

GOOD HEALTH

A Journal of Hygiene.

VOL. XXXIV.

JUNE 1899.

No. 6.

THE NATURAL LAW FOR LIVING THINGS.

BY J. H. KELLOGG, M. D.

HEALTHY life, whether plant or animal, demands activity and light. Exercise is one of the essential conditions of growth. All living things take exercise. The tiny plant pushes through the soil, and gains strength thereby. The rosebud steadily unfolds its petals, and when it ceases to exercise, it begins to die. The leaves of the trees follow the sun all day. At night their faces are set toward the west, but in the morning they turn again to the east to greet his rising.

Have you ever seen a great tree on the mountainside where a landslide has carried away the earth? Have you noticed that the part of the tree growing under ground is larger than that above? that the mass of roots is greater than trunk, branches, foliage,—all together? Have you ever thought that the reason the tree growing on the mountainside has such a prodigious mass of roots is because it swings back and forth with a tremendous leverage that would tear it out of the earth if it did not keep thrusting its roots deeper and deeper into the soil, thus enabling it to hold its position against wind and storm? In consequence of this vigorous exercise such trees have harder and firmer wood than do those that grow in the protected valley. Trees crowded close in the forest where they have little opportunity for exercise grow up tall and slen-

der, with few branches and roots, and are sickly and unhealthy, like the inhabitants of densely populated tenement houses in the large cities.

Every one knows that the lower animals, the ordinary brute creation, live and thrive by exercise. Shut up the dog, and he grows lazy and dull. Deprive the bird of its freedom, and it pines away.

The stagnant pool shows the result of lack of exercise. The water of the brook running down the mountainside is clear and pure; there is nothing offensive about it. The same water, when it reaches the plain and is collected in pools, becomes covered with slime, and full of filth.

The very same thing is true of human beings. It has been said that a man is simply a stream of matter flowing through a certain form. The body is the cast or mold, if you please, and the food we eat, the air we breathe, the water we drink, constitute the stream that is constantly flowing through this mold. If this stream is kept pure and active, if it is well mixed with air, it will be clean and wholesome. But if, like the stagnant pool, it becomes sluggish and inactive, it will be impure and offensive.

The body is made of what we eat. One eats, we may say, his own weight every month; that is, a mass of matter equal

to the entire weight of the body passes through it every month. Three fourths of a pound of solid carbon is cast off through the lungs every twenty-four hours. Several ounces pass off through other channels,—through the kidneys and the skin. If this constant inflow and outflow of matter is maintained according to the laws of nature, if it is kept steady and pure, the stream remains clear and pure, the body is kept well and strong.

Exercise is one of the most important means by which this stream of the body is kept in constant activity. The stream is accelerated by making the muscles work. Exercise stimulates the appetite, and hence increases the inflow of the stream. Muscular work tears down the tissues and increases the outflow of matter. Exercise has an important effect upon the heart. When one is lying down quietly, the average pulse-rate is about sixty a minute; when sitting up, it is from sixty-five to sixty-eight; when standing, from seventy-two to seventy-five; when walking at a moderate pace, it is increased to from eighty to eighty-five; when running, it averages about double the ordinary rate. But this increase of heart-beat is not simply an increase in the number of beats a minute; there is also an increase in vigor. Exercise makes the heart beat not only more rapidly, but more forcibly. More blood is sent out through the veins and arteries. In order to do its work in the body, it must pass through the lungs, and here it is purified by taking in oxygen from the air. So we find that exercise not only stimulates the heart-rate, but increases the activity of the lungs as well. When the lungs are excited by muscular activity of any kind, one takes in a much larger amount of air. When running, the amount of oxygen absorbed by the body is seven times as great as when one is lying on his back and breathing normally.

Hence it is evident that exercise is one of the most important means by which the body can be changed, because oxygen is the great vitalizing element in maintaining the activity and vigor of the body. The more oxygen taken into the blood, the more life there will be in the body; the more oxygen that gets into the stomach, the better the gastric juice; the more oxygen that finds its way to the liver, the more cheerful the man's outlook upon the world; the more oxygen that is carried to the brain, the more mental work can be done by that organ.

Let us compare for a moment the frog with the bird. The frog finds his natural environment in the dirty pond, because his life is on a very low level. He has a very small pair of lungs. He has no chest, no diaphragm, no breast-bone. The only way he can get air into his lungs is by swallowing it as we swallow water. The frog comes to the top of the pond, sticks out his nose, swells out his throat, and you see a little winking movement at the ends of his nostrils; these are the little valves which he uses in swallowing the air. A mouthful of air will last him half an hour. He is just fitted to live in the mud, to sit on a log and croak dolefully.

But the bird. Think what an enormous chest it has compared with the rest of its body; and its great chest is filled with a splendid pair of lungs. Even this is not enough breathing capacity for the bird, and so its bones are made hollow, and these hollow bones are all in communication with its lungs so that when the bird breathes, its whole body is filled with air; hence the bird can keep up with the fast express-train. Some birds can fly one hundred and twenty miles an hour.

The bird lives above smoke and miasma. He soars to the mountain top, and sings his song to greet the rising sun. But the frog simply croaks away among the shad-



OLD MOKI WOMAN MAKING A BASKET.

ows. If you wish to live the bird's life, you must breathe like the bird,—expand your lungs, fill your whole being with God's pure air. Then you can climb to the mountain top, and enjoy the warm sunlight of each new day. But if you breathe like the frog, you can not rise above a low, dark plane.

Why are so many people depressed and low-spirited, troubled with the "vapors," given to seeing nothing but the dark side of

life?—Because their whole bodies are full of organic dirt. Eyes, skin, brain, glands, every organ and part of the body is saturated with organic dirt. The only way to get it out is to breathe, to make the whole body breathe. Go out of doors, take deep inspirations of Heaven's own tonic, walk, run, tramp through the woods and the fields, and learn the natural law for all living creatures from the one great Master of physical culture.

THE INDUSTRIES OF THE NAVAJOS AND THE MOKIS.

BY GEORGE WHARTON JAMES.

SIDE by side in northern Arizona are the two reservations set apart by the United States government for the Navajos and the Mokis. The former are nomads—people of no settled homes; the latter are "pueblos"—home-lovers, home-builders; settled and, in a measure, civilized. New Mexico and Arizona alone, in the United States, have formed the home of these Pueblo people. Along the Rio Grande are the most settlements. Farther west, in New Mexico, are Laguna, Acoma, the Seven Villages of the Zuni, and, in Arizona, the Seven Villages of the Mokis. It is of these latter and their neighbors, the Navajos, that this article will treat.

The Navajos have a large reservation, but only a small proportion of it is suitable for agricultural purposes. Hence the Navajo prefers horse and sheep raising to agriculture. Wool is a commodity of fluctuating value, so, of late years, the more intelligent of the Navajos have preferred to convert their crude wool into blankets of their own style, pattern, design, and weave. Centuries before the Spaniards came into this region the Pueblo Indians had been growing cotton, and making textures of it; and there is no

doubt but the Navajo early learned the art from his neighbor. The Spaniard brought the sheep, three hundred and fifty-five years ago, to the Pueblo Indians; and though, in early years, the thieving Navajo might have found great difficulty in proving legitimate ownership of the flock of sheep he claimed as his own, time kindly threw a veil over his doubtful acquisitions, so that now he is openly and boastingly a large sheep owner. In driving over his solitary reservation,—solitary because he is so shy that you seldom meet him on any regular thoroughfare of travel,—the tedium is often relieved by meeting a large flock of sheep, generally tended by a shy lad of tender years, swarthy and active, with long, flowing black hair, kept in place over his forehead by a high-colored banda, and wearing the white calico shirt and trousers which his ancestors learned how to make from the Spaniards.

When shearing time comes, the head of the household goes out, and deftly robs his flocks of their wool. Then he or one of his spouses—for he is invariably a polygamist—cleans the wool, cards and dyes it, and then spins it ready for the loom. Sometimes the spinning is done



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A NAVAJO HOGAN, BLUE CANYON, ARIZ.

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before the dyeing, generally after. The only machinery for spinning the wool consists of a smooth, straight stick, on about the middle of which a flat wooden disk is fixed. This helps to steady its revolutions. The spinner, squatted on the ground, with wool at his feet and the stick in his right hand, feeds the wool with his left hand, and with the easiest, deftest motion spins the stick on his right knee, pulling the staple out at the same time, until it is twisted to his liking. Then, in a moment, the twisted yarn is wound upon the stick below the disk, and the process repeated until the stick is full. The wad of yarn is then slipped off the stick, and more spun on. Now the warp for the blanket must be prepared. This is generally of cotton, the threads prepared in the same way as the wool before described.

The weaving, among the Navajos, is always done by a woman, and her loom is the most primitive kind in existence. With four poles cut from the cottonwood trees that line the streams of her sandy country, two stout, forked uprights, and a few other lesser sticks, she is ready to go to work. The uprights are placed in position, and upon two of the poles the warp is fixed. Then to the top and bottom of the uprights the two other poles are affixed with thongs of rawhide. It is now an easy task to take the upper and lower yarn beams and lash them, with horsehair ropes or rawhide, to the frame already prepared. Then the loom is ready for the nimble fingers of the weaver. But where is her shuttle? and whence gains she her pattern? The former is composed of a plain, simple stick, and the latter is mapped out in her clear, active brain. No two designs are alike; they vary according to the individuality of the weaver, and the circumstances in which she finds herself at the time of her weaving. Few people can realize, even when

told, how much there is to a Navajo blanket of direct and peculiar interest to its maker at the time of its manufacture. As I once wrote:—

“The tendency toward mythologic symbolism seems to be instinctive with the Navajos. Apparently, from their earliest condition their decorations have always shown this bent. The designs in their textile fabrics suggest their derivation from basketry ornamentation, as the angular, curveless forms inherent in the process of depicting figures by interlying plaits are predominant; and the principal subjects are conventional devices representing clouds, stars, lightning, the rainbow, and emblems of the deities. But these simple forms are produced in endless combination, and often in brilliant kaleidoscopic grouping, presenting broad effects of scarlet and black, of green, yellow, and blue,—a wide range of color skilfully blended upon a ground of white. But the greatest charm of these Navajo fabrics is the unrestrained freedom shown by the weaver in her treatment of primitive conventions. To the checked emblem of the rainbow she adds sweeping rays of color typifying sunbeams; below the many-angled cloud group she inserts random pencil lines of rain; or she softens the rigid meander signifying lightning with graceful interlacing and shaded tints. Not confining herself alone to these traditional devices, she invents her own method of introducing curious, realistic figures of common objects,—her wooden weaving-fork, a bow and arrows. None of the larger designs are ever reproduced. Each fabric carries some distinct variation, some suggestion of the occasion of its making, woven into form as the fancy arose.”

Lately I have secured some most interesting blankets which illustrate this “weaving by suggestion.” One shows a railway train, with engine, headlight, smoke-stack, tender, and cars all well rep-



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MOKI BLANKET WEAVER.

resented. Above this are flying birds, and below, a freight-train, in which are the figures of cattle. The weaver was living in her "hogan" by the side of the railway when she wove this blanket, and when I asked her the meaning of the design, she said she had merely worked into her blanket the passing trains and the birds that flew overhead as the trains went by. Another shows the same influence of the trains, with a rain-storm, in which lightning played an active part at the time the blanket was being woven.

With the Mokis the men are the weavers, and their looms are generally found inside their dwellings, or sacred *kivas*. The patterns of the Moki blankets are much more simple than those of the Navajo. A Moki rarely introduces anything but the stripe, the cross, and a simple fret or zigzag. But for their ceremonies they weave an excellent cotton fabric, and skilfully embroider it in green,

black, and red in a complex and tasteful design.

The pottery of the Navajos and Mokis, while differing in appearance, is made in the same manner. The former people, however, have but few designs, to which they rigidly adhere, while the latter people make *ollas* of all sizes, bowls, cups, saucers, ladles, bottles, water-bottles, and various other utensils, for use at home and in the field, besides quite a variety of useful domestic utensils.

The work is all done by the women. When the clay is properly kneaded, or "puddled," the potter squats on the ground with her dish of

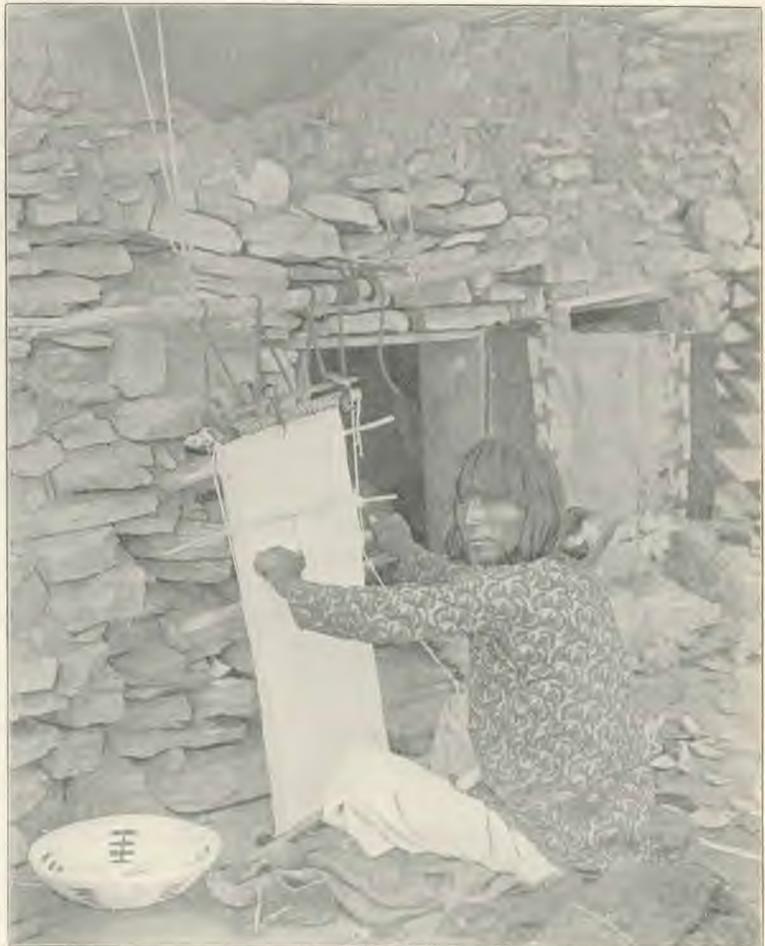
clay, a bowl of water, a flat or saucer-shaped basket, and a small "spatula" made of stone or bone at her side, and a large flat stone before her. On this stone she rolls out a piece of clay until it is of the length and thickness required. Then she coils it around and around, using the basket as a base, making the size large or small as she desires. The coils are pinched together as they are added one to another, and smoothed out by the dexterous manipulation of the fingers and the spatula, which are moistened to prevent the sticking of the clay. With each added length of clay, the olla, or bowl, is smoothed out to the shape required, and when the time comes to narrow in the vessel at the top, the care and skill required will be manifest. The shape is perfectly and accurately proportioned without calipers, foot rules, or any other standard of measurement than the eye and hand of the potter.

Now the vessel is shaped, but it must be dried, painted, and baked before it is ready for use. A few days in the hot sun accomplish the necessary drying. Then with her tiny paint mortars (in which the colors have been pounded, ground, and well mixed with some simple and natural mordant) the potter begins the work of decoration. The designs vary as much as individual tastes and abilities can make them. Some work is artistically designed and painted, and some is wretched both in design and execution. In the whole of Moki there is no potter equal to Nampeo, who, however, lives at the Tewa town of Hano, on the first mesa, and is herself not a Moki but a Tewan. In my small collection I have several fine pieces of her work, one of which, a very large olla, is skilfully painted in designs after the masks of their *katchinas*, or lesser divinities, which in later articles I hope to describe. For brushes these primitive artists use horse and goat hair and also the fibers that they peel from the leaf of the amole, a species of yucca.

When a sufficient quantity of pottery is painted to justify

it, a large fire is built near the sheep, goat, or burro corrals (or pens), which have been robbed of their closely compacted dung. This dung constitutes the fuel, for it has the properties of burning slowly, and of giving out a moderate and steady heat with little or no smoke, so there is no danger of cracking with too quick burning, or smutting with the smoke.

After the fire has been burning for a little while, and a reasonable amount of heat is generated, the pottery is carefully placed in the fire, partially covered with more "chips," and allowed to remain until thoroughly baked.



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The finished articles are now used by the household for holding flour, beans, corn, or other edibles, and water; and one of the "oriental" sights of an Arizona or New Mexico pueblo is to see one woman, or a dozen, carrying an olla filled with water, delicately and gracefully poised on the head.

From the pottery dug up in the ancient mounds, ruins, cliff- and cave-dwellings of this southwest region, it is apparent that the Pueblo people have not improved in their manufacture of pottery. Some of the prehistoric ware is better shaped, lighter, and more artistically decorated than any made to-day, and happy is that collector who is fortunate enough to be able to add a few pieces of this old ware to his cabinet.

The Mokis are also skilful basket makers. In six of the seven villages, one kind of basket is made, while another kind is made only at the seventh. The accompanying engraving shows my friend Kuch-ye-amp-se making a basket of the common type. She is the best maker of the tribe, and I have known one of her baskets to sell for as high as thirty dollars. The interior of the "rolls" of which these baskets are made is a native grass, called *wii-shi*. The wrapping for this grass is composed of strips taken from the leaf of the amole, or soap-weed yucca, dyed according to the fancy of the basket maker, then wrapped in such a way as to produce the design already fixed in her mind.



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KUCH-YE-AMP-SE MAKING BASKETS.

The basket is not made, as so many people suppose, by first wrapping a long roll and then coiling it up, layer above layer, but each roll is made and fastened to the one preceding it by threading the warp of the new coil to the one below. For this purpose a small awl is used, generally made from the thigh-bone of a jack-rabbit.

These baskets are made into a variety of shapes, the prevailing ones being flat plaques and cylindrical baskets, most of which are provided with a lid and a handle.

The other style of Moki basket is made of willow, dyed in high colors, and woven into most striking, effective, and often dazzling designs. These are made solely at the village of Oraibi, or at its agricultural offshoot, the tiny settlement on the Molucopil Wash. Baskets of both styles, as well as those made by Piutes and Yava Supais, are used by the Mokis in their many religious ceremonials and dances. I had almost overlooked the fact that the Mokis do make a third style of basket of yucca fibers. These are very coarse and crudely made, but answer the purpose for which they are designed; viz., to carry corn on the cob or other large substances. The old woman, pictured in our frontispiece, is making one of these baskets.

A singular fact about the more common baskets and plaques, those made of grass and amole, is that one versed in their signs can tell whether the individual basket under consideration was made by a virgin, a married woman with or without children, or a widow.

Of the symbolism of the designs of both baskets and blankets I should like to write



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ORAIBI BASKET MAKER.

at length, but in the limits of such an article as this, that is impossible. Suffice it to say that all the designs mean something, as I have already shown in the case of the blankets. In the baskets can be found

the conventionalized bird, the human face, the rain-clouds, the concave of the sky, the descending rain, the lightning, the waving contour of the mountains, the sun, the moon in all her phases, the Milky Way, the stars, with a thousand and one things little dreamed of by those who simply see in them designs, crude or otherwise, made by "rude, ignorant, and brutal savages." Eyes, indeed, have such as these, but "they see not," and ears have they, "but they hear not." It is only when one, in the spirit of loving investigation, seeks to know the inner life of the so-called savage that he finds therein a poetry, a conception of beauty, a recognition of the powers of nature and of "those above" that is humanizing, ele-

vating, and refining, as well as interesting and instructive. And this brings the truly religious heart into a closer knowledge of God as the universal Father, and makes us know more fully that man—all men—is our brother. Until these articles of our so-called beliefs become living realities to us, the true progress of the world will be retarded.

Other industries of the Mokis are largely connected with their religious life; as, for instance, the manufacture of *bahos*, or prayer-sticks, and of *kacina* dolls for teaching their children the characters and attributes of their totemic divinities. Of these *bahos* and dolls I shall speak in later articles.

SHALL THE TRUTH BE TAUGHT?

BY KATHERINE LOUISE SMITH.

WHAT is needed to improve the education of our children?" asked Napoleon. "Mothers," was the reply. To which he answered, "That will comprise an educational system in itself."

How can we accomplish this? how can we improve our education, and hence the race? It is a problem that confronts us daily, yet with the inconsistency of beings who know yet will not admit that knowledge, we deliberately turn our backs to it. Only by the education of the young to the recognition of the higher selfhood which is the very law of life can we realize this education. Let them know themselves physiologically. Let them know the science of correct living, creative life, heredity, prenatal culture, all that tends to the cultivation of a higher manhood and womanhood. We are particular to educate our young in the higher mathematics, in the dead languages, in science and art, but at the essentials of a divine selfhood,

which can come only from a knowledge of correct living, we draw the line. This last most important thing of all is left to chance knowledge picked up anywhere.

We should regard the body as the temple of God, and perfection of body and soul should be cultivated within. Side by side with social economy this should be put.

At fourteen, the critical age of the youth, the Persians gave their young nobles the four best masters they could find. One of them taught temperance, including the mastery of sensual temptations.

Our children are not born as they should be. Are they to blame for this? There is a duty we owe our children long before they enter the world.

Is it possible to educate the unborn child? Prenatal culture answers, "Yes." Do mothers as a class know this? Are girls taught of motherhood and the influences that bear upon that state? — No, a

thousand times, no; yet the very things of which we keep our girls in ignorance are of momentous importance not alone to them, but to their children yet to be. How to give each child that most sacred of birthrights, the right to be well born, should be the problem of the age. That attended to, many of the other problems would adjust themselves. Mankind is ever careful in regard to the breeding of animals according to the natural laws of life, but scorns the knowledge of his own flesh and blood. Is the girl who cramps in her waist often taught that she is injuring not herself alone but her chances of motherhood? Is it often said to her, "Not you alone will be deformed, but your child may be stunted; perhaps you will not even have the power to create a human being"? Is the young man taught that his drinking and dissipation may injure not himself alone but his yet unborn child also? Alas, these are facts that the higher education should but does not reveal.

Are girls taught that they may some time become the dwelling of a human soul, and how they must care for their bodies as well as their minds? The education of to-day does not mention this. It is a subject tabooed as if unclean. Of all knowledge needed by women, the scientific knowledge of herself, her motherly functions and duties, has been systematically withheld. In the language of a prominent kindergartner, "In all branches of education she may be learned, but the woman who enters the home of her coming child, as a rule, knows nothing of preparation or instruction for the most difficult office of motherhood." Intelligent teachers tell us that a girl's training should comprise physiology, hygiene, psychology, pedagogics, and ethics. Let us add to this the physiology of common sense, the knowledge of self. This should be a part of every educational system, and no girl should enter womanhood, no boy

should enter manhood, without a correct idea of the gifts that comprise that individuality of womanhood and manhood, those God-given gifts which are of the holiest in either sex. In the words of an eminent physician, "How shall we adjust the man animal to the man moral, intellectual, and spiritual?" The answer which the coming age will bring can not help but be, "Intelligence." Intelligence will solve many problems. It is through enlightened motherhood that men and women will both be bettered. How can we have this betterment without preparation? So also we need unity in parenthood to perfect the human race. What we want is an education that presents more than mere pedagogics; we need an education that teaches common sense, and a practical, ethical Christianity.

How many of our criminals, inebriates, and degenerates are congenital imbeciles? It is to avoid such evils that boys and girls should be instructed in the laws of their being, should know that there are laws of heredity and prenatal influence.

Do the average boy and girl know that the offspring of marriages where one or both parents are drunkards, are frequently epileptics? Are these things put forcibly before them? With a stubbornness that is so terrible in its results that one would think the very stones would cry out, we let our boys and girls remain in ignorance of the highest functions of their being, and through this ignorance often combined with injudicious marriages we let them bring misery upon themselves and thrust upon the world a race of illy bred, haphazard children, weak in mind and body. During this whole process we congratulate ourselves upon the fact that our children are so innocent! Innocence is not ignorance. Fathers and mothers, do you wish your child to enter life as you did, without any training as regards the very holiest of his nature?

Every profession demands special preparation. Women are not prepared for the duties of life. Not alone youths and maidens, but men and women assume the obligations of matrimony with no knowledge of what it entails. There is even among mothers, to whom in sympathy a child should be closest, an aversion to speaking frankly on these subjects. And the absolute unenlightenment of young men causes much misery. This sin against nature begins in school and at home. The separation of the sexes causes an unnatural, morbid social state, then follows bad instruction or more frequently none at all in regard to human beings as sexual beings. Natural history is taught in the schools, but as to the physiological development of their own race, boys and girls are kept in the dark. "The knowledge of natural things presented to a natural understanding will prove to be right." Do the schools of to-day teach young women the genuine, solid education which will fit them for the wifehood and perhaps motherhood which await them? Are these not the natural functions of female life? Man has instinctive faith in woman. Teach our girls aright, and as Goethe says, "The ever womanly will draw us up." It will help the men as well, for woman's power is the more important. She is not only one half of creation necessary for the completion of the whole, but also in her we find the cradle of the race.

It is a higher parenthood we want, but this can be reached only through the proper preparation of our youths and maidens. The teaching of the knowledge of self must come as the forerunner of true manhood and womanhood. Is this taken into account in education?

The marriage contract is the most important transaction entered into by man or woman in the whole course of his or her life. Does not this relationship involve the necessity of education? Man

must be freed from his lower self. He must look upward and onward. In his very carriage he must show a perception of self-respect. In hospitals, schools, asylums, pulpits, the influence of woman has been felt. Why can she not rise up now and demand a higher parenthood, a nobler, more enlightened boyhood and girlhood? Bodily health and mental vigor are to be recognized, to be aids to the fulfilment of this idea. Through knowledge women will become better wives and mothers.

Above all there should be implanted in girls a reverence for their own sex. "Nature," says Richter, "sent women into the world with their bridal dower of love, not, as men often think, that they may altogether and entirely love them from the crown of their heads to the sole of their feet, but for the reason that they might become what their vocation is—mothers."

All that poetry has sung and love has felt as to the home's enriching life or the power of motherhood in rendering the noblest of service, will through right education become more true. A distinguished woman writer says: "I never could see why girls should not be taught physiology complete at school, instead of being educated in ignorance of knowledge necessary to the health and well-being of every woman."

Knowledge does not destroy delicacy, ignorance does; it destroys also health and character.

"The kingdom of God is within you," is true in more senses than one. When is there a more critical time in the life of the youth or the maiden than when he or she first discovers the new world of sex? Is all this tender, truthful knowledge that should be imparted to be left to chance, or to be taught with seriousness, calmness, and judgment? A child reflects the sacred unity of manhood and womanhood

like the flower that blossoms, like all of God's great creative world; but does the average parent study all that is needed for the perfection of children, and bring the boys and girls up accordingly? Is heredity, that mysterious, unknown something which molds the child after the fashion of its parents, taken into account? It is this law which makes man what he is now, and shall make him what he is to be. Dr. Benjamin Ward Richardson said: "The first step toward the reduction of disease is beginning at the beginning to provide for the health of the unborn. The error commonly entertained, that marriageable men and women have nothing to consider except wealth and social relationships, demands correction. The offspring of marriage, the most precious of all fortunes, deserve, surely, as much forethought as is bestowed on the offspring of lower animals." Yet, in spite of statements which every thinking man and woman knows to be true, we falsely bring up our youths and maidens, and let them marry with no thought of the future.

Should not girls and boys be taught that drunkenness is the starting-point of insanity, epilepsy, crime, and endless disease in posterity? True, an acquired vice or habit may give way to judicious treatment, but as Dr. Oliver Wendell Holmes said, "The doctor should have been called in a hundred years previously."

The duty of the teacher, which is to instruct and forewarn, is not the less clear

because of the unwillingness of people to know the truth regarding self. People should be educated out of these false, feverish ideas which are not inducers of modesty, but a mockery on that virtue. In these days of education it should not be difficult to impress upon the minds of boys and girls the facts of selfhood, and that the law of hereditary transmission applies to all of nature's creatures.

Men and women ought no longer to plead that they do not understand the gravity of the situation. Above all, just as the physical can be modified, so can the mental and moral nature of the boy or girl. Under changed conditions a plant, an animal, or a man will change. Nature must have harmony. Educate the boy and the girl into the laws of their being, and life will appear to them in a new light, and purity and goodness be seen more plainly than now.

"Teach me thy way, O Lord," is the cry of many a parent's and teacher's heart. Purity of heart can be reached only through truth. This alone is divine and unchanging, and should in the form of common sense be taught as part of the curriculum of our schools and universities. Then will men and women recognize the equal responsibility of each in the welfare of the individual and of the race, and the science of life, when understood by both sexes, will become the crowning glory of their lives. Self-knowledge and self-control are the two requisites.

THINK, every morning when the sun peeps through
 The dim, leaf-latticed windows of the grove,
 How jubilant the happy birds renew
 Their old melodious madrigals of love!
 And when you think of this, remember, too,
 'Tis always morning somewhere, and above
 The awakening continents, from shore to shore,
 Somewhere the birds are singing evermore!

—H. W. Longfellow.

THE NATURAL SOURCE OF FOOD FOR MAN.

BY W. H. RILEY, M. D.

SOME people entertain the idea that there is some element, substance, property, or an indefinable something in flesh-food which is essential to strength, vigor, and health, and that is not furnished by a non-flesh diet. Just what this essential thing is, these people do not seem able to state definitely, but they have the idea that meat is a necessary article of diet, and that to deprive themselves of it would jeopardize their health. This idea, of course, comes from education, custom, and habit, and really has no foundation in fact or truth.

It may be well for one who desires to settle the claims that are held for meat and denied to a non-flesh diet by some, to consider briefly the purposes, sources, and functions of food in the body, and what properties of a substance are essential to make it a foodstuff.

In our daily duties, however easy or simple they may be, there is a constant loss of matter from the body through the various eliminative organs. Carbonic acid gas leaves the body through the lungs; urea and other waste matters leave it through the kidneys, and still other substances which the body can not use are cast off through the pores of the skin. Besides this loss of matter, there is also a loss of energy. The slightest movement, even winking the eye, draws on the bodily supply of energy. In the beating of the heart, and in carrying on all the different physical functions, a large amount of energy is consumed daily. Energy is also used in maintaining the normal temperature of the body. This temperature is the same on a cold day as on a warm day. But it is very evident that on a cold day more heat leaves the body than on a warm day, hence to maintain a con-

stant temperature, energy must be used. In fact, whether awake and active or asleep and inactive, every moment of our lives entails a constant loss of both energy and matter.

Unless this energy and matter which make up our bodies and are constantly being diminished, are renewed at short intervals, there soon comes a time when the supply is exhausted, and sickness and death ensue. The purpose of food is to supply this new matter and energy to take the place of those which are consumed.

Food, then, may be defined as any substance which, after being taken into the body, digested and absorbed, fulfils one of the following conditions: (1) To supply material for the growth of the body, or to repair waste; (2) to furnish energy to the body; and (3) to facilitate the nutritive processes. An essential part of the definition of food which is frequently overlooked, is that the food itself, or any of its products in its transformation in the body, shall not be injurious to the structure or function of any of its parts. This last idea is important; for there are many substances which, although they do contain matter and energy which may be utilized by the body, along with these contain also other deleterious substances which act as poisons to the tissues; and therefore in the strict meaning of the term "food," this class of substances can not really be listed as foods. Alcohol, for instance, is claimed by some to be oxidized in the body, and thus to furnish energy. Granting that this statement is true (which, however, we have good reason to doubt), alcohol could not be considered a food for the reason that it deranges the structures and functions of different organs of the body, and is, ac-

ording to our definition of food, really a poison and not a food.

If we hold strictly to the idea of a food as given in the foregoing definition, and apply the definition closely, we shall find that meat comes in the same category as alcohol. Although it does contain energy which can be utilized by the body, and material which may be used in building tissue, yet it also contains other substances which neither supply energy nor in any way enter into the formation of tissue, but on the other hand, do interfere with the normal functions and structure of different parts of the body; and so far as it does this it must be considered deleterious.

Omitting this last point for the present, let us notice more in detail the functions of a food. Food contains energy and matter which can be utilized by the body. There are comparatively few elements that enter into the formation of food, and these are principally carbon, oxygen, hydrogen, nitrogen, sulphur, and phosphorus. There are others, of course, but they are of less importance. These few elements are arranged in such a way as to make the matter in the form of food very complex. The molecules in foods are very complex and unstable. This is the form, then, in which matter is taken into the body.

Every tissue and organ is composed of matter which has entered it in the form of food, water, or oxygen.

Energy passes into the body in the form of potential chemical energy. This is energy in a latent condition, which is stored up in the molecules of food. By the complicated machinery of the body, this matter taken in the form of food is broken down, and the potential chemical energy, or latent energy, takes an active form which may be used in keeping the body warm, in causing muscular action, in keeping the heart at work, or in per-

forming any function. In transforming this latent energy to an active form, the different molecules of food are broken down into simpler forms, and thus the chemical energy is liberated. The material which forms the food, as already indicated, may be used in the process of growth or in repairing the waste going on in the body as the result of its various functions.

The body, then, is a machine capable of transforming energy that is inactive into energy that is active, and matter that is apparently dead into living tissue.

What is the original source of this energy and this matter that we take into the body in the form of food? With the exception of water, and possibly some chemical substances usually known as salines, all the food we eat comes directly either from the animal or the vegetable kingdom. That part that comes from the animal kingdom in reality comes originally from the vegetable. The animal eats grass, corn, oats, which go to form flesh. Whatever energy or matter there may be in the flesh of the animal comes from the vegetable kingdom; so whether we confine our diet strictly to the vegetable kingdom or use meat, the energy and the material ultimately come from the vegetable kingdom.

It is evident, then, that there is no element and no energy in meat that was not at some time present in the vegetable kingdom. Consequently it is a fallacious idea that there is in the animal some element not present in the vegetable kingdom.

It is one of the underlying principles of natural law that energy and matter can not be created or destroyed. An animal has not the power to create either matter or energy. As previously stated, it is simply a machine which can transform matter and energy, but it can in no sense create either. It is true that in the ani-

mal body new compounds may be formed, some of which possibly may not be present in the vegetable; but when it comes to food, we find that there is not only no element in the animal body that is not found in the vegetable, but more than this,—there are no compound elements which in any way belong to food substances that are not found in quite as favorable a condition to meet the demands of food in the body, in the vegetable kingdom as in the animal. For instance, the different foodstuffs, or, as they are called, alimentary principles, are carbohydrates, represented by different forms of starches and sugars, fats, proteids, water, certain salines, and possibly certain organic acids. All the different foods can be placed in one of these classes. These different classes are present in the vegetable kingdom, and most of them in much greater abundance in vegetable than in animal foods. It is therefore true that not only are all the elements of food found in the vegetable kingdom, but all the foodstuffs. Consequently there is nothing in meat in the form of food that is not present in the foods produced by plants; and as a matter of fact this food is in a much better condition in the vegetable than in the animal.

The highest function of a plant is to store up energy and matter. The plant absorbs water, oxygen, nitrogen, and carbon from the earth, air, and water, and under the influence of sunlight these elements are tied together, as it were, rearranged, and built up into starches, sugars, oils, and vegetable proteid. Thus to rearrange the elements of matter requires energy. This energy the plant obtains from the sunlight. This transformation of matter and absorption of energy from the rays of the sun takes place, principally at least, in the leaves of the plant. After the compounds of starch, oil, and

proteid are formed, they are stored away in some part of the plant. In the potato plant, for instance, we have large reservoirs of food stored in the root. In cereals, such as corn, oats, and wheat, these products are stored away in other parts of the plant, and in fruits they are placed in still another part.

When this process of storing up material and energy is completed in the plant, there are no substances left behind, such as by-products, or waste products. Carbohydrates, fats, and vegetable proteids, with perhaps some salts, water, and acids, are the only substances in vegetable foods; and they represent the final or end product of the building-up process. These are all foods, and are all put to a useful purpose in the human body. It is true there may be some substances, like cellulose, in some plant foods that the body may not be able to make use of as food, but these are in no way harmful to the body. Cellulose, although it may not be digested in the alimentary tract, is passed off as an indigestible substance without entering into the circulation; but in the better class of vegetable foods, as cereals, nuts, and fruits, cellulose is present only in the smallest quantity.

Foods derived from the vegetable kingdom differ essentially from foods derived from the animal kingdom, in this particular,—the food derived from the vegetable kingdom does not contain any waste products that in any way irritate or derange the functions of the body, while the food derived from the animal kingdom must necessarily contain a large amount of waste products, which are always present in the tissues of the animal during life, and also after death. These waste products are of no use to the animal in which they were formed, and are of no use to the human body when they are taken into it with flesh-food; but on the other hand they act as irritants and poi-

sons, and interfere with the physical functions to a greater or less degree.

When a plant or a tree has performed its function of growing a potato, an ear of corn, a nut, or an apple, and the grain, potato, or apple is fully ripe and fit to be eaten, there is no chemical or other process going on in the potato, grain, or apple. The work is finished when the fruit of the plant or tree is ripe. The starch, sugar, vegetable proteid, and vegetable acids that have been formed in the plant are the end products of this wonderful chemico-vital change. If there were a chemical process going on in any of these foods at the time they were gathered, there might be in them some deleterious substance on its way to a higher elaboration in the plant, which, when the process was finished and the end product formed, would be food, but which might be in any stage a substance irritating to the tissues. But since the chemical processes are all completed when the fruit of the different kinds of plants is ripe, there can be nothing of this sort.

This is an important point, one that is very likely to be overlooked by those who have not given the subject thought. How different it is, however, when we turn from the vegetable to the animal kingdom. In the animal during his life and even after his death there is constantly present a chemical process in the tissues by which the more complex and highly elaborated

substances are being broken down into those which are less complex and more irritating, and which are deleterious in their action when taken into our bodies as food. There is never a time in the animal's life when this breaking-down process ceases, or when there is nothing present in the tissues except what we might call food elements. Consequently, we can never eat any flesh-foods without getting some of these poisons into our system.

An essential difference between vegetable and animal foods is that in the food derived from the vegetable kingdom all chemical processes have ceased at the ripening of the product of the plant; while in the animal, chemical changes are going on when the animal is killed, and the result is that the poisons thus produced are present in the food. Probably the greatest objection to the so-called waste products in meat is that they overtax the eliminative organs, such as the kidneys. As a matter of fact, we have very good reason to believe that eating meat is one of the most prolific causes of diseases of the kidneys. These organs, being overtaxed in their attempt to rid the body of this waste matter, frequently become diseased. Besides diseases of the kidneys, there are many other disorders which, if not caused directly by meat, are induced by the effects of meat in lowering the vital resistance of the tissues.

FRANCES W. NEWMAN, brother of Cardinal Newman, now living at the age of over ninety years, and a vigorous thinker all his life, makes the following statement in regard to meat eating:—

“I regard abstinence from flesh-meat to be an advantage to an intellectual and sedentary person scarcely inferior to abstinence from wine and ale.”

DR. NEWELL DWIGHT HILLIS says that we are not very far removed from the sav-

age when a woman thinks she can make herself more beautiful by wringing the necks of two birds and setting their feathers in her hat, and a man thinks to cure nervous prostration by murdering God's innocent deer in the Adirondacks.

ABRAHAM LINCOLN once defined a cigar as being “a roll of filthy leaves with a bonfire at one end and a fool at the other.”

WHOLESOME AND UNWHOLESOME RECREATION.

BY DAVID PAULSON, M. D.

THE Creator never intended that life should be one long, ceaseless toil. It is an unnatural condition of modern society that renders it absolutely necessary for any one to work incessantly. The feverish desire for gain on the part of many stimulates them to violate the laws of nature, and the result is premature decay, and weakened, shattered nerves. At the time that life should be at its very ripest and sweetest, we see broken-down specimens of humanity traveling from one health resort to another, vainly attempting to coax back from nature that which was ruthlessly plucked from her,—the priceless boon of health.

The desire for some sort of summer recreation seems to be almost an instinct born into the human race. The school-boy hies himself away to the river with his fishing-pole; the business man puts on his hunting suit, and seeks the quiet of the forest in search of game; those whose minds are drawn out in literary lines spend a few weeks at the various Chautauquan assemblies or other schools, and there feed their minds from the lectures and studies presented by men whose names are inscribed high on the roll of fame; others whose minds are particularly drawn out in a devotional way go to camp-meetings where songs of praise and the words of the gospel blend harmoniously with the chirping of birds and the rustling of leaves. Many of the workmen's clubs own their own parks or other resorts where they can take their families for a quiet outing, and forget the monotonous whirl of the machinery to which their ears have daily been accustomed. There is still another class, it is sad to say, whose highest ideal of recreation means simply dissipation in a more strict sense than

they succeed in carrying out at home; hence, instead of recuperating the physical organism, they proceed to tear it down in the surest way. But the ideal recreations and summer outings are those conducted in such a manner that people who enjoy their advantages are fitted for a more successful discharge of the duties devolving upon them after they return to their callings; every one should feel better for the good cheer which he brings back with him as he returns improved in mind and refreshed in body, and prepared to re-enter life's battle with better courage.

There are definite reasons why so many fail to attain to this, and why so much of the good which they should receive in return for the time and outlay of means is never realized. When many people leave their homes, under the change of surroundings they feel a sort of stimulus which prompts and enables them to do with impunity what they would not have dared to do at home, and for which they must reap the results afterward. But because the digestion is improved by the stimulus of fresh air and outdoor exercise, is no sign that it is best to eat the various meats, sausages, cheese, and rich cakes made from such complicated mixtures that it puzzles the digestive organs to know how to proceed to classify them; to say nothing of pickles, nearly as digestible as bullets, and spices and condiments in such abundance that they would raise a blister if applied to the skin. More than this, there is more or less irregularity of meals,—eating tidbits at any time when one feels any suggestion of hunger, or perhaps in excess at the regular meals. Who ever heard of a good-sized picnic that did not bring a harvest to the doc-

tors for several days afterward? How much education will be required before we can be made to believe that there is something better at picnics than eating unwholesome, indigestible foods, prepared with the special purpose of tickling the palate, when it is known full well by the majority of persons that this food must cause distress for hours afterward, and that it will not manufacture pure blood, and good brains to think God's thoughts after him.

It is not alone in diet that the typical excursionist is wont to fail. Many a man who is a stern advocate at home of the principle that the city should be compelled to furnish the purest water to its citizens, never dreams for a moment that there is any necessity of sterilizing the suspicious water-supply of the typical summer resort.

The foundation for a great deal of suf-

fering and invalidism is laid by the violent and exhaustive exercise that many who are not accustomed to it, at once plunge into when on their summer vacation. They seem to think that in a week or two they can make up for all the violations of nature's laws of which they have been guilty during the past year, and many return from their annual outing with dilated hearts, weak muscles, and sprains in the back—difficulties which they will have to carry more or less during the remainder of life.

One of the most delightful things that can be done during the time of the summer recreation is to seek to make some one else happy. We may gather up those who would be entirely deprived of fresh-air privileges if it were not for us, and the happiness that we are thus the means of bestowing upon them will be reflected upon us in a sure and enduring way.

Seeing the Point.

The following story is told of a Philadelphia millionaire who has been dead some years. A young man came to him one day and asked pecuniary aid to start him in business.

"Do you drink?" asked the millionaire.

"Once in a while."

"Stop it! Stop it for a year, and then come and see me."

The young man broke off the habit at once, and at the end of the year came to see the millionaire again.

"Do you smoke?" asked the successful man.

"Now and then."

"Stop it! Stop it for a year, and then come and see me again."

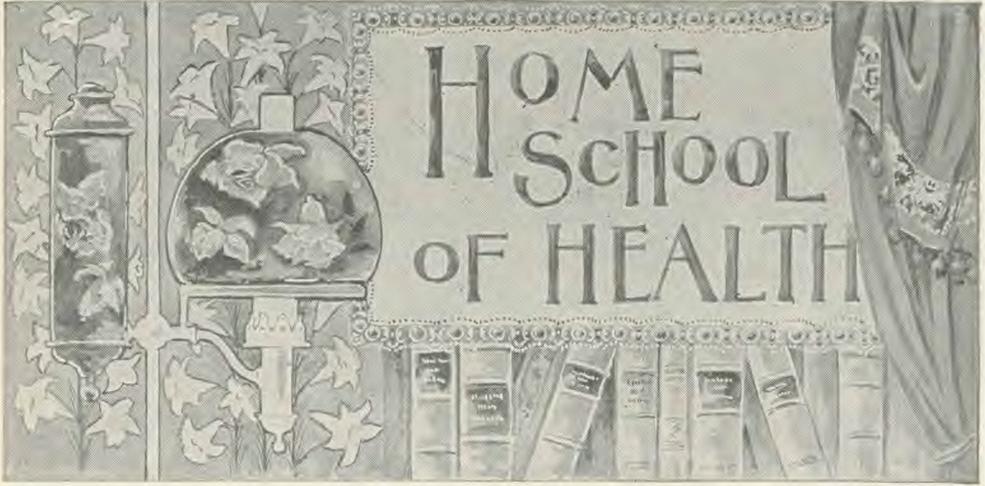
The young man went home, and broke away from this habit. It took him some time, but finally he worried through the year, and presented himself again.

"Do you chew?" asked the philanthropist.

"Yes, I do," was the desperate reply.

"Stop it! Stop it for a year, then come and see me again."

The young man stopped chewing, but he never went back again. When asked by his anxious friends why he never called on the millionaire again, he replied that he knew exactly what the man was driving at. "He'd have told me that now that I have stopped drinking and smoking and chewing, I must have saved enough to start myself in business. *And I have.*"
— *Youth's Companion.*



PHYSICAL TRAINING IN MIDDLE LIFE.

AT no time of life is the matter of regular and systematic exercise of more importance than between the ages of twenty and fifty. The adult has not the same facility as the youth for acquiring the ability to perform difficult exercises, and it is by no means necessary that he understand complicated and elaborate systems. For him the particular kind of exercise is of secondary importance; the essential is to take exercise enough every day to cause fatigue and to induce vigorous perspiration.

The man who at forty years of age finds himself stiff and awkward is prematurely old, not because of years, but because of idleness; the degenerative processes have begun in his body, not in the course of nature, but because he has neglected exercise. The suppleness and elasticity of youth may be wonderfully preserved by daily, regular, and systematic physical culture.

Exercise is the most important of all means by which the regulation of the nutritive processes is effected. Many diseases are due to disturbances of the changes which take place in the tissues, particularly in the muscular structures, in which the

so-called metabolic processes are most active. Dr. Latham, an eminent English physician, agrees with Dr. Bouchard in tracing gout, rheumatism, and diabetes, three maladies which he associates as springing essentially from the same cause, to perverted vital changes in the muscles. Proper exercise is the only means by which these activities can be maintained in a normal state.

It is by exercise also that the correct balance between supply and expenditure in the body is preserved. The idle man suffers almost as much damage from the consumption of an excessive and unnecessary amount of food as does the half-starved wretch in an Arab slave train from being underfed. An excess of material that can not be used and is imperfectly oxidized is not easily eliminated, and accumulates so much rubbish as to burden every organ and tissue, and to hinder every bodily function. Exercise affords a means by which this surplus material may be consumed. This is the reason why a wood chopper is able to consume, with apparent impunity, immense quantities of food difficult of digestion; why also the sedentary man, even with the most scrupulous attention to diet, often suffers the pangs of dyspepsia.

The amount of exercise required daily by the adult, according to my observation, is at least one sixteenth of his total capacity for work, or not less than three hundred thousand foot-pounds or its equivalent. A much larger amount of work than this may be done without injury, but we believe this proportion absolutely necessary to the maintenance of sound health. The amount of work taken as exercise must of course depend somewhat upon the employment. The common laborer generally gets sufficient exercise in connection with his daily tasks. The carpenter, the blacksmith, the farmer, and those engaged in many other muscular pursuits likewise find in their employment an adequate variety of muscular work. But all these and all other classes may be benefited, nevertheless, by systematic daily exercise adapted to secure an all-round development of the body, and to antagonize the one-sided and deforming tendency of each of the pursuits mentioned and of most other forms of manual labor.

Exercise for adults must not be too violent in character. The heart and lungs must not be subjected to excessive strain. The grown person can endure sustained effort much better than the child or the youth, because his muscles are firmer and stronger, but his breath is more easily exhausted. Hence for him the form of exercise is immaterial, while the vigor and intensity of it must be carefully considered.

By its regulation of nutrition, exercise prevents the undue accumulation of fat, so rendering the tissues firmer. Observation has shown that a man's ability to resist disease is closely related to his specific gravity. The man who weighs the most for his size, other things being equal, is usually the healthiest man and possesses the greatest power of resistance. On the other hand, the undue accumulation

of fat encourages degeneration of the tissues, and lessens the vital resistance. Lack of exercise encourages the deposit of fat in idle parts.

Pliny gives an account of a Greek physician residing at Rome who had so great faith in exercise as a means of restoring health that he almost wholly abandoned the use of medicinal agents in his treatment of disease, and declared that he was willing to be pronounced a charlatan if he himself ever became ill, or if he died from any other cause than old age or accident. The historian tells us that this wise physician lived to be nearly one hundred years old, and then died as the result of an accident, being still in the enjoyment of vigorous health.

The man who has all his life been engaged in active exercise will not be likely to find his joints becoming rigid, his breath short, his muscles weak, and his arteries hardened at forty-five, when he should be at the very height of his powers physically and mentally; for exercise maintains the suppleness of the tissues, the purity of the blood, the caliber of the arteries, the mobility of the chest, the strength of the heart, the soundness of the digestive and eliminative functions, and the activity of the brain and the nervous system. By means of proper physical training the activity of middle life may be prolonged to a very advanced period and the discomforts and diseases of old age largely avoided.

J. H. KELLOGG, M. D.

SKIRTS.

IN ancient times the dress of both men and women consisted of loose, flowing robes or of an artistic drapery of some sort, the only difference being a slight variation in the length. Each country or nation has had its peculiar style of dress, some having only the slightest hint of a

skirt in the form of a small apron, which served as a protection, while in what we ordinarily term civilized lands, many varieties of skirts have been worn from time to time, all perhaps having some objectionable features.

A brief consideration of some of these may prove of interest, and may also serve as an aid in selecting that which is best and most convenient, as well as in deciding whether women should wear skirts or not, since in the opinion of some leaders of reform the advance step would be for women to adopt a style of dress more like that worn by the opposite sex.

In the days of our forefathers the skirt commonly worn was straight, quite long, and equally full in front and back. In addition it often had two or three deep flounces, which, of course, added to the weight and breadth. This was ordinarily sewed to a waist, thus removing the weight from the hips, but the length of the skirt and the great amount of fulness allowed the garment to fall to the front when stooping and to interfere when going up and down stairs.

With this skirt at different times have been worn hoops of various sizes, from those so small that they interfered with locomotion to others of enormous size. An amusing incident is told of a lady wearing a very wide hoop-skirt: Passing along a country road, she met a bright little boy attending a gate where teams were constantly passing. Not being certain of the road she should take, she asked the little fellow if she could go through the gate. He eyed her very closely, and then looked at the gate, and said he thought she could, as a load of hay had just gone through.

The followers of fashion are often extremists; and soon after the enormously full skirt was discarded, the narrow pull-back came into use, but it was only another source of annoyance to locomotion.

This was often puffed and decorated, and the weight, which had formerly been suspended from the shoulders, was transferred to the hips, and became not only a burden but a positive injury.

Of all skirts, none is more objectionable than that with the train. We can not speak too strongly of this unclean, unhealthful style of skirt. While the trained skirt is usually comparatively narrow, it has the superfluous amount of material attached to the back, and all of this weight the woman must drag after her, no matter how tired or weak she may be.

Even this, which is sufficient reason to lead any sensible woman to discountenance such a garment, is not the only or the greatest evil arising from wearing a trained skirt. The train serves as a sweeper, if not of the street, at least of the floors and the carpets, which, no matter how clean they are kept, are never free from germs, often of the most dangerous kind. Can any one conceive of a better method of scattering tubercular germs, which are so prevalent everywhere at the present time, than to allow a woman with a train to pass along the sidewalk or even to move about the house attended by a fine cloud of dust, which may be almost imperceptible but nevertheless dangerous to herself and others? In ancient times persons afflicted with leprosy were compelled to isolate themselves, and when any one came near, to cry, "Unclean! unclean!" We think this would be a most appropriate requirement of women who persist in wearing such death-dealing garments.

Dr. Kate Lindsay, on being asked which she would recommend, disinfection or a surgical operation for a long train which had been sweeping the streets, replied, "Both disinfection and a surgical operation would be necessary for a radical cure. A train which has swept the by-ways anywhere would be very dirty, being

loaded with germs which might carry blood-poisoning to some one. Washing would be necessary to get rid of this danger, and to prevent a recurrence it would be necessary to remove the train with a pair of shears."

The gored skirt which has been worn in more recent years has its advantages and disadvantages. The greatest disadvantage, as usually made, is doubtless its length and weight.

The healthful skirt must be made of light material, and should be sufficiently short to clear the ground entirely. If the skirt were at least two inches from the floor all around, it would not only give freedom from germs and filth but would prevent the skirt from wearing about the bottom. There should be fulness enough to allow perfect freedom of the limbs in walking or taking any exercise. The skirt should be evenly supported by some suitable waist so that the entire weight would be suspended from the shoulders.

Only one underskirt is needed. This should be of light material,—taffeta silk or moreen,—made with a yoke, and buttoned to the Freedom waist which was described last month, or sewed to a small skeleton waist. The dress skirt may be attached to the Freedom waist or to the dress waist, preferably the latter. With the skirts made and arranged in this manner one can have perfect freedom and comfort without the dangers which have been described.

Mention might also be made of the divided skirt, which is a favorite underskirt with many, and has also in some cases taken the place of the dress skirt. This should be made quite full, with a divide, but falling in folds which conceal the division. It should be gathered at the bottom in such a way as to fit snugly around each limb, and thus serve as a protection from cold.

ABBIE M. WINEGAR, M. D.

FRUIT FOR THE TABLE.

FRUIT is a food so generally looked upon as a luxury and partaken of at all hours that its dietetic value is largely overlooked. The average bill of fare makes but little, if any, use of fruit save in the form of rich sauces or as an ingredient of pies. Fresh fruit is eaten between meals so commonly that it seems to be regarded much as are candy and nuts, as a sort of chinking to fill in the intervals between breakfast and dinner, dinner and supper, supper and bedtime, with no relation to the general food supply at meal-time. Ripe fruit is a most healthful article of diet when partaken of at seasonable times; but to eat it, or any other food, between meals is a gross breach of the requirements of good digestion.

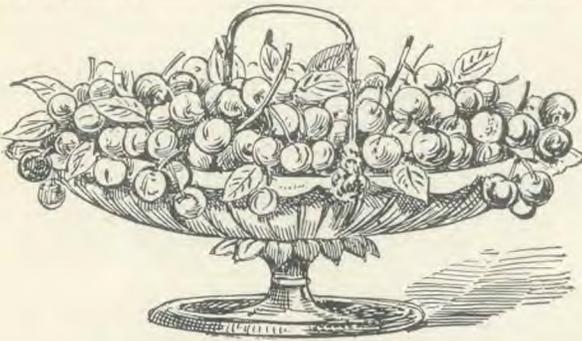
With few exceptions, fruits possess a low nutritive value, but they contain so many essential acids and so large a proportion of fluids mixed in just the right way, after nature's own method, that they serve a most valuable purpose in the vital economy, and when used in conjunction with nuts and grains, provide every element needed for the proper sustenance of the body. In some countries the more nutritious varieties of fruits are largely depended upon for food. In the south of Europe figs form a large part of the dietary during at least one half the year. In ancient Greece the diet of athletes consisted of fruits, nuts, and coarse bread. The Greeks of the present day are a strong, robust race, whose diet is mainly black bread, grapes, raisins, and figs.

Like grains, fruits are so universally grown that there is seldom a time when an abundance of some sort can not be obtained.

Aside from the skin and seeds, all fruits consist essentially of two parts,—the cellulose structure, containing the juice, and the juice itself, which is water with a

small proportion of fruit-sugar and vegetable acids.

While the juice, as we commonly find it, is readily transformable for use in the



system, the cellular structure of some fruits is not always so easily digested. In fruits like the strawberry, the grape, and the banana, the cell walls are so delicate as to be easily broken up, but in the watermelon the cells are coarser and form a large bulk of the fruit, hence it is less easily digested. As a rule, other points being equal, the fruits which yield the richest and largest quantity of juice, and also possess a cellular frame-work the least perceptible on mastication, are the most readily digested.

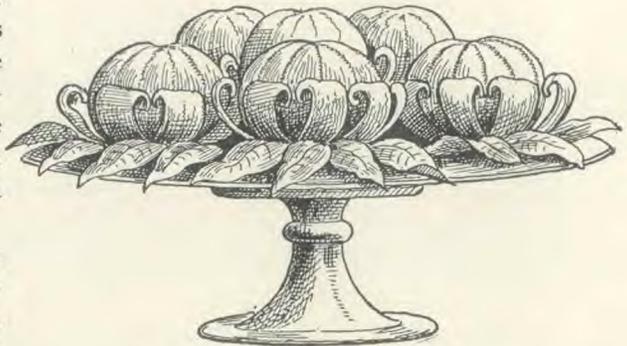
Unripe fruits differ from ripe fruits in that they contain starch, which during the ripening process is changed into sugar, and generally some proportion of tannic acid, which gives them their astringency. Raw starch is indigestible, therefore unripe fruit should never be eaten uncooked. As fruit matures, the changes it undergoes are such as best fit it for consumption and digestion.

There is a prevailing notion that the free use of fruits, especially in summer, excites derangement of the digestive organs. When such derangement occurs, it is far more likely to have been occasioned by the way in which the fruit was eaten

than by the fruit itself. Perhaps it was taken as a surfeit dish at the end of an already full meal. It may have been eaten in combination with rich, oily foods, pastry, and other indigestible viands which in themselves often excite an attack of indigestion. Possibly it was eaten between meals, late at night, with ice-cream and other confections, or was swallowed without sufficient mastication, or eaten with the skin on. It is not to be wondered at that digestive disturbances occur under such favorable

circumstances. The innocent fruit, like many other good things, being found in bad company, is blamed accordingly. Most fruits, properly used, aid digestion either directly or indirectly. The juicy ones act as diluents; nearly all are appetizing and purifying.

To serve its best purpose raw fruit should be eaten without sugar or other condiments, or with the addition of as small a quantity as possible. All fruits to be eaten raw should not only be sound in quality but should be made perfectly clean by washing, if necessary. Small fruits, like currants and cherries, can best be washed by putting into a colander and dipping in and out of a pan of water.

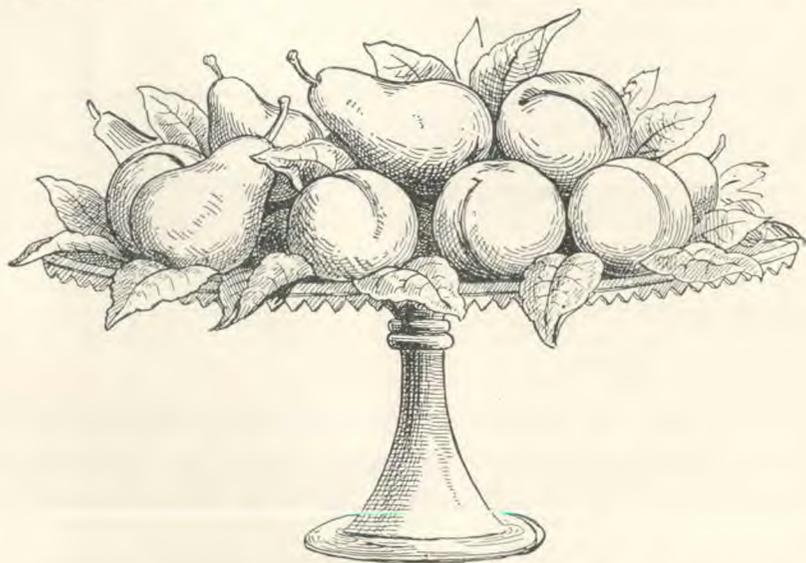


Drain and dry before using. Larger fruits are easily made clean by washing with a brush and drying with a towel.

Fruits which have begun to decay should be rejected. According to M. Pasteur, the French scientist, all fruits and vegetables when undergoing even incipient decay contain germs which, introduced into the system, are likely to produce disturbances or disease.

sliced and mixed with well-ripened strawberries, in the proportion of three oranges to a quart of berries, make a very palatable dish.

Both peaches and pears after being well washed are very pretty piled upon a plate edged with uniform-sized leaves of



There is room for much artistic display in the arrangement of fresh fruit for the table. Apples make a dainty dish piled in a fruit basket with a few sprigs of green leaves here and there between their rosy cheeks. The feathery tops of carrots and celery are pretty for this purpose.

Cherries served on stems, piled in a high dish with small sprays of cherry leaves between, or rows of different colored cherries arranged in pyramidal form make a pleasing dish.

A nice way to serve oranges is to cut the skin with a sharp knife longitudinally into six or eight strips. Remove these, leaving the body of the orange intact. Separate into sections without pulling apart, and serve; or, cut the skin into eighths, two thirds down, and after loosening from the fruit leave them spread open like the petals of a lily. Oranges

foliage-plant of the same tint as the fruit, with sprays and tips of the plant between. Yellow Bartlett pears and rosy-cheeked peaches arranged together in this way are most ornamental.

Perfectly ripe fruit is, as a rule, more desirable used fresh than in any other way. Fruits which are hard or immature require cooking. Stewing and baking are the simplest methods of cooking fruits, and nearly all fruits admit of one of these methods of preparation.

For cooking fruits the utensils used should be granite or porcelain. Fruit cooked in tin not only loses much of its flavor, but if the tin is of poor quality, there is always danger that the acid of the fruit acting upon the metal will form a poisonous compound. Cover the fruit also with a plate, not with a tin cover. Use silver knives for paring, as steel

blackens and discolors the fruit. Many fruits are more easily handled and can be pared better if divided before paring. Always cook fresh fruits in boiling water; generally but a small amount is required. If economy is a point to be considered, do not add sugar until the fruit is done, as sugar cooked with an acid is converted into glucose, and it will require nearly twice as much sugar to give the same sweetness to the fruit if added before cooking as it will if added when the fruit is done. On the other hand, if the fruit is one which you desire to keep whole, sugar added to the fruit will aid in this direction, as it abstracts the juice of the fruit, thus slightly hardening it and preventing its falling in pieces. Fruit, in cooking, should not be allowed to boil hard, as hard boiling destroys its flavors by excessive evaporation. Strong flavors, such as cinnamon and nutmeg, destroy the natural flavors of fruits. If any flavor is desired in addition to that of the fruit, let it be some other fruit, as lemon and quince, pineapple, or the perfume of some flower, as of rose. Unripe fruit is improved by quite lengthy cooking, as this is a sort of artificial ripening. Many of the larger fruits are best cooked by baking. In cooking fruits by any method, care should be taken to cook the same quantity and size together so far as possible.

Most dried fruits, such as prunes, peaches, pears, and others with a strong flavor are best cooked slowly and long. Dried fruits which are deficient in flavor and less hard in texture, like berries and currants, require slow but short cooking.

Not only fruits but fruit-juices are most serviceable as foods, and quantities of both should be preserved in their season for use in winter.

Fresh fruit is most advantageously preserved by cooking and canning. This is simply a process of sterilization by which

the fruit is freed from germs by being boiled and sealed, while at a boiling temperature, in air-tight receptacles. If properly done, fruit thus prepared will keep indefinitely.

Fruit-juices may be canned the same as fruit. To extract the juice, in the first place put the fruit into a double boiler of some sort, and scald until broken, when it can easily be drained by turning the fruit into a cloth bag. The old-fashioned preserves, jams, and jellies, in which an excessive quantity of sugar is used with the fruit, are preparations not to be recommended.

ELLA EATON KELLOGG.

RECIPES.

Pearled Barley with Lentil Gravy.

— Carefully look over and wash a cupful of pearled barley. Cook in a double boiler in five cups of boiling water for four hours. Serve with a gravy prepared as follows:—

Lentil Gravy.—Rub a cupful of cooked lentils through a colander to remove the skins, add one cup of rich milk, part cream if possible, and salt if desired. Heat to boiling, and thicken with a teaspoonful of flour rubbed smooth in a little cold milk.

Cream Graham Rolls.—To one-half cup cold cream add one-half cup of soft ice-water. Make into a dough with three cups of graham flour, sprinkling in slowly with the hand, beating at the same time, so as to incorporate as much air as possible, until the dough is too stiff to be stirred; then knead thoroughly, form into rolls, and bake.

Pop Overs.—For the preparation of these, one egg, one cupful of milk, and one scant cupful of white flour are required. Beat the egg, yolk and white separately. Add to the yolk, when well

Seasonable Menus



BREAKFAST No. 1.

Strawberries with Orange
 Pearled Barley with Lentil Gravy
 Cream Graham Rolls
 Cherry Toast



DINNER No. 1.

Fresh Green-Pea Soup
 Nut and Rice Croquettes
 Beet Greens
 Pop Overs with Nuttolene
 Fruit Tapioca
 Fresh Berries



BREAKFAST No. 2.

Currants on Stem
 Coconut Crisps
 Fresh Berry Toast
 Gran-Nuts with Fruit-Juice



DINNER No. 2.

Cream Barley Soup
 Spinach with Cream on
 Browned Granose Biscuit
 Mashed Potato
 Lettuce Salad Graham Puffs
 Sponge Cake with Fresh
 Berries

beaten, one half the milk, and sift in the flour a little at a time, stirring until the whole is a perfectly smooth paste. Add the remainder of the milk gradually, beating well until the whole is an absolutely smooth, light batter about the thickness of cream. Stir in the stiffly beaten white of the egg, and bake in hot earthen cups or muffin rings, and to prevent them from sticking, sift flour into the rings after slightly oiling, afterward turning them upside down to shake off all the loose flour.

Fruit Tapioca.—Cook three fourths of a cup of tapioca in four cups of water until smooth and transparent. Stir into it lightly a pint of fresh strawberries, raspberries, currants, or any small fruit, adding sugar as required. Serve warm or cold with whipped or mock cream.

Cream Barley Soup.—Wash a cup of pearled barley, drain, and simmer slowly in two quarts of water for four or five

hours, adding boiling water from time to time as needed. When the barley is tender, strain off the liquor, of which there should be about three pints; add to it a portion of the cooked barley grains, salt, and a cup of whipped cream, and serve. If preferred, the beaten yolk of an egg may be used instead of cream.

Sponge Cake.—For this will be required four eggs, one cup of sugar, one tablespoonful of lemon-juice with a little of the grated rind, and one cup of white flour. Success in the making of sponge cake depends almost wholly upon the manner in which it is put together. Beat the yolks of the eggs until very light and thick, then add the sugar little by little, beating it in thoroughly; add the lemon-juice and the grated rind. Beat the whites of the eggs until perfectly stiff and firm, and fold or chop them very lightly into the yolk mixture. Sift the flour with a sifter little by little over the mixture and

fold it carefully in. On no account stir in either the white of the eggs or the flour, since stirring will drive out the air which has been beaten into the eggs. Do not beat after the flour is added. The cake, when the flour is all in, should be stiff and spongy. If it is liquid in character, it will be apt to be tough and may be considered a failure. Bake in a shallow pan in a rather hot oven for fifteen or twenty minutes.

FAMILIAR FORMS OF NERVOUS DISEASES.

THERE is something fascinating about nervous diseases just as there is about spooks and ghosts, because of the mystery connected with them. It is not difficult to comprehend the structure of the bones and muscles, but there is a mystery about the nerves of the human mechanism that has never been unraveled.

When we are children, we have the idea that when we touch a hot stove with our fingers, and receive a burn, the feeling is actually there in the end of the finger; when we are grown, we know that the feeling is in the brain. We learn that there are nerves in the finger that are connected with the brain, and that these nerves have to communicate an impulse to the brain before we perceive the feeling. A sensation of this kind travels over the nerve at the rate of about one hundred feet a second; with some it travels faster, and with others more slowly. But what is it that has been carried from the finger to the brain? This is a question that has never been satisfactorily answered.

There is a striking similarity between the muscles of man and the muscles of animals, also between the bones of man and the bones of some of the lower animals. They have practically the same functions. But when we come to con-

sider the brain and the nervous system, we see here a vast difference. Physiologists and biologists have been hunting for ages after the "missing link" between man and the monkey, but they will never find it. There is a gulf that has never been spanned, and never will be spanned. It is because man was created in the image of God, and was given this wonderful brain and nervous system and that faculty we call the mind, that differs mysteriously and essentially from anything found in the brute world.

There are numerous forms of nervous diseases, but to make the subject as clear as possible, I will classify them under two general heads: Organic, or structural, and functional. Suppose we have here a jar of water; we will let the jar represent the nervous system, and the water the vital force, or energy. Suppose again that here is a young man starting out in life, full of the vigor of youth. He has steady nerves, and the unerring aim of the sportsman. But let this man become dissipated, and waste his strength in various ways, and the time will come when he will feel weary in the middle of the day; perhaps he will feel more tired when he awakes in the morning than when he goes to bed at night. Now, this man may yet have a perfect nervous system, comparatively speaking, but the nerve energy is largely gone. His case may be represented by the empty jar,—the jar is perfect, but the water is gone. He may have practically a complete nervous system, but it is minus the vital energy. This illustrates a functional disease, for, as you see, the structure is perfect.

Bear in mind that the jar without any water in it represents the nerves with no energy in them. Persons afflicted in this way may have nervous prostration, for they lack nerve energy. This vital energy can be restored so long as the nervous system is not diseased; in other words,

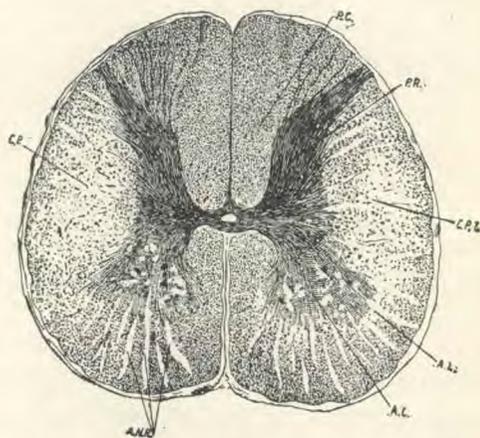
one can get well if he has only a functional disease.

Here is another jar that has no water in it, and more than that, it is broken. This represents an organic disease—a structural disease. When one gets that sort of nervous disease, it is a much more serious matter than the other form. Neuralgia and neuritis are diseases of the nerves after they leave the spinal cord or brain. They are obstinate and very painful, but not especially serious. The most serious diseases are those that affect the brain itself or the spinal cord.

Suppose we should cut out a section of the spinal cord, just as we would cut off a slice of bread; we would then have represented what is shown in the illustration. By noting the figure it is seen that there is a thin covering all around the edges. It is this part that is affected in cases of spinal meningitis, which has become such a fearful epidemic in some of our cities, and which ends life so quickly. It is very important thoroughly to obey the laws of life and health, and not to allow the nervous system to become weakened so as to make it susceptible to this disease, as there has scarcely any remedy yet been found that modifies its course, and death generally ends the suffering in a short time.

We may now take a brief survey of the most common diseases of the spinal cord itself. Perhaps you have seen a mother carrying a child about with one of its limbs hanging down perfectly helpless. If you raise a foot, it will simply drop back limp and lifeless. This is because the nerve cells in the front part of the spinal cord are more or less destroyed. That is indicated in the figure by the letters *al*. If the nerve that goes to a muscle is not alive, the muscle becomes as useless to move the limb about as if it were a piece of rubber, for it is by impulses carried down from the nerves that

the muscles are caused to contract. This disease is called infantile paralysis. In many cases the only disturbance noticeable previous to the attack is a slight rise of temperature; and as the child recovers, the mother may find that perhaps a leg or an arm is in this sad condition. Recovery is extremely slow in the majority of cases.



There may be a disease in the part of the cord indicated by *pc*, in which the nerve fibers become inflamed and afterward largely destroyed. This produces the well-known disease called locomotor ataxia, which is undoubtedly the result of poisons of various kinds persistently circulating in the blood year after year until finally the disease begins to show itself in this sensitive part of the nervous system. These poisons may be the result of dissipation, possibly of direct injury; many are now beginning to believe that it may even be largely brought on by the continual absorption of poisons from the alimentary canal. A person who has this disease fully developed can not stand or walk with his eyes closed; he has lost the ability to direct the movement of his limbs. If you should lay him on the bed, ask him to close his eyes, and should then take one foot and cross it over the other, and request him to point out where it now is, he will point to the place where

it was before you moved it. Such a patient can walk only by keeping his eyes fixed on the place where he is stepping. Let him go into a dark corridor, or turn out the light in the room suddenly, and he will often fall as quickly as if he had been struck on the head with a club.

Another common disease is a sclerosis, or hardening, or really a destruction, of the nerve fibers, shown in the figure by

apt. A person having this disease hobbles along; as he steps down, his heels jerk back; he has a tendency to walk on his toes.

All the parts of the spinal cord described, and others which have not been mentioned may be diseased as the result of some injury, as falling off a house, or by the kick of a horse, or being run over by a wagon. This may produce inflammation

across the entire cord. It is then called transverse myelitis. In that case, every function of the lower part of the body may be entirely paralyzed.

Dismissing the spinal cord with this brief view, we take a glance at the brain. By looking at the second figure and noting the part entitled the cortical motor centers, we find the part that controls motion on the opposite side of the body; it will be seen that the fibers, as they pass down to the lower part of the brain, cross over to the opposite side. It is at this point that a severe blow on the skull from a policeman's club, or some other simple injury may so depress the bone as to produce epilepsy or even entire paralysis of the whole body.

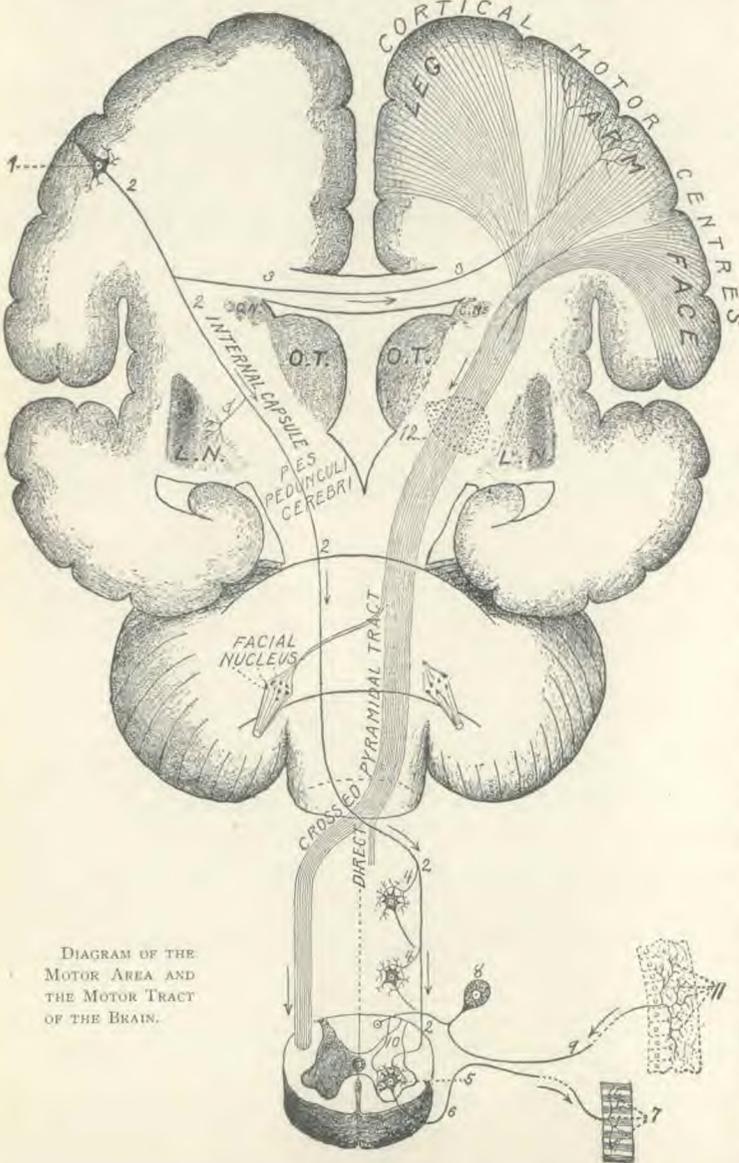


DIAGRAM OF THE MOTOR AREA AND THE MOTOR TRACT OF THE BRAIN.

Another very common disease of the brain, and one which so many old persons with hardened arteries fear, is apoplexy, or one-sided paralysis. It will be noted that at the point indicated in the figure by the number 12, the fibers come very close together. At this place the rupture of a blood-vessel, producing a clot perhaps not much larger than a pea, may cause paralysis of almost one entire side of the body.

With this brief glimpse of some of the most common organic and nervous diseases, we are better prepared to study more fully something with reference to functional diseases, as, fortunately, they are much more common than the organic, or structural. One of the most prevalent of these is neurasthenia. American people seem to be more susceptible to it than those of other nations. This disease is known in common language as nervous prostration. There is a long train of symptoms which go with this trouble, although all do not have the same,—sleeplessness, a feeling of pressure on the head upon the least exertion, creeping and crawling sensations in various parts of the body, more or less mental depression and discouragement, weakness, and a general all-gone feeling. Those who begin to suffer from this disease often make the mistake of trying to find something to “brace them up,” but it is utterly useless to try to put anything into a man to bring something out of him that is not there already. The only way that we can cure a man of nervous prostration is by persuading him to put himself in harmony with nature,—to eat the foods that contain strength, and to lay aside the habits that have been unnecessarily sapping his nervous energy. The vitality must be built up by the slow efforts of nature until the jar that has been emptied by excesses and overwork is again filled.

DAVID PAULSON, M. D.

SPECIAL APPLICATIONS OF WATER TREATMENT.

COLD applications to the upper spine constitute a most excellent measure for checking nosebleed. For hemorrhage of the lungs there is no better remedy than ice compresses over the chest and short fomentations between the shoulders. Care should be taken to cover both the lower cervical and the upper dorsal regions. The vasomotor nerves which supply the lungs find exit from the spine in this region, and hence applications made at this point will act with the greatest possible energy upon those vasomotor nerves whereby the blood-vessels of the lungs are controlled.

In cases of hemorrhage from the stomach, lumps of ice may be swallowed, and large ice compresses should be placed over the epigastrium.

Ice and ice compresses are most convenient methods of checking hemorrhage by the direct application of cold to the bleeding parts, or across the trunk of the main artery supplying a bleeding part, as in using the ice collar or cravat in nosebleed. This method of checking hemorrhage is, of course, not adapted to cases of bleeding from large vessels, but applies rather to cases of capillary oozing than to cases in which the hemorrhage occurs from arteries or veins which have been cut or otherwise ruptured.

Other efficient methods are the following: The hot nasal douche for nosebleed; and the hot vaginal douche for menorrhagia, metrorrhagia, and post-partum hemorrhage.

In apoplexy, the ice cap or ice-cold compress to the head is a most appropriate and valuable measure.

In case of hemorrhage from the uterus, short, very hot fomentations or the hot douche may be applied to the spine, and an ice-bag may be placed over the lower

abdomen while a hot vaginal douche is administered.

There is no more powerful means of exciting increased activity of the heart, when this special effect is desired, than by hydrotherapeutic applications. Fomentations over the heart, the application of large, hot compresses over the entire chest and trunk, or to other large areas, hot and cold applications to the spine, hot water drinking, and the hot enema are the most efficient means of stimulating a flagging heart to increased action. The measures named are especially applicable in case of collapse under chloroform and in cardiac weakness in which the disease has not extended to insufficiency of the small blood-vessels, as indicated by general anasarca.

Hot applications over the heart should be avoided in cases in which there is a very considerable degree of cardiac dilatation, as in cases of this sort the indication is for withdrawal of the blood from the heart through dilatation of the surface vessels by means of revulsive applications to the general surface and carefully graduated passive exercise, rather than for excitation of the heart muscle. A very short application of cold to almost any part of the body, but especially to the face or chest, stimulates the heart. The common practise of sprinkling cold water upon the face of a fainting person affords an excellent illustration of the primary exciting influence of cold in rousing the flagging energies of the heart to increased activity.

A cold douche to the feet and over the bladder is a powerful means of exciting vesical contractions, and, used judiciously, is applicable in many cases of motor insufficiency of the bladder. This remedy should, of course, be withheld in cases of retention of urine from obstruction.

The hot enema, the cold enema, the

graduated enema, cold or alternately hot and cold douches, and other applications over the loins and the entire abdomen, especially about the umbilicus, are measures highly efficient in exciting intestinal activity through the impressions made upon the sympathetic centers and the splanchnic nerves.

The hot and cold rectal douche is an excellent means of arousing nervous activity in the semiparalyzed condition of this organ which is so prolific a cause of constipation in persons whose bowels have become inactive through neglect to attend promptly and regularly to daily evacuation.

The cold enema and the graduated enema are also useful measures for combating constipation. The impressions made upon the mucous membrane reflexly stimulate the splanchnics, or motor nerves of the intestines, and, through them, Auerbach's plexuses are aroused to efficient activity, resulting in a restoration of normal peristalsis.

Of the several forms of douche the rain douche, or shower bath, is the most powerful, since it impresses at each instant the largest portion of the surface. The rain douche has been employed by some hydrotherapists in combination with the horizontal jet douche. This combination is, however, too powerful for safety with any except very vigorous patients, unless very moderate temperatures are used.

The horizontal jet, the spinal douche, the circle douche or needle bath, affusions, the wet sheet rub, the towel rub, the sponge bath, the wet hand rub, the plunge or swimming bath, the sitz bath, the full or immersion bath, the Scotch douche, the alternate douche, and various modifications of these baths may be employed in such a way as to produce tonic effects, varying in degree according to the method of application, the temperature and the length of the bath.

Tonic measures are applicable in nearly all forms of disease. Though tonic baths can not always be employed at the outset of a course of treatment, it should be the constant aim to prepare the patient for their employment; and after the beginning of baths which are tonic in character there should be a progressive training in the direction of more and more vigorous applications. Tonic measures are especially indicated in cases of anemia; in all forms of nervous exhaustion, or neurasthenia; in hysteria; in the numerous classes of dyspeptics in which enteroptosis and consequent irritation of the sympathetic nerve give rise to general nervous irritability and exhaustion; in chronic inebriety; in many cases of insomnia; in obesity; in exophthalmic goiter; in convalescence from fevers; and in many other allied conditions.

Tonic applications are indicated in cases of irritable weakness, such as delirium tremens; in the extreme nervousness and agitation which often accompany fevers of grave type, as typhoid and typhus; in hysteria; in many reflex neuralgias growing out of irritation of the abdominal sympathetic; in insomnia; and in the treatment of persons who have been addicted to the use of alcohol, chloral, opium, and other drugs.

In depressed conditions of the nervous system, such as hypochondria, dyspepsia, many cases of melancholia, and general nervous exhaustion without excitability, very exciting applications should be employed, such as the different forms of douche, jet, spray, and rain applications, in which the excitant effects of cold are supplemented by percussion effects. The immersion bath, the wet sheet rub, the wet towel rub (cold, and wrung as dry as possible) are also valuable. In very weak persons, simple dry friction may be employed for a few days at the beginning of the treatment, before vigorous cold

water applications are made, and the skin should be further prepared by some form of hot bath just before the douche.

A few words may be useful in relation to the adaptation of tonic measures to the various classes of invalids who require tonic treatment.

Extremely feeble persons are in the greatest need of tonic treatment, and yet have the least tolerance for cold water; hence at the beginning the very gentlest measures must be employed, such as the wet hand rub, towel friction, sponge bath, salt glow, hot and cold applications to the spine, and similar means.

In many cases it is necessary to confine the application to a small area extending from one part of the body to another in rapid succession, as a hand, an arm, the feet, the legs, the chest, the upper portion of the back, the lower portion of the back, etc., carefully drying and rubbing each part before proceeding to the next. It is best to make the application symmetrical; that is, if the right hand and arm are first treated, the next parts to be treated should be the left hand and arm. This brings into action adjacent and relative nerve centers practically simultaneously, and so secures the maximum effect upon the centers and the parts innervated by them.

In feeble patients, a very unpleasant and discouraging sensation of fatigue is often experienced after tonic applications, especially at the beginning of a course of treatment. The cause is the patient's deficiency in vital capital wherewith to support the loss of heat and the expenditure of nervous energy required by the reaction. The irritable condition of the nervous system occasions a very quick reaction, whereby heat dissipation, through the increased surface circulation, begins before the production of heat has proceeded far enough to repair the loss occasioned by the contact of cold water, and

thus an unpleasant nervous perturbation continues, sometimes manifested by chilliness and various nervous symptoms, which only too clearly indicate the fact that the patient's vital resources are at a low level. Such cases demand the greatest care to avoid producing so great a degree of exhaustion as to discourage the patient, and blight his prospects for recovery. It must never be forgotten that cold water is a most powerful therapeutic agent, and potent for mischief as well as for good, and that an application which, if wisely managed, may produce powerful tonic effects, may by lack of care or judgment become equally depressing and highly injurious.

It must be remembered, also, in making tonic applications of water, and especially in the use of the cold douche, that the skin is abundantly supplied with sympathetic nerves, that these nerves are connected with the great ganglionic system, including the abdominal brain, which controls every vital process in the body, and that there is an intimate association between the sympathetic nervous system and the pneumogastric nerve, which exercises so profound an influence upon the functions of the lungs and heart.

The cough, oppression, and distress experienced in the region of the chest as the result of a very cold application to this part of the body are indicative of the profound influence which such applications exert upon the respiratory center. This fact must be kept in mind in the treatment of persons of nervous temperament, and especially persons subject to asthmatic attacks, or suffering from dyspepsia.

Avoid applications of the cold douche over the stomach, loins, and abdomen in cases of hyperpepsia, ulceration of the stomach, hemorrhage from the bowels, or any form of uterine hemorrhage.

Very anemic persons, such as convalescents from fevers and other wasting dis-

eases, persons who have suffered severe hemorrhage, and especially those who are greatly emaciated as well as weak, must be treated with careful regard for the precautions suggested.

Extremely nervous or neurasthenic patients invariably rebel at the application of very cold water. Some have such dread of cold applications that, if cold baths are suggested, they are likely to seek other medical advice. Such persons must be humored at the start until their confidence is secured. The writer has found it a very good plan to prescribe at first for such a person a hot bath, such as the electric-light bath, vapor bath, or a warm electrothermic bath, which is likely to suit the patient's ideas as to his needs, especially as the immediate effect is usually quieting and comforting. But the hot application is made very short, and is immediately followed by a cold application, very short—one or two seconds; or if at a more moderate temperature, as from 65° to 70° F., of from five to ten seconds' duration.

For a very feeble and anemic patient the Scotch douche generally secures the best effects, as in such cases the heat-producing powers of the patient are weak. This is especially true in the case of patients who are very susceptible and excitable. The bath should be graduated by extending at each successive application the time of the concluding cold application. If the patient is so sensitive that the douche can not be tolerated, employ the wet sheet rub, fomentations to the spine followed by affusion with water at 80° F., the electric-light bath followed by affusion of the same temperature, or the hot air or vapor bath, also followed by tepid affusion or some other similar measure. The patient must be, however, progressively trained to employ water at lower and lower temperatures until short applications of cold water can be borne.

It is not infrequently a good plan to have the patient stand in a hot foot bath while taking the cold jet or spray douche, making the water of the foot bath very hot, so hot that the patient can scarcely stand still in it. The patient's mind is thus diverted to his feet, and the impression of heat is so generalized that a brief general cold application is tolerated without complaint. Or, the patient may be prepared for the cold application by a brief, very hot spray or shower, which must be instantly succeeded by the cold douche to the spine or to the spine and lower extremities. Care must be taken to avoid the abdomen, the chest, and especially the region of the heart in nervous cases, particularly those in which hysteria is a well-marked symptom.

In hypochondria, tonic measures are of the highest importance and are generally well tolerated. It is necessary, however, to precede the cold application by a short, hot bath, carried to the extent of perspiration, so as to secure the elimination of the poisons to which the depression is due.

Rheumatics can take cold applications only after a sweating bath of some sort. The cold application must be very moderate in degree, and painful joints must be avoided. These observations apply also to persons suffering from gout, and cases of neuralgia in which large nerve trunks or extensive areas are involved, as in sciatica, spinal irritation, and myalgia, involving many groups of muscles.

With persons suffering from cardiac disease, with deficient compensation, in arterio-sclerosis, in aepsia, in hypopepsia, in acute mania, in advanced cases of consumption, especially those in which pulmonary hemorrhage is a marked symptom, in diabetes with emaciation, in both acute and chronic Bright's disease, in cases of locomotor ataxia, with persons who have an idiosyncrasy against cold, in

conditions of fatigue from extreme exhaustion,—as violent muscular exertion,—of exhaustion from loss of sleep or expenditure of nervous energy in other ways, very cold baths must be avoided, as also with the very young, that is, children under seven years of age, and the very aged. It should be noted that age must be judged not by the number of years exclusively, but by the evidences respecting senile decay. One person is older at fifty than another at seventy. An elderly person who has been in the habit of taking a cold bath daily may be able to tolerate the cold douche without injury, while another person of the same age, but who has not been accustomed to cold bathing, will be greatly damaged by an application of this sort.

J. H. KELLOGG, M. D.

THE BILE, THE INTESTINAL JUICE, AND THEIR FUNCTIONS.

THE bile, or gall, as it is commonly called, is the product of the liver, the largest gland in the human body. Although probably possessing no specific digestive properties of its own, the bile greatly assists the pancreatic juice in emulsifying fat, and thus rendering it easy of absorption. The bile is chiefly composed of water, salts, pigments, bile acids, and a substance known as cholesterolin, which usually makes up the largest proportion of the material of which gallstones are composed.

The golden color of bile is due to a pigment known as bilirubin. Other pigments are present, but all are formed from bilirubin. Bilirubin is obtained from the coloring matter of broken-down red blood-corpuscles.

In cases of jaundice, in which the function of the liver is disturbed, this pigment is carried to all parts of the body, and deposited, giving rise to the yellow color

of the eyes and skin. This yellow color is readily detected in the eye, as the contrast in color between the pigment and the mucous membrane of the eye is quite strong.

The bile acids are formed by further action of the liver on the products of the pancreatic digestion of proteids. These acids, glycocholic and taurocholic, combine with sodium, and form sodium glycocholate and sodium taurocholate, which are known as bile salts.

The bile differs from the other digestive fluids in that it is secreted by the cells of the liver, and is stored in a receptacle known as the gall-bladder, from which it can be obtained as occasion demands; while the other digestive fluids, as we have seen, are formed in response to stimulation by food.

The food material as it leaves the stomach is in a more or less fluid condition and is strongly acid; the bile and pancreatic juice, which enter the intestine a short distance below the pyloric end of the stomach, are alkaline, and soon make the contents of the intestine alkaline, thus preventing further action of the pepsin of the gastric juice and facilitating the action of the trypsin of the pancreatic juice.

The steapsin of the pancreatic juice splits up part of the fat into free fatty acid and glycerin; some of the alkaline salts of the bile unite with this free fatty acid, forming a soap; this soap then acts upon the remaining unchanged fat, and forms an emulsion. Besides assisting the pancreatic juice in forming the emulsion, the bile has the ability to cause the absorbing surfaces of the intestine to take up more readily the emulsified fat. It has been determined by experiments that this property of the bile is due to the bile salts.

Bile also possesses some antiseptic properties, as is evidenced by the fact that it prevents putrefactive changes from

taking place in substances outside of the body.

INTESTINAL JUICE.

The intestinal juice is a product of the glands of Lieberkühn, which are found distributed throughout the small intestine. This fluid is slightly alkaline, and contains considerable mucus. It is said to possess the digestive properties of all the other digestive fluids, and is able to digest all food substances; in addition it is capable of converting cane-sugar into maltose. This universal digestive ability of the intestinal juice is a wise provision of nature; for the digestion of substances left by the other fluids can be completed by the intestinal juice. Recent investigations seem to prove that the digestive action of the intestinal juice on other foods than cane-sugar is somewhat limited, and that its chief action is to digest cane-sugar.

CHARLES E. STEWART, M. D.

AFTER HOUSE CLEANING.

THE whole world has just passed through another house-cleaning crisis, and with fresh paint, paper, carpets, and delicious atmosphere indoors as well as out, and with everything in "apple-pie order," has settled down with clean hands to enjoy itself for a brief season, until the merciless dust and grime again begin to call for the same old brushes and rags. Then with a sort of despair the housewife will once more take up the same round of efforts at keeping clean, sighing for wings to fly away into some land where dirt never comes, where her hands can be kept, if not altogether as shapely and white as a girl's, yet smooth enough so that they will not stick to everything they touch, and where the nails will not break, nor yet wear mourning borders in spite of all that she can do.

But the awful memories of that gen-

eral house cleaning! Who would not like to have them wiped out forever? Yet as disagreeable as they are, they are not to be compared with the conditions that made them inevitable,—the slow accumulation of filth and bad odors all through the season when germs and fungi, as well as fruits and grains, ripen; the sense of stuffiness that steals over one upon entering the house as winter comes on, and with which arrive chills, fevers, epidemics of various sorts, culminating at last in that mad spasm, house cleaning, from which we are just now taking our first good, long, hygienic breath.

But this annual experience of the home maker and housekeeper is unnecessary. There is a better way.

“Oh, yes,” says one woman, “a better way for people who can have hardwood floors, beautiful rugs, gas stoves, running water on tap on every floor, and a housemaid to do your bidding.”

Certainly; and these conveniences are not to be despised; but they are not all necessary to perfectly hygienic house-keeping. Water is necessary, and soap. But even water can be economized if one must draw it with a weak back from a well fifty feet deep, or carry it from the run or spring forty rods away, or catch it from the eaves of the house in a rain barrel.

There are a few little things to be done every day in every place where people live, things so small as to be neglected from one day to another, and at last left altogether, but which if done in the right way at the right time will take but a few moments, and will prevent the most disagreeable and dangerous causes of the annual upheaval.

First of all there is the bedroom. Since this is where the day begins, we shall consider it first. On arising from the bed, almost every person slips out at the side, leaving the clothing in a tumbled heap in the middle of the bed, which is in itself

one of the most unsightly and discouraging of all disorderly spectacles.

Upon leaving the bed, every man, woman, or child should throw the clothing, including the upper sheet, neatly over the foot-board, and leave it until the toilet is nearly complete; but before putting on the outer garments (unless one really has not time for anything further), dismantle the bed entirely, hanging the clothes on hooks, doors, gas fixtures, chairs, or anything that may be convenient, only so that they are spread open to the air; then before leaving the room throw the window wide open, even in winter. When the time comes for making the bed, instead of sickening odors, which make everything seem vile and take the courage out of the strongest, the fresh atmosphere will have given a touch of cleansing to everything in the room, and the work of putting it to rights will be robbed of the sense of drudgery.

It is more important that the bed should be thoroughly sweetened with fresh outdoor air than that it should be “made up” in the conventional way; more important, if time is very precious to you, and strength slender, that the dust should be gathered up out of the corners with a damp cloth and all the bowls washed and wiped, than that the room should “look just so.” Better a small room, and but few things in it, with an open window through which even the cold air circulates, kept free from accumulations of dust, than a large room filled with every luxury, always warm because always closed against the outer air. No room can be kept in good hygienic condition without being for some part of each day in cold weather too cool for comfort.

But if one must live in two rooms, or even in one, she can bundle up the children, baby and all, as if for an outdoor excursion, put on a jacket, and go on with the necessary work while the fresh

air is given a chance to destroy the germs that have developed overnight; and she will find that her spirits have risen in proportion to the volume of pure oxygen which she allows herself to inhale during the process.

And the children: it will be "great larks" for them—a regular tonic to nerves and blood, and do more toward keeping them free from colds and contagions of various sorts than all the nostrums in the preventive catalogue. Only be sure that they are allowed to give natural expression to the sense of exhilaration which they experience, to dance about and halloo unchecked. A jumping, laughing, hallooing child will never take cold.

Eternal vigilance is the price of cleanliness, as well as of freedom from disease; and now while your house is clean, it is a good time to begin that sort of vigil that will make it unnecessary ever again to turn it all inside out like a pocket to get at the dirt that has accumulated.

Besides the good airing, a few deft little dabs in all the corners and around the edges, a few long sweeps of the damp cloth-covered broom over the floor or carpet to gather up whatever of loose dirt is still hunting for a hiding-place, a few touches of the dry broom overhead and along the walls, and your bedroom smells, *tastes*, and feels just as sweet and fresh as it did when a month ago you said with so much satisfaction, "There, thank goodness, that is done once more."

And do not forget the closet. Provided you shake things well before hanging away, and keep the door open by night and closed by day, you will not need to dust it more than once a week. Arrange your closet so that as nearly as possible everything is off the floor. If you must use the floor for boots and shoes, always have a clean paper neatly spread under them. This will hold the dust, and make cleaning easy.

Do all your dusting, of such articles as

will not be injured by it, with a damp cloth. The object of dusting is not to change the location of the dust about the room, but to get rid of it altogether; and this can only be done by taking it up bodily and holding it until you can wash it off into water, and send it off into the drain. Keep your dust-cloth clean. If it is not allowed to dry dirty but is washed out at once, it will not be any special trouble to care for it. Hang it and all other house cloths out in the air to dry. A line in an open shed will do, but one in the yard is better. When dry, the cloths can be put into a bag or drawer, or hung over a convenient nail or line indoors without "making a smell."

You can cultivate the habit that will cause you to do these things almost automatically, and also, as the old adage puts it, "make your head save your heels," by making one trip up or down stairs, out or in, serve for many errands.

We hope that you did not have to begin in the living room this morning with a lot of yesterday's leftovers lying all about on floor, table, and chairs. If you did, and if you would like a comfortable beginning to your day hereafter, be sure that you and the children put everything in place to-night before going to bed. As you undress the children, take their clothing to the door, and give it two or three brisk shakes in the wind to get rid of the dust, then hang it where it will get the full benefit of all the air that is going.

Let there be ventilation all night through the rooms which have been used by day, unless, indeed, which will be just as well and very comfortable in cold weather, you thoroughly ventilate them the last thing at night, and leave them closed to warm up with a slow fire through the night. Since night air is the only kind you can get at night, and was provided especially to use, don't be afraid of it, but let it in freely.

During the summer the matter of ventilation takes care of itself as a rule; however, very few know how to avoid drafts and still secure plenty of air. You can open the whole house on one side and have no drafts while you will get a healthy circulation. It is in the meeting of opposite currents that discomfort and danger lie.

If your rooms are so small that you can not secure ventilation without the risk of drafts, even in winter you can prevent all harm from an open window close to the bed by drawing a line or placing a screen so that a blanket can be hung between the bed and the window. Do not hang the blanket close against the window, for that would shut off the air. Have it at least six inches away, and high enough completely to protect the sleeper.

Sleeping in a small room well ventilated in this way, even if cold enough for water to freeze, will prove an excellent preventive of colds; and such a system of ventilation is a most effectual deodorizer and disinfectant.

In cold weather the windows should be closed while dressing, but afterward opened for the airing of the bedding as before stated.

As to the carpets and floors, it is vastly better in every way, especially in the common rooms, to use rugs instead of carpets—home-made if you choose, or strips of carpet will do nicely. These can be taken out often and shaken. The children can handle them if they are not too large. They can at least beat them as they hang on a line.

Maybe your floor is a common soft-wood one, with the usual cracks, every one of which is a fruitful breeding-place for a large and enthusiastic colony of germs; but you can make them very discouraged with a few strips of manila paper, some good paste, paint, and varnish. If you have never tried it, you have no

idea what a good floor covering you can make with paper. You can get a dark mahogany-colored paper with which to cover the entire floor of your bedroom; press this closely down into every crack with cloth or brush, and when dry, cover it with two or three coats of good varnish. You can keep this free from dust with a damp broom cloth; by keeping the carpet strips over the runways, and by renewing the varnish once in a while, it can be made to last for years.

But if you wish to cover your floor with carpet, or use one large rug, you can lay a border of paper and varnish, paste strips closely over the cracks, and so prevent one of the most grievous offenses against health which is chargeable to the carpet system.

A carpet should be lifted and beaten just as soon as it begins to retort with dust every time you touch it with the broom. But you can do this, one room at a time, with long intervals between, and make it a regular frolic for yourself and the children, provided you go at it with the true *home* keeper's spirit. In fact, this spirit will take the sting of drudgery out of any work anywhere from cellar to garret.

S. M. I. HENRY.

HOME CLUB QUESTIONS.

PHYSICAL DEVELOPMENT.

1. WHY is it necessary to emphasize the importance of physical training for adults?
2. What are metabolic processes?
3. What classes of adults should give the greatest attention to exercise?
4. What amount of exercise should be taken daily by the adult?
5. What kind of exercise is to be especially recommended for the middle aged?

HEALTHFUL DRESS.

1. What requirements must be met by the skirt?

2. Why not discard the skirt altogether?
3. Why not use suspenders instead of a skeleton waist for supporting the skirt?
4. Is a trained skirt ever sensible?
5. What is the proper length for a bicycle skirt?

SCIENTIFIC COOKERY.

1. Of what dietetic value is fruit?
2. Which contains the more nourishment—fruits or vegetables?
3. Why are unripe fruits unwholesome?
4. What foods combine well dietetically with fruits?
5. Does cooking increase or decrease the dietetic value of fruits?

HYDROTHERAPY.

1. What is the epigastrium?
2. What is meant by "general anasarca"?
3. What is a "graduated enema"?
4. Explain what is meant by Auerbach's plexuses.
5. What is percussion?

PHYSIOLOGY AND HYGIENE.

1. Does the bile possess any specific digestive ability?
2. What are the functions of the bile?
3. What food substances does the intestinal juice digest?

ANSWERS TO HOME CLUB QUESTIONS FOR MAY.

PHYSICAL DEVELOPMENT.

1. BECAUSE the conditions of civilized life have become so unnatural and perverted.
2. With the child's first voluntary activities.
3. They should make a feature of games and sports.
4. Sufficient care is not taken to prevent the children from overexertion; many are taught an undue fear of exposure to all sorts of weather; natural instincts are antagonized, not encouraged.
5. The fatal indifference, procrastination, and prejudice of parents.

SCIENTIFIC COOKERY.

1. Because they contain an unnecessary,

unwholesome ingredient likely to prove detrimental to health.

2. No. Any solid or pasty mass of starchy food can not readily be digested.

3. Use good material, measure accurately, have everything in readiness before beginning to put the material together, put together with despatch, bake in small form, *at once*. If it must wait, put on ice. Bake thoroughly.

4. By agitating and beating a batter; by kneading and chopping a dough.

5. They are equally palatable. The aerated is more wholesome and of higher nutritive value because there has been no loss of substance through fermentation. If well made, aerated bread is more digestible.

THE GENEALOGY OF CERTAIN DISEASES.

1. A constitutional predisposition to disease.

2. Glycosuria is a condition in which there is sugar in the urine; albuminuria is one in which albumin is deposited in the urine; chorea, more commonly known as "St. Vitus's Dance," consists of a tendency to involuntary and irregular muscular contractions of the limbs and face; hemiplegia is a paralysis of one side of the body.

3. Nerves in the skin and mucous membranes.

4. Rheumatism is a disease with fever, pain, inflammation and swelling of the joints; gout is really a localized rheumatism confined to the joints.

5. Because the effects of errors in diet are so far reaching, and violations in this direction are so constant and insidious. Violations of many of nature's laws bring the penalty so speedily that it is much easier to trace the relation of cause and effect.

HYDROTHERAPY.

1. Swooning, or fainting; hardening of the arteries; a condition in which the blood in the body is no longer brought into the proper relations to the atmospheric air by respiration, so as to allow a sufficiently free exchange of carbonic acid gas for oxygen.

2. Striking a sharp slight blow.

3. A pouring on, as water on the body.

4. No. A fomentation is always hot.

5. A shower is liquid falling from a height;

a spray is liquid vaporized by a current of air or pressure.

PHYSIOLOGY AND HYGIENE.

1. Proteids, fats, and carbohydrates.
2. Amylopsin, trypsin, and steapsin.

3. Amylopsin — starchy foods, trypsin — proteids; steapsin — fats.

4. Fat in a finely divided state, as in milk.
5. The fact that it is very difficult to keep it clean and free from germs.

THE CARE OF THE BABY IN SUMMER.

BY KATE LINDSAY, M. D.

EVERY mother justly dreads the heated term, especially for children under three years of age, and more so for those between the ages of eight months and two years. The mortality among bottle-fed infants is often frightful, particularly in cities, where as a rule over two thirds or three fourths of them die during the first year.

All disease comes from some disturbance of the organs of the body, resulting either in disordered functions or damaged tissues. The most common summer disorders are those of the digestive system, and are usually due either to spoiled food or to food which is unsuitable for the infant digestion,—food infected with germs and containing some kind of dirt. Then the intense heat is depressing, and interferes with the elimination of wastes from the body. This leads to poisoning of the tissues by the products of tissue wear; consequently all the organs are more or less hindered in their work. Respiration is slow and shallow, or, if quickened, the breaths are short and shallow; the heart's action is feeble, and the blood is not sent to every tissue rapidly enough and in the amount needed, so all the structures suffer. The skin becomes relaxed, and is often unable to meet the demands made upon it as a heat-losing as well as an excreting organ. At first the sweating may be excessive if the baby is old enough to perspire. The sweat-glands are not active until a child is several weeks old, and during the first years of life are much

more easily exhausted than in the adult. It is a well-known fact that the skin is much more active as a depurating organ when it is clean than when it is covered with dirt; therefore, in hot weather cool and tepid baths should be given frequently. Whenever the little one is fretful, a cool bath will revive it as does the rain a drooping plant. A child of three or four months will usually show how much it enjoys the bath by an unwillingness to leave it. Generally after such a bath, if put into a light nightgown, it will quickly fall asleep.

Every observing person who has watched an infant on a hot sultry day will understand just how the intense heat depresses physical vigor. Even well-fed, healthy infants in the country suffer greatly, and how much worse must be the condition of weak, sickly babies in the filth of crowded city tenements.

In sultry weather, if a child craves water, and is given instead either an extra feeding of breast milk or an extra amount of bottle feeding, it will suffer; for when milk is not digested, it soon spoils, and fills the stomach with all manner of poisonous substances, the result of food fermentation, and thus the stomach and alimentary canal become infected with dangerous disease-germs. One form, the tyrotoxicon germ, grows especially in spoiled milk; and when the stomach of an infant once becomes infected with this deadly organism, it may be weeks before milk can be taken in any form

without making the child violently ill. It is often hard to make mothers and nurses understand that even breast milk, and that of the best quality, may be dangerous to the stomach of an infant already infected with tyrotoxicon and other disease-producing microbes which live and grow in milk. All vomited matter and all discharges from the bowels contain this germ, and will reinfect the patient, also other infants, if it is allowed to contaminate their food and drink. In hospitals one nurse has been known to infect several children because she failed to keep her hands and clothing clean from such discharges. The result was food infection, from which several infants died. All the diapers used should be at once put into some disinfecting solution, as boiling salsoda water, or a five-per-cent. carbolic acid solution, hot; then they must be rinsed, washed, and boiled. Take special pains with the hands, and always wash and disinfect them carefully before preparing either food or drink for the baby. It is well also to wear a clean apron when feeding the baby, to prevent any germs or matter from getting into the milk or feeding vessels.

The dieting of all cases of summer diarrhea is an all-important thing. On a hot day, when the little one feels languid and tired, and there is any inclination to vomiting or purging, at once stop the food, and increase the amount of boiled water used. Sometimes it may be needful to stop the food of even a child a few weeks old for twelve or twenty-four hours, or even longer. Food fermentation in the stomach is worse than want of food, and in some cases of stomach infection a meal of even breast or sterilized milk is as deadly as a dose of arsenic.

Cholera infantum is due to acute infected milk poisoning, and every drop of milk taken into the stomach hinders na-

ture in her efforts to dispose of this load of germs, ptomaines, putrid food, and poisonous exudates. It is like adding fuel to an already blazing fire: it but continues the conflagration, and consumes the infant's life. In these cases a cold drink will often be retained when all else is rejected. Sometimes in the stage of collapse, hot water is most effective.

The main thing in cases of acute catarrh of the stomach and bowels caused by food poisons is to remember that all the fluid of the body is running off through the mucous membrane of the intestines, and that if the patient survives, fluid must be introduced into the circulation. If there is not enough fluid retained by the stomach, it may be supplied by enemas, and in some cases by hypodermic injections. The water used for the injections must be aseptic, as must that used for drinking purposes. Remember also that even when well, the infant in hot weather perspires, and needs more water than when the weather is cooler and there is less elimination by the skin. Just how much the death-rate would be lessened by every mother's reducing the food supply whenever children show by listlessness and fretfulness that they are suffering from heat depression is not shown by any statistics, but the experience of the writer leads her to infer that it would be a respectable percentage.

Want of proper rest is another cause of infant mortality, often too little appreciated by both mothers and nurses. In the hot summer days and nights grown people often become worn out with extreme heat and want of rest. Healthy adults will not suffer seriously for a time if they can obtain five or six hours' rest in the twenty-four, but the infant under one year old should sleep at least from twelve to eighteen hours of the twenty-four, or else it will be irritable, lose flesh, and often become ill from the wear and

tear of the rapidly developing nervous system. Even infants of a very few weeks are frequently kept awake night and day for several days because of the heat and mosquitoes. Malaria, yellow fever, and leprosy have all been traced to insect bites.

Unrest is also sometimes the result of overclothing, this causing the baby to perspire so freely that the skin becomes cold and clammy. Then the least exposure chills the surface, and may result in diarrhea, nasal catarrh, or bronchitis.

Dr. Post, of New York, thinks that babies ought to be allowed to go nude during hot weather, and the writer agrees with him that their comfort would certainly be very greatly promoted if they could be undressed about ten o'clock every day, and not dressed until the cool of the evening. Any one skeptical about the propriety of this proceeding should try the experiment of undressing a six- or eight-months-old baby, hot and fretful, on a broiling July day. Put it into a cool bath, then watch it laugh, and splash the water. After the bath wipe off the water lightly, and lay the child on a clean cot, cover it with only a light, clean sheet, and see how peacefully it will sleep. When it wakes up rested, how it will rejoice in the sense of freedom from hot, restricting clothing! These cool baths may be given several times a day if not prolonged more than from ten to thirty minutes at a time.

In the country it usually needs only a

little pains to have clean food and drink, a clean body, freedom from overheating from bedding and clothing, and protection from insect bites to carry the little one safely through the heated season. It is almost always possible to change the baby to the shady side of the house or under some cool tree. When indoors, the atmosphere may be cooled by hanging wet sheets in the room, which cool the air by evaporation. In the city, the question of keeping the baby cool is not so easy to answer. In America, houses are generally heated by hot air and steam to the point of parboiling and suffocating the inmates in the cold season, but so far little has been done toward inventing any practical method for cooling the house in the hot season. It would seem, when we see the terrible increase in infant mortality during the summer months, that it is of as much importance to the health and welfare of the community to be able to decrease the temperature of dwellings at will as to raise it. And it may be that some genius of the future will invent a patent house-cooler warranted to reduce the temperature in a short time to a moderate point above zero, and maintain it there for any desired length of time. In the meanwhile the best that can be done for the city baby is to take it to the seashore or into the country. Around every city should be established sanitariums where these little ones can be kept to escape the heat, dirt, and foul air of the city.

A PHYSICIAN'S OPINIONS.

BY O. F. BAERENS, M. D.

IF a man's stomach were as sensitive to injury as his eyes, there would be little indigestion or dyspepsia. If every man would eat the food that nature intended him to eat, and eat it properly, many sanitariums would close their doors

for lack of patronage. It is not my purpose to take up the Herculean task of detailing a dietary for the dyspeptics of this country, but I do intend to emphasize a few truths that have come to me in my experience as a physician.

Americans are wont to boast that they are the best-fed people in the world. This is an undeniable fact, for no other country is blessed with so great a variety and wealth of food products. We are largely omnivorous in our habits, and those who have learned from experience that everything that is "good to eat, is bad for them," constitute a small, though powerful minority. Man should be taught that it is sinful to live to eat, and that the price he must pay for a healthy body and soul is to live in accordance with the laws of nature. The fervent prayer of every doctor of medicine practising his profession in this grand old Republic, should be, "Teach me, O Lord, to interpret correctly the signs in thy book of nature, and give unto me the power to impart this knowledge to all sufferers, that they may understand, and, understanding, heed it." The tempting culinary exhibitions of the French *chef de cuisine*, with his sauces, timbales, croquettes; and *pâtés*, are, beyond a doubt, responsible for many cases of indigestion, incurable dyspepsia, rheumatism, gout, much ill temper, and hypochondriasis.

We need not go to the French cook alone, however, to blame him for all gastronomic catastrophies. The average kitchen turns out daily so many insults to man's best friend, the stomach, that it seems well-nigh miraculous that there still are among us individuals with an apparently normal digestive system. I believe most of these mistakes of the kitchen queen are errors of the mind and not of the heart, and the corrective is to be summed up in one word, "education," and this along the lines of scientific physiological research and experience.

Prosperity works injury to many people in many ways, but I will refer here to one instance only. Take a good look at some of the people landing at New York, "just overs," as they are designated. In the

majority of cases you will find them to be people whose circumstances have been so moderate that it was impossible for them to live otherwise than frugally. Often frugality meant to them no meat at any time. After these people have lived here some time, the roses in their cheeks fade, curves give way to angles on the face, the eyes become duller, the sclerotic gradually assumes a yellowish tinge with every variance of the barometer, and they feel twinges through the body, when formerly they could not tell that they had hands, arms, or legs, so far as their aching was concerned. Why is this?—Because the fresh garden vegetables of Germany, England, and Ireland have been replaced by carcasses of cow, calf, or hog,—chiefly hog, at first,—and the good, clear water, by chemical solutions commonly called beer and artificial grape-juice. Their muscular and nervous systems, once working like a machine fresh from the Master's hand, now need, as they imagine, some spring medicine, liver cure, kidney, and other cures less sure, when in reality a little retrospection, combined with untainted common sense, should teach them that they have (because means were at hand) outraged the temple of the soul in such a manner that the Master has asserted himself, indicating by various symptoms that a change must be brought about. This is the acute stage. If this sufferer should now come under the care of some intelligent physician who recognize that it is a case of "frying-pan-itis," coupled with a mild degree of hydrophobia and dread of muscular exercise, resulting as it does invariably in constipation and the accompanying five hundred symptoms, he is indeed fortunate, as it can be set down with reasonable assurance that he will be instructed to eat this and not that, to drink no wine, beer, and other nerve poisons, but water—first, last, and always.

He will have his teeth looked at, and if a dentist's handiwork is needed, he will be told so; his work, his rest, both physical and mental, will be regulated, likewise his recreation. His exercise will be outlined for him, and he will be put on the right path which, if followed faithfully, will ultimately lead to the highlands of health.

It is deplorable that so many physicians associate so intimately symptoms with drugs, contenting themselves with an incidental mention of a few hygienic precautions, which the patient has usually forgotten at the termination of the interview. The poor fellow goes home, and swallows a mixture of so-called "digestants," or perhaps two or three pills, to "stimulate the portal circulation," and

usually feels worse. Unfortunately, the average American has no time to look after himself, or he thinks he has n't, and this state of affairs tells very plainly why the streets of our cities are thronged with dyspeptics, neurasthenics, pale-faced and hollow-eyed men and women. In the fierce struggle for existence, man's waking moments are occupied with the pursuit of the dollar, and his slumbers with hideous nightmares. The advice of dietists and hygienists is unheeded, and the world continues to be peopled with children suffering from the sins of their parents. Will it ever be thus? Who knows? Let us all contribute our mite to the end that man's best friend may no longer be abused and insulted.

THE CONSERVATIVE.

The garden beds I wandered by
 One bright and cheerful morn,
 When I found a new-fledged butterfly
 A-sitting on a thorn;
 A black and crimson butterfly,
 All doleful and forlorn.

I thought that life could have no sting
 For infant butterflies.
 So I gazed on this unhappy thing
 With wonder and surprise,
 While sadly with his waving wing
 He wiped his weeping eyes.

Said I, "What can the matter be?
 Why weepst thou so sore?
 With garden fair and sunlight free
 And flowers in goodly store?"
 But he only turned away from me
 And burst into a roar.

Cried he, "My legs are thin and few
 Where once I had a swarm!
 Soft, fuzzy fur—a joy to view—
 Once kept my body warm,
 Before these flapping wing-things grew,
 To hamper and deform."

At that outrageous bug I shot
 The fury of mine eyes;
 Said I, in scorn all burning hot,
 In rage and anger high:
 "You ignominious idiot!
 Those wings were made to fly!"

"I do not want to fly," said he,
 "I only want to squirm!"
 And he dropped his wings dejectedly,
 But still his voice was firm.
 "I do not want to fly!" he said,
 "I want to be a worm!"

O, yesterday of unknown lack!
 To-day of unknown bliss!
 I left my fool in red and black,
 The last I saw was this—
 The creature madly climbing back
 Into his chrysalis.

— Charlotte Perkins Stetson.

THE BUSINESS OF NUT GROWING.

THE commercial nutting business is assuming greater proportions every year in this country, and the farmers are planting nut trees for profit along with their apple, peach, pear, and plum trees. A nut orchard properly attended to frequently yields as much profit as an orchard of peaches or apples, and the trees can be made to grow on the sides of hills that can be utilized for little else. In New England the bleak, stony hillsides of farms that were considered of little real agricultural value are being successfully planted with walnut-trees, chestnuts, butternuts, and other nut-bearing growths. In the West and Southwest, land that is too wet for corn, wheat, and other cereals is utilized for raising hickory-nuts and pecans. The latter, in particular, will thrive on land that is frequently flooded with water, and in a wild state the trees are mostly found growing on rich alluvial bottoms along the streams of fresh water.

California started into nut culture on a large scale first, and the example she set has been followed by most of the other States. To-day she produces more than two million pounds of English walnuts, great quantities of almonds, improved chestnuts, English filberts, and hazelnuts. In the South the pecan trees have been growing for half a century in a semiwild state, but for ten years now groves of them have been planted and cultivated by the farmers with every promise of success.

The question of nut growing for profit was agitated in this country about ten years ago. At that time our importations of nuts were heavy, amounting to many millions of pounds. They came from England, Madeira, Spain, Portugal, Persia, and many other countries of Europe and Asia. Our few wild trees were neglected, and their fruit ungathered by the

farmers, except for their own private use. It was not thought then that the nuts could prove of much commercial value. The farmers' boys and the Italian venders gathered a small crop every autumn and sold them to the stores in the city for a nominal price. Our chestnuts were the most important, and a large crop of these always found a market in the local towns and cities.

But in ten years now a new industry has sprung up, and developed into one of considerable commercial importance. Not only has the market been supplied with home-grown nuts, but a wider demand for them has been created. The hygienic value of nuts is better understood and appreciated to-day, and the consumption of them has steadily increased in this country. They are used in an endless number of ways in our modern cooking and confectionery. Certain varieties yield a valuable oil, such as the pecan, which is used by clock-makers and gunsmiths and also for table purposes.

The improvement in nut culture began with the introduction of foreign chestnuts. Our native chestnut is practically one species, but there are several other species and varieties found abroad. The European chestnuts are larger than ours, but they are inferior in quality to the wild American chestnuts. A few species of Japanese chestnuts are not only larger but superior in flavor to both. Each species was found to have its drawback. The American chestnuts were hardy, sweet, delicious, and prolific, but small; the European species were large and attractive, and the trees came into bearing in about half the time required for the American, but the nuts were inferior in flavor; while the Japanese species were large, quick bearing, and rich in juicy meat, but the

trees were dwarf in habit, and not perfectly hardy.

The question for the pomologist to decide was how to combine these various good qualities of the several species into one, and eliminate the inferior points from the cross. This has been obtained by selecting good American chestnut-trees for the stock, and working on them the best Japanese species. The result is that a hardy, prolific, early-bearing tree has been produced, with large, delicious nuts that equal any imported from abroad. They are sold in the market as Japanese chestnuts. Some of them are the genuine Japanese nuts from the South and California, where the dwarf trees can endure the climate. But the Japanese and European chestnuts raised in the Middle, Eastern, and Western States are nearly all from grafted or budded native stock. Some remarkable stories are told of the size and quality of these improved Japanese chestnuts; but after making allowances for exaggeration, there is still enough left to cause one to marvel at the success of scientific nut growing. All chestnuts come into bearing earlier by transplanting and cultivation, and all the trees started in orchards are nursery grown. The Japanese trees come into bearing as early as the peach, and when grafted on native stock, they are nearly as early. The burs open without the aid of frost, and the nuts are on the market long before frost appears.

English walnuts have been found to do well in Indiana, New Jersey, and New York, and good crops have been gathered every year for ten years past in several orchards. England imports 150,000 trees from the Continent annually, and we have heretofore drawn heavily upon Europe for our supply. The trees are rather tender, and are likely to be injured by our cold winters unless protected for the first few years of their growth. After that

they seem to do well in our cold climate. In the South and on the Pacific Coast they are not affected unfavorably by the climate, and the trees yield abundant crops.

Next to chestnuts, pecans are probably the greatest of American nuts that are raised and used quite universally in most of the States of the Union. Primarily found growing chiefly in the States south of New York, their line of culture has been gradually extended to all parts of the North. They produce larger crops, however, in the South. In Illinois a native pecan-tree is found which is said to be as hardy as the apple and fully as prolific of nuts as the Southern trees. Even in Michigan pecan-trees are now found. In their wild state the trees are slow of growth, and come into bearing only after a lapse of ten, fifteen, and twenty years. But those cultivated in orchards produce a bushel of nuts in ten years from the planting of the seed, and the crop increases gradually every year thereafter. So important has pecan culture become in parts of the South and West that nurserymen make a specialty of raising the trees from seeds, and a beginner can save time by purchasing two- and three-year-old trees at once for the orchard.

There are many varieties of the pecan, and some are much hardier than others; but the few choice thin-shelled varieties have been greatly improved through systematic cultivation, and they are always found to be the most profitable for planting. Horticulturists say that the trees will grow wherever the hickories and oaks flourish, and that they will last from sixty to one hundred years, always improving in productiveness. In Texas, growers frequently average from ten to fifteen dollars a tree fifteen years after seed planting. So popular has the industry become that a few years ago the owners of orchards on the Gulf Coast dug up orange trees to

make room for pecan-trees. The trees attain immense size, and have to be planted as far apart in the orchard as the apple, the average distance being from thirty-four to forty-two feet. This is the regulation distance for walnut, hickory, and chestnut trees. Almonds and filberts need to be planted closer together—from twelve to fifteen feet. When grown for the timber as well as the nuts, they are planted in rows from eight to twelve feet apart one way, and from five to eight feet the other way.

The shagbark hickory is far more profitable to grow in many regions of the country than the peach. It comes into bearing in about ten years from the seed. The timber of an orchard of hickory trees is of itself a valuable investment in time. Timber men also figure out that it is a profitable investment to plant walnut-trees on any land that can be purchased for twenty-five dollars or less per acre. This is for the timber alone, and the owner has all the additional profit that comes from selling the nuts. Good walnuts sell readily in our markets, and they are easier to dispose of, as a rule, than apples. Trees planted for timber, however, will never produce as large a crop of nuts as an orchard planted in regulation style for the fruit. The trees must be planted close together for timber, and the crowd-

ing injures the nuts. The white walnuts, or butternuts, are fairly profitable, but not so much so as the black walnuts.

The English filbert is also being raised in this country with considerable success. It produces a fine crop in almost any region where peaches thrive, and, as every one knows, the peach region in this country is wide and extended.

Hazelnuts are found growing wild over millions of acres of land in the West and East; but the nuts have always been rather small and inferior. A large and important species has been found growing wild in the far Northwest, and the new trees are being used as stock for the general improvement of the nuts. By careful selection and cultivation the size of the nuts has been increased from one third to one half, and there is every reason to suppose that in the course of a few more years our common wild hazelnuts will be important commercial products. The improved English hazelnut is cultivated here successfully.

Of almonds little need be said. California has entered so extensively into the work of raising them that the crop is valued at hundreds of thousands of dollars. This nut is a native of a warm climate, and its culture will never extend beyond the Pacific Coast and the strip of land bordering the Gulf of Mexico.

Tea Cigarettes.

A new abomination is described by *Medical Progress* as follows:—

“Tea cigarettes are of a grade of green tea which has but little dust, and is composed of unbroken leaf. This is dampened to make the leaves pliable and capable of being stuffed in the paper cylinder, while the dampness is not sufficient to affect the paper. The cigarettes are laid aside for a few days, and are then

ready to be smoked. The feeling of a tea cigarette in the mouth is peculiar. The taste is not so disagreeable as might be supposed, but the effect on the tyro is a sense of thickening of the head and a disposition to take hold of something or sit down. If the beginner stops then, he will not try tea cigarettes again. If, however, the smoker sits down, and tries a second cigarette, inhaling it deeply, then the thickening feeling passes and is suc-

ceeded by one of intense exhilaration. The stage lasts as long as the smoke continues. The agony of the opium fiend is a shadow to that of the nauseated victim of the tea cigarette. Food can not be looked at for hours, yet the first step toward a cure is a cup of tea. An hour afterward comes the craving for a cigarette."

The Average Home Maker.

Mary Roberts Smith, Ph. D., in the *Popular Science Monthly*, gives some valuable suggestions upon "Education for Domestic Life." She says:—

"Several writers have recently called attention to the fact that a woman does not necessarily have an instinct for home making; that while her instinct for the care of children may be strong, she may lack the skill to make a fire properly or to mix the ingredients of wholesome food. Or she may be skilled in handling modern kitchen appliances, but may lack the knowledge of the effect of exercise, regular hours, wholesome food, and clothing adapted to climate, upon the future health and mental development of her children. It seems to be only just now dawning on women that domesticity—the care of the household and children—is in itself a profession for which the best training and the fullest development attainable are not too much. . . .

"The fact that one third of all the women in the United States are married, sets them aside as needing a peculiar training for their profession. . . .

"Without additional illustration, it appears that women are being prepared for everything else but domestic life—the life which, as statistics show, nearly one half of them are living. . . .

"What, then, does the average woman need?—In the first place, a thorough manual training. She needs to know how to cook a wholesome meal properly, to

put it on the table appetizingly, and to do this with the minimum expenditure of energy. It is one of the most hopeful signs in elementary education that kitchen gardening and household training are being introduced into those schools which the children of the general population attend."

The average woman may not need to know how many bones there are in the body, but she does need to know the connection between rich gravies, indigestion, and bad colds. She may not need to know how to bandage a broken arm, but she does need to realize the effect of sudden changes of temperature upon a delicate infant organism. The value of applied physiology in preserving infant life and diminishing hereditary and individual disease can not be overestimated; and no woman is fit to be married who has not had a training which gives her the elements of this essential knowledge.

Apples for Queen Victoria.

All the apples for Queen Victoria's table are said to be imported from New York State. Lady Randolph Churchill introduced the Spitzenberg apple to her majesty about twelve years ago, and since then a supply is sent yearly to Windsor. These apples are highly polished, each one is wrapped in vari-colored tissue-paper, and the barrels are painted in parallel stripes of red and green, and glossily burnished, while around and inside the top of the barrels apple blossoms and leaves are realistically painted. On the head of each barrel is stenciled the address: "To the Under Steward of the House, Windsor Castle, England."

MRS. ELLEN H. RICHARDS says that we send our young men to college to be fitted for thirty-thousand-dollar teachers and three-hundred-thousand-dollar engineers, but we take less care of their food than does the farmer of his fifty-dollar cow.

EDITORIAL.

THE BEST REMEDY FOR SEASICKNESS.

THE writer, while recently crossing the ocean in a Cunard "liner," heard a conversation between an experienced cabin steward and a seasick passenger, a part of which was as follows:—

Passenger: "Steward, don't you know of anything that will cure seasickness?"

Steward: "Well, no, sir. I reckon there ain't any cure for it. I've been to sea many years now, and sometimes I'm a bit sick myself. Even the captain gets sick once in a while."

Passenger: "But is n't there anything that will help it a little?"

Steward: "Well, sir, according to my experience, a clean stomach is the best thing for seasickness, and if you eat anything, let it be a little dry bread and fruit, or just fruit. Let alone the greasy things and the sweet things and the meats and pastries and highly seasoned things. Keep the stomach clean, and you're soon over it."

That sounded like rare good sense, dietetic advice worthy of a place in a classical volume on medical dietetics. Having followed exactly that program with the happiest results,

we were able to testify to its merits. The storm was a bad one, the worst in many years. Waves sixty feet high dashed over the deck. The storm lasted four days, but our total experience of nausea was summed up in about three minutes, and it was not at all severe at that. We simply gave the stomach a good rest, eating nothing but apples and granose cakes for three or four days, and but little of these. Then the battle was over. The waves still rolled high, but the stomach was clean, and the nerves were masters of the situation.

If any of our readers have occasion to cross the ocean in the stormy season, we recommend three things: Keep horizontal, with the head low; put an ice-bag to the back of the neck; keep the stomach clean, free from greasy foods and meats, and eat nothing till there is an appetite for food. A habitually clean dietary before going on board is doubtless a good preparation for such a voyage, as well as for any other nerve strain or test of endurance. It pays to be good—to your stomach, as well as in other ways.

IS DISTILLED WATER POISONOUS?

THERE recently appeared in several Eastern journals an article purporting to emanate from a scientific authority, which undertook to maintain the remarkable proposition that pure distilled water is a poison. It is not necessary to read more than half a dozen lines in the article mentioned to discover that the writer was certainly a tyro in scientific pursuits, and knew practically nothing of the subject of which he was writing.

It is, of course, true enough, as every physiologist knows, that pure distilled water brought in contact with pure protoplasm will cause the protoplasm to swell and perhaps

burst, thus destroying it. This is due to the simple law of osmosis. The movement of fluids is toward the denser medium. It is for this reason that surgeons prefer to sponge raw surfaces with a normal salt solution (six drams to the gallon of water) instead of ordinary distilled or boiled water. But in the use of distilled water for drinking purposes we have no trouble of this sort. No protoplasmic cells and no raw surfaces are exposed to distilled water in the stomach, though there is always in the stomach a quantity of salts, often free hydrochloric acid, and a strong proportion of chlorides which

quickly mingle with the distilled water, thus readily changing its character so as to adapt it to the surfaces with which it comes in contact. When the distilled water is absorbed into the blood, it simply dilutes the saline constituents of the blood, a dilution never extending beyond a certain point, for the reason that the kidneys stand as a protecting sentinel, ready to begin at once the rapid elimination of water, as soon as excessive fluidity of the blood is threatened.

It is thus apparent that no real danger can possibly come from the use of distilled water; that on the other hand many actual advantages are offered. It is free from germs,

free from injurious salts, from lime and other substances with which they are found in combination, if not always of the same uniform quality. The fact that in the laboratory distilled water has been made to destroy protoplasm has no bearing at all on this question, for the conditions under which distilled water is used for drinking and culinary purposes are such as do not involve at all the conditions which exist in the case of the unprotected protoplasmic body. It is a pity that such an unscientific and misleading statement should be allowed to appear before the public.

ALCOHOL AND THE COLD FULL BATH.

THE fashion quite generally prevails, especially in Germany and among those physicians in this country who slavishly affect to imitate German methods, to administer alcohol in some form as a preparation for the cold bath. The unwisdom of this procedure will be apparent on due consideration of the following facts:—

1. The purpose of administering the cold bath is to secure a true stimulant, or tonic, effect by arousing the vital energies, especially through excitation of the nerve centers of the sympathetic and cerebrospinal systems. Alcohol was once supposed to be capable of effecting this, and was used for this purpose in typhoid fever and various morbid conditions accompanied by depression of the vital forces. At the present time, however, it is well known, and with practical unanimity admitted, that alcohol is neither a tonic nor a stimulant, but a narcotic; that it depresses and does not excite the nerve centers, that it lessens and does not increase their activity, and that this is true not only of large doses, but of small doses, as shown by the careful researches of various investigators. In a series of physiological experiments¹ conducted by the writer in 1893, reported at the meeting of the American

Medical Temperance Association held at Milwaukee, in May of that year, it was clearly shown that nervous muscular and glandular activities are all diminished to a noticeable degree by the ordinary medicinal doses of brandy and other stimulants.

It is clear, then, that those who administer alcohol before the cold bath, by so doing antagonize the therapeutic effect of the bath. So far as the alcohol has any effect whatever, it is to depreciate or neutralize the therapeutic effect which the cold application is designed to secure.

2. The effect of alcohol is to cause dilatation of the peripheral vessels. This it does by paralyzing the vasoconstrictors. Alcohol at the same time exercises a like effect upon the accelerator nerves of the heart, which are both anatomically and physiologically associated with the vasoconstrictors, as Waller has so clearly pointed out. By this means, while the heart's action seems to be freer, the movement of the blood through the systemic circulation is slow, as is shown by the stasis in the peripheral vessels, which is clearly indicated by the dusky hue of the skin of a man under the influence of alcohol. The influence of alcohol is in this respect somewhat akin to that of the warm bath. The effect of a cold application, however, is the very opposite; namely, the stimulation of the vasoconstrictors. At first this effect is

¹ For details of these experiments, see the *Medical Temperance Quarterly*, July, 1893.

so pronounced that the blood-vessels are almost completely emptied of their contents, and the skin is blanched in appearance.

As reaction sets in, the caliber of the blood-vessels is increased, but stimulation of the vasoconstrictors continues in that wonderful rhythmic activity whereby the blood is steadily pumped from the arterial into the venous system, resulting in a bright red flushing of the skin, indicating an increased flow of the blood through the periphery, and an increased rate of movement throughout the whole circulatory system.

3. It is not maintained that no preparation for the cold bath is needed, but rather that there is a far better method of preparation than the application of alcohol. This will be found in the application of heat. If alcohol in any way aids reaction, it is not by augmenting the activity of the nerve centers, but by encouraging the relaxation of the surface vessels. But this can be accomplished far better by either a general or a local application of heat, a foot bath, fomentations to the spine, or, when convenient, a general application of heat, such as a hot full bath for one or two minutes, or a hot blanket pack, a hot shower or even hot water drinking, or a hot enema, or by wrapping the patient in warm woolen blankets, with hot bags about him, for a half-hour or so. These are measures whereby the preparation for the cold bath may be accomplished far more efficiently than by any form of medication.

Heat is a natural preparation for cold. The application of heat to surface vessels is a physiological stimulus whereby the centers are aroused to activity, and the thermic nerves rendered in the highest degree capable of responding to the reflex stimulus which the cold applications communicate to the skin, and through it to the nerve centers.

4. While it is true that the patient seems to bear the cold bath better when alcohol is administered, this fact is the strongest kind of argument against the use of alcohol in this connection, for the only way in which alcohol can diminish the shock or lessen the discomfort of the patient during the application of cold water is by lessening nervous sensibility, through its narcotic effect. This can be

accomplished only through the anesthetic, or narcotic, effect of alcohol, and so far as it is accomplished, the effect of the bath is neutralized and its efficacy lessened, for the reason that the whole effect of the cold application depends upon the thermic impressions made upon the skin. So far as this impression is diminished, the effect of the bath itself is diminished. The combination of two such antagonistic measures as alcohol and cold water can not be regarded otherwise than as in the highest degree unphilosophical, and from the standpoint of rational therapeutics, absurd. The practise is one which appeals strongly to the prejudices of the laity and the predilections of quite too large a proportion of physicians as well as patients, but not one scientific fact or even a plausible apology can be brought forward in support of this practise, which we can not regard otherwise than as highly reprehensible.

After twenty-five years' experience in the use of baths of all temperatures, administered by himself and assistants at the Battle Creek Sanitarium, on an average of one hundred thousand baths having been given annually during the past twenty-five years, the writer feels justified in taking a most uncompromising stand against the use of alcohol in any form in connection with hyriatic procedures, as an utterly unscientific and unjustifiable measure. If there are any two agencies in the world which are absolutely antagonistic and irreconcilable, they are alcohol and water. Their application in conjunction gives us, not the sum of two co-operating or complementing agents, but the difference between two neutralizing and antagonistic procedures. We do not hesitate to say, and without fear of contradiction, that in any case in which alcohol may seem to be indicated as a means of preparing the patient for the application of a cold bath, heat may be employed to far better advantage, with the certainty of better results, and with absolute physiological consistency, whereas no reason, with a moment's consideration, can be given for the employment of alcohol in any form under any circumstances.

It is also important that a word be said in reference to the employment of the cold

bath. The idea that no very scientific effects can be obtained from the use of water without resorting to water of very low temperature, is certainly an error. The utility of the cold and very cold bath has certainly been greatly overrated. In France, Beni-Bardi and others have long been contending for the employment of less heroic measures in hydrotherapy and the more general recognition of the utility of wider ranges of temperatures for hydiatric applications.

Since 1873 the writer has made very continual and practical use of hydrotherapy in the treatment of all classes of ailments, acute and chronic, and careful observation has convinced him that cold applications, especially prolonged very cold applications, are rarely useful, and that far better effects can often be obtained by the use of temperatures which do not occasion the patient such distress, and give rise to such apprehension as to constitute a nervous shock either to the subject of the treatment or the friends who may be present. The writer has never found it necessary to exclude the patient's friends from witnessing any treatment applied, because of the alarming or distressing symptoms occasioned by it, and considers it unnecessary to administer such treatment. A measure so violent in character that constant vigilance must be employed to prevent collapse or heart failure can not be regarded as safe for general use. Putting a patient into a very cold bath, and keeping him there until his teeth chatter and until there is such painful shivering that he struggles to escape, is a measure which can not be used without frequently giving rise to grave, if not fatal, accidents. An application which brings the patient so near death's door that the face becomes cyanotic, even though this may occur but rarely, would better be relinquished for other much safer and quite as potent procedures, which the science of hydrotherapy is abundantly able to supply.

It is true that by constantly rubbing the patient during the bath, and by the strictest attention to the pulse, the color of the surface, and the patient's condition in general, any serious effects from cold applications of water may generally be avoided, but it must

be considered that if by the employment of less violent measures the desired good results can be obtained, such measures must in every way be preferable.

If it is deemed necessary to employ the cold bath, friction should be used. A bath at a temperature lower than 80° F. is scarcely safe without it, and even with this temperature the effect upon the patient might be more or less serious without careful attention to this important means of encouraging reaction and maintaining surface circulation. The whole surface should be gone over as rapidly as possible, and continuously during the bath. By this means shivering is prevented. The mechanical irritation of the skin stimulates the action of the small vessels, thus antagonizing the constricting influence of the cold, and so encourages the heat loss, at the same time enhancing, by the constant change in the condition of the circulation in the skin, the reflex movement set up between the skin and the nerve centers.

The use of hot coffee, tea, or other medicants in connection with hydiatric procedures, is to be in every way deprecated, as a sort of mixed and antagonistic therapeutics, for which no good, scientific reason can be assigned. Coffee, like alcohol, is a narcotic. It lessens the susceptibility of the nerve centers to the stimulation of thermic impressions made upon the skin, and thus lessens the effect of applications made, as shown in relation to alcohol, but when it is desirable that these impressions should thus be mitigated, it can be accomplished much more effectively and consistently by raising the temperature of the application, or by preparing the skin for the application of cold water by a preceding hot application, either local or general.

The Germs of Stale Bread.

A recent examination of bread, made at the Bacteriological Laboratory of the Battle Creek Sanitarium, showed that while fresh, well-baked bread gave 240 germs to the gram (15.4 grains), in bread that was kept in a warm cupboard three days, or until it had become slightly stale, the number of germs was nearly six and one-half million.

THE UNNATURAL APPETITE FOR SALT.

THAT the appetite for salt as a constituent of food is an unnatural and wholly cultivated taste, has long been suspected by those whose attention has been called to the matter, and who have become familiar with accumulated facts bearing on the case.

From a biological standpoint it seems unphilosophical to suppose that Nature knew just the right amount of all other salts to put into the food intended for human beings, but either lacked the skill to combine the proper amount of chloride of sodium with the other elements, or else somehow missed getting it in. It is also a most exceptional and inexplicable fact, if it be a fact, that man must take his solid nutriment or food of all other sorts in organic or organized form, salt alone being an exception. Why should we not add sodium carbonate, calcium carbonate, and other salts, as well as sodium chloride?

It has been recently shown by carefully conducted experiments that the phosphates of lime and other similar salts sometimes used in medicine as food remedies are not assimilated, as has been erroneously supposed, but are purely medicines, and not foods in any sense whatever, and it seems safe to predict on physiological grounds that the same may be proved respecting the use of chloride of sodium, if it can be established that the use of this drug was of any real value at all, other than that of a pure condiment.

But recondite argument is not necessary to make clear the fact that salt is not a necessity of life. There are numerous tribes of primitive people who, when found by civilized man, had never made use of salt, and in many cases salt has not become a cultivated necessity with them as with civilized men. The Siberians, the Esquimaux, the Pampas Indians of South America, and many Central African tribes, as well as the Kamchadales, are examples of this sort.

Recently in a conversation with the Rev. Archdeacon Phair, who has lived for thirty-five years among the Indians of Lake Winnipeg, we learned that these Indians when he first knew them were unacquainted with salt. The salt he ate himself was all imported the same as the sugar, and at the same cost. The Indians did not like salt, and have never been induced to eat it. They boil their salt pork three or four times to extract the salt as completely as possible before eating it. They will not eat food containing salt if they can avoid it.

This is another refutation of the idea that salt is a necessary food. There is evidence worth considering that salt in the quantities in which it is commonly used is decidedly injurious; and the thirst which it creates may be a leading-string to beer-drinking and intemperance.

DOES WINE MAKE BLOOD?

WINE is simply a mixture of alcohol and water with some flavoring substance added. The proportion of alcohol is sometimes as low as seven or eight per cent., and again as high as twenty per cent.

Can blood be made from alcohol? This is a very important question, and one on which there is great diversity of opinion. Paracelsus first made use of pure alcohol for the preparation of his Elixir Vitæ. Thousands of physicians to-day recommend that mothers, invalids, and other feeble persons drink wine

and beer, with the idea that these liquors make blood. Perhaps this notion grew out of the similarity in color of wine and blood; at any rate, it is the red wines that are largely consumed for this purpose.

But wine can not make blood; wine interferes with the blood-making process. To be converted into blood, a substance must contain some of the properties of blood. Wine does not resemble blood; it is diluted alcohol. Hence it can not be converted into something so radically different from itself as blood is,

Blood is just as much flesh as any other part of the body; it is liquid tissue; it is liquid flesh; it is a vitalized fluid, and is as much alive as the brain or a nerve.

Alcohol is lifeless, consequently it can not be changed into blood. Nothing but good food—fruits, grains, and nuts—can make pure blood. These foods become blood through digestion. Let us test it: Suppose a man eats bread, apples, and potatoes one day, and the next day you examine him; you find none of these substances. They have been dissolved, converted into blood, and organized into tissue. On the other hand, if you should dissect this man, and discover bread, apples, and potatoes in his muscles, you would rightly conclude that that food had not made blood and tissue.

This is precisely what happens when alcohol is taken into the system. Examinations of men who have drunk alcohol have revealed the liquor in the brain, liver, and muscles; indeed, the whole body was saturated with alcohol as a sponge with water. The poison has been detected in the perspiration and in the secretions of the kidneys. By distilling the breath of such persons, it has been possible to obtain the alcohol again. So alcohol does not make blood and tissue.

Another Cigarette Victim.

We sometimes read in the political papers about the "fool-killer" being around. The fact seems to be recognized that this cruel executioner is on hand all the time, killing poor simpletons by the thousand. The cigarette, the cigar, the quid, and the whisky bottle are among the most potent agencies of death which the fool-killer uses for the extermination of his victims.

There must be very few intelligent persons nowadays who are not aware of the fact that alcohol and tobacco are deadly poisons, and that the habitual use of these drugs must certainly end in miserable and premature death. Those who try to persuade them-

Another natural question is, Can it be used in any other way for the benefit of the body? Investigations have answered this in the negative. We have devised an instrument by which we can determine just how long it takes a man to see, and experiments with it have shown that it takes a person longer to see the letter A, for instance, after taking alcohol than before. Not only does alcohol render a man's sight less keen, but it retards all his other sensibilities.

We have experimented to find out the effect of liquor on digestion, by giving a young man a test breakfast to which four ounces of simple claret of wine had been added. As a consequence, his record was down in the "hypo" territory. Then he was given two ounces of brandy with his test breakfast, and the record showed almost apepsia, or no digestion whatever. This agrees with the experiments of Sir William Roberts, an eminent English physiologist. He put food into a test-tube, and added a little hydrochloric acid and pepsin, making an artificial gastric juice. Next he tried alcohol with the test breakfast, also tea and coffee, and various allied substances. His conclusion was that alcohol certainly does interfere with digestion.

selves or others that tobacco is harmless, and alcohol a food, talk only for the sake of argument. In their hearts they know better, and are saying to themselves all the time, "I will stop when I find it hurts me." After the mischief is done, after they have smoked as many cigars or swallowed as much whisky as nature can endure, then they propose to stop; but it is much easier to begin than to stop. Almost every newspaper records the death of some poor victim of cigarettes; for instance, in St. Joseph a short time ago, there died a boy of fifteen who for four years had smoked cigarettes in increasing quantities until he became absolutely unconscious, and died a miserable death.

ANSWERS TO CORRESPONDENTS.

Ralston Health Club — Hypnotism.—A. E., Illinois: "1. Does the Ralston Health Club teach the same philosophy you do? 2. What is your opinion of hypnotism? 3. Is not 'animal magnetism' a false name for it?"

Ans.—1. We are not very familiar with the philosophy of the Ralston Health Club. Our principles consist simply of the principles of wholesome living.

2. It produces a diseased condition which increases with repetition, hence is not likely to be of service to mankind. It belongs to the same class of phenomena as hysteria and other diseased mental states, and is capable of being used in such a way as to do great harm.

3. So-called animal magnetism is generally pure humbuggery. Hypnotism may sometimes be connected with it.

Eating before Breakfast—Diet for Consumptive.—H. D. S., Massachusetts: "1. Is it good for one who rises two hours before breakfast to eat fruit shortly after rising? 2. What exercise and diet would you advise for a consumptive? 3. Would it be well for him to drink milk between meals and just before going to bed?"

Ans.—1. Your experience would determine whether or not the practise is a good one. It ought not to be particularly harmful, though it might to some degree diminish the appetite for breakfast.

2. A large amount of exercise in the open air daily, a nourishing diet consisting of an abundance of fat- and blood-making elements. Protose, gran-nuts, fruit-coco, malted nuts, granose, granola, browned rice, and similar foods will be found especially helpful. Exercise should be omitted for a few days after a hemorrhage has occurred, and at first should be very gentle indeed, as walking quietly; but great advantage may be derived from the inhalation of cold air, provided it does not induce coughing, which will seldom be the case if care is taken to breathe only through the nose. Care should be taken to expand the lungs well, taking full inspirations at every breath.

3. No. The practise is very detrimental, because it disturbs the stomach. If the amount of food taken is small, and consists only of liquid food, it should be taken at more frequent intervals, say three or four times a day, but the intervals should be regular, and as far apart as possible, usually not nearer than four hours. If there seems to be need of something to relieve the "all-gone" sensation between meals or on going to bed, let it be a little light fruit or fruit-juices.

Indigestion.—Mrs. L. D., Georgia, aged sixty-three, gives her symptoms as follows: "Bloating after eating, prolapsed bowels, great weakness in the back and hips, terrible pain in back and legs, nausea. Walking causes the bowels to bloat; there is a continual buzzing in the head, and at times a sinking sensation. Will a battery used a little every day do any harm? What would you prescribe?"

Ans.—The use of the battery would do no harm, and might afford temporary relief, but would not effect a cure. Amylaceous dyspepsia, or indigestion of starch, and disturbance of the sympathetic nerves from prolapse of the stomach and bowels would cause the unpleasant symptoms mentioned. A natural abdominal supporter should be worn, abdominal massage should be applied, and fomentations over the abdomen at night, followed by a moist abdominal bandage to be worn during the night. The diet should consist of predigested and thoroughly cooked cereals, combined with fruits and nut preparations. Protose, gran-nuts, nuttolene, and toasted granose cakes will be found wholesome. Avoid milk, coarse vegetables, butter, and animal foods of all kinds. Fresh fruits may also be advantageously used.

Colds.—R. M., Ohio, asks for a preventive against taking cold, and also one for the "grippe," which he has had seven times.

Ans.—The thing necessary is to get so strong and well that you will not be subject to colds and "la grippe." When an attack is threatened, if the head is affected, take a hot leg bath from fifteen to twenty minutes, wrapping with a blanket. The water should be as hot as can be borne, increasing the temperature by adding boiling water until a temperature of from 110° to 115° F. is reached. The clothing may be partly removed, and the legs should be well wrapped about with blankets, to retain the heat. If convenient, a hot half-bath may be taken as follows:—

Fill an ordinary full bath-tub half full of water at a temperature of about 100°. Enter the bath, and remain in a sitting position. Add hot water until the temperature is as hot as can be borne, increasing the temperature from time to time. Remain in the bath from fifteen to twenty minutes or until vigorous perspiration is produced. Cold water may be applied to the head, and cool cloths may be placed around the neck during the bath. On leaving the bath, dash cold water over the body from the waist down. Go to bed, cover up warm, and drink hot water very freely. A glassful an hour is a good rule. A little fruit-juice may be added to the water without detriment.

The foot bath may be repeated once or twice a day if the disease manifests itself chiefly in the head and chest. Fomentations may also be applied to the chest for relieving chest symptoms, and hot and cold applications may be made to the back of the neck for the relief of head symptoms. If the head is very hot, cold compresses may be applied. Cold compresses may also be applied to the chest, if found comfortable. Eat nothing but fruit for three or four days; eat all the fruit you want, but do not eat all the time. The fruit should be taken three or four times a day. When catarrh of the throat, nose, or lungs is present, the steam inhaler and the Pocket Vaporizer may be used advantageously. Pain in the back may be relieved by fomentation. The bowels may be opened by means of the hot enema. If the disease is accompanied by pneumonia, the treatment required for that disease should be employed. A good physician should be secured.

Fruit Diet—Soup.—L. J. says that a fruit diet has caused bloating and gas, but that GOOD HEALTH replies to her former question as to the cause that germs made the trouble. When the same magazine says that fruit will kill germs, she can not understand the conflicting statements. This trouble has only come on since discarding meat. If the cooked or raw fruit is taken only with bread, the same effect is produced. She says, "I have been told by a doctor that I have a floating kidney caused by gas in my stomach."

Ans.—There are occasionally cases in which the stomach is affected when germs will grow in fruit-juices, but they are rare. The stomach must be cleansed with a stomach-tube before fruit is taken. Fruit may often be taken alone when it can not be taken in combination with any other food, for the reason that when taken with other substances, the fruit-juices may be so diluted as to render them incapable of checking the growth of germs. The best combination for fruits in cases of this sort will be found in nut preparations, such as protose, nut meals, ambrosia, nut cream, almond or coco cream, fruit-coco, and fig bromose. The next best combination for fruits will be found in zwieback, granose, toasted granose cakes, and browned rice. The floating kidney should be held in place by the Natural Abdominal Supporter.

Lime Salts—Pocket Vaporizer—Blood Purifier—Blotches—Coffee.—Mrs. K. G., Alaska: "1. Is it good for a fifteen months' child to have much lime salts? 2. What food contains them? 3. What can I give him in place of cow's milk? 4. What is the price of the Magic Pocket Vaporizer? 5. What should be done when a child's urine is very strong? 6. What is a good blood purifier in the spring? 7. What causes blotches on a child's face? 8. Should a child whose bowels

move three times a day eat graham bread? 9. What health coffee do you recommend?"

Ans.—1. What the food naturally contains, no more. The use of lime-water is detrimental.

2. Milk and all natural foods contain salts in sufficient quantity. Granose, gran-nuts, granola, Sanitarium infant food, etc., are admirable for a child. Granose is especially satisfactory. Malted nuts, fruit-coco, and bromose may be used in addition. In fact, almost any of the nut foods may be taken with advantage, as they are especially rich in salts.

3. The foods mentioned, especially malted nuts and fruit-coco.

4. The Magic Pocket Vaporizer is furnished by the Modern Medicine Co., Battle Creek, Mich., for \$1.

5. Correct the child's diet, and give it more fluid.

6. The only blood purifiers needed are pure water, pure air, and pure food. These are good at all seasons of the year.

7. Probably indigestion.

8. Fermented graham bread is not very wholesome for children. The granose cakes mentioned will be found much more beneficial. The best form of graham bread for any one, is to cut the bread into very thin slices, and bake in an oven until browned throughout. Frequent movement of the bowels may be due to decomposition of the retained fecal matters. The enema should be used at least three times a week to cleanse the bowels thoroughly.

9. Caramel-cereal is as good a substitute for coffee as any, but we do not recommend any of these beverages. They have no food value, and are on the whole more or less objectionable. Fruit-coco is a food drink closely resembling chocolate, and is wholly free from objectionable features.

Alcohol—Coconut—La Grippe—Insomnia—Cream with Health Foods—Inhaler for Catarrh—Locomotor Ataxia.—Mrs. E. T., Illinois: "1. Will bathing in diluted alcohol poison the blood? 2. Does rubbing the skin with coconut oil nourish the body? 3. What will relieve the pain when the grippe settles in the bowels and kidneys? 4. What will relieve insomnia? 5. Will eating cream on the health foods injure the system when the digestion is slow? 6. Are there any inhalers good for catarrh of the head? 7. What will cure locomotor ataxia, when the patient is almost helpless?"

Ans.—1. Probably not to any considerable extent, if the alcohol is applied in very dilute form, as it evaporates so quickly that little, if any, is absorbed. If applied freely, however, some harm might arise through the inhalation of the alcohol.

2. No; but rubbing, accompanied with the application of oil, may encourage the nutrition.

3. Fomentations over the abdomen and back, a hot trunk pack, or a hot enema.

4. A bath at from 92° to 96°, lasting from half an hour to an hour and a half, just before retiring, followed, if necessary, by the moist abdominal bandage, to be worn during the night. Nothing should be eaten after four o'clock, except a little fresh, ripe fruit.

5. Cream disagrees with some persons to such an extent as to act almost like a poison. It is often better to use fruit-juices, fruit-coco, nut cream, etc., than cream.

6. Yes; the Magic Pocket Vaporizer, manufactured by the Modern Medicine Co., Battle Creek, Mich.

7. Nothing. In such cases the disease is incurable, but not infrequently considerable benefit may be derived from rational treatment. The neutral full bath applied at from 92° to 96° for half an hour or more will be found helpful.

Coconut Oil.—Mrs. J. T., New Jersey, asks: "1. When, where, and how should coconut oil be used? 2. What is its special function? 3. Is it good for children?"

Ans.—1. We know of no coconut oil we can recommend as a food. Coco-cream (Sanitas Nut Food Co.) is a delicious preparation which is perfectly wholesome.

2. Coconut oil may be used as a lubricant if perfectly fresh, but it is generally rancid and unfit for use. Coco butter is generally better.

3. No.

Nuts—Cramps in Limbs—Pain in Stomach.—W. M. C., Utah, asks: "1. Can nuts, such as peanuts and others, be reduced to a pulp in the kitchen, and cooked in various ways? 2. What causes cramps in the limbs? 3. What causes pain in the stomach after eating? 4. What is the remedy for the last two conditions? 5. Your bills of fare always suggest fruit for dinner. Then why do you state that fruit and vegetables should not be eaten together?"

Ans.—1. Yes, in the following manner: First shell the nuts, then place in an oven for a few minutes until the skins are loosened. Rub off the skins by shaking in a rough bag; one made of burlaps is best for the purpose. The skins may be separated from the nuts by tossing in the wind or by blowing with a fan. In drying the nuts, care should be taken not to roast them, as roasted peanuts are indigestible. Place the nuts after blanching in twice the quantity of water. Boil for six or eight hours, if necessary, adding water from time to time to keep them moist. When thoroughly softened and free from the raw taste, they should be rubbed through a fine colander. Put them in the oven, closely cov-

ered, and allow them to cook until slightly browned on the surface, and solid enough to be of about the consistency of butter. Nut butter made in this way will be found to be exceedingly sweet and wholesome.

2. A nervous disorder.

3. There may be many causes; as, ulcer of the stomach, chronic gastritis, fermentation of food, causing distension, etc.

4. Remove the cause. The pain may be temporarily relieved by fomentations. In case two the use of the stomach-tube and a carefully regulated diet is necessary. Avoid the use of fruits and vegetables at the same meal; also avoid the use of mushes and other half-cooked preparations.

5. The avoidance of the combination of fruits and vegetables is not always necessary, with a sound digestion, but persons whose digestion is slow must observe this rule. Far better sacrifice the vegetables than the fruit. Probably one reason why vegetables disagree is because they are taken in a half-cooked state. Boiling does not sufficiently cook starch to render it digestible; vegetables also, being soft, are generally swallowed without sufficient mastication, and hence without the proper admixture of saliva.

Whole Wheat—Milk—Butter—Germs.

Mrs. J. E., Iowa: "1. Is whole-wheat soaked and eaten raw beneficial? 2. Is it superior to whole-wheat thoroughly cooked? 3. Is it as easily digested? If not, why not? 4. Is it unwholesome to use a little Jersey milk on whole wheat, granola, or other preparations? 5. Can a little cream be sprinkled on granose without injury? 6. My baby lives on fruits and granola, but will not eat the latter unless cream is sprinkled over it. Is the combination of fruit and cream injurious? 7. Is butter, the cream having been separated, unwholesome? 8. Can not a comparatively healthy stomach digest whole-wheat bread baked two hours? 9. Are there any more germs in milk than in water? 10. Does not the gastric juice kill the germs?"

Ans.—1. We know of no condition in which such food is especially indicated.

2. No; doubtless there are some cases in which raw starch produces less inconvenience in the stomach than half-cooked starch.

3. No; the starch of raw wheat can not be digested in the stomach for the reason that the saliva will not act upon raw starch. The pancreatic juice will digest raw starch, but it does not come into contact with it until the starch enters the small intestine.

4. Milk behaves almost like a poison in some cases, especially in persons who have dilatation of the stomach. Fruit-juice, coco-cream, and other nut creams are in every way preferable to cow's milk in any form.

5. Fruit-juices are much to be preferred; still, a little sterilized cream may be used, provided there is no evidence that it disagrees.

6. A little cream will probably do the child no harm. It is not the best combination, but if the child thrives, it is probably suffering no injury. But it is better to use malted nuts, fruit-coco, almond cream, etc.

7. Ordinary butter contains millions of germs; is a separated fat not digested in the stomach, and is likely to interfere with stomach digestion. Some form of fat is necessary in the food. However, nut preparations may be obtained which are no more expensive than ordinary cow's cream or butter. Write the Sanitas Nut Food Co., Battle Creek, Mich., for information.

8. Yes.

9. Yes. Drinking water containing one tenth as many germs as are contained in ordinary cow's milk would be condemned as absolutely unfit for use and known to be contaminated with sewage. Milk often contains many millions of germs to the ounce.

10. If the gastric juice is present in abundant quantity, and is strong in quality, it will kill germs in milk; otherwise many millions of persons would be dead to-day who are still alive. But if the milk is taken in large quantities, the gastric juice may not be able to kill all the germs present, or, if the germs be present in large quantity, the same may be true, and in numerous cases the amount of gastric juice present in the stomach is so small, or the quality is so poor, that it is not able to do its work as a disinfectant. It is far better to take a food containing no germs, so that the unnatural and unnecessary task of disinfecting foods may not be required of the stomach.

Twitching of the Body—Diet for Brain Workers—Round Shoulders—Biting Finger Nails.—Mrs. T. A. C., living in W. B., asks: "1. What causes a violent twitching of the legs at night? 2. What diet is best for brain workers? 3. What will prevent a child from becoming round-shouldered? 4. How can a child eight years old be broken of biting the finger nails? 5. Should a pregnant woman take cold morning baths, or should she indulge a longing for ham?"

Ans.—1. An irritable condition of the spinal cord, probably the result of reflex disturbance of the sympathetic nerves.

2. The diet which is purest, simplest, and most easily prepared. A diet of fruits, grains, and nuts is to be recommended.

3. The child should be trained to sit and walk erect. This requires constant supervision, especially if the child is weak, as in such cases the muscles are usually too weak to hold the body erect without

a special and constant effort of the will. If the child can not be made to sit erect, he should be made to lie down when not exercising. A relaxed condition of the muscles should not be allowed when in a sitting or vertical position.

4. Dip the finger nails in a concentrated decoction of quassia.

5. The cold morning bath may be given, using special care to avoid chilling, provided the patient has been previously accustomed to cold bathing. We would recommend protose or protose B in place of the ham.

Diet—Woolen Underclothing.—E. E. L., Pennsylvania, describes his case as follows: "I am not able to attend to business, have nervous dyspepsia, nasal catarrh, enlarged liver, and suffer from constipation and a weak heart. 1. What is the best home treatment for me? 2. Is woolen underclothing the best to wear? If not, why not? 3. What kind would you advise?"

Ans.—1. Your case is too serious for successful home treatment. You ought to visit a good sanitarium. Such an institution will soon be opened at South Lancaster, Mass., or you might visit the institution at Battle Creek, Mich. Even if you could remain but a few weeks, what you would learn would be of inestimable value to you, and give you a start on the road to health.

2. No; it irritates and overheats the skin, and retains the moisture for a long time in contact with the skin, producing a poultice effect. The Russians employ linen underwear.

3. Coarse mesh linen underwear is to be preferred to any other kind. Cotton is next best.

Prolapsed Stomach—Sponge Bath—Hot Water—Gum—Malted Nuts.—O. M. P., Tennessee, asks: "1. How is one to know whether he has a prolapsed stomach or dilatation of the stomach? 2. Is a sponge bath in the morning better than a dip in a bath-tub full of water? How long should one remain in a cold bath? 3. Is a glass of hot water before breakfast better than a glass of cold water for one who has gastritis? 4. Is gum chewing injurious? 5. Is it too much to use twelve quart bottles of malted nuts each month?"

Ans.—1. Not without an examination by a skilled surgeon. Flashing sounds heard in the stomach immediately after drinking a small quantity of water are an evidence of probable prolapsed condition.

2. Either method is appropriate if good effects follow. A dip into a cold bath should always be short if the temperature is low, generally not more than from one to four seconds.

3. In cases of chronic gastritis hot water may be taken half an hour or an hour before breakfast.

4. Yes; it excites the salivary glands, and is besides a very indecorous and unsightly habit.

5. No; not if it is made a part of the regular diet.

Foods for Hypopepsia and Apepsia.—W. S., Montana, wishes to know which of the health foods and nut foods we recommend for hypopepsia and which for apepsia.

Ans.—Of the nut foods: Ambrosia, nutta, proctose C and D, also malted nuts and the nut meals cooked for ten or fifteen minutes. Of the health foods: Fruit-coco, granose, gran-nuts, granola.

Change of Climate for Catarrh of the Stomach.—H. G. asks if a change to a warm climate would be beneficial for one having catarrh of the stomach and bowels; also what should be the diet under the circumstances.

Ans.—1. Change of climate will do no particular good in cases of this sort.

2. Treatment: Give the stomach a rest for twenty-four hours; at most take only a few sips of gruel. Keep the feet warm. Apply fomentations to the stomach and bowels at the beginning of the attack. The stomach should be washed out occasionally. The diet should be simple, chiefly fruits and grains, or fruits and some preparation of nuts. The wet girdle worn at night is a valuable remedy.

Treatment for Smallpox.—J. H. P., Colorado: "1. Please recommend a course of treatment for smallpox. 2. Is milk a healthful diet, provided the cow is healthy, and proper care is taken to prevent foreign particles from getting into the milk?"

Ans.—1. Keep the patient quiet in bed. The food should be simple and easily digested. Thirst may be quenched by the use of cold or cool water, lemonade, etc. The room should be well ventilated, the temperature 65° F. There is no known remedy which will check the disease, and all that can be done is to aid nature in the process of eliminating the poison against which the body is struggling. Large cool compresses on the body, changed frequently, will allay the fever. Cool sponging is also good. When the throat is sore, ice compresses are serviceable. Cold applications will also allay the itching sensations.

An application of an ounce of carbolic acid, one-half pint of glycerin, and two pints of water to the affected parts will keep down the foul odor which is frequently present.

2. Milk, even when pure, is not a suitable diet for adults.

Goiter.—T. H., Michigan, asks what to do for a goiter that was apparently cured three years ago, but which seems to be returning.

Ans.—Do the same thing you did before.

LITERARY NOTICES.

FRANCES SHELDON BOLTON'S new book, **Baby**, is a dainty little volume dressed in white, and designed as an aid to young mothers in securing the physical development of their children. It includes chapters on mother and father, as well as instruction concerning the first bath, the food, teeth, eyes, ears, hair, bed, bottle, bedtime, and even the name of the little one.

The book is written in a clear, simple style, so that very young mothers, who have given no previous thought to the subject, will find it helpful. We consider it a valuable addition to the class of literature to which it belongs, although in the matter of diet we can not fully recommend it. (Mothers' Journal Company, New Haven, Conn. 150 pages. Price, 50 cents.)

Teaching Truth is one of Dr. Mary Wood-Allen's invaluable little books to assist parents in guiding their children through the critical period of the dawn of manhood and womanhood. The subjects treated are handled in such a true, reverential

spirit that only good can possibly result from the imparting of this knowledge to the young boy or girl. (The Wood-Allen Pub. Co., Ann Arbor, Mich.)

In Tune with the Infinite, by Ralph Waldo Trine, has just entered upon its thirteenth thousand. It has been published a little over a year, and the Crowells feel, judging from the steadily increasing demands for it, that it is to have, eventually, a very large and permanent sale. The book deals primarily with the power of the inner forces in molding the every-day conditions of life, and a markedly noticeable feature in connection with it is the number of its readers who buy it for others, there being many cases of a single reader's purchasing from ten to twenty-five copies for this purpose. One reader, a prominent railroad official in the West, since December last has given out over five hundred copies. It will be remembered by some that a few months ago a prominent Boston business man purchased a thousand copies of Mr. Trine's first

book, "What all the World's a-Seeking," for a similar purpose. A German translation of "In Tune with the Infinite" is about completed for publication in Germany. (Thos. T. Crowell and Co., Boston, Mass.)

To those interested in household matters the May issue of **Table Talk** will be welcome, with the directions for the economical carrying out of its menus, and its tested recipes, as well as its practical general reading-matter. A few of the topics of the month are "A Retrospect of the Potato Family," by Martha Bockée Flint; "The Pudding of the Century," by Clara Marshall; "A Cup of Tea," by a Bachelor Housekeeper; "Mrs. Sargent's Experiments," by Mary G. Woodhull; "Mothers Who Need Help, and How to Help Them;" "The Early Training of Children." In addition, women's interests in general, the dining-room, the table, fashions, books, and science in the household all have attention. A sample copy of *Table Talk* is offered to our readers free, if they will send name and address to Table Talk Publishing Co., Philadelphia, Pa.

Sidney Lanier was a musician of exquisite taste as well as a lyric poet, and in the May **Scribner's** are given a number of his letters to his wife upon musical subjects, which are a blending of poetic imagination with musical appreciation.

Self Culture for May comes to hand in fresh spring attire and laden with good things. The magazine continues to merit the compliments paid it in high literary quarters, since, among the cheaper periodicals, there is none that maintains a higher average of excellence, or is a worthier exponent of the national and intellectual life. The magazine's success may well be accounted for if we take the present number, with its timely articles and mass of instructive and entertaining reading, as an indication of the character of the matter it currently places before its readers. Lack of space forbids our mentioning these articles in detail, but they are such as will commend the magazine to all thoughtful minds. (*Self Culture*, Akron, O. Price, \$1 a year.)

Professor William James, in the May **Atlantic**, gives a psychological talk to teachers upon the subject of "Will," explaining its nature and action, the inhibitive influences that tend to arrest or modify what otherwise would be simple acts of volition, and the contradictory and complicated

conditions that result from such reflex or inhibitive action of the nerves.

The **Sanitarian** is a monthly magazine which was established in 1873. Based at the outset upon medical knowledge and sanitary service, over an extensive field of observation in various climates in different quarters of the world, large experience in dealing with epidemic diseases, and practical sanitation for the maintenance of health under the most trying circumstances, the *Sanitarian* is (as others see it) "The American authority for everything appertaining to the healthful condition of the people at large," (*Virginia Chronicle*); "The best sanitary publication in America," (*Mississippi Valley Medical Monthly*); "Easily maintains its superiority over all similar publications," (*Medical World*). "The *Sanitarian* has been the exponent of the most progressive science of hygiene for more than twenty years" (*The Living Church*). (Two volumes yearly. \$4.00 a year, in advance; 35 cents a number. Sample copies, 20 cents — ten two-cent postage stamps. Dr. A. N. Bell, 337 Clinton St., Brooklyn, N. Y.)

The magazine number of the **Outlook** for May is more than usually interesting. It embraces the following noteworthy articles: "The Peace Congress at The Hague;" "Mayor Jones, of Toledo," by Washington Gladden; "Hebrew Prophets and American Problems," by Rev. Lyman Abbott; "America's Working People," by Charles B. Spahr; "Rosa Bonheur at Home," by Th. Bentzon (Mme. Blanc); "Edgar Allen Poe: A Study," by Hamilton W. Mabie; "The Man with the Hoe," a poem suggested to Edwin Markham by Millet's famous picture; "An English Village Worthy," by Clifton Johnson. All these are well illustrated, and with the other usual features of the magazine make a book of rare excellence from cover to cover. (The Outlook Pub. Co., New York. \$3 a year; 10 cents a single copy.)

Is Flesh Eating Morally Defensible? by Sidney H. Beard. That this is the thirty-fifth thousand of this little brochure speaks well for the cause of vegetarianism in England, where the pamphlet is published. It is scientific, and presents the same principles in regard to flesh eating that have been advocated by GOOD HEALTH for the last thirty or more years.

Appendicitis, by H. O. Walker, M. D., Detroit, Mich.

PUBLISHERS' DEPARTMENT.

DR. J. H. KELLOGG, the editor of this magazine, was a delegate to the International Medical Temperance Congress held at Paris, in April. From reports of the congress in the French papers sent home by the editor, it appears that the city of Paris heard some startling views, from the average European standpoint. A *bon mot* in the opening address by Doctor Legrain was as follows: "The abstainer is no longer an absurd ascetic; he is simply a man who refuses to poison himself."

THE thirty-fourth annual meeting of the Michigan State Medical Society was held May 4 and 5, 1899, in the Auditorium at Kalamazoo. The profession of the State was well represented. The papers presented were on live topics, and brought out points of interest. It was gratifying to note that the treatment of various disorders outlined by the authors of several of the best papers consisted of measures which assist nature in bringing about a normal condition; drug medication no longer holds first place in the treatment of disorders whose pathology is best known. In cases in which

the exact pathological conditions are known, rational measures, such as diet, hydrotherapy, electricity, massage, etc., are fast taking the place of the uncertain drug medication.

In an address given by Dr. David Inglis, of Detroit, many points of interest were brought out concerning commercialism in the medical profession. Dr. Inglis stated that "we are living in a time which sets us thinking and sometimes in a rather hopeless way. The medical profession is carrying on a career which, to say the least, is unwise, and is allowing itself to be made use of by the proprietors of patent medicines, who obtain permission to use physicians' names in connection with their remedies, and do so wholly for their own profit."

These words of Dr. Inglis are only too true; and the man who will allow his name to be used for such a purpose is one who is not worthy to be called a member of the medical profession, which is the divinest of all arts.

The last session of the Association was held in the beautiful chapel of the Asylum. After the

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These properties have won for LISTERINE a first place in the lying-in room and in the treatment of catarrhal conditions of the mucous surfaces of every locality.

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An ounce of LISTERINE in a pint of warm water forms a refreshing, purifying, and protecting application for sponging the body during illness or health. A few ounces added to the bath enhances its tonicity and refreshing effect.

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meeting, through the kindness of Dr. Edwards and his associates, the members were given lunch, and shown about the beautiful grounds and through the buildings. In this pleasant place one is struck with the quietness of the patients and the extreme neatness found everywhere.

The following officers were elected : —

President, Dr. A. W. Alvord, Battle Creek.

Secretary, Dr. Collins H. Johnson, Grand Rapids.

Treasurer, Dr. Chas. E. Hooker, " " "

Mackinac Island was chosen as the place of meeting in 1900.

THE thirty-second annual meeting of the Mississippi State Medical Association, which convened in Representative Hall, Jackson, Miss., April 19-21, 1899, was a meeting of more than ordinary interest to the medical profession. The papers presented showed great care and foresight in their preparation, and the knowledge gained from hearing them and the discussion which followed could not but make one feel that the meeting was a success in every respect.

Many of the papers treated of hygiene and prophylaxis, showing that the members of the medical profession of the South are alive to the fact that it is their duty to prevent disease as well as to cure it.

The subject of yellow fever also received considerable attention, and if the sentiment expressed by the members of this Association are carried out concerning the teaching of hygiene and prophylaxis to the laity, it is quite safe to say that epidemics of yellow fever in Mississippi will be less frequent in the future.

Dr. C. E. Stewart had the privilege of reading before the distinguished body a paper written by Dr. J. H. Kellogg, on "The Importance of Intestinal Asepsis in Medicine and Surgery."

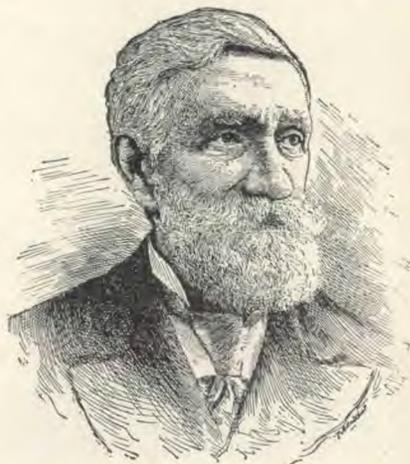
THE work on the Cook-Book announced in the last number has been unavoidably delayed, and we can not promise to deliver it before July 1. All orders received will be carefully booked, and filled in the order in which they are received, as soon as the book is ready.

WE are in receipt of a report from W. R. Hansen, who is devoting his entire time to the circulation of health literature in Utah. He sends a list of seventy-three subscriptions for GOOD HEALTH, and says, "Last Tuesday we had a severe snow blizzard, but in spite of the weather I took eight orders for 'Ladies' Guide' and sixteen subscriptions for GOOD HEALTH in eight hours." From general reports received it is evident that there is an increasing interest in the subject of healthful living.

So far it has been impossible for the Good Health Publishing Company to meet the demands for assistance in this direction. There is opportunity for a number of persons to engage in this work. Those interested will please address Good Health Publishing Company, Battle Creek, Mich., for information.

JAMES LEWIS PRESCOTT.

The Founder of a Great Business.



JAMES LEWIS PRESCOTT, the founder of the house of J. L. Prescott & Company, was born at Epsom, N. H., March 8, 1828. He descended from sturdy New England stock, with an English ancestry, which landed in the Massachusetts colony at an early colonial period.

The name Prescott is familiar to the readers of American history. Mr. Prescott's ancestor was General William Prescott, who commanded at the battle of Bunker Hill, June 17, 1775.

In 1866 Mr. Prescott moved to North Berwick, Maine, and in 1870 began the manufacture of stove-polish in a structure only sixteen by eighteen feet in size. He first put on the market the "Universal" brand, which soon became very favorably known in a limited territory, but the superior quality of the product worried his competitors not a little. The total daily output of about five gross was delivered at the railway station in a wheelbarrow. The business was a success from the start, and yearly increased until it reached an annual sale of about eighteen thousand gross.

In 1888 Mr. Prescott retired from business, and was succeeded by his son, Mr. A. L. Prescott, and Mr. C. O. Littlefield, under the firm name of J. L. Prescott & Company. Mr. J. L. Prescott now lives

at Battle Creek, Mich., where he is passing his days in peace and quietude, and where he and Mrs. Prescott recently celebrated their golden wedding in the midst of a large circle of relatives and friends.

In 1887 Mr. Amos L. Prescott, the present head of the house, conceived the idea that the old-fashioned stick-to-it-all-day method of blacking a stove was a drudgery for housekeepers, and ought to be abolished. He accordingly set about producing the first paste stove-polish which ever proved to be a success. It was put on the market as "Enameline, the Modern Stove-polish,"—a lucky hit, and a product destined to play an important part in the household economy of millions of homes in many lands. It was determined to make Enameline famous through the most vigorous methods of publicity. In a single year more than \$200,000 has been appropriated for advertising.

"It soon became evident," says Mr. A. L. Prescott, "that Enameline was to be the world's stove-polish, and that another location must be selected in one of the great centers of commerce, where adequate facilities for manufacturing and shipping could be provided. This led to the selection of New York City for the new headquarters, and in the spring of 1896, an extensive factory, constructed after modern plans, was put in operation at Passaic, New Jersey, twelve miles by rail from New York, on the Passaic River, where steamers from the vast water connections about New York, Brooklyn, and Jersey City enter the docks of the company every day. The five gross per day of 1870 has grown to an output of nearly five car-loads per day, and is being distributed to every English-speaking country on the globe, as well as in Germany, Scandinavia, Holland, Belgium, and South America."

THE Battle Creek Sanitarium Health Food Company is feeding more than twenty-five thousand people daily with its unequaled products. This enterprising company is constantly developing something new and good. One of the latest improving innovations is the discarding of grease and animal fats of all kinds in the shortening of its crackers. No use is made in this factory of such questionable fats as cottonseed-oil, cotto-suet, and the various so-called butters, made from rancid coconut, with which the market is flooded. The only seasonings used are the choicest nuts, prepared in such a way as not only to provide the necessary shortening, but to be easily and perfectly digestible.

The company is preparing to bring out a number of new products, among which might be mentioned Gran-nuts, a capital food, consisting of just what

its name indicates—cereals and nuts. Every one who has tasted this new product, which has already passed the experimental stage, is delighted with it. This product was first made more than a year ago, but the pressure of business has prevented its introduction to the public until the present time.

Country Uncle— "Bless you, my boy, there's no end of fun in the country. You must come up when it's the time for husking bees."

City Nephew (nervously)— "Deah me! I should n't care evah to husk a bee unless some one would first wemove the sting."— *Pittsburg Bulletin*

WE are indebted to the liberal patronage of the Battle Creek people who so frequently take advantage of our route between Battle Creek and Buffalo. This may be accounted for by the attraction of our modern equipments. For information in regard to rates, etc., on the Grand Trunk Railway System, address E. H. Hughes, Ass't Gen. Pass. Ag't, Chicago; or Ben. Fletcher, Trav. Pass. Ag't., Detroit, Mich.

CHEAP EXCURSIONS, 1899.—Annual Meeting General Assembly Presbyterian Church, at Minneapolis, Minn., May 18 to June 1.

National Baptist Anniversaries at San Francisco, Cal., May 26 to 30.

National Educational Association at Los Angeles, Cal., July 11 to 14.

For all these meetings cheap excursion rates have been made, and delegates and others interested should bear in mind that the best route to each convention city is via the Chicago, Milwaukee & St. Paul Railway and its connections. Choice of routes is offered those going to the meetings on the Pacific Coast, of going via Omaha or Kansas City and returning by St. Paul and Minneapolis. The Chicago, Milwaukee & St. Paul Railway has the short line between Chicago and Omaha, and the best line between Chicago, St. Paul, and Minneapolis, the route of the Pioneer Limited, the only perfect train in the world.

All coupon ticket agents sell tickets via the Chicago, Milwaukee & St. Paul Railway. For timetables and information as to rates and routes call on or address Harry Mercer, Michigan Passenger Agent, 7 Fort street, Detroit, Mich.

LADY AGENTS wanted to sell flavoring extracts and perfumes. It will pay you to write me. R. W. Snyder, 140 E. Canal St., Battle Creek, Mich.