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J. H. KELLOGG M.D.

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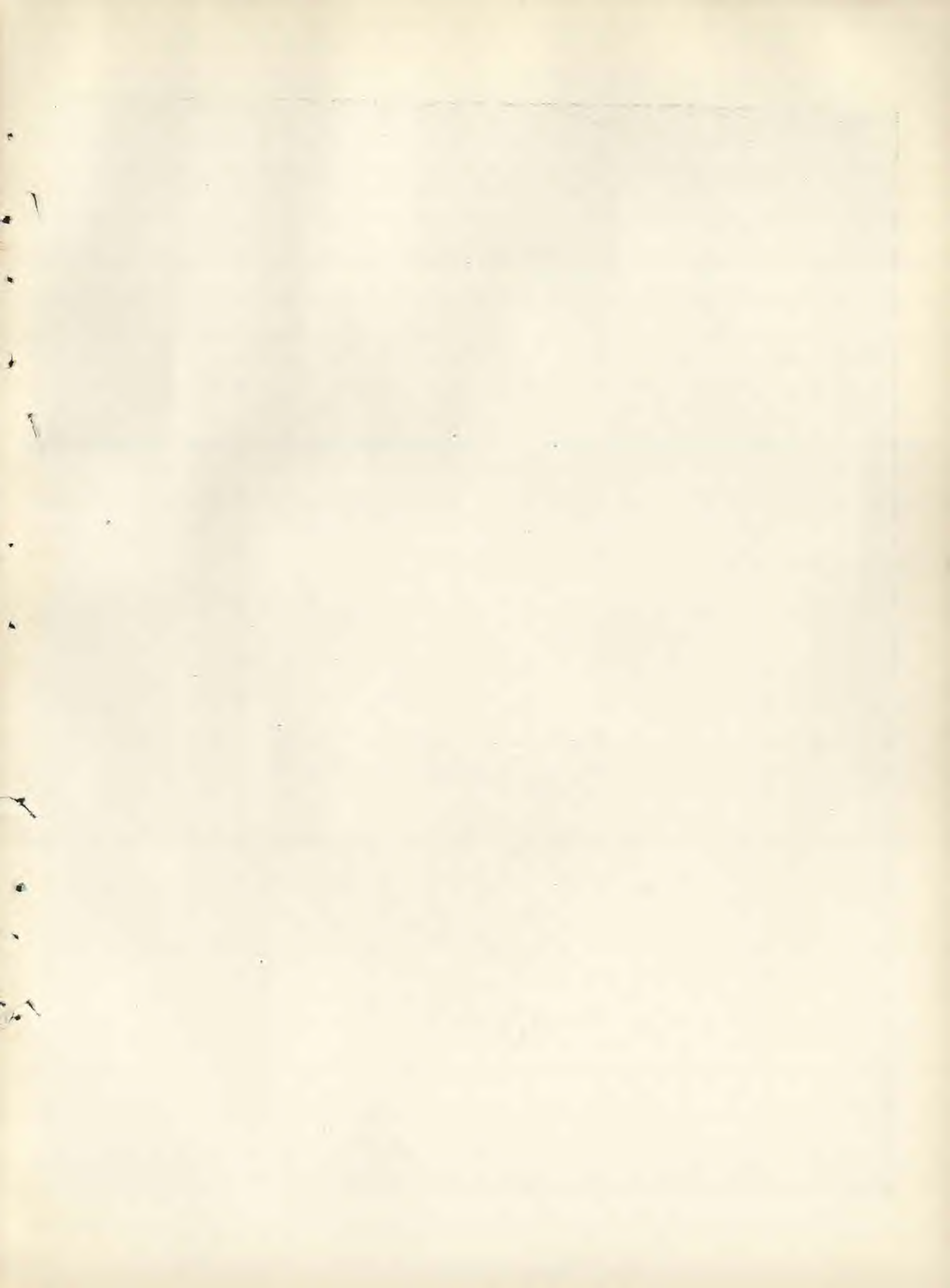
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INTERNATIONAL HEALTH STUDIES.

BY FELIX L. OSWALD, M. D.

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

31.—The Upper Andes.

If it is true that the enjoyment of happy days depends upon the contrast of affliction, the climatic beatitude of the equatorial Andes might seem too monotonous to be altogether pleasant. On the plateau of Quito, at an elevation of 9,000 feet, and only twenty miles south of the equator, the weather, indeed, is that of a New England spring,—never colder, and never, or rarely, much warmer; still, between the twenty-first of March and the end of June there is time for considerable change of temperature, and the climate of Ecuador is by no means as absolutely uniform as considerations of geographical position might lead us to infer.

Changes of the seasons, in the conventional sense of the word, are, of course, unknown; but warm and cool weeks alternate, regardless of calendar periods. In the middle of August a brisk south wind may bring a cool wave from the Andes of Chili, which at that time of the year are frost-chilled by the winter of the Southern hemisphere, and a week later a breeze from the opposite direction may heat the atmosphere with the breath of a Panama sirocco.

The great advantage of the climate consists in the circumstance that the dryness of the air makes both chilly and hot days much more endurable than in damper regions, and that the morning hours, almost without an exception, are ethereally bright and genial, the year round. Out of twenty rain showers, nineteen occur between two and five o'clock in the afternoon, when the ocean vapors, raised by the rarefying influence of the noonday heat, come in contact with the cold-air currents of the upper Sierra, and descend in spray showers, rarely lasting longer than three quarters of an hour.

Nor is the "happiness of contrast" lacking to complete the pleasure of that arrangement. Almost in sight of the Quito tableland, the valley of the Guayaquil River reeks with constant rains, and near the coast becomes almost unapproachable on account of the frightful and continuous plague of noxious insects. The mosquito-torture of the South American lowlands here reaches its climax; fierce wasps of ten or twelve different species resent trespass upon the vicinity of their nest-tree; ants find their way into the inmost recesses of every human habitation, and collect the first-fruits of every field-crop.

From all these plagues, the plateaus of the upper Andes are entirely free, and the priest-ridden condition of the natives is due to the conservatism of all isolated communities, much more than to the influence of climate-bred indolence. The "organ of sublimity," according to Spurzheim, is akin to the instinct of mountain-love, and the equatorial perfectionists have strayed into a rather ultra-fervid type of religious zeal, but are by no means inclined to purchase salvation at the price of mental inactivity. The program of a Quito boarding-school, described a few months ago in one of our Eastern magazines, was exacting enough to appal an Oxford cramming tutor: Class-studies from 7 A. M. to noon; one hour for dinner; studies from 1 to 5 P. M.; one hour and a half for supper and exercise, then back to the classroom till eight. In Western Peru the attempt to enforce a curriculum of that sort, would fill all the hospitals with brain-fever patients.

The bracing influence of the highland air is seen also in the athletic forms of the male aborigines of upper Ecuador and New Granada. Lower Canada boasts the

exploits of a young Frenchman (Louis Cyr), who has repeatedly lifted the enormous weight of a ton and a half; *i. e.*, more than three thousand pounds, and who can swing a hundred-pound dumb-bell for minutes together. He can snap a three-inch plank by sticking one end into the crevice of a rock and bracing his shoulder under the other end, and on one occasion lifted a heavy brick-wagon out of a rut in a muddy road, where a stout horse was unable to move it backward or forward. Nevertheless, it might be doubted if that Canadian Hercules, or any other Northern athlete, would undertake a feat daily performed by dozens of Bogota Indians; *viz.*, to do

legua'—'Watch out, your mercy; just keep awake this next half league; we strike a better trail then, and you can take all the naps you desire.' The present trail, indeed, was none of the best, leading often within three feet of a dizzy precipice, and again among boulders where the track of former travelers was almost lost in the shifting gravel. Yet on such paths, the old *sillero*, with his burden of twenty odd stone, trudged along at the rate of three miles an hour. On anything like level ground, I found it hard to follow him, though I was encumbered only with a woolen *poncho* and a ten-pound pouch full of miscellanies. Only twice in the course of that long journey the porter rested for a few minutes, by leaning sideways against a convenient cliff. 'Would n't it rest you better to sit down?' I inquired, seeing that my Spanish friend showed no disposition to alight.

"'No, this will be best,' said the *sillero*; 'I don't like to sit down low, it hurts my knees to get up again.'

"'How much would you undertake to carry for extra wages?' I asked him when we reached the *posada* that evening.

"'A man with fifty-pound baggage is all I can load,' said he, rubbing his aching hips, 'or perhaps sixty pounds extra, if my rider is not too big. Last year I carried a three-hundred-pound bale of goods to Tambo (a distance of 28 miles), and it made me feel sore for a week—but they only paid me six *centavos* a mile.'"

The reason that horses are not used in preference to men for such kind of work is that the trails are often too dangerous for any four-footed burden

carrier,—Peruvian llamas possibly excepted,—and that there are bridges which a heavy animal could not pass at all; namely, the suspension ropes, which occasionally are stretched over a hundred-foot chasm, and can be crossed only by means of sliding baskets.

Forced marches of that sort in the thin air of the lofty Sierras may explain the fact that the natives, both white and red, are subject to a peculiar kind of asthma, for which the local physicians, like our own, generally prescribe in vain, and which can be cured only by a change of habit. It is quite unknown in the *tierra caliente*, the sultry coast plain, and prevails chiefly on the high *paramos*, where the atmos-



MOUNTAIN TRAVELING IN THE ANDES.

saddle-horse duty for a heavy man, and carry him from morning till night over mountain roads where a pack-mule would hesitate to follow.

A sort of arm-chair, with extra stout uprights, is strapped to the waist and head of the *sillero*, who thus manages to carry a two-hundred-pound traveler, gun, rain cloak, valise and all, across mountains where the grade of ascent often amounts to fifteen hundred feet per mile, and where dizzy chasms have to be crossed on foot logs, hardly thirty inches in diameter. "My traveling companion," says an eyewitness of that performance, "fell asleep in his *silla*, and warned by his snoring, the porter looked back to caution him: '*Cuida, ushed, cuida por asta media*

phere is so rarefied that foreign travelers, with or without an extra burden, experience all sorts of respiratory troubles. Even in the immediate neighborhood of the equator, cereals cannot be successfully cultivated at an elevation of more than eleven thousand feet, but potatoes—*papas*, miscalled “Irish” potatoes, since South America is their natural *habitat*—will grow at twelve thousand feet, and mining operations have created permanent settlements considerably higher up. In Peru and Bolivia, there are silver mines at the very border line of perpetual snow; the tableland of Titicaca, with numerous scattered farmsteads, has an average elevation of 13,000 feet, and the altitude of the hamlet of Antisana, thirty-five miles southeast of Quito, has been variously estimated at 13,500 and 14,000 feet above the level of the Pacific. At all events, the elevation of the little village is more than twice that of the highest summit in the southern Alleghanies, and five thousand feet above the highest peak of Mount Olympus.

The settlers of that ultra-Olympian height have wives and children, and actually contrive to raise a few vegetables in the sheltered nooks of their plateaus, but that abnormal condition of existence has modified their organization in many curious ways. They are thin and bony, but withal remarkably broad-chested, as if their ribs had been obliged to make room for lungs of about twice the ordinary working capacity. A cubic foot of air inhaled at Antisana contains only about 65 per cent of the amount of life-sustaining gases breathed with the same quantum of air on the shores of the Pacific, and the respiratory apparatus of a stranger works at high pressure, in quick, panting gasps, often interrupted by a dry cough. The highland Indians of Ecuador are naturally hearty eaters, but, like their kinsmen of the coast plain, subsist chiefly on vegetable substances, which they consume in quantities that often makes them over-corpulent—a peculiarity noticed even in children of twelve years.

Consumption is very rare outside of the mining communities, with their ill-ventilated hovels, and habits of underground life. In Bolivia and Ecuador, the pastoral Indios attain a fair old age on their airy highland haunts, but as a rule it must be admitted that the health-giving tendency of mountain air reaches its maximum at certain elevations, which strangers in quest of a permanent home cannot surmount with impunity. In Ecuador, that maximum is found at about 10,000 feet; in Spain and California at 6,000–6,500; in the central Alleghanies hardly above 5,000 feet. The Cagots, inhabiting the highest valley of the French Pyrenees, are neither physically nor mentally able to compete with the set-

tlers of the midway terraces, and bear a curious resemblance to the stunted natives of northern Lapland, who likewise suffer thermal misery and dietetic privation.

On the sunny slopes of the equatorial Andes there are large plantations of the tree known as the *theobroma cacao*. Chocolate forms the favorite morning drink of the Ecuador Creoles, and it would be well if we could compromise the poison problem by persuading our Northern friends, who refuse to dispense with stimulating beverages, to limit their potations to the same mild tonic. Chocolate, in fact, does not contain more than one fifteenth of the virulent elements found in tea and coffee, and the split seeds of the cacao tree are actually used for food, like brown beans, whenever the harvest of a large plantation exceeds the demand. Besides theobromine, of which it contains one and one-half per cent, cacao beans contain 22 per cent of starch and gum; 20 of gluten, and 45 of a digestible oil. In other words, cocoa, with or without its admixture of sugar and spice, is a nutriment, though a poor one, and in stress of circumstances, a person could contrive to live upon chocolate alone, for weeks together, while upon tea or coffee he would worse than starve. On strong coffee, without milk, Dr. Tanner could not have lived a week and a half; on chocolate he could have lived two months or longer. A still safer plan, of course, is that recommended for years in the dietetic treatises of GOOD HEALTH; viz., to eschew all tonic beverages whatever, in accordance with the principle that only abstinence is easier than temperance.

About thirty years ago, the investigations of a Swiss physician started a lively controversy concerning the origin of *goiters*. The followers of Dr. Vogt clung to the old theory that the affection is due to the influence of rarefied air, on high, treeless plateaus, while their opponents ascribed it to the prevalence of calcareous impregnations in the drinking-water of certain localities. The latter view is rather strongly confirmed by the fact that goiters of the ugliest kind are found in the limestone region of Derbyshire, England, and on the barren Eichsfeld, a chalk-hill district of northern Germany, east of Gottingen, Hanover. Still, it seems probable that the true cause of the strange complaint will remain one of the unsolved problems of human pathology. Goiters, though very rare on the tablelands of Ecuador, are found in every village of the Cuzco mining district, where no limestone formations are known to exist, and also on the eastern slope of the continent, on the volcanic plateau of Cumaná, near Carácas, where the natives attribute them to the sandstones of the barren Sierras.

(To be continued.)

A SERIOUS MISTAKE.

A CONTEMPORARY quotes the following from Lawrence K. Jerome's "Three Men in a Boat":—

"It is a most extraordinary thing, but I never read a patent medicine advertisement without being impelled to the conclusion that I am suffering from the particular disease therein dealt with in its most virulent form. The diagnosis seems in every case to correspond exactly with all the sensations that I have ever felt.

"I remember going to the British Museum one day to read up the treatment for some slight ailment of which I had a touch—hay fever I fancy it was. I got down the book, and read all I came to read; and then, in an unthinking moment, I idly turned the leaves, and began indolently to study diseases generally. I forget which was the first distemper I plunged into,—some fearful, devastating scourge, I know,—and before I had glanced half down the list of premonitory symptoms, it was borne in upon me that I had fairly got it.

"I sat for a while, frozen with horror; and then, in the listlessness of despair, I again turned over the pages. I came to typhoid fever, read the symptoms, discovered that I had typhoid fever, must have had it for months, without knowing it; wondered what else I had got; turned up St. Vitus's dance, and found, as I expected, that I had that, too; began to get interested in my case, and determined to sift it to the bottom, and so started alphabetically—read up ague, and learned that I was sickening for it, and that the acute stage would commence in about another fortnight. Bright's disease, I was relieved to find, I had only in a modified form, and, so far as that was concerned, I might live for years. Cholera I had, with severe complications; and diphtheria I seemed to have been born with. I plodded conscientiously through the twenty-six letters, and the only malady I could conclude I had not got, was housemaid's knee.

"I felt rather hurt about this at first; it seemed somehow to be a sort of slight. Why had n't I got housemaid's knee? Why this invidious reservation? After awhile, however, less grasping feelings prevailed. I reflected that I had every other known malady in the pharmacology, and I grew less selfish, and determined to do without housemaid's knee. Gout, in its most malignant stage, it would appear, had seized me without my being aware of it; and zymosis I had evidently been suffering with from boyhood. There were no more diseases after zy-

mosis, so I concluded there was nothing else the matter with me.

"I sat and pondered. Then I wondered how long I had to live. I tried to examine myself. I felt my pulse. I could not at first feel my pulse at all. Then all of a sudden it seemed to start off. I pulled out my watch and timed it. It made a hundred and forty-seven to the minute. I tried to look at my tongue. I stuck it out as far as ever it would go, and I shut one eye, and tried to examine it with the other. I could only see the tip, and the only thing that I could gain from that was to feel more certain than before that I had scarlet fever.

"I had walked into that reading-room a happy, healthy man. I crawled out a decrepit wreck.

"I went to my medical man. He is an old chum of mine, and he said: 'Well, what's the matter with you?'

"I said: 'I will not take up your time, dear boy, with telling you what is the matter with me. Life is brief, and you might pass away before I had finished. But I will tell you what is not the matter with me. I have not got housemaid's knee. Why I have not got housemaid's knee I cannot tell you; but the fact remains that I have not got it. Everything else, however, I have got.'

"And I told him how I came to discover it all. Then he examined me, looked grave, and wrote a prescription. I put it in my pocket, and went out.

"I did not open it. I took it to the nearest chemist's and handed it in. The man read it, and then handed it back, saying he did n't keep it.

"I read the prescription. It ran:—

"1 lb. beefsteak, with bread every 6 hours.

1 ten-mile walk every morning.

1 bed at 11 sharp every night.

And do n't stuff your head with things you do n't understand.'

"I followed the directions with the happy result—speaking for myself—that my life was preserved, and is still going on."

The above case is only an exaggerated illustration of the condition of thousands of men and women who are suffering from the ghosts of maladies which might easily be cured by the application of a little common sense. We quite agree with the doctor's prescription for the case described, only we should substitute fruit for beefsteak, having no doubt a more speedy, perfect, and permanent cure in such a case might be secured on a fruit-and-bread diet than with any other bill of fare.

ON THE RIGHT SIDE.—Writing in reference to a certain instance where an individual life had been prolonged beyond the usual limit, despite the habitual use of both liquor and tobacco, the *Progressive Age*, Minneapolis, Minn., gives the following worthy expression of its editorial opinion:—

“The fact that a man has lived to the age of one hundred and three years, though having used whisky and tobacco most of his lifetime, shows what age he might have attained had he been free from those filthy and life-shortening habits. In spite of his abuse of himself, he passed the century. Undoubtedly many years of his life were cut short by those habits. How much more of a man, however good he was, he would have been all these five-score years, had he kept himself clean from the two evils that injured not only himself but imposed upon every one with whom he came in close contact. A man has no right to injure himself, and he has no right to make himself a nuisance by drinking intoxicants or by using tobacco. Every one of God’s creatures has an inalienable right to pure air for breathing purposes. The man who breathes the air full of the aroma of a beer stomach or blows out clouds of nicotine smoke, or ejects saliva in pools, where men and women have to walk, robs them of their inherent rights.

“But we must to a certain extent excuse this old man for the violations of human rights of which we have spoken; for eight or ten decades ago, it had not dawned upon men and women that these habits were so injurious and so unethical. His ripe age only proves to what limit human life may be prolonged, and if under the abuse of selfish indulgence, so many years may be lived, what age may be attained when a clean, pure body has carried a clean, pure mind over the years! We all die too early. It is because ignorantly or intelligently, we commit slow suicide. We should be in the joy of active, beautiful age at one hundred, and when we breed humanity with as great care as we do other animals, and live as naturally as they, we will make our average in years equal to theirs. They live five times the number of years it takes them to mature. We ought to equal their record, which would bring us to fivescore years.”

EAT slowly, and live long.

Doctor (thoughtfully)—“I believe you must have some sort of poison in your system.”

Patient—“Shouldn’t wonder. What was that last stuff you gave me?”

“THE first wealth is health,” says Emerson.

COUNT the cooks; you will then no longer wonder at the innumerable number of human maladies.—*Seneca*.

DR. CRAGIE, author of a work on the practice of medicine, says: “A diet from which the flesh of animals is altogether excluded, is perfectly adequate to the maintenance of the human body in a state of health and strength.”

EXCEPT in children, there remain no traces of that instinct which determines in all other animals, what aliment is natural or otherwise; and so perfectly obliterated is this instinct in the reasoning adults of our species, that it has become necessary to urge considerations drawn from comparative anatomy to prove that we are naturally frugivorous.—*Percy Bysshe Shelley*.

TOO TRANSPARENT.—A recruit was brought up for medical inspection, and the physician asked him, “Have you any defects?”

“Yes, sir, I am short sighted.”

“How do you prove it?”

“Easily enough, Doctor. Do you see that nail up yonder on the wall?”

“Yes.”

“Well, I don’t.”

AN UNFORTUNATE INFERENCE.—*Mrs. Youngwife* (to shopman)—“I want a nice ham, please.”

Shopman—“Yes, ma’am. I can strongly recommend this one; it is well cured.”

Mrs. Youngwife—“Oh! oh! That must be one that has been affected by that horrid tuberculosis the doctors are talking so much about! Thanks! I don’t want it even if it *is* cured! Think I won’t get any meat to-day.”

AN APT REPLY.—In the course of a recent enthusiastic meeting of the Church of England Temperance Society, in London, during a momentary season of quiet, an individual rose in the hall, and inquired of the chairman, “Does not the Bible tell us to take a little wine?” But a member who, fortunately, had his Bible at the tip of his tongue, was quite equal to the occasion; for he promptly arose and repeated the twenty-first verse of the fourteenth chapter of Romans: “It is good neither to eat flesh, nor to drink wine, nor anything whereby thy brother stumbleth, or is offended, or is made weak.”

HEALTH, THE TRUE NOBILITY.

WHICH is the fairest of babes? What man the manliest? Who, among women, the queenliest woman?

Is it the infant ushered into the world amid a nation's plaudits, cradled in damask, and surrounded by all the luxury of wealth, whose dull eye and feeble wail betoken its dire inheritance from generations of royal sinners; or the rosy child, without spot or blemish, which has never ached with pain, feeding at the mother's breast?

Is it the man who daily wakes from restless slumber to battle with one or another of the body's ills, which have pursued him from birth or are the fruits of his own reckless living; or he whose sound body domiciles a sound mind, and whose nerves thrill with ecstatic pleasure to the harmonious tunings of his senses?

Is it she whose existence has been one long plaint of suffering, who hides ill-shaped, attenuated limbs and shrunken bosom beneath rich garments, and by cunning artifices makes that seem which is not, braiding her thin, short hair with other women's tresses, tinting her sallow cheeks, and filling unsightly gaps until they counterfeit nature's rounded outlines; or she whose warm blood courses unchecked throughout her faultless form, mantling her cheeks with rosy hue, moistening her lips with dewy softness, and brightening her eye with lustrous fire, whom time fails to disfigure, and who passes out of the loveliness of youth into the eternal beauty of perfect womanhood?

What is it that thus beautifies the babe, ennobles the man, and glorifies the woman—which no wealth can purchase, no ancient lineage or exalted station secure? Health! Health is the priceless talisman of beauty. Health is the patent of nature's own nobility. Health is the crowning glory of womanhood and of all humanity, the source of all earthly happiness, the mainspring of every human pleasure.

The Greeks deified health, typifying it, like every other good and blessing known to man, in the guise of woman. She was legendized as the daughter of Æsculapius, the god of medicine, and was worshiped with him. She sat by the side of Apollo, the type of manly vigor, and herself the impersonation of female loveliness; was the companion of Pallas, the Goddess of Wisdom, and of Cytherea, Queen of Love. Among the sisterhood of deities none was more fair and honored than the divine Hygeia. Young and old crowded her temples, rejoicing that through her favor the world was so bright and joy-

ous, and life such sweet lingering on earth. Alas! how has she fared in modern times? Her statues have fallen from their pedestals, her beautiful temples have crumbled into ruins, her faith discarded and her precepts scorned. A few votaries of the sweet goddess have preserved the secrets of her cult, and with encouraging success have sought to re-establish her fanes and light once more the sacred fire upon her altars.

Are the rites this deity's service imposes solemn *hyperdulia*, recondite mysteries, only to be mastered by a trained priesthood? Far from it! Health is nature's simplest faith. Its liturgy can be written in the prattle of children and the commonplaces of the peasant. Its laws are fixed, irrevocable, eternal. This do, and thou shalt live and be happy. Do that, and thou shalt surely suffer and die.

If health is but the outcome of self-evident truth; if long life, unalloyed happiness, ecstatic pleasure, are but the recompenses for simply walking in its broad paths; and premature decay, pain, and sorrow, and ungratified desire the certain penalties for wandering in the tangled by-ways that stretch away far from it in unknown lines, why should any need be taught that wherein their interest lies? This is the great mystery of humanity—having ears, they hear not, and eyes, they see not. In every age men have rushed where angels have not sought to tread. While the sanitarian begins his teaching abashed at the simplicity of the lessons he has to inculcate, knowing the stubborn incredulity of the world, on the other hand, he realizes the magnitude of his undertaking.

A perverted religious sentiment is responsible for this disregard of the body's welfare. A system which teaches that the physical man is the enemy of an independent, immaterial personality, called soul or spirit; that the flesh is inherently rotten, vile, and sinful; that the more beautiful its contour, the more sensitive and delicate its organization, the more surely it leads its psychic prisoner toward the gates of hell and eternal damnation,—had but one corollary; that it were good to despise, degrade, and mortify this earthly thing which is all we know as self—which we call father, mother, brother, sister, child. Naturally these earnest strivers after spiritual salvation immured this carnal foe, of which they could not rid themselves and live, in convents, monasteries, and hermit cells, and passed their lives in a long crusade against the pleadings of their senses. They welcomed

pain, the protest of outraged nerves; they endured hunger, the cry of the thin blood for food; they suffered cold, because it antagonized every sense of pleasure; they wallowed in filth in defiance of their educated humanity. The modern Christian, like the older Buddhist, waxed in self-complacent holiness as he tortured, deformed, and degraded his body, preparing the way for fiendish inquisitors, who, in the name of God and Saviour, tore off the sin-cased flesh of gentle maidens with red-hot pincers, and sought to appease the vengeance of a heavenly Father by empaling unbelieving babes. Rather the pagan's homage to that Maker, in whose image he has been fashioned, by glorifying that masterpiece of creative power, the human body—that marvelous mechanism called man. What mortal handiwork can rival this, in the mysterious intricacy of its parts? What other object on earth or in the heavens approaches in beauty that culmination of grace and loveliness—the human form? Grant the soul a distinct identity, can it have a grander temple than this house not made by hands, and should not this be guarded from pollution with jealous care—its avenues closed to every unclean thing, the slimy reptile of disease allowed no hiding corner in its secret chambers, the sacred fire of health kept burning on its altars, daily decked with fresh thank-offerings?

It is only my present purpose to ask your attention to the culpable neglect which has been the natural consequence of the degradation of the body, and to urge upon you, in the interest of every living being, in the interest of every organized community, in the interest of the whole human race, the importance of bestowing the most earnest thought upon the subject of physical culture. All that we know or feel, every desire and gratification, finds expression through the body. Thought, will, emotion, sensation, depend upon the normal action of normally constituted organic molecules. Hence, to think intelligently, to feel acutely, the chords on which these harmonies are rung must be in perfect tune. The aggregate actions of the various organs and apparatus of the body, which we call life, if harmonious and without jar, are what we mean by health. Dim the eye, deaden the ear, silence the speech, and benumb the touch, and what will remain to us of the bright world? Widen the avenues to the senses, let in the flood of light and sound, develop the capabilities of the physical man, and, as he communes with new spheres, he grows in mental stature.

It behooves us, therefore, to cultivate this garden of the soul, in which it lives and thrives; to develop this mortal frame to its utmost, that all these attri-

butes of manhood, which are alone possible through its instrumentality, may be exercised in their highest intensity; not only for the well-being and happiness of the individual, but for the welfare and higher development of the whole race. Rich estates and noble titles are valueless bequests beside the heritage of health. The youth who can boast ancestry free from the stain of transmitted disease has a prouder blazon on his banners than the lordling whose feeble frame bears the indelible mark of constitutional contamination. Invalid parents beget invalid offspring, and these, other weaklings like themselves, whose puny descendants ramify over an entire country. How great, then, should be the concern of the community in the physical condition of its individual members! The contaminated man, seared through folly, ignorance, or sin, does not bear his living burden alone to the grave, but shares it with his wife and child. It leaps the threshold of his home. The blight spreads from household to family, to vicinage, to race. The muddy stream poured into the ocean meets others from like polluted sources, each aiding the other in marring the purity of the broad waters. The physical deterioration evidenced in certain localities, notably in America, by the paucity of children; the abstention from outdoor life; the incapacity for athletic sports; and the high mortality rate, is only temporarily retarded by foreign importation. While the breeding of cattle is carefully fostered, and splendid results obtained by judicious crossing, the human animal is allowed to intermingle without regard to possible funest consequences. The mother confides her spotless daughter to a contaminated husband; the father sees his son deliberately taking to wife the heiress of some other father's infirmity. The warning family records of premature decay are unheeded. Hereditary taints are blindly encountered, and physical vices intensified and perpetuated in malformed and weakly offspring. Nor is the evil wrought, limited to the impairment of the body. Crime is the outcome of physical defects. The brutal outrages, which have disgraced humanity, have been the fruit of impulses ingrained in ill-developed brains, exaggerated by repeated crossing. If the intermarriage of criminal classes is beyond the control of society, and the vipers must breed for slaughter, the enlightened sentiment of the educated should, without the need of arbitrary enactments, restrain the chance, promiscuous sexual alliance of the doomed victims of disease. Why should the future of a family, or a race, be imperiled, to gratify the impulsive whim, the momentary fancy, or even the ardent affection of those who bear the stigma of

an ineradicable physical taint? Men toil and hoard. In the eager greed of wealth, they sacrifice health and strength, and, prematurely old, survey the pile of gold, which is to purchase pleasures they no longer have the capacity to enjoy. The very effort to taste the unaccustomed draught kills them before they should have reached their prime, and, dying, they leave their riches to children framed in the likeness of their own decrepit bodies.

What if the sanitarian succeeds in inducing mankind to heed his warnings? Will not life be made up of self-denials? Will we not have to live, and move, eat, sleep, and dress by rigid rules, so irksome that one would welcome the pangs of pain as penalty for untrammelled pleasure? By no means. It is not a question of a short life and a merry one, without restraint, in contrast with the tedious drawling of years of cheerless asceticism. The song and dance, the music and the flowers, the joyous laugh and sounds of jovial frolicking, are heard and seen among Hy-

geia's followers,—the cry of pain, the wailing of the sorrow-stricken, tears, agony, despair, the gloom of death, among those who have denied her. Let the child learn the simple laws of health, and the man will live responsive to them as automatically as the musician obeys the laws of harmony. Inculcate in the youth that his ambition should be the possession of a healthy physique; in the maiden that no art can rival the charms with which nature will deck her unblemished form; that, however lowly the station or humble the home, he and she may proudly vie with the scions of the richest aristocracy in that vigor of body, that strength of mind, that exquisite refinement of the emotional nature, which constitutes the perfect thinking, feeling, loving, living man and woman; that the blue blood, which is derived from titled progenitors, however many their quarterings, is cold and sluggish in the veins, beside the red blood which has been transmitted from ancestors who have known no stain of disease.

(To be concluded.)

TOBACCO POISONING.

NUMEROUS cases of tobacco poisoning are recorded in scientific literature, the majority of which were the result of the accidental swallowing of a quantity of tobacco, or of the administration of an excessive dose in its medicinal use. Permit me to cite a few cases of this sort.

The first case I will mention, I find in a note from M. de Fourcroy, inserted in his translation of an essay upon the diseases of artisans, by Ramazzini: "A drunken soldier swallowed the saliva while chewing tobacco. He vomited, he fell asleep, he soon awoke with strong convulsions, laughed loudly, uttered violent cries, lost his sight for some time, and appeared to be in a maniacal state."

The death of the poet Santeuil, who died after having drunk a glass of Spanish wine in which a bad joker had emptied the contents of a tobacco pipe, is everywhere known.

One finds in Orfila the following facts:—

An enema with an infusion of two drams of tobacco, caused death in two hours to a child of fourteen years.

Elizabeth P. died fifteen minutes after having taken an enema with an infusion of an ounce of tobacco.

A decoction of two ounces of smoking tobacco, by enema, caused death in a woman twenty-eight years of age.

A young woman of twenty-four years, suffering from obstinate constipation, died three quarters of

an hour after having taken an enema prepared with an ounce and a half of tobacco.

I obtain the following fact from M. Wright: A man who suffered cruelly from hemorrhoids, to relieve himself, sat upon a vessel in which he had placed four or five drams of tobacco with some hot coals. At the end of fifteen minutes he was nauseated and suddenly fell in the most complete collapse. The heart-beats were hardly perceptible, and were intermittent. The respiration was so slow that he was believed to be dead. By the aid of various stimulants he was resuscitated.

Following the application of tobacco leaves, in the case of a woman of fifty years, reported by M. Meyer, the following phenomena were observed: nausea, spasmodic vomiting, hiccough, oppression, attacks of suffocation, extreme prostration, extremities in a cold and viscid sweat, great fatigue, slow and intermittent pulse.

In a note addressed to the Academy of Sciences, M. Nanius reported an observation upon a smuggler, who, having covered his person, next to the skin, with leaves of tobacco, in order to avoid the payment of duty, presented the symptoms of true poisoning—extreme feebleness of pulse, cold sweats, faintness, etc.

Hildebrand has cited a case more remarkable still. All the members of a company of cavalry soldiers had enveloped their bodies with leaves of tobacco,

with the intention of defrauding; and although all of them were great smokers, they were nevertheless taken with headache, vertigo, vomiting, etc.

The following observation is recorded in the *Journal of Chemistry and Toxicology*: A young man of seventeen years had come during the day, on a visit to his uncle, employed at service on a farm, where he occupied a small and badly ventilated chamber. The uncle returned home in the evening, accompanied by two comrades, and all three began to smoke. The atmosphere of the chamber was so much charged with tobacco that one could hardly see. When the two visitors withdrew, the uncle lay down upon the couch, where his nephew had previously retired, when he found the nephew cold, and in spite of all the efforts that could be made, it was impossible to resuscitate him.

Marshall Hall relates that a young man after having smoked ten pipes, was taken with cramps, convulsions, with dilatation of the pupils, and fell into a comatose state, from which he was with difficulty revived.

Helwig tells the story of two brothers who died after having smoked, in competition, one eighteen and the other seventeen pipes of tobacco.

Mackenzie relates an observation upon a man, who, having smoked a pipe and a half of tobacco, swallowing the saliva, was taken with fainting and vomiting, then fell into a profound stupor; his respiration became stertorous (snoring), the pupils were unequally dilated and did not respond to light. He remained four hours in this state, and owed his life solely to the energetic treatment to which he was subjected.

Phenomena of poisoning have also been observed after the application of the juice of tobacco upon a skin disease of the neck; of tobacco juice upon an ulcer; of powdered tobacco upon a wound of the thigh, etc.

In one of the principal towns of the department of Manche, a young man, aged about fourteen years, unaccustomed to the use of tobacco, conceived the idea of smoking to relieve a violent toothache. Hardly had he finished a three cent package when he fell unconscious, continuing thus until he expired.

Acute tobacco poisoning begins almost instantly. A few minutes after the swallowing of the poison, the subject experiences *malaise*, vertigo, a sensation of the hair standing on end, cold sweat, sharp pains in the abdomen or at the pit of the stomach. Then come nausea, violent vomiting, followed by no considerable relief. The trembling which appears whenever a poisoned individual undertakes to use his hands, renders precision of movement impossible. The pupils are widely dilated, a severe headache, affecting by preference the *supra-orbitaire* nerve, torments the patient; salivation is not always perfect; the secretion of the urine, on the contrary, is always greatly increased, and micturition becomes more frequent. The urine is nearly colorless.

The stools are painful, semi-liquid, blackish or greenish, and repulsively fetid. The heart-beats are feeble and intermittent, the pulse small and very weak.

The special senses share in the disorder. Cutaneous sensibility is lessened, sight is disturbed, sometimes even completely obliterated.

In the meanwhile the face is extremely pallid, the patient falls into a profound stupor, interrupted from time to time by partial or general convulsions, by a slight delirium or a burst of laughter. Respiration is sometimes snoring and embarrassed, and sometimes so feeble and slow that it is scarcely perceptible.

Following this frightful array of symptoms, a quarter of an hour, twenty minutes, or a few hours at most, after the poison has been received into the system, death occurs either in the midst of a convulsion or during the coma which succeeds it.

At the autopsy a remarkable pallor of the tissues is found. The lungs are dense and grayish, sinking in water instead of floating. The brain and the heart are engorged with black fluid blood. The digestive tube, the stomach notably, presents some traces of slight inflammation, some effusions of blood, and some spots of *ecchymosis*.

[The above picture of the symptoms of tobacco poisoning, and illustrations of the extremely toxic properties of this noxious weed, we translate from a recent number of the *Journal de la Societe contre L'Abus du Tobac*.—EDITOR.]

“On the day of judgment,” says Jean Paul, “God will perhaps pardon you for starving your children when bread was dear; but if he should charge you with *stinting them in his free air*, what answer shall you make?”

ONLY NATURAL.—*Esteemed Family Physician* (to young patient convalescent from the influenza),—“Well, my dear, what did you dislike most about the influenza?”

Ethel (aged seven)—“The medicine!”

LONG LIFE.

LONG life has at all times been the chief desire, the principal object, of mankind. How can it be secured? How can the flame be supplied with fuel? These are questions which have always engaged the attention of the deepest thinkers. Perhaps the most interesting and instructive example of the ability to prolong life and preserve health, is given in the writings of a wise old man, who owed his century of existence to a strict adherence to the principles of sobriety and moderation.

Luigi Cornaro was born at Venice about the year 1465. He died in 1566, at Padua. He belonged to one of the old families in the city. He began life with a bad constitution, and a long course of excesses had, by the time he reached the age of thirty-five, reduced him to a state of extreme misery. For four or five years he remained in constant bodily and mental suffering. Gout began to lay hold of him; he was tormented by pains in the stomach and by perpetual feverishness and thirst. His physicians pointed out to him that his chronic ailments must have their cause in his habitually disordered life, and urged him again and again to change it. He was long convinced of the truth of what they said to him before putting their advice into practice. For a while he pretended to follow it, still eating and drinking as before, and concealing the fact from his doctors,—“as all patients do,” he adds with some humor.

At last he found the strength of will to adhere strictly to the diet and mode of life prescribed for him; and at the end of a year he found himself, instead of a broken-down, hopeless invalid, unfit for either work or enjoyment, a healthy and singularly active and happy man. He then came to the natural conclusion that the regimen which had overcome the effects of excesses and repaired the natural weakness of his constitution must be the one to keep him permanently in health; and from that time onward, during the sixty years which remained to him of life, he never, except in the rarest instances, and then to his hurt, swerved from it. He had more than completed his eightieth year before he set himself down to write his experiences for the benefit of others. During forty years he had lived a life of almost unbroken health and happiness,—a life which contrasted

as much with that which he had led himself in his earlier days as with that which he saw commonly lived by others around him.

Cornaro's regimen was, as he tells us, intended for himself alone. All people should live temperately, but the temperance of one man is the excess of another. Cornaro's method is the simple one, that each man should find out for himself the suitable quantity of food and drink he should take, and live accordingly. Cornaro's daily allowance of food weighed twelve ounces. On one occasion, after he had slightly increased the quantity, he became in a few days “choleric and melancholy,” and soon fell into a violent fever, from which he only recovered by returning to his former regimen; he never ate or drank to the extent of his appetite; avoided extremes of heat and cold; was careful to have sufficient sleep.

To keep clear of grief, melancholy, hatred, and other perturbations of the mind, was also an essential part of his system; though temperance in eating and drinking will do much to counteract mental trouble, as well as to neutralize the effects of bodily hardships. Once, when powerful enemies brought a suit against him, he kept his equanimity and won his case in the end; while his brother, who had led an irregular life, died of anxiety, while the case was still going on. If men were but temperate as he, they would live to be one hundred years old. He himself intended to do so, and to die at last, not of disease, but of “*pura risoluzione*.” If he had had a good constitution to start with, he would have reached one hundred and twenty years instead of only one hundred. He did, in fact, die at the age of one hundred, if he did not surpass it.

Every person, at least every one that is not afflicted with organic trouble, or who has not neglected too long the observance of the laws of nature, has within himself the power to prolong his own existence, as well as to improve and to secure his own health. In life insurance we find that the best risks are not the most robust men nor the athletes, but the men who, without organic trouble or inherited tendencies to disease, are yet obliged to take care of themselves—men who, like Cornaro, live with sobriety.—*Sel.*

THE Sandwich Islanders have a proverb: “If strong be the frame of the mother, her sons will make laws for the people.”

Undertaker (to youth who is lighting a cigarette)—“That's right. You smoke the cigarettes; we do the rest.”—*New York Press.*

ONE OF MANY.—The following is said by an exchange to be a true story :—

“A young man, a student, having no resource but the teaching of a country school, took board at a German farmer’s, where fat, rich food was supplied and largely consumed, and where the sleeping-rooms were warm, close, and crowded. As he had always acted on the principle of trying to do what he found any one else could do, he saw no reason why he should not imitate these hearty people in their eating, although his was a sedentary, confined life, and theirs an out-door, active one.

“He married from this family, and his own table was supplied freely with the same sort of fat cakes, strong meats, pies, and coffee. Headaches and bilious troubles set in and became overpowering. The doctor gave calomel and other powerful drugs freely. This doctor was a large, fine-looking man, ruddy with health, riding far every day, and in all weathers. Once, in conversation, he said he never took medicine himself; if a little surfeited or oppressed, he ate nothing for a day, unless, perhaps, some apples. ‘If that plan is good for you, it may enable me to change my state of misery for yours of happy, rosy health,’ thought this sufferer, and he too resolved to try abstinence. He had the fortitude to go without coffee for some weeks, and had less sick headache. He used less butter, fat, and sugar, and things compounded of them, and lived in the fresh, open air, and so slowly regained more ease and comfort.

“The German farmer and his wife died before they were sixty. All of their large family have followed them. The young teacher who learned in the eleventh hour the virtue of simple abstemiousness, and had the resolution to practice it, lives yet in a serene and evidently comfortable old age.”

RUSSIAN DIET.—A recent Russian correspondent of the *N. Y. Independent*, in commenting on the increase of famine in that country and the difficulty in the way of supplying the nation’s need by the products of other countries on account of the peculiar prejudices of the Russian laboring class regarding some particular foods, gives the following items of information concerning the simple fare which has contributed largely towards a race of vigorous and long-enduring peasantry and hardy Russian soldiers :—

“The Russians do not eat wheaten bread; they loathe it. Of the more than 100,000,000 of the population, there may be two or three millions that use wheat. The army, the navy, the peasantry, the whole working population, use rye bread, or rye and

barley, or barley bread. Nothing but actual starvation will bring them to the use of fine wheaten bread. In the Crimean War, in 1855, eight hundred Russian prisoners were sent to the English Commissary-General at Constantinople, to provide for. He gave them the same generous rations which the English soldiers had. The bread was of the best quality, superior, as officers and soldiers confessed, to the bread served to them in England. In a few days the whole eight hundred Russians rebelled against it. If some of it was eaten, the rest was thrown away and trampled under foot.

“The contractor represented the dissatisfaction to the Commissary-General, who sent for the Russian colonel and a deputation of the men. The colonel was an educated German in the service of the Czar. He assured the General that the fine white bread was equally bad for the palate and the health of the Russian soldier. Moreover, they wanted more salt fish and less fresh meats, etc.

“‘Make out your own rations,’ said the General; ‘such as would satisfy you in your barracks at home.’ He then passed the list to the army contractor, to see if he would demand any change in the contract.

“After careful examination, he returned it, saying that with the proposed changes, he would consent to twenty per cent discount on his contract.

“The General would consent to no change in that direction. He said Her Majesty’s Government would pay the same for the Russian prisoners as for its own soldiers. So the affair, which had threatened a serious disturbance, was amicably settled. The Commissary-General was satisfied, the prisoners perfectly contented, and the army contractor of supplies jubilant.

“The stolidity and solidity of the Russian peasant are phenomenal attributes. Under Peter the Great, ten thousand consented to have their heads shaved off rather than their beards. They will, no doubt, be equally solid against wheaten bread, and famine will be as merciless as was Peter the Great.”

THE Scotch very sensibly attribute their ability, honesty, and perseverance to oatmeal porridge, and their faults and failings to barley beer.

DR. ADAM SMITH, in his “Wealth of Nations,” says: “It may indeed be doubted whether butcher’s meat is anywhere a necessity of life. Grain and vegetables, with the help of milk, it is known from experience, can, without any butcher’s meat, afford the most plentiful, the most wholesome, the most nourishing and most invigorating diet.”

THE HOME GYMNASIUM



HEALTH, GRACE, AND BEAUTY. — ELEVENTH PAPER.

Walking.

WALKING, like other forms of physical exercise, is so much neglected in these days of undue haste and excessive luxury, that it is in danger of being relegated to the galaxy of lost arts. In the city, the business man steps from his office or residence into a hack or an elevated railroad car, and is carried on wheels to his destination, and keeps a carriage for the use of his wife and daughters. Not infrequently the postman even rolls along his beat on a tricycle. In the country, the farmer's boy who has an errand to a neighbor's half a mile distant, prefers to take the trip on four legs instead of two, and mounts the extra horse kept handy by for such emergencies.

The result of the general neglect of exercise with the lower limbs is shown in the decided decay of leg vigor among the moderns. This increasing weakness in the lower extremities is made very conspicuous by a comparison of the jumping ability of the ancients and the moderns. History records that a certain Spartan made a long distance jump of fifty-two feet, and a native of Crotona outdid him by two feet. The best jump of the century was made by George Washington, who, in the long running jump, covered twenty-four feet. Frasier, the champion jumper of the world at the present time, has twenty-three feet as his best

record. History tells us of some German barbarians who made an invasion into Italy, and finding themselves confronted by three rows of spears in the hands of Roman soldiers, did not make any attempt to break the ranks of the enemy, but by the aid of their long leaping poles, jumped clear over them.

Leonardo da Vinci, the famous Italian artist, used to exhibit to his visitors the strength of his legs by springing straight up until his head touched the ceiling.

That leg-ability is a quality which can be cultivated, is evidenced by the marvelous feats of Weston and other professional walkers. That most Americans are such poor walkers is due to the fact that the leg muscles are not developed and hardened by daily exercise from early childhood. The city boy has thighs scarcely larger than his spindling arms, because his journeys to school are made on a street-car instead of a sidewalk, and the facilities provided at school are not usually such as to compensate for the neglect of physical development at home.



FIG. 1.

In our last article we gave a description of correct walking. We exhibit in this a few samples of bad walkers. These outlines are all accurately drawn from instantaneous photographs, which show with incontestable exactness some of the faults which one

may observe every day in noticing the various styles of walking exhibited by passers-by upon the street.

Figs. 1 and 2 exhibit the very common fault of putting the heel down too much in advance of the toe. Fig. 1 shows a man evidently in a hurry, and giving no attention whatever to his style of carriage.

In Fig. 2, the fixed position of the arms, rigidly extended at the sides, indicates an attempt to control the poise of the body, but the forward position of the hips, the inclined head and elevated toe, indicate ignorance of the rules of correct walking, or a want of ability to make a practical application of them.

Fig. 3 represents rather an unusual form of gait—a sort of gliding, teetering gait, in which the knees

are never quite extended, and both feet are flat upon the ground at the same instant. This mode of walking suggests the stealthy movement of the cat or the lion, when approaching its prey, although it might not necessarily indicate this mental or moral characteristic, as it may be wholly the result of lack of muscular development.

Fig. 4 is the swinging gait of the tired laboring man. The faulty elements of these several styles of walking will be best appreciated by a comparison with the figures showing correct walking, given in our last number.

Next month we will deal with some of the other forms of incorrect walking which are frequently met with.



FIG. 2.



FIG. 3.



FIG. 4.

PROGRAM OF EXERCISES FOR NOVEMBER.

We suggest the following as an excellent program for exercises during the month of November:—

1. One half hour walking out of doors daily, with the body in good position, chest well forward, head erect, chin drawn in, abdominal muscles well contracted. If one has the advantage of walking in the country, or on an unfrequented street, or elsewhere excluded from observation, he may practice several useful walking exercises, in addition to ordinary walking. The following will be found very excellent walking exercises:—

2. At each step, in placing one foot forward, at the same time rise upon the toe of the other foot. Take pains, in placing the advance foot, to strike the ground with both toe and heel at the same time. This is a very vigorous walking exercise, and should not be practiced more than five minutes at a time.

3. Walk on tiptoes with the fingers touching at the back of the neck, the elbows in line, taking pains to keep the chest well forward, head erect, and chin well drawn in. This exercise is one of the best means of curing roundness of shoulders and a

stooped position in walking. Four or five minutes' daily practice of walking in this manner will be exceedingly useful.

4. Continue the program for exercise described for August, increasing the number of movements until the amount of work done is sufficient to produce slight fatigue, being careful to avoid exhaustion.

The simplicity of the exercises described may lead some to regard them as valueless. No greater mis-

take could be made, however, as these exercises are considered by all trainers who have had experience with the various systems of physical culture to be the most effective and scientific means of securing symmetrical bodily development, without incurring the risk of injury to any vital organ, or the overstraining of any muscle or joint.

Next month we will give a program of exercises which will be found especially useful for stimulating the circulation, warming the feet, etc.

ATHLETICS.—Athletics may be taken generally to mean the exercising of one's limbs and muscles, and the performing of feats of strength and skill. The word "athlete," therefore, (also "athletics") is derived from the Greek *athlon*, a prize.

Among the Greeks the athletes who contended for prizes were held in high esteem, the victors having the greatest honors bestowed upon them, being sometimes freed from all taxes, and having statues set up in their honor.

The contention for the prizes took place at the four great public games; viz., the Olympian, the Isthmian, the Nemean, and the Pythian, which were held at stated periods in Greece. An athlete devoted his whole life to preparing for these contests, taking a regular course of training in a gymnasium, regulating his diet, and, it is said, sleeping much.

At the close of the Æolian War, 186 B. C., M. Fulvius introduced athletes into Rome from Greece. Under the emperors, admiration for the athletes bordered upon passion, and during the reign of Nero an enormous number of athletes lived in Rome, forming a distinct community.

The athletes were an entirely different class from the gladiators, who were introduced into Rome from Asia, and were at times a source of terror to Rome. Among the Greeks there were no gladiators.—*Indian Spectator*.

PHYSICAL CULTURE.—That physical culture was not regarded with so little favor in early times as now, is well attested by the history of the early Greeks and Romans. It is not so well known, however, that some of the well-known artists of an earlier age were as great lovers of physical exercise, and prized vigorous physical development as much as did the sculptors who modeled the Venus de Milo and the Apollo Belvidere. As an illustration of the zeal with which some of the older Italian artists cultivated physical development, we may cite the fact, stated on good authority, that Leonardo da Vinci was so thoroughly trained in athletics that he very frequently amused his visitors by jumping to the top of the room and shaking the balls of the chandelier with his feet.

BEAUTY MORE THAN SKIN DEEP.

DR. C. W. EMERSON, President of the Emerson College of Oratory, Boston, says:—

"If one would become strong and enduring, he must exercise the spirit of heroism directed toward health. When one has firmly resolved to become strong, he has taken the most important step toward securing the incomparable prize, health. The laws of nature say, 'Obey us and live, disobey us and die.' Health is the price of constant obedience, and is within the reach of the majority.

"Poising brings perfect obedience to the law of gravitation, secures infinite reinforcements, and a suggestion of power and self-command. Poise stands for strength. Weakness takes a braced and constrained attitude. Poise is a gymnastic of the nervous system; it strengthens the cerebellum. Poise gives presence and secures ease. There is

no rigidity in the cultivated body. If it moves, its movements will be soft as music.

"How much force is unnecessarily expended by a person whose physique is uncultivated! He is every day expending the force of two or three men to do the work of one. The Greek could so move that, with a minimum of force he could attain gigantic results. It is this that made him the best soldier in the world when he would fight. Cæsar himself was a copyist of the Greeks in this respect; during forty years he spared no pains in cultivating his body to the last possible degree, and that practice gave him great agility. He could labor many hours more than any other man, because there was so little friction in the body.

"One of the most important functions of muscular exercise, is to assist the arterial system. The heart,

unaided, cannot perform all the work of carrying the blood through the system. The heart is assisted by the arteries, and they are prompted to healthy exercise by the effect produced upon them by the muscles when in action. The arteries can be assisted by any muscular exercise. Any form of exercise is better than no form at all, but I believe those motions most helpful which are at the same time the most beautiful. All nature's lines are curved lines. The curved line is the line of beauty. Beauty and health cannot be divorced. That which produces health produces beauty; that which produces beauty will produce health.

"Some people have said that beauty is only skin deep. There never was a greater mistake. Beauty is more than skin deep. If one will tell how deep are soul depths, I will tell him how deep beauty is.

The beautiful face and the beautiful form have been developed down the ages from beautiful impulses of the soul. Many a handsome face in the world to-day, owes its inheritance to beautiful impulses that existed in the bosom of its ancestors. There may be beautiful faces to-day which are masks for evil thoughts; there may be beautiful faces, which, instead of being the facades of temples of worship, are the facades of dens of thieves! but let these evil conditions continue, and the face slowly but surely loses its charms. Something gave that fine outline of brow and chiseled nose, and sweet mouth. Something, we know not when nor where, but it existed in the hearts of the predecessors of the person who owns the face. From ugliness comes ugliness. From beauty of soul, by-and-by, down the ages, somewhere, comes beauty of face and beauty of form."

EXERCISE FOR ELDERLY PERSONS.

LAST month we endeavored to emphasize the importance of exercise for aged persons as well as for the young. The infirmities of old age are largely the result of neglect to keep the joints supple and the muscles in good tone by daily engaging in muscular exercise in a regular and systematic way. Among the results of this neglect which are most frequently noticeable in aged people, are a bent form, roundness of shoulders, and protrusion of the lower abdomen. These deformities are the result of weakness of the muscles of the shoulders and trunk. We promised last month to give some exercises especially beneficial to old people. The exercises which are described below are especially useful for strengthening the muscles of the shoulders and the trunk, and are also useful in resisting the tendency to lessened lung activity, which is one of the most active causes of physical decline in advancing years.

Owing to the lateness of this number, we are compelled to go to press without the illustrations designed for this article, but will present them, together with others, in a series of illustrated articles which will appear in this journal early in 1892, under the head of "Exercises for Old People."

1. Seated in a chair with the arms bent overhead, the fingers touching and resting upon the top of the head, elbows in line and shoulders drawn back as far as possible, chest forward, and sitting free from the back of the chair, bend the trunk first to left, then to right, repeating six or eight times.

2. Placing the hands on the hips, elbows in line, head erect, chin well drawn in, take a deep breath, expanding well at the waist. Bend slowly forward, at the hips, to an angle of 45°, keeping the head and

trunk in line. Return to position, breathing out at the same time. Take a full breath and bend forward again. Repeat the exercise six or eight times.

3. Seated upon a low stool in front of a sofa, catch the toes under the front edge of the sofa, with the legs extended. Sit erect, with the fingers touching at the back of the neck, with elbows in line. Bending backward, let the body fall back, bending at the hips, keeping the head and trunk in line. In beginning this exercise, the body should be allowed to fall backward only a few inches beyond perpendicular, as too great strain might be brought upon the abdominal muscles. As strength increases, the angle may be increased until the body can be inclined backward to an angle of 45°. The exercise should be taken slowly, and a full breath should be taken before beginning the backward movement, the breath being held until the trunk is returned to the vertical position. Repeat the exercise three or four times at first, and increase to eight, ten, or more times, as the strength of the trunk muscles increases by exercise.

4. Standing in the doorway, with the door open, grasp the door jambs as high up as possible. Swing backward and forward, taking a full breath with the forward movement and rising upon the toes at the same time; breathe out with the backward movement. Repeat ten or more times. This is an excellent movement to expand the chest and counteract the tendency to roundness of shoulders. Any aged person who will practice these exercises systematically for fifteen minutes daily, will derive very great benefit therefrom, in the way of increased vigor and the prevention and relief of many of the inconveniences due to advancing age.



THE NATURAL SIZE OF THE WAIST.

BY J. H. KELLOGG, M. D.

THE following paragraphs upon this subject recently appeared in our scientific contemporary, the *American Naturalist*:—

“Among the many uncritical propositions urged by would-be reformers in recent years, few are more so than some of those anent the interesting subject of women’s waists. We are repeatedly told that a narrow waist is a deformity produced by artificial compression, and that the just model for the healthy normal woman, is the robust and matronly Venus of Milo. Now the anthropologist knows that this general assertion is not true as applied to the civilized white woman. It is especially characteristic of the highest types of woman of the Indo-European race to have wide hips and a narrow waist, up to the age when adipose tissue fills to greater uniformity of outline the graceful curve which is so generally admired. It is well known that the form of the pelvis differs in the different races, so that in the white race the female pelvis differs from that of the male more than is the case with the African. In the latter, the female pelvic strait is as in the male, longer in antero-posterior than in transverse diameter; in the female Mongolian the strait is sub-square in outline, while in the Indo-European the strait is oval, with the transverse diameter greater than the antero-posterior. Thus the white woman has wider hips than the women of inferior races, and she is in so far more unlike the male than they. The larger pelvic cavity of the female is an adaptation to the increase in the bulk of its contents incident to gestation; and it follows that when this cavity is not so occupied, the movable viscera fill the space. From this results the contraction of the abdominal walls immediately above the pelvis, known as the waist. It is clear, then, that the diameter of the waist is inversely as the diameter of the pelvis, and the differential of diameter is greatest as the trans-

verse diameter of the pelvis exceeds the antero-posterior.

“The cause of the increased transverse diameter of the Indo-European pelvic strait, is probably mechanical. It may be due to antero-posterior pressure on the pubic arch. This in turn may be a consequence of the monogamic customs of the Indo-European sub-species, due to the greater esteem in which women are held. But on this point we can only speculate.

“In any case, the Venus of Milo has the form of a very mature woman of her race, and many moderns can boast of far more graceful figures than she. And these figures are not the result of artificial compression of the clothing, but are the product of a natural evolution of form. It is true, however, that all women of the white race have not attained this stage, and not a few retain the figure of lower races. It is not, however, proven that the women possessing this figure are any better child-bearers than those of modern type. Occasionally we meet women who to a robust waist add a narrow pelvis—an unfortunate structure, and one not likely to be extensively reproduced, owing to the difficult parturition which is indicated.

“The women who are not satisfied with the figures which nature has given them, and who endeavor to reduce by artificial means, a naturally robust waist to the proportions which characterize their more favored sisters, deserve all the reprobation which the above-mentioned reformers bestow so indiscriminately on all alike. Excess of slenderness is not beautiful, and artificial compression forces the viscera into positions which produce a deformity of the abdominal wall more repulsive than a stout waist.”

The facts above stated are incontrovertible; nevertheless they have no bearing whatever against the

position which we have taken respecting the proper size of the waist. Our comparative studies of the size of the waist of women of different nationalities, have not been based upon a comparison of the waist and hips alone, but upon a comparison of the waist and height. The larger brain of the European, and consequently larger skull, necessitates a larger and broader pelvis; but it is apparent by a moment's observation, even to a person who has not made anthropometry a special study, that any cause which operates to increase the size of the pelvis, will not at the same time act to decrease the size of the waist. The influence of such causes would naturally be in the direction of increase of the size of the waist, rather than a decrease in the size of this portion of the body. A study of the size of the waist in comparison with the height, places the question of waist measurement upon a basis wholly independent of the question of breadth of hips. Broad hips give the appearance of narrowness of waist; but this is not the question. The question is one of waist capacity rather than simply proportion of figure.

In our studies, we have recently made measurements of forty-three working women between the ages of eighteen and twenty-five years. These young women were all wearing loose garments, having been induced to do so by a representation of the evils resulting from waist constriction. Some had but recently adopted a healthful style of clothing, while others had enjoyed the advantage of ample waist room for several months or years. In a few instances, corsets

and tight waistbands had never been worn. We found the average waist measure of forty-three young women, who were selected only with reference to age, to be 27.15 inches, or 44.64 per cent of the height, nearly three inches in excess of the average feminine American waist.

Comparative measures made in the cases of twenty-five of these young women, showed that before the adoption of loose garments their average waist measure was 23.3 inches. Since that time there had been an increase in waist proportion to such an extent that the average waist measure at the time the measurements were taken, was 27.15 inches. The proportion of waist to height, in these twenty-five young women, had increased, by the change of dress, from 37.3 per cent to 43.4 per cent, and the waist measure had gained 3.85 inches, or 6.16 per cent.

We recently secured the measurements of ten girls between the ages of nine and twelve years, and found the average waist measure to be 23.5 inches.

From these facts is it not evident that the small waist of the civilized American woman is a deformity? Can any one assign a physiological reason why the civilized woman should have a smaller waist than the savage woman? Certainly no other reason can be given for the abnormal waist of the civilized woman than the fact that this portion of the body has been subjected to abnormal pressure in such a manner as to prevent natural development and to compel the acquirement of an ugly and health destroying deformity.

A BENEFICENT SLIPPER.—It is said that there is, in an old French family in New York City, a carefully preserved heirloom, in the shape of a slipper once worn by Marie Antoinette, of France. It was caught up as a souvenir in the hurried flight of a court lady, who, with her husband, made her escape to this country in the early days of the French Revolution. This lady left the slipper to her daughter, with the provision that it should always be kept in the family, and should descend in regular succession to the eldest daughter, *if she never allowed herself to have corns*. Those who know, state that the condition regarding the inheritance of the famous slipper has been strictly complied with by all the women of the family, who have always, on this account, taken exceeding care to preserve their feet in perfect, natural shape and condition.

THE press of the Northwest indicates that active and progressive women throughout that section are developing a growing spirit of dress reform. Rainy-Day Clubs, Wet-Weather Clubs, etc., are being organized in many of the principal cities.

CANCER FROM TIGHT LACING. — The fact that gall stones are much more frequent in women than in men has long been known, and physicians have not hesitated to ascribe the peculiar predisposition to this disease in women to the injurious influence of tight lacing upon the body. Dr. J. H. Musser has recently published a report of one hundred cases of cancer of the gall bladder, which show that this distressing and incurable disease is three times as frequent in women as in men, a fact which can only be explained by their mode of dress.

SOCIAL PURITY

WHAT SHALL WE TEACH OUR DAUGHTERS?

[Extract from a lecture by Kate Lindsay, M. D., in the Sanitarium parlors.]

MOTHERS, consider with me this question: How much are we going to make our daughters worth? Shall we make of them mere dolls, whose only mission in life will be to look pretty and wear fine clothes? Shall we destroy their nervous system and wreck their health by compressing the waist to suit fashionable models? Or, shall we train them so wisely that they will reach womanhood perfectly developed, with bodies well nourished, hands skilled to some useful employment, and brains and hearts quickened to the perception of the true and beautiful? It rests with the mothers of the present to educate the daughters out of their follies and diseases. In the mothers' hands lie the destiny and well-being of the women of the future.

Mothers, when your little girl wants to climb a cherry-tree or go into the barn loft, don't tell her that she must not do it, because she is a girl! Don't begin to impress inferiority upon her mind. Instead, teach her that her sex is no barrier to prevent her from doing anything that is right. Teach her to despise small waists, small feet, pale cheeks, and "nerves." Teach her that it is both weak and silly to scream at the sight of a spider or to be afraid of a mouse. Free her alike from the over-sensitiveness which requires much attention, and the vanity which stoops to crave perpetual admiration. Teach her the wrong of courting the flattery of worthless men. Teach her to respect strength of mind and purity of morals in the opposite sex, and to hold her men friends up to the same high standard which they would demand of her. Teach her to choose for her associates those who are brave and noble enough to rise above the rottenness of the age, and who dare to lead unsullied lives in spite of the jeers of other coarser men. Teach her to shun the debauchee and the libertine, no matter what his social standing or the length of his bank account. Teach her the laws of her own being and the sanctity of her own person.

A girl should be taught self-control and self-help, and that her success in life will depend upon her ability to do things well. Many a woman fails, who

enters upon a business or a professional life, for the reason that she does so merely as a makeshift, and not with the idea of self-dependence. Let us teach her to do her best, whatever she undertakes to do. Let us train her mind and her hand to some good, practical employment, and see that she has the self-respect to demand good, fair remuneration, and not accept a mere pittance just because she is a woman. There is nothing to hinder girls from becoming just as valuable to the community as boys; healthy competition will but spur boys to greater exertion to keep from being outstripped in the race of life. A girl should never be made to feel that sex has anything to do with her moral, mental, or physical capabilities. The merit alone of a picture is considered; the purchaser does not stop to inquire whether it was painted by a man or a woman. If she wants to be a designer or an engineer, let her follow her bent, if she proves to have the necessary ability. Bring her up with the idea that if she has talent and ability, she has just as good a right to use them as has her brother.

There are mothers who are proud of their sons, and yet who seem to regard their daughters as so many incumbrances; yet why should women cheapen themselves and daughters by depreciating their value? Sons are valued because they are expected to be producers, to enter upon honorable, independent careers. Why should their sisters do or be any less? Their mental, moral, and physical endowments are just as good. Why should they not take to themselves wisdom and knowledge, and be clothed with strength and honor like the ideal woman of the Scriptures? Is there any reason why a woman could not cultivate her talents as fully as a man? Every disability and hindrance should be cleared from her path—hindrances and disabilities which are mostly traditional and imaginary, not real. There is no limiting the possibilities of a woman's career, who essays to make the most of herself for God and humanity.

The majority of women are dependent creatures, because of a supposed inferiority, having this stigma attached to them down through countless generations

of the past. The Quakers have always regarded their women as of equal rank with their men, and I have heard Quaker fathers and mothers boasting in some instances that their daughters were better economists and better financiers than their sons, and they valued them accordingly. When girls only represent bills from the milliner, the dressmaker, and the doctor, besides a certain number of headaches and backaches, it cannot be expected that they will be ranked alongside of their independent, self-supporting brothers.

Let us inculcate in our daughters good and generous feelings toward their own sex. A woman's interest should be chiefly in and for women, to aid, to encourage, to benefit them when possible, and she should always keep herself informed of what plans tending to their uplifting are being laid or carried out, and work in harmony with these. Mother, do not suffer your child to grow up thinking that marriage is the end and aim of her existence. Instead, teach her the terrible sin of marrying for social rank, or for money and a fine establishment. Teach her what true marriage means, and that she would vastly better remain single and maintain her independent

livelihood, unless she can contract a marriage on a higher plane than do many of our modern girls.

And, above all, we should labor to divest, in the eyes of our young daughters, the term "old maid" from its traditional stigma of disgrace. And by the way, the modern "old maid" is a very different being from the one of two or three generations ago, who became a meek nonentity or a household drudge in the family of some male relative, who gave her grudging support. Now she has her own bank account, and if she chooses, makes an independent home for herself, into which she gathers one or more orphan waifs whom she "mothers" and educates. Or she maintains her old mother, or brings up and educates younger brothers and sisters. In short, she is a producer, not a burden; a creature of independent thought, and action; one who may, if she will, belong to a fraternity more glorious than any age save this has ever produced,—the noble fraternity of unmarried women who are now giving their lives, some in one way and some in another, to uplift and benefit their less fortunate sisters. The shining group, Frances Willard, Ellice Hopkins, Kate Bushnell,—let these be the ideals of all single women.

GEN. BOOTH'S encouragement, simple but mighty, to the fallen is: "It's a pity you fell, but it's no use lying there. Get up!"

EVERY human soul has the germs of some flowers within, and they would open if they could only find sunshine and pure air in which to expand. I always told you that not having enough sunshine was what ailed the world. Make people happy, and there will not be half the quarreling, or a tenth part of the present amount of wickedness.—*Lydia Maria Child.*

THAT LITTLE SILVER CROSS.—The following is a fine tribute to the order of King's Daughters, instituted by the large-brained and large-souled Mrs. Margaret Bottome, of New York city, which is now doing its quiet but beneficent work among thousands of young girls throughout our cities and towns. A New York policeman recently said to a reporter:—

"The best protection a young woman can have in this city, is one of those little silver crosses that the King's Daughters wear. I've noticed that nowadays the professional dude, on meeting a woman, will quickly glance to see if that little cross is dangling from a buttonhole, and if so, he passes her by without even a stare. It's the same way on street-cars. The young woman who wears one of those

badges has got the whole carload of men to take care of her and chastise the fellow who dares to annoy her. That little cross is getting to be looked on with the same respect and deference as a nun's garb. As a safeguard, it beats the average policeman out and out."

A REPORT submitted at the 104th anniversary meeting of the Pennsylvania Prison Society, shows that there are in Philadelphia, nine police stations where matrons are employed. The report says: "Police matrons in Philadelphia are a success. Police stations have been transformed from foul to cleanly abodes."

OUR chief work to-day should be done among the children. Our strength and our time are limited; we want to plant our blows where they will tell most, to sow our seed where it will have the best chance to grow. A man or a woman who has pursued an evil course from childhood is almost past help at twenty-five, speaking generally; but the children can be saved. They are not being saved; they are passing from bad to worse, and nothing can rescue them but an awakened Christian sentiment, that will not pause till their surroundings are such as will give the divinity within them some chance to grow.—*The Forum.*



WHO ARE THE CULPRITS?

WITHIN the last few weeks, numerous articles have appeared in the newspapers, warning the public against the use or substitutions for patent medicines, which are, as is alleged, through the dishonesty of druggists, being palmed off on the public in place of the "genuine articles."

The publication of the analyses of the most popular patent nostrums in various pharmaceutical journals, in our Detective Bureau Department of this journal, as well as in our work, "The Household Monitor of Health," which has had such an exceptionally wide sale, has placed in the hands of the public the most powerful weapon yet devised against the enormous frauds perpetrated under protection of law, by patent-medicine venders in this and every other civilized country of the globe. And is it not the fact that these public robbers, the nostrum manufacturers, are beginning to feel the results of the exposure of the worthless or commonplace character of their wares, which has called forth this show of righteous indignation on their part?

The druggist, having learned the composition of the great majority of the popular nostrums, is no longer compelled to purchase from the manufacturers, but when a customer calls for any particular nostrum, he simply compounds whatever is called for from the published formula, and supplies it to his customer at half the usual price, or less, and is then able to make a larger profit than when he buys from the manufacturer. The one dollar which is the usual price for a bottle of patent medicine, is expected

to pay not only the original cost of the compound and the bottle containing it, but a large sum expended in advertising, a big profit to the manufacturer, and a small profit to the druggist. The usual relation of cost and selling price in patent medicines is about one to ten or twenty.

The demand for patent medicines is created by a liberal use of printer's ink, by means of which most brazen falsehoods are told, apparently substantiating the most astounding claims to curative virtues. In many instances, patent medicines contain not one of the properties ascribed to them, and probably in the majority of cases the testimonials are written by a conscienceless scribe who is hired for the purpose. It is, indeed, an exhibition of brazen effrontery which could scarcely be matched, when these unscrupulous compounders of worthless drugs under alluring and deceitful titles, come forward and condemn as robbers the druggists who save their customers *fifty per cent* by selling them the same drugs put up in plain bottles minus the elaborate and lying labels.

The public ought to be informed in every possible way, that these newspaper denunciations of druggists are paid for at so much per line. Every druggist who will tell his customers the truth about patent medicines, and, when they insist upon their use, will sell them the ingredients of the nostrum at a price proportionate to the original cost of the material, ought to be eulogized as a man of exceptional honor, instead of being condemned as a thief and a robber.

AMMONIA BAKING-POWDERS.—Several times we have called attention to the injurious character of all baking-powders, and especially those containing alum or ammonia. At the last meeting of the American Chemical Society, Dr. Enderman, for many years chemist of the Board of Health of New

York City, presented a paper, in which he shows very conclusively that when any preparation of ammonia is used in the preparation of bread, the ammonia is only in part driven off by the heat of the oven, a portion being retained through combination with the gluten of the flour. The action of

ammonia on gluten is to render it soluble and to destroy its nutritive value. The ammonia also neutralizes the gastric juice, and thus interferes with digestion.

According to Van Hasselt, ammonia is a poison, and produces both acute and chronic morbid conditions. Chronic ammonia poisoning, such as would be the natural result of the long-continued use of ammonia baking-powders, is described as producing chronic gastritis and degeneration of the blood. Half a dram of chloride of ammonium killed a rabbit within an hour. Carbonate of ammonia has been found a still more actively poisonous agent.

Dr. Winslow Henderson, a professor in the Medical Department of the University of California, asserts that the American disease, dyspepsia, is due to the use of baking-powders containing ammonia, alum, and other adulterants.

In experiments conducted in the Sanitarium chemical laboratory, for the purpose of determining the effects of various proportions of carbonate of ammonia used in raising bread, it was found that ammonia is not only not dissipated by the heat of the oven, but it is extremely difficult to get rid of. Long baking or drying after removing from the oven, did not completely dissipate the chemical compound from bread which had been raised by its use.

It is high time that the public was thoroughly informed of the injurious character of all baking-powders, and especially those containing alum or ammonia.

PLEIS'S FIT POWDERS.—According to the *Drug Mill*, each powder contains fifteen grains of bromide of potash, and five grains of powdered gentian. This nostrum, like nearly all others which are recommended for the cure of epileptic paroxysms, owes its activity to bromide of potash. A vast amount of harm has been done by the use of this and similar nostrums.

THE SANITARIUM LABORATORY OF HYGIENE.—The Sanitarium Laboratory of Hygiene is now equipped, and in full operation under the experienced management of Prof. Paul Paquin, M. D., D. V. S. One of the special lines of work in which the Laboratory will engage is the investigation of food adulteration, impure water, and whatever relates to the care and preservation of health, or to the avoidance of disease. This announcement is made for the purpose of inviting the readers of GOOD HEALTH to avail themselves of the advantages afforded by the Laboratory, by sending specimens for analysis, in cases in which scien-

tific investigation may seem to be required. Special attention will be given to cases in which bacteriological investigation is necessary, such as water or milk suspected of containing typhoid-fever germs; or cheese, lard, butter, meats, or other articles of food, the use of which has been followed by acute or severe illness. Canned meats, especially canned salmon, oysters, either raw or slightly warmed, and game which has been allowed to reach an advanced stage of decomposition, are often the cause of severe illness. The Laboratory is prepared for an exhaustive investigation of cases of this sort. One of the purposes of the Managers of the Sanitarium in fitting up this Laboratory, has been to afford facilities for the investigation of such causes of illness without expense, their idea being thus to encourage the public in bringing to light all facts respecting this class of disease-producing causes which possess a practical value. In any case of general public interest, no charge will be made for the investigation. Any one desiring to send specimens to the Laboratory, should write to the Superintendent, Dr. J. H. Kellogg, for instruction respecting the sending of samples, etc.

MILK ADULTERATION.—Last month we referred to a new mode of adulterating milk by the addition of a solution which, it is claimed, is capable of producing a fluid equal to milk. The following is a report of the analysis made of this fluid by Dr. F. G. Novy, of the Laboratory of Hygiene, University of Michigan:—

“The examination of sample No. 1, purporting to contain all the nutriment of milk, etc., is completed, and it is scarcely necessary to say that such a claim is entirely preposterous, and shows at once upon its face its fraudulent character. On analysis it was found to contain:—

	Per cent.
Total Solids.....	44.88
Common Salt.....	13.08
Invert Sugar (Glucose).....	14.62
Cane Sugar.....	16.36
	——44.06
Salicylic acid (present but not determined).	

The solution is probably colored by caramel.

“The fluid, sold for two dollars per gallon, by men trying to work up a market for it in Kalamazoo, and who claimed that with a little of this fluid the dealer could add water equal in quantity to the milk, and thus double his sales, has been analyzed and found to contain about one-eighth common salt, about one-seventh glucose, one-sixth cane sugar, and about one per cent salicylic acid; the rest being water slightly colored.”

GOOD HEALTH

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

HEALTH IN PERSPIRATION.

PROBABLY the majority of people entertain the idea that perspiration is exhausting, and are inclined to shun any sort of bath or occupation which induces profuse perspiration, as they would a depressing drug or a blood-letting. The error of this notion should, it would seem, be sufficiently apparent in the face of the fact that farm laborers, glass blowers, moulders, and men employed in various other occupations, are often in a condition of profuse perspiration for many hours daily, and enjoy excellent health. The skin carries off from the body some of its most poisonous secretions. The amount of these noxious poisons eliminated through the cutaneous covering of the body, is doubtless much less than that thrust off either through the lungs or kidneys; yet that it is sufficient to be of vital importance is shown by the fact that complete closure of this avenue of escape for excreta, is sufficient to cause death, as indicated by the small boy who was varnished and gilded to represent an angel, on the occasion of a great festival at Rome in honor of a pope two or three centuries ago, and speedily died in consequence of the sealing up of the millions of little ducts in the skin, through which poisonous matters escape. The experiment has since been repeated many times upon lower animals, which naturally perspire freely, and with the same results. An animal usually dies in three or four hours after the skin has been varnished.

Probably the best illustration of the healthfulness of a high degree of skin activity, is to be found in the influence of a Turkish bath upon those who employ it frequently or regularly, and especially upon the shampooers themselves. We quote the following interesting paragraphs from the "Pillars of Hercules," an English work by David Urquhart, M. P.:—

"There is an impression that the bath is weakening. We can test this in three ways: its effects on

those debilitated by disease, on those exhausted by fatigue, and on those who are long exposed to it.

"1. In affection of the lungs and intermittent fever, the bath is invariably had recourse to against the debilitating nightly perspirations. The temperature is kept low, not to increase the action of the heart or the secretions; this danger avoided, its effect is to subdue, by a healthy perspiration in a waking state, the unhealthy one in sleep. No one ever heard of an injury from the bath. The moment a person is ailing he is hurried off to it.

"2. After long and severe fatigue—that fatigue such as we never know—successive days and nights on horseback—the bath affords the most astonishing relief. Having performed long journeys on horseback, even to the extent of ninety-four hours without taking rest, I know, by experience its effects in the extremest cases.

"A Tartar, having an hour to rest, prefers a bath to sleep. He enters as if drugged with opium, and leaves, his senses cleared and his strength restored as much as if he had slept for several hours. This is not to be attributed to the heat or moisture alone, but to the shampooing, which in such cases is of an extraordinary nature.

"Well can I recall the *hamam* doors which I have entered, scarcely able to drag one limb after the other, and from which I have sprung into my saddle again, elastic as a sinew and light as a feather.

"You will see a *hummal* (porter), a man living only on rice, go out of one of those baths where he has been pouring with that perspiration which we think must prostrate and weaken, and take up his load of five hundred-weight, placing it unaided on his back.

"3. The shampooers spend eight hours daily in the steam; they undergo great labor there, sham-

pooning, perhaps, a dozen persons, and are remarkably healthy. They enter the bath at eight years of age. The duties of the younger portion are light, and chiefly outside in the hall to which the bathers retire, after the bath; still, there they are from that tender age exposed to the steam and heat, so as to have their strength broken if the bath were debilitating. The best shampooer under whose hands I have ever been, was a man whose age was given me as ninety, and who, from eight years of age, had been daily eight hours in the bath. This was at the natural baths of Sophia. I might adduce in like manner the sugar-bakers in London, who in a temperature not less than

that of the bath, undergo great fatigue, and are also remarkably healthy.

“The Romans furnish another example. Unlike the Arabs, who restrict its use to once a week, they went into it daily. The temperature was gradually raised, until in the time of Nero it came to be excessive. Their habits in other respects were not such as to be conducive to health, and must have disqualified them for enduring the bath if it did debilitate; it served, therefore, as an antidote to their manner of life, and relieved the excess of the Patriarchian, as it does to-day the fatigue of the wandering Tartar.”

MOSQUITOES AS VACCINATORS.—The *Medical Record* gives the following interesting account of some experiments by Dr. Finlay, of Havana, in employing mosquitoes as vaccinators against yellow fever. Dr. Finlay's experiments have been carried on for about ten years, and his position as physician in charge of two large religious communities, the members of which are changing more or less every year by the substitution of new-comers from Spain, has given him a favorable opportunity for collecting a large number of very valuable statistics.

“Nearly every year he inoculated some of the new-comers, while others did not go through the ordeal. During the period 1883-1890, forty-nine of these new-comers were inoculated, and thirty-two were not. After deducting from the inoculated, thirteen cases who had not been long enough in the country to permit of any definite conclusion being drawn from them, there remained thirty-three inoculated and thirty-two not inoculated members of the same communities, having arrived in the same years, leading the same life, and exposed to the same chances of infection. Indeed, it would be difficult to find anywhere a better opportunity for comparing the results of any method of prophylaxis. Of the inoculated, some had no febrile symptoms, either immediately after the inoculation or subsequently; others had a mild attack of fever, accompanied or not with albuminuria; and two had regular yellow fever, from which they recovered. Of the not inoculated, twenty-one either had a mild fever or escaped all illness, and eleven had yellow fever, five of them dying. Thus none of the inoculated died of yellow fever, whereas five (or fifteen and a half per cent) of the non-inoculated did die of it. Of all the persons inoculated in and out of these communities, but one died of yellow fever.

“From a study of these comparative results, and of the results obtained in other cases in which inocu-

lations were practiced by Drs. Finlay and Delgado, the author draws the conclusion as to the value of his method: that inoculations with one or two recently contaminated mosquitoes, in the manner practiced, are free from danger, inasmuch as the numerous trials which have been made have produced at most (in about eighteen per cent of the cases) a mild attack followed by immunity.”

DANGER IN LETTUCE.—Although a vegetarian for more than a quarter of a century, we have never felt any sympathy with the idea that man is an herbivorous animal, and have found no use for herbs in our dietary. The use of such foods as lettuce, celery, cabbage, greens, parsley, and similar coarse substances, is wholly unnecessary for health, and the nutritive value possessed by such substances is so small that an exclusive diet of such articles would be quite insufficient to sustain life, as it would be impossible to digest a quantity sufficient to furnish the necessary amount of nutritive elements. For example, a day's rations of cabbage would be scarcely less than a bushel, while lettuce and celery would be consumed in still larger amounts to prove “satisfying” as well as “filling.”

But aside from the inutility of these articles as foods, there is a decided objection to their use, to which the *Maryland Medical Journal* has recently called attention, on the authority of a farm hand, who asserts on the strength of personal observation, “that the market gardeners about Baltimore (and other cities we doubt not), in their eagerness to be first in the market, dilute the human feces from the cess-pool with water, and by the aid of a watering pot sprinkle it daily upon their lettuces and cabbages. The plants, grown large, and more or less saturated with fecal matters, are then served as an appetizing luxury upon our tables, having first undergone such a

cleansing as the cook thinks necessary. This cleansing for the most part consists in a hasty washing of the plants with *cold* water. In view of the fact that lettuce is eaten raw, and of the assertion made by scientific men that poisonous matters are taken by

such herbs directly and unchanged into their tissues from the soil about them, it would be well for those who are interested in the public health to consider the methods by which the marketman fertilizes his garden and forces his early vegetables."

A SAVING OF HUMAN LIFE.—By the intelligent application of sanitary principles, the death rate in the British army in India has been reduced within the last thirty years, from 69 per thousand annually to 14 per thousand, and even as low as 10 per thousand, in some years. In the healthful part of Great Britain, where attention is given to hygiene, the annual death rate is as low as 9 per thousand, while in the manufacturing districts, where money-making is the chief purpose, the death rate is 30 per thousand.

BURNED THEIR CORSETS.—According to the *New York World*, a very exciting scene recently occurred at a Free Methodist meeting in Sydenham, Ontario. Free Methodists are noted for their noisy demonstrations in connection with revival meetings, but heretofore we have never known this extraordinary excitability to assume any really useful form. According to the report, however, the excitement on this occasion really produced some very tangible and salutary results. The revivalist, a certain Mr. Frasier, is a thorough believer in healthful dress, and denounced the prevailing mode of women's dress in stirring terms, remarking that "women are born beautiful, and die misshapen because of the wearing of corsets." The speaker made such powerful appeals to his audience that great excitement was produced among his women hearers. The scene is thus described:—

"'Throw off the accursed invention!' the preacher cried, 'throw it off, and go to God as you left him! Burn the corsets rather than burn yourselves in everlasting fire!'

"This suggestion struck a responsive chord, and he had hardly ceased speaking when an enthusiast piled up material for a bonfire, and applied a match. It was a weird scene,—the dusky evening, the crowd of religious enthusiasts, quivering with excitement, surrounding a fire which shot up long tongues of flame.

"'Throw off the garment!' shouted the revivalist.

"'Burn them!' hysterically cried a feminine voice in the crowd, and pushing and panting, a young woman of twenty-five forced her way to the center, near the bonfire. She was tugging at her dress. There was a sudden gleam of white shoulders in the

glare of the fire-light, and she flung her corset into the flames, saying she would die as God made her, and not as she had made herself.

"Her example was contagious, and in less than half an hour not a woman in the crowd wore a corset, and nothing remained in the blaze but a mass of grotesquely twisted corset steels, amid which the flames playfully flickered. The excitement was so great and the nervous strain so tense that several women grew faint, but they had burned their corsets and were happy."

We understand that the Free Methodists consider this revival a very great success, and talk of carrying the campaign into the United States. We have no particular affinity with this mode of propagating the principles of dress reform; nevertheless, we have no doubt that a corset crusade would be a useful addition to the average Free Methodist camp-meeting.

COLOR BLINDNESS.—The neglect to cultivate the color sense in children results in color blindness to an alarming extent, probably much more so than is generally supposed. According to statistics which have been carefully gathered, color blindness exists in at least five per cent of all the white males in the United States, or fifty in one thousand. Among women, however, the percentage of color blindness is only two per thousand. Color blindness is thus seen to be twenty-five times as frequent among men as among women. This condition can hardly be supposed to be due to any hereditary condition; it must be due simply to the lack of the cultivation of the color sense. This fact is one which should be brought to the attention of educators everywhere, and care should be taken that the education of the color sense be begun at the beginning of the school life of a child. It should, in fact, begin earlier than the age at which a child usually enters school. The kindergarten affords an excellent field for the development of this important sense. Dr. L. Webster Fox recently made an examination of 250 Indian children, 100 of whom were boys. Color blindness did not exist in a single case. This observation is quite in harmony with the fact which has been observed by others, namely, that color blindness is very rare among savages.

HORSE-LIVER SAUSAGES.—A number of persons were made sick at Egelsdorf by eating sausages made from the liver of horses. The illness was very severe, and in one case proved fatal. A careful investigation showed that the disease was due to a peculiar microbe or germ which was found present in the sausages. The flesh of animals is one of the most convenient vehicles for the introduction of germs into the human body.

A SANITARY LAW.—The Brazilian government has, according to a recent sanitary authority, enacted a law making obligatory the physical examination of all persons who announce their intention to marry, for the purpose of determining their fitness. This measure was found necessary in consequence of the rapid increase of disorders of a scrofulous nature, the tendency of which, as is well known, is transmitted by heredity.

CONSUMPTION GERMS IN BUTTER.—Prof. Herm has been studying the influence of fermentation upon the vitality of tubercular or consumption germs, so frequently found in milk, as the result of contamination from diseased animals. He was able to produce consumption in rabbits and other small animals, with milk containing tubercular germs, which was ten days old and had become sour. The germs were also found alive in butter a month old, which was decidedly rancid. It is apparent from these facts that the germs of consumption have great vitality, and are able to resist whatever unfavorable conditions may exist in milk or butter.

The presence of germs in butter is a matter which is eminently worthy of careful thought by all butter eaters, who may well consider whether it would not be safer to abjure the use of butter altogether, unless made from sterilized cream, rather than run the risk to which one is constantly subjected by eating butter likely to contain consumption germs or other dangerous microbes, which give rise to so incurable a malady as pulmonary tuberculosis. The writer has abstained from butter for a number of years, believing it to be unfit for use as an article of food.

THE CURE OF IDIOCY.—Of all classes of crippled and deformed human beings, those unfortunate mental cripples known as idiots have been heretofore regarded the most hopeless of all. The bold surgeon, Prof. Lannelongue, has, however, ventured to undertake a method of curing cases of this sort, which, before the days of antiseptic surgery, would have been quite impossible. Prof. Lannelongue conceived

the idea that the cause of idiocy in many cases, is a premature ossification of the sutures, or joints, of the bones which form the upper part of the skull and inclose the brain, by which proper growth of the brain is prevented. Acting in harmony with this theory, he selected a case in which idiocy accompanied an unusually small head, and removed from the skull a small strip of bone running across the top of the head. Notable improvement was secured, and in the twenty-five cases on which he has operated, improvement is reported in all but one, in which death followed soon after the operation. It is, of course, yet too soon to know what will be the permanent results of the operation, but thus far the outlook is hopeful that many human beings may be saved from a life of helplessness and dependence, or, at any rate, their condition can be very greatly ameliorated.

POISONOUS GLOVES AND VEILS.—A case was recently published, in which a lady was fatally poisoned by wearing a pair of long black gloves. A needle prick on the finger was the point of entrance of the poison, which set up an inflammation which rapidly extended up the arm, and ended with death within a few hours.

The daughter of a wealthy manufacturer in London recently suffered from violent inflammation of the eyes, which rendered the removal of one eye necessary and nearly destroyed the other, as the result of wearing a black veil which was evidently dyed with poisonous coloring matter.

GOVERNMENT TRICHINA INVESTIGATION.—The investigation of the presence of trichinæ in American pork, now in progress by the national government, for which a large appropriation has been made, bids fair to result disastrously for the American hog. The original purpose of this investigation was to convince our foreign cousins that American pork had been maligned and misrepresented by the mercenary pork-raisers of foreign countries. However this may be, the character of the animal is not likely to be greatly benefited by the present investigation, as, according to a recently published report, one of the commissioners appointed by the government to take the matter in charge, has admitted that the presence of trichinæ has been established, by the microscopical examinations being made, much more frequently than was expected. We should not feel at all unhappy if the character of American pork should be proved to be so bad that our American farmers would be induced to take up some more useful if less profitable line of business.



THE FEEDING OF INFANTS.

THE two questions concerning the feeding of infants which probably puzzle the young or inexperienced mother most, are, How much should a child eat? how often should it be fed? These questions become especially prominent in connection with artificial feeding. So much has been written upon the character and quality of food for infants, it may be supposed that the mother is quite well posted upon this part of the subject, and in the consideration of the questions of frequency and quantity, we will take it for granted that the child is to be fed with sterilized milk, suited to its age by dilution.

The weight of the child at birth is taken as the basis for estimating the quantity required to support the extraordinarily rapid normal development which occurs during the first few months of an infant's life. Experiments which have been made by eminent Russian and other European physicians respecting the size of an infant's stomach, and the amount of food required to support normal development, have led to the establishment, as the basis for feeding infants, of the following rule:—

During the first week of a child's life, the weight of the food given should be 1-100 of that of the weight of the infant at birth. The daily additional amount of food required for a child amounts to about one fourth of a dram, or about one ounce at the end of each month. A child gains in weight from two thirds of an ounce to one ounce per day during the first five months of its life, and an average of one half as much daily during the balance of the first year.

From a series of tables which have been prepared, as the result of experiments carefully conducted in large lying-in establishments, we have devised this rule:—

To find the amount of food required by a child at each feeding during the first year of life, divide the weight of the child at birth by 100 and add to this amount 3-100 of the gain which the child has made since birth. Take, for example, a child which weighs $7\frac{1}{2}$ lbs. at birth, or 120 ounces. Dividing by 100 we have 1.2 oz. Estimating the weight according to the rule above given, the child at the end of nine months will have gained 210 oz. Dividing this by 100 and multiplying by 3, we have 6.3 oz. Adding to this our previous result, 1.2, we have 7.5 oz. as the amount of food required at each feeding at the end of nine months by a child which weighed $7\frac{1}{2}$ lbs. at birth. To save mothers the trouble of making these calculations, we have prepared the following table, which will be found to hold good for the average child weighing $7\frac{1}{2}$ lbs. at birth. This is rather more than the ordinary child weighs, but we have purposely chosen a large child for illustration, as it is better that the child should have a slight excess of food than too little.

	AGE OF CHILD.							
	1 w.	1 m.	2 m.	3 m.	4 m.	6 m.	9 m.	12 m.
Amount of each feeding in ounces...	1	$1\frac{1}{2}$ -2	3	4	5	6	$7\frac{1}{2}$	9
Number of feedings.....	10	8	6	6	6	6	5	5
Amount of food daily, in ounces...	10	12-16	18	24	30	36	$37\frac{1}{2}$	45
Interval between feedings, in hours..	2	$2\frac{1}{2}$	3	3	3	3	$3\frac{1}{2}$	$3\frac{1}{2}$

In the above table, the first column represents quantities for the first week, the second for the end of the second month, the third for the end of the third month, etc. It need not be mentioned that the change in quantity should be even more gradual than represented in the table.

Attention should also be called to the fact that the time mentioned as the interval for feeding at different ages, does not apply to the whole twenty-four hours. Even during the first week, the child is expected to skip two feedings during the night, making the interval four hours instead of two. By the end of the second month, the interval between the feeding at night becomes six hours, and at the end of the ninth month is six and one-half hours.

From personal observation we judge that in many cases children will do equally well if allowed a longer interval between feedings at night. The plan

of feeding five times daily instead of six, may be begun at as early an age as six months in many instances.

Any mother who has never tried feeding a child at perfectly regular intervals, instead of the haphazard manner which leads her to feed it whenever it cries, or whenever she has leisure, will be astonished to discover what a gain in convenience to herself and comfort to the little one will be thus secured. Regular habits in eating are as necessary for children as for adults. A large share of the digestive disturbances in children are undoubtedly due to irregular feeding.

MASSAGE OF THE HEART.—Prof. Oertel, an eminent German physician, recommends massage of the heart for persons suffering from deficient nutrition, poverty of the blood, or obesity, also in cases in which there is serious obstruction to the circulation from the pressure of tumors, from some forms of pulmonary disease, and curvature of the spine. It is also recommended as an excellent means for strengthening the heart.

Massage of the heart is performed by placing the hands upon the chest in such a way that the thumbs fall on each side of the sternum, about the middle portion, the hands grasping the sides of the chest on a line with the nipple. Pressure is made upon the chest during respiration, the hands being gradually moved downward to the seventh rib. By this means both the lungs and the heart are compelled to empty themselves as completely as possible, and the heart muscle is stimulated to increased vigor in its contractions.

CHOLAGOGUES.—Doubtless a vast deal of harm is done by the almost universal use, by the lay public, of so-called liver medicines. If a person finds his tongue coated, a bad taste in his mouth, feels dull and generally wretched, he seeks relief in a mercurial pill, a dose of salts, or Warner's Safe Liver and Kidney Cure, or some other nostrum. No matter what one out of a hundred remedies may be used, temporary relief is usually experienced. The effect of these remedies is, however, very transient. They do not, as is generally supposed, help the liver, but in many instances really have an opposite effect. They sometimes afford temporary relief by increasing the activity of the bowels and carrying off depressing and offending matters, but the effect upon the liver in the great majority of cases is to diminish its activity. Experiments recently made by Dr. A. Leventon show that gamboge, a famous cholagogue, actually dimin-

ishes the quantity of bile, while jalap, aloes, and other equally noted remedies of this class, have absolutely no effect. W. M. Missen has also shown that alkalies, which have been generally supposed to influence the liver favorably, are also of no value as cholagogues, but instead, actually diminish the quantity of bile produced.

A NEW REMEDY FOR WARTS.—An Austin physician, Dr. Romer, recommends the flowers of the common mullein as an unfailing remedy for warts. The flowers freshly wrung from the stalk are pressed upon the wart and rubbed smartly. The application is repeated a number of times; usually one or two rubbings are sufficient.

MILK DIET FOR SCURVY.—Scurvy is a disease not commonly met with in man, and yet it is sometimes encountered, especially in women who have become greatly addicted to the use of tea. An eminent Russian physician announces the discovery that an exclusive diet of milk is the best remedy for scurvy. Persons thus subsisting upon milk should use from two to four quarts daily, it being taken in doses four or five hours apart. The milk should be boiled.

TO REMOVE SUPERFLUOUS HAIR.—The best radical means for removal of superfluous hair is electrolysis applied by means of a fine needle to each hair follicle. The best means for temporary removal of the superfluous capillary growth, is barium sulphate, which may be obtained in the form of powder. It is used by mixing two parts of the powder to one part each of starch and oxide of zinc. Sufficient water is added to form a soft paste. This is spread upon the surface from which the hair is to be removed, and scraped off after ten minutes, when the skin will be found to be smooth.

SPECKS BEFORE THE EYES.—Many people are made miserable by the appearance in the field of vision, of strange specks, spots, threads, etc., whenever they look at the sky or a white wall. In the majority of cases these appearances are of no significance. Sometimes they are a symptom which requires attention. Dr. Williams recently contributed to the *St. Louis Medical and Surgical Journal*, the following useful paragraph upon this important question:—

“People are often frightened almost out of their wits by the sudden appearance of flying specks before their eyes; sometimes there are only one or two, but often thousands of them can be seen, particularly when a person looks toward a white surface, as white clouds, white houses, white pavements, or toward water surface. These flying specks are mostly small points, connected one with another by fine lines, and the points often present a beaded appearance. At first, persons are likely to try to knock them away, thinking it is something before their eyes. They come usually in both eyes at the same time. They may diminish or increase in number at times, but rarely ever disappear entirely. They usually have a fixed position in the field, but occasionally they move or float about to a limited extent. They never interfere with vision by settling over objects looked at. They are invisible with the ophthalmoscope. Their nature is not well understood. The explanation usually given is that they are opaque points in the vitreous humor, which throw shadows upon the retina and thus become visible. Badly focused eyes are most likely to be troubled with *muscæ volitantes*. They signify nothing serious so long as they are mere points, connected by fine lines, and do not interfere with the acuteness of vision. Treatment is more than useless. If the eyes are out of focus, proper glasses should be selected. It is important that the patient should ignore their presence entirely; should avoid seeing them as much as possible, and let them alone. Large, floating masses before the eyes, which swim around and often obscure the vision, are the result of serious disease, and should be promptly looked after.”

ARE WARTS CONTAGIOUS?—The popular notion has long prevailed that warts could be cured by transference from one person to another by means of various tricks, such as splitting a potato, rubbing one half on the wart, doing it up in a neat package, and placing it on the sidewalk, the theory being that the wart would be transferred to the first person who opened the package. It is not at all probable that there is even

the smallest element of truth in this popular notion, but a scientific study of the nature of warts long ago gave rise to the suspicion that they possess a contagious element, and that they may be transferred by contact. A recent writer in an English journal devoted to skin diseases, relates that after using his thumb to remove warts which had previously been softened, three warts developed upon his thumb, which confirmed his belief, based upon facts which had previously come to his knowledge, that warts are contagious. The most thorough study respecting the origin of warts, shows that they are due to certain species of microbes which invade the tissues and modify their development.

A NEW REMEDY FOR COUGH.—Chronic cough due to catarrh of the lungs is likely to become more troublesome than ever at this season of the year. The *Medical and Surgical Reporter* recommends the following as a remedy for such cases:—

“In cases of chronic bronchitis with difficult breathing and scanty expectoration, the use of banana juice has been highly praised. The juice is prepared by cutting up the bananas in small pieces, and putting them, with plenty of sugar, in a closed glass jar. The latter is then placed in cold water, which is gradually made to boil. When the boiling point is reached, the process is complete. Of the syrup so made a teaspoonful every hour is the proper dose.”

COSMETICS.—The question is frequently asked us, Are there any remedies which can be taken internally or applied externally for the improvement of the complexion? We answer, Yes. Pure cold water is excellent for external application, and simple wholesome food is the best remedy with which we are acquainted for internal administration. There are a few others which may be applied externally with benefit in cases of eruption of the skin due to the development of microbes, but arsenic, and other drugs which are often recommended for internal use, and which are frequent constituents in complexion tablets and similar remedies, are dangerous in character. They only whiten the skin by injuring the health. The results of using the numerous patent medicines recommended for the complexion, are not materially exaggerated in the following from the *Detroit Free Press*:—

“She had read of patent medicines that whitened the complexion, So she took a dose of one of them before she went to bed. In the morning, sure enough, her skin was whitened to perfection, And it might be added incidentally in this connection That she never looked so well before, as now that she was dead.”

ANSWERS TO CORRESPONDENTS.

OBJECTIONABLE ARTICLES OF FOOD.—A lady subscriber wishes to know in relation to the following articles of food, whether any of the list are objectionable: "Lettuce, raw onions, green peas, string-beans, green-corn, sauer-kraut, gooseberries, pie-plant, and red raspberries?"

Ans.—We should recommend raw onions and pie-plant as unfit for consumption by human beings, and of doubtful utility for consumption by either man or beast. Gooseberries usually require so much sugar to make them palatable that they must be very difficult of digestion, and hence their utility as food is decidedly questionable. The other articles on the list may be used by persons with good digestion without trouble.

A SUBSTITUTE FOR TEA AND COFFEE.—W. H. T., Mich., writes, "I see that in your magazine you condemn tea and coffee. What, then, do you recommend as a drink at meals?"

Ans.—If the bill of fare contains the proper proportion of fruits and liquid foods, drinking at the table is quite unnecessary. It is, in fact, detrimental, unless the bill of fare consists wholly of dry foods. If a few sips of something must be taken in connection with the meal, hot water or hot milk is the only substitute for tea and coffee which we can recommend.

ADULTERATION OF TEA—EFFECT UPON THE SYSTEM.—"An Inquirer" asks, "1. Is it true that tea is widely adulterated with poisonous substances? 2. What are some of the drugs used in its adulteration? 3. What is the general effect of pure or unadulterated tea upon the system?"

Ans.—1. Yes, in many instances. 2. We quote as follows from the "Home Hand-Book of Domestic Hygiene and Rational Medicine:" "The chief adulterants of tea are the leaves of other plants—of the sycamore, horse-chestnut, plum, beech, plane, elm, poplar, willow, oak, hawthorn—exhausted tea leaves, lie-tea, sand, quartz, oxide of iron, iron filings, starch, black lead, gum, indigo, Prussian blue, turmeric, Chinese yellow, China clay, soapstone, French chalk, mica, gypsum, rose pink, Dutch pink, chrome yellow, Venetian red, carbonate of copper, arsenite of copper (Paris green), bichromate of potash, carbonates of lime and magnesia, copperas, catechu, etc." 3. Tea is a stimulant, or rather, a narcotic. Its effect is to benumb the sensi-

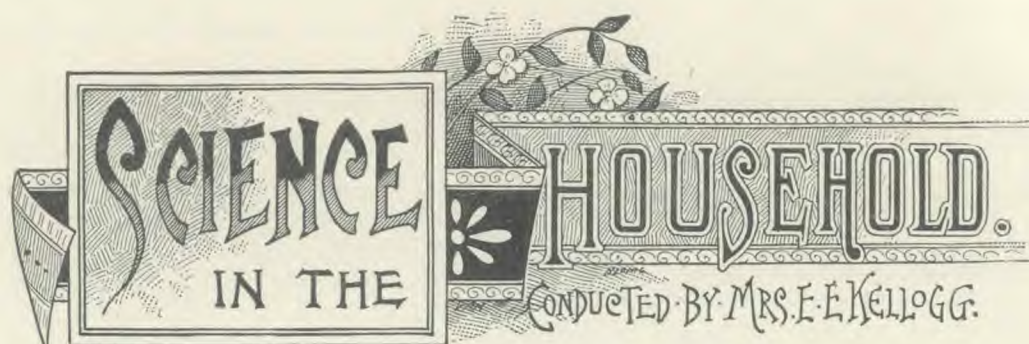
bility, and thereby relieve the sense of weariness or feeling of anxiety or depression, by producing a sense of well being. Tea belongs to the class of felicity-producing drugs, all of which are "nerve foolers." The exhilaration which it induces is at the expense of future health and strength. The writer has met many cases of serious nervous disease which might be fairly attributed to tea drinking. It is now generally recognized by many physicians as a very prolific cause of neurasthenia, and many allied disorders.

TREATMENT FOR SCARLET FEVER—MEASLES, ETC.—"A reader" asks the following questions: "1. In case of an attack of scarlet fever, what treatment would you advise, aside from calling a competent physician? 2. What is the proper treatment to bring out measles? 3. How can one best treat himself at home for catarrh of the bladder?"

Ans.—1. It would be impossible to give a useful description of the treatment of this disease in our limited space, and we are obliged to refer the correspondent to the "Home Hand-Book," page 1229. 2. There is no better means of encouraging the appearance of the eruption than the cool wet-sheet pack or the warm bath, together with copious water-drinking. 3. It is not possible for an untrained person to manage this disease.

NURSING SORE MOUTH—MILK LEG.—Mrs. M. H. R., Oregon, asks the following questions: "1. What is the cause of the malady known as nursing sore mouth? 2. What is the remedy? 3. What is its medical name? 4. What is the cause of the disease commonly called milk leg? 5. How ought it to be treated? 6. What name is this disease known by among medical men?"

Ans.—1. The disease is doubtless due to the action of germs, but its origin is not yet well understood. 2. The mouth should be washed with a solution of ten grains of chlorate of potash to an ounce of water, several times daily. The diet should be regulated to correct any disturbance of digestion, and the bowels should be kept freely open. If necessary, a small dose of salts, or a Seidlitz powder may be taken; but the free use of the enema will usually be sufficient to empty the bowels. 3. *Stomatitis*. 4. Infection of the system with germs, producing inflammation of the lymphatics. 5. Perfect rest, bandaging, and fomentations. 6. *Phlegmasia alba dolens*.



THE USE OF CHEMICALS IN BREAD-MAKING.

BY MRS. E. E. KELLOGG, A. M.

WHAT is usually termed unfermented bread, is prepared with flour and liquid, to which shortening of some kind is added, and the whole made light by the liberation of gas generated within the dough during the process of baking. This is brought about either by mixing with the flour certain chemical substances, which, when wet and brought into contact, act upon each other so as to set free carbonic acid gas, which expands and puffs up the loaf; or by introducing into the dough some volatile substance, as carbonate of ammonia, which the heat during baking will cause to vaporize, and which in rising produces the same result.

Carbonic acid gas may be for this purpose developed by the chemical decomposition of bicarbonate of potassa (saleratus), or bicarbonate of soda, by some acid such as sour milk, hydrochloric acid, tartaric acid, nitrate of potassa, or the acid phosphate of lime.

The chemical process of bread-raising originally consisted in adding to the dough definite proportions of muriatic acid and carbonate of soda, by the union of which carbonic acid gas and common salt were produced. This process was soon abandoned, however, on account of the propensity exhibited by the acid for eating holes in the fingers of the baker as well as in his bread pans, and the more convenient one for both hands and pans, that of using soda or saleratus with cream of tartar or sour milk, was substituted.

We can hardly speak too strongly in condemnation of the use of chemicals in bread-making, when we reflect that the majority of housewives who combine sour milk and saleratus, or cream of tartar and soda, more frequently than otherwise *guess* at the proportions, or measure them by some "rule of thumb," without stopping to consider that although two cups of sour milk may at one time be sufficiently

acid to neutralize a teaspoonful of saleratus, milk may vary in degree of acidity to such an extent that the same quantity will be quite insufficient for the purpose at another time; or that though a teaspoonful of some brand of cream of tartar will neutralize a half teaspoonful of one kind of soda, similar measures will not always bring about the same result.

When there is an excess of soda, a portion of it remains in the loaf uncombined, giving to the bread a yellow color and an alkaline taste, and doing mischief to the delicate coating of the stomach. Alkalies, the class of chemicals to which soda and saleratus belong, when pure and strong, are powerful corrosive poisons. The acid used with the alkali to liberate the carbonic acid gas in the process of bread-making, if rightly proportioned, destroys this poisonous property, and unites with it to form a new compound, which, although not a poison, is yet unwholesome. Very seldom, however, will the proportions be sufficiently exact to perfectly neutralize the alkali, since chemicals are subject to variations in degree of strength, both on account of the method by which they are manufactured and the length of time they have been kept, to say nothing of adulterations to which they may have been subjected, and which are so common that it is almost impossible to find unadulterated cream of tartar in the market.

Baking-powders are essentially composed of bicarbonate of soda and cream of tartar, mixed in the proper proportions to exactly neutralize each other, and if they were always pure, would certainly be as good as soda and cream of tartar in any form, and possess the added advantage of perfect proportions; but as was demonstrated not long ago by the government chemist, nearly every variety of baking-powder in the market is largely adulterated with cheaper and harmful substances. Alum, the most frequent constituent of such baking-powders, is exceedingly in-

jurious to the stomach. Out of several hundred brands of baking-powder examined, only one was found pure.

These substances are, fortunately, not needed for the production of good light bread. The purpose of their use is the production of a gas; but air is a gas much more economical and abundant than carbonic-acid gas, and, when introduced into bread and subjected to heat, has the property of expanding, and in so doing, puffing up the bread, and making it light.

Bread made light with air, is vastly superior to that compounded with soda or baking-powder, in point of healthfulness, and when well prepared will equal it in lightness and palatableness. The only difficulty lies in catching and holding the air until it has accomplished the desired results. But a thorough understanding of the necessary conditions, and a little practice will soon enable one to attain sufficient skill in this direction to secure most satisfactory results.

SOME SEASONABLE RECIPES.

GRAHAM PUFFS.—Beat together vigorously until full of air bubbles, one pint of unskimmed milk, the yolk of one egg, and one pint and two tablespoonfuls of Graham flour, added a little at a time. When the mixture is light and foamy throughout, stir in lightly the white of the egg, which has been previously beaten to a stiff froth; turn into heated irons, and bake in a rather quick oven. Instead of all Graham, one third white flour may be used if preferred.

CURRENT PUFFS.—Prepare the puffs as directed in the foregoing recipe, with the addition of one cup of Zante currants which have been well washed, dried, and floured.

RYE PUFFS.—Bent together the same as for whole-wheat puffs one cupful of milk, one tablespoonful of sugar, and the yolk of an egg. Add one cupful of good rye flour, mixed with one half cupful of Graham flour, and stir in lastly the well beaten white of the egg. Bake at once, in heated gem-irons.

SALLY LUNN GEMS.—Beat together the yolk of one egg, two tablespoonfuls of sugar, and one cupful of thin, ice-cold sweet cream. Add slowly, beating at the same time, one cup and two tablespoonfuls of sifted Graham flour. Beat vigorously until full of air bubbles, add the white of the egg beaten stiffly, and bake in heated irons.

NEW tinware should be filled with boiling water, and let to stand on the stove several hours before being used for holding or cooking food.

OUR kitchens are the fortified intrenchments of ignorance, prejudice, irrational habits, rule-of-thumb, and mental vacuity, and the consequence is that we are suffering from wasteful, unpalatable, unhealthful, and monotonous cookery. Our kitchens are almost abandoned to the control of raw servants. And, what is worse, there is a general acquiescence in this state of things. We profess to believe in the potency of education, and are applying it to all other interests and industries excepting only that fundamental art of the preparation and use of food to properly sustain life, which involves more of economy, enjoyment, health, spirits, and the power of effective labor, than any other subject that is formally studied in the schools. We abound in female colleges and schools, supported by burdensome taxes, in which everything is studied except that practical art which is a daily necessity in the health and life of every household.—*Prof. Youmans.*

RECIPE FOR DESTROYING WEEDS.—Sow the walk or court with salt, using one quart for four square yards. This may be done twice a year.

Another method is to sprinkle with the following liquid: Three pounds of chalk, three pounds of sulphur powder, boiled in five quarts of water, stirring the mixture often. In use employ one part of the liquid and two parts of water.

THE Sanitary News gives the following as a fine, lustrous polish for furniture: "One half pint linseed oil, one half pint old ale, the white of an egg, one ounce spirits of wine, one ounce spirits of salts. Shake well before using. A little to be applied to face of a soft linen pad, and lightly rubbed for a minute or two over the article to be restored, which should first be rubbed off with an old silk handkerchief. If well corked, this mixture will keep any length of time."

It is said that after cleaning closets, if borax be sprinkled around the edges of the shelves and floor, one will not be troubled with roaches.

LITERARY NOTICES.

WE have, as usual, a warm welcome for the November number of the *Pansy*. This little magazine has its own niche in the family circle, which no other can fill. Chaste, pure, and elevating, it teaches the best of moral lessons without being either dull or dry. A perfectly safe little magazine to put into the hands of the young folks. D. Lothrop Company, Publishers, Boston.

THE November number of *Babyhood* closes the seventh volume of this worthy nursery guide for parents. Among the articles of special interest are, "The Care of Delicate Infants," "Bathing for Sick Children," and "The Family Medicine Chest," in which is pointed out the dangers of indiscriminate domestic doctoring. The "Nursery Helps and Novelties," and "Nursery Problems" furnish useful hints and advice concerning many of the perplexing questions which parents of young children have to solve.

THE November number of *Good Housekeeping* is a Thanksgiving number, devoting several of its more important papers, each to some one particular phase of the great national festival. The frontispiece is an illustrated poem on "The Pumpkin," which is an indispensable adjunct of the day—particularly in all New England homes. There are, as usual, many excellent general articles, among which may be mentioned, "Home Furnishings for Winter," "Celery Raising," "Some Ways with Apples," etc. Then follow the usual number of good stories, an abundance of poetry, most of which has the flavor of the season, practical papers on all manner of subjects related to the household, besides all the usual features which render this magazine so popular. Clark W. Bryan & Co., Springfield, Mass.

Scribner's Magazine for November contains several notable illustrated articles on countries but little known to American readers, including the first of several papers by Dr. Carl Lumholz on his exploration in the Sierra Madre. Another striking paper, by Napoleon Ney, grandson of the great Marshal of France, is on the proposed Trans-Saharan Railway, which the French Government has approved. The Hon. Alfred Deakin, M. P., one of the most influential political leaders of Australia, writes of the great federation movement in that country; and Lieutenant A. B. Wykoff, U. S. N., contributes another illus-

trated article, "The United States Naval Apprentice System," in which he pleads for the Americanization of our Navy. George Hitchcock, the American artist who lives in Holland, writes on "The Picturesque Quality of Holland," illustrating his article with his own drawings. There is also another paper in the Ocean Steamship Series, another installment of Andrew Lang's literary recollections, and a Harvard graduate recalls "Mr. Lowell as a Teacher." There is also much other fresh, valuable matter. Charles Scribner's Sons, New York.

THE *Chautauquan* for November has several illustrated articles and the portraits of a number of prominent women. The following is only a partial list of its contents: "The Battle of Long Island," by John Clark Ridpath; "Domestic and Social Life of the Colonists," II., by Edward Everett Hale; "The History of Political Parties in America," II., by F. W. Hewes; "Progress of the Colored People in Washington, D. C.," by Margaret W. Noble; "An Encouraging Phase of Social Life," by Anne H. Wharton; "The Prevention of Crime," by Mrs. Kate Tannatt Woods; "Women as Astronomers," First Paper, by Esther Singleton; "House Decoration," by Hester M. Poole. There are the usual departments devoted to the Chautauqua Literary and Scientific Circle. The *Chautauquan*, Meadville, Pa.

OF all the valuable papers in the November *Century* probably the most noteworthy is that of Prof. W. O. Atwater, on "The Food Supply of the Future," the first in a scientific series of special value to the farmer. Science has shown what are the essential factors in vegetable production, and plants can now be grown simply in water or in sand, by adding the proper chemicals. Other particular features of this fine number are, "Southern Womanhood as Affected by the War," "What are Americans Doing in Art?" "Mazzini's Letters to an English Family," two articles on James Russell Lowell, and "San Francisco Vigilance Committees," by the chairman of the Committees of 1851, 1856, and 1877. The most of these articles are fully illustrated. There is, besides, a rich variety in a lighter vein; melodious verse and charming fiction. The departments, "Topics of the Time," "Open Letters," etc., are as various and fully as enjoyable as ever. The Century Publishing Company, New York.

PUBLISHERS' DEPARTMENT.

SEVERAL young women are already enlisted in a class taking a course preparatory to working in connection with The James White Memorial Home school, for the opening of which preparations are now being made.

* *

THE edition of the Social Purity leaflets published by the Good Health Pub. Co., will soon be issued in the French language. A call for these tracts has been made from various French-speaking countries, also from Spain. The tracts have been placed in the hands of Jean Vuilleumier for translation, and we hope to be able to announce them from the press within a few weeks.

* *

THE "Household Monitor of Health," which was issued from the press in April, has already passed through four editions, aggregating 20,000 copies. No work of the kind has enjoyed so great popularity within so short a time after its appearance from the press. The present prospect is that within the next twelve months a still larger number will be required to meet the rapidly increasing orders for this useful little volume.

* *

THE Sanitarium family had the pleasure of listening, a few evenings ago, to a very excellent temperance "Chalk Talk" by Mrs. Ellen A. Blair, of Nebraska, who favored the Institution with a call on her way to Washington to attend the annual meeting of the N. W. C. T. U. Mrs. Blair is a genuine philanthropist, and we wish her Godspeed in her work for children. The audience was highly entertained at intervals during the address by the marvelous whistling of Miss E. Abbie Thomas, of Elkhart, Indiana.

* *

THE editor recently visited the Sanitarium Medical Class at Ann Arbor. He found there a happy family of medical students, numbering nearly twenty, all enjoying good health, evidently prospering in their studies, and enjoying greatly the opportunities for preparing themselves for future usefulness. The friends of sanitary reform have great expectations respecting the young men and women who constitute this class, and when their course of study is completed, they will be warmly welcomed to the ranks of workers in the cause of sanitary and hygienic reform, which is very sadly in need of recruits.

* *

THE patients' cooking-school at the Sanitarium is very popular. Every forenoon finds half a dozen or more at work in the experimental kitchen, learning to make the toothsome unfermented breads which form one of the most attractive features of the Sanitarium table, together with the numerous delicate, but wholesome, desserts which excite the admiration of so many of the lady guests of the Institution. The Sanitarium cooking-school has very satisfactorily solved the problem of preparing food in such a manner as to be palatable as well as healthful. One of the great faults of the old system of hygienic cookery, was the fact that those who adopted it were usually obliged to subject themselves to many months of severe discipline before they could relish the plain and wholesome viands, which, as one lady said, "agreed with the stomach better than with the palate." Any one who has ever eaten a meal at the Sanitarium, or anywhere, prepared after the methods developed in the Sanitarium experimental kitchen, under the direction of Mrs. Kellogg, will testify that food when scientifically cooked is as acceptable to the palate as to the digestive organs.

DR. AND MRS. KELLOGG will begin, early the present month, a course of instruction for the benefit of mothers