Ans.— 1. There is no necessary incompatability, but the hulls of the peas and beans delay the food so long in the stomach that foods taken with them are likely to ferment.

2. Yes.

3. Expectoration is no doubt due to disease of the nose or nasal pharynx. The diet should be dry, thoroughly cooked grain preparations, ripe fresh or stewed fruits, and properly prepared nuts.

Peanut Butter.— W. H. M., Iowa, asks how peanuts should be prepared to make nut butter.

Ans.— They should be thoroughly cooked, then ground to a paste.

Stomach Tube — Nut Oil — Dandelion and Water Cress — Dyspepsia.— J. E. J., Vermont: "1. Can any one use a stomach tube without directions? 2. Is nut oil for constipation harmful? and is it a perfect substitute for butter? 3. What are the effects of the moderate use of common dandelion and water cress? 4. What kind of dyspepsia do the following symptoms indicate: Coated tongue; less pain after a full meal than a spare one; intense hunger at mealtime?"

Ans.— 1. No, not without considerable risk.

2. We do not recommend the use of free oil for any purpose, but it may be considered as harmless a remedy for constipation as any that could be used. It is certainly as wholesome as butter.

3. Dandelion and water cress have no nutritive value, and are not worth eating.

4. Probably moderate hyperpepsia.

Biliousness.— O. H., California, suffers from biliousness, and is troubled with a brick-dust sediment in the urine. What diet and treatment should he follow?

Ans.— See answer to C. A. C. in last number.

Olive Oil — Whole Wheat — Grain Mill — Granola — Peanuts — Quaker Oats.— E. E. H., Cuba: "1. What is the value of olive oil as an article of food? 2. Do you know of any mill for grinding grains, especially wheat, that can be operated by boys of ten or twelve years of age? Where can it be obtained? 3. Can you tell me how to make granola? 4. Will shelled peanuts keep in good condition long in this climate? 5. What is the proper way to cook oatmeal? 6. Do Quaker Oats require longer cooking than rolled oats or oatmeal? 7. If roasted peanuts are indigestible, do you condemn peanut sauce, which calls for roasted peanuts? 8. Does the Sanitas Nut Food Co. make its nut butter from roasted peanuts? 9. What is the price of the booklet, 'Natural Food Recipes'?"

Ans.— 1. It is more wholesome than animal fat, but difficult of digestion, and unnecessary, for nature provides in nuts of various sorts an ample amount of oleaginous element and in a form readily assimilable.

2. Yes; one can be obtained through the Sanitas Nut Food Co., Battle Creek, Mich.

3. Granola requires expensive machinery for its manufacture. You can make a very good substitute by toasting bread dry, and browning it thoroughly in the oven, and then grinding in a coffee mill.

4. No, not without special and careful treatment.

5. Make it into cakes, and bake in an oven.

6. Cooking is not sufficient to prepare this or any other cereal food for the human stomach.

7. We can not recommend the use of roasted peanuts in any form whatever.

8. We are informed not.

9. Ten cents.

Nervous Prostration.— A. M. D., Oregon, has nervous prostration induced by constipation. She has an abnormal craving for raw wheat flour. Is the use of such food injurious?

Ans.— Raw wheat flour is certainly not poisonous, and probably may be eaten in moderate quantity without any particular injury.

LITERARY NOTICES.

"My father was a rover from his youth," says W. J. Stillman in the January **Atlantic**, "and Saturday being his only leisure day, he used to take me with him on long walks in the woods and fields, according to the season; and the weather and the length of the day were his only limitations. In the house mother ruled, but out of it he made his own conscience, and so it happened that the only pleasures that I owe him, except the bringing me a few books when he came back from his business trips to New York to sell his machines, were these long walks in the face of nature. He was, in his family, apparently a cold, hard man, but out of it, kindly and benevolent, melting always to distress which came in his way, with a passionate love of animals and of nature. He was a poor business man, for he could never press for the payment of debts due him, and of an honesty so rigid that it became a proverb in our town that a man should 'be as honest as old Joe Stillman,' and that good name was all he gave or left his children. This was a sample of the family discipline: I was forbidden to walk with other boys when I drove the cow to pasture; forbidden to bathe in the millpond near by, except at stated times; to play with certain children; to amuse myself on the Sabbath, and other similar doings,— all to my childish apprehension harmless in themselves, and the punishment never failed to follow the discovery of the transgression. Naturally I learned to lie, a thing contrary to my inclination and nature, and a torture to my conscience, but I had not the courage to meet the flogging, or the firmness to resist temptation and the persuasion of my young companions who rejoiced in a domestic freedom of which I knew nothing. My father's severity finally brought emancipation by its excess. He used to follow me to see if I obeyed his orders, and one day when I had been persuaded by some boys of our neighborhood to go and bathe in the forbidden hours, he found me in the pond, led me home, and, cutting two tough pear-tree switches about the thickness, at the butt, of his forefinger, he took me down into the cellar, and making me strip off my jacket, broke the switches up to stumps, over my back, protected only by a cotton shirt. This was the deciding event which determined me to run away from home, which I did the next week, and though my escapade did not last beyond ten days, on my return the rod was buried." $4 a year. Houghton, Mifflin & Company, Boston.

Mrs. J. K. Hudson tells how a Mormon marries "The Third Wife," in a story by that title in the new **Lippincott** for January.

"Ranged along the wall in a solemn row sat the brother of the bridegroom, his mother, his daughter, and the mother of the bride. Clarisse's mother was but the ghost of herself of yesterday: then strong and erect and content; now trembling in her chair as if she would again fall to the floor, her appealing eyes unheeded, for her daughter had been placed so that she could not see her mother.

"Almost as quickly as the company was seated — no time being permitted for scenes, that were disliked by the head of the church — the voice of Brigham Young rang out loud and confident. Addressing the first wife, he said: 'Are you willing to give this woman to your husband to be his lawful wife for time and for all eternity? If you are, you will signify it by placing her right hand within the left hand of your husband.'

"The broken, wretched wife reached across the altar, and lifting the delicate hand of the girl with her own work-stiffened fingers, laid it in the broad outstretched palm of her husband. Thus was the plural marriage consecrated and the holy institution of Christian wedlock desecrated — in Christian America.

"Long afterward I knew that I had witnessed one of the tragedies in what was known among the Mormons as the Reformation, and among the Gentiles as the Reign of Terror." $2.50 a year. J. B. Lippincott Co., Philadelphia.

The January number of **Mc Clure's Magazine** presents something in the way of color printing surpassing anything yet achieved by magazines. In illustration of the first chapters of "The Life of the Master," by Dr. John Watson (Ian Maclaren), eight brilliant paintings by C. K. Linson are reproduced full-page, in all the colors of the originals. The titles of these paintings are "The Annunciation to Mary," "A Nazareth Street Scene," "Fountain Scene at Nazareth," "The Way up to Bethlehem," "The Flight into Egypt," "The Birthplace of John the Baptist," "Rachel's Tomb," and "Jesus Laboring at Home with Joseph and Mary." $1 a year. The S. S. Mc Clure Co., New York City.

"When Cromwell grew to manhood," says Theodore Roosevelt, in the January **Scribner's,** "he was a Puritan of the best type, of the type of Hampden and Milton; sincere, earnest, resolute to do good as he saw it, more liberal than most of his

fellow religionists, and saved from their worst eccentricities by his hard common sense, but not untouched by their gloom, and sharing something of their narrowness. Entering Parliament thus equipped, he could not fail to be most drawn to the religious side of the struggle. He soon made himself prominent; a harsh-featured, red-faced, powerfully built man, whose dress appeared slovenly in the eyes of the courtiers; who was no orator, but whose great power soon began to impress friends and enemies alike." $3 a year. Charles Scribner's Sons, New York.

From the literary point of view, the leading feature of the January magazine number of the **Outlook** is the first installment of Mr. Hamilton W. Mabie's "William Shakespeare: Poet, Dramatist, and Man." In this series of articles, which will extend throughout the year in the monthly magazine numbers, Mr. Mabie will offer, not a formal biography, but an attempt to realize the poet and dramatist as a great Englishman, to approach him through the atmosphere of his own age, to set him distinctly in his own time, to bring about him his brilliant contemporaries, and to exhibit him as a typical man in a great epoch. The first installment deals with "The Forerunners of Shakespeare," and is illustrated with portraits, curious representations of the ancient street pageants, miracle plays, and dumb shows. For the entire series there has been gathered a great mass of illustrative material of value and beauty. $3 a year. The Outlook Company, New York.

In view of the widely discussed question, When does the twentieth century begin? it may be interesting to note a communication in the **Inland Printer** from Prof. W. H. M. Christie, Astronomer Royal, of England, in which he says, "I beg to inform you that the twentieth century begins on Jan. 1, 1901. It has been generally agreed to call the first year of the Christian era Anno Domini 1, not A. D. 0, and consequently the second century began with A. D. 101, one hundred years after the beginning of the first year, and so on for the succeeding centuries."

The frontispiece in this issue is especially fine — a study in sheep. The *Inland Printer* is the leading journal of the world in printing and allied industries. $2 a year. The Inland Printer Company, Chicago.

A very interesting article on "Wagner's Personality," by Gustav Kobbé, will be found in the January **Forum.** The striking characteristics of the great composer are clearly set forth by the author. As there is to be a great revival of Wagner's operas and music-dramas this season, Mr. Kobbé has assumed the pleasant task of describing the personality of this man; thinking that a description would be of great interest, especially as Wagner's character has been much misunderstood. The master mind, the restless energy, the many lovable traits, and the great physical as well as mental activity of Wagner are the fundamentals used in this article, which gives a concise delineation of his personal character. $3 a year. New York.

"La Lettre d'Amour" is one of the best love stories Richard Harding Davis has written. The scene is laid in London, and the characters are a beautiful American girl, her mother, a wealthy young Harvard man, and a violinist of the Hungarian Orchestra. The illustrations are by Howard Chandler Christy. "La Lettre d'Amour" is the leading story in the midwinter fiction number of **The Saturday Evening Post.** $2.50 a year. Philadelphia.

Good Housekeeping begins the new year with a change in its cover design. The frontispiece is a strong one, used in connection with the short story, "The Knuckling Down of Mrs. Gamble," a tale of domestic trouble and reconciliation. In "Home in Its Relation to Business," Hezekiah Butterworth pays a high tribute to wives and mothers and to them attributes the success of most business men. Among other articles are "Etching on Wood or Leather," "Domestic Appliances as Personally Observed in Foreign Lands," "The Best Way in Doing all Manner of Things about the House," "The Management of an Income," and a character sketch of Elizabeth Palmer Peabody. Besides these there are the departments so welcome every month to the busy housekeeper. $1 a year. Springfield, Mass.

Pamphlets Received.

"A Review of the History and Literature of Appendicitis." George M. Edebohls, A. M., M. D., New York.

"Observations and Reflections on Abdominal Surgery." Prof. A. C. Bernays, St. Louis, Mo.

PUBLISHERS' DEPARTMENT.

WE have already received orders for 65,000 copies of the midwinter number of GOOD HEALTH, and the publishing of a second edition is contemplated.

DURING the holiday week a Workers' Convention was held at Davenport, Iowa, the delegates being health missionaries who are at present actively engaged in the sale of health literature and the organization of Schools of Health in that section of the country. There were a large number of workers in attendance, and the Convention throughout proved a very profitable and pleasant occasion. Speakers were present from Battle Creek, and as plans and methods for carrying on the health work were fully discussed, we anticipate a great work in that locality during the year. The Convention was in session one week, the meetings being held in the convenient and commodious building known as the Industrial Home.

We feel that our hearty thanks are indeed due the people of Davenport, both as a city and as individuals, for the kind reception they gave our workers and their generous hospitality during the entire Convention. The courtesy and kindness on the part of the merchants of the city, in allowing us the use of cooking utensils, dishes, etc., with practically no charge, evinces the interest and good will of the Iowa people toward our educational work as it is carried on in that State.

WE were pleased to find the following tribute to one of our new health foods in that wideawake and enthusiastic English journal, the *Vegetarian* : —

AN ACHING VOID.

To the Editor of the Vegetarian.

DEAR SIR : All vegetarians must rejoice at the appearance of Protose upon the scene. That substantial, meat-flavored article supplies a long felt want. Apart from any condiment, save the pinch of harmless and necessary salt, it makes most tasty sandwiches. In passing, perhaps I may be allowed to remark, with regard to condiments in general, that it appears somewhat inconsistent for vegetarians to use them, for do we not pride ourselves

upon keeping both palate and stomach pure and unvitiated by stimulating or, in other words, irritating substances?

But my object in writing is not to descant upon successes already achieved in the food line, but to cry, like the horse-leech's daughter, "Give! give!" Would that the inventor of beloved Protose might be inspired to produce something containing the *fish* flavor. Surely from his inner consciousness he could evolve something of the sort, and so fill up the aching void which some of us experience. Alas! my own unregenerate nature cries aloud, only too often, for the dried, even the common or breakfast haddock, and — shall I confess it? — likewise for the yet more homely kipper.

Why, oh, why, in the name of all that is appetizing, can not this delicacy be conjured up from the vasty deep of somebody's ingenuity? As the flavor of these is the result of a simple process of salting and exposure to wood or peat smoke, surely the thing could be managed.

Yours in trembling hope,
RUTH MILLS.

DURING the next two months it is expected that Schools of Health will be held in Davenport, Burlington, and Cedar Rapids, Iowa, and in Rock Island, Moline, Aledo, and Geneseo, Ill. Some of these schools are already well organized, and work will soon be started in the other cities mentioned. A corps of competent instructors under the supervision of Dr. Abbie M. Winegar, of the Battle Creek Sanitarium, insure an interesting and profitable occasion.

IT would improve many people to have a little of Dr. Abernethy's liking for sparing speech. It would please him when a patient or other person refrained from talking when the person had nothing to say, or, having something to say, would say it shortly.

One day a woman entered his consulting room, and, without saying "Good morning," showed him the first finger of her left hand. The following conversation took place:—

"Cut?"

"Bite."

"Dog?"

"Parrot."

"Bread poultice." So ended the first conversation. On the second visit the patient, without uttering a syllable, lifted up the sore finger, which was the signal for the following dialogue: —

"Better?"

"Worse."

"Linseed poultice."

On a third visit, it was simply: —

"Better?"

"Well."

But when the woman was about to pay the doctor, he burst out: "Fee? Not for the world. You are the most sensible woman. You don't speak. Adieu."— *Exchange.*

IS A SMALL WAIST BEAUTIFUL?

This
is the
shape of
a woman's waist
on which a corset tight
is laced. The ribs, deformed
by being squeezed, press
on the lungs till they 're
diseased. The heart
is jammed and
can not pump;
the liver
is a
tor-
pid lump;
the stomach,
crushed, can not
digest, and in a mess
are all compressed. Therefore this silly woman grows to
be a fearful mass of woes,
but thinks she has a lovely
shape, though hideous
as a crippled ape.

This is
a woman's
natural waist,
which corset tight
has not disgraced. Inside
it is a mine of health. Outside,
of charms it has a wealth.
It is a thing of beauty
true, and a sweet joy
forever new. It
needs no artful
padding vile,
or bustle big to
give it "style."
It 's strong and solid,
plump and sound, and
shows a mind that 's "all
around." Alas! If women
only knew the mischief that
tight corsets do, they 'd let
Dame Nature have her
ease, and never try her
waist to squeeze.

— *Sel.*

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BATTLE CREEK SANITARIUM, Battle Creek, Mich.
J. H. KELLOGG, M. D., SUPERINTENDENT.

COLORADO SANITARIUM, Boulder, Colo.
W. H. RILEY, M. D., SUPERINTENDENT.

St. HELENA SANITARIUM, or RURAL HEALTH RETREAT, St. Helena, Cal.
A. J. SANDERSON, M. D., SUPERINTENDENT.

NEBRASKA SANITARIUM, College View (Lincoln), Neb.
A. N. LOPER, M. D., SUPERINTENDENT.

PORTLAND SANITARIUM, 1st and Montgomery Sts., Portland, Ore.
W. R. SIMMONS, M. D., SUPERINTENDENT.

NEW ENGLAND SANITARIUM, South Lancaster, Mass.
C. C. NICOLA, M. D., SUPERINTENDENT.

CHICAGO BRANCH SANITARIUM, 28 33d Place, Chicago, Ill.

SANITARIUM TREATMENT ROOMS, 230 Euclid Avenue, Cleveland, Ohio.
A. W. HERR, M. D., SUPERINTENDENT.

HONOLULU SANITARIUM, Hawaiian Islands.

MEDICAL AND SURGICAL SANITARIUM, Apartado 138, Guadalajara, State of Jalisco, Mexico.
D. T. JONES, SUPERINTENDENT

INSTITUT SANITAIRE, Basle, Switzerland.

CLAREMONT SANITARIUM, Cape Town, South Africa.

SKODSBORG SANITARIUM, Skodsborg, Denmark,

FREDRICKSHAVN SANITARIUM, Fredrickshavn, Denmark.

SOUTH SEA ISLANDS SANITARIUM, Apia, Samoa.

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W. G. NEIMYER, General Western Agent, 238 Clark Street, Chicago.
EDWIN HAWLEY, Assistant General Traffic Manager, 349 Broadway, New York.
W. H. CONNOR, Com'l Agent, Chamber Commerce Bldg., Cincinnati, Ohio.
W. J. BERG, Trav. Pass. Agent, 220 Ellicott Square, Buffalo, N. Y.

GRAND TRUNK RAILWAY SYSTEM.

Time Card in Effect Nov. 19, 1899.

C. & G. T. DIVISION.

WEST-BOUND FROM BATTLE CREEK.

No. 9. Mail and Express, to Chicago..... 12.15 P. M.
No. 1, Chicago Express, to Chicago..... 9.00 A. M.
No. 3, Lehigh Valley Express, to Chicago... 3.40 P. M.
No. 5, Pacific Exp., to Chicago, with sleeper 1.10 A. M.
No. 75, Mixed, to South Bend..... 8.20 A. M.
Nos. 9 and 75, daily, except Sunday.
Nos. 1, 3, and 5, daily.

EAST-BOUND FROM BATTLE CREEK.

No. 8, Mail and Express, to Pt. Huron, East, and Detroit..... 3.45 P. M.
No. 4, Lehigh Express, to Pt. Huron and East 8.27 P. M
No. 6, Atlantic Express, to Pt. Huron, East, and Detroit..... 2.25 A. M.
No. 2, Lehigh Express, to Saginaw, Bay City, Port Huron, and East..... 6.50 A. M.
No. 74, Mixed, to Durand (starts at Nichols yards)..... 7.15 A. M
Nos. 8 and 74, daily, except Sunday.
Nos. 4, 6, and 2, daily.

A. S. PARKER, Ticket Agent,
BATTLE CREEK.

The Cincinnati Northern Railroad Co.

TIME TABLE NO. 3.

IN EFFECT SEPT. 24, 1899.

Trains Pass Battle Creek as follows:

WEST-BOUND.

No. 21, Mail and Express..... 6.58 P. M.
No. 23, Accommodation..... 2.07 P. M.
No. 27, Local Freight..... 8.25 A. M.

EAST-BOUND.

No. 22, Mail and Express..... 8.25 A. M.
No 24, Accommodation..... 1.45 P. M.
No. 28, Local Freight..... 5.30 P. M.

Direct connections are made at Toledo with all roads diverging. Close connections for Detroit and Cincinnati.

J. L. READE,
Ticket Agt., Battle Creek.

E. R. SMITH, City Pass. Agt., 6 West Main St.

MICHIGAN CENTRAL

"The Niagara Falls Route."

Corrected Nov. 19, 1899.

EAST	8 *Night Express	12 †Detr'it Accom.	6 †Mail & Express	10 *N.Y & Bos. Sp.	14 *East'n Express	20 *J'n Accm.	36 *All'n Express
Chicago	pm 9.35		a m 6.45	am 10.30	pm 3.00		pm 11.3
Michigan City	11.25		8.43	pm 12.08	4.40		am 1.2
Niles	am 12.40		10.15	1.00	5.37		2.3
Kalamazoo	2.10	am 7.30	pm 12.10	2.08	6.52	ps6.00	4.1
Battle Creek	3.00	8.10	1.00	2.42	7.28	6.45	5.0
Marshall		8.38	1.30	3.09	7.51	7.10	5.3
Albion	3.50	8.57	1.50	3.30	8.11	7.30	5.5
Jackson	4.40	10.05	2.35	4.05	8.50	8.15	6.4
Ann Arbor	5.55	11.10	3.47	4.58	9.48		7.4
Detroit	7.15	pm 12.25	5.30	6.00	10.45		9.1
Falls View					am 5.02		pm 4.1
Suspension Bridge					5.17		4.3
Niagara Falls					5.30		4.4
Buffalo				am 12.20	6.14		5.3
Rochester				3.13	9.50		8.4
Syracuse				5.15	11.50		10.4
Albany				9.05	pm 4.15		am 2.5
New York				pm 1.30	8.15		7.0
Springfield				12.16	6.19		7.4
Boston				9.00	9.05		10.3

WEST	7 *Night Express	18 *NY Bo. & Ch.Sp	3 †Mail & Express	5 * News Express	23 *W'st'n Express	13 †Kal. Ac'n.	37 *Pacif Express
Boston		am 10.30			pm 8.00		pm 6.0
New York		pm 1.00			6.00		am 12.1
Syracuse		6.10			am 2.00		pm 12.2
Rochester		10.00			4.05		2.2
Buffalo		am 12.05			5.20		3.5
Niagara Falls					6.02		4.3
Falls View					6.34	pm	5.0
Detroit	pm 8.20	am 7.20	am 8.25		pm 12.40	4.35	11.2
Ann Arbor	9.43	8.18	9.40		1.38	5.45	am 12.3
Jackson	11.15	9.20	11.05	am 3.30	2.40	7.30	1.3
Battle Creek	am 12.40	10.30	pm 12.25	4.35	3.50	9.08	3.0
Kalamazoo	1.40	11.05	1.20	5.15	4.28	10.00	3.5
Niles	3.15	pm 12.22	2.55		6.05		5.0
Michigan City	4.20	1.20	4.10		7.05		6.0
Chicago	6.30	3.00	6.05		8.55		7.0

* Daily. † Daily except Sunday.

Trains on Battle Creek Division depart at 8.05 a. m. and 4.10 p. m., and arrive at 12.40 p. m. and 6.10 p. m. Daily except Sunday.

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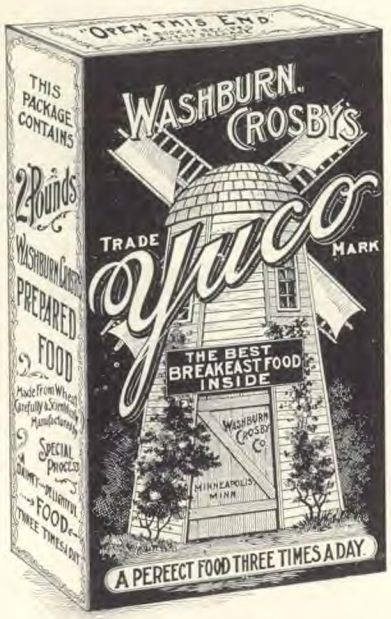

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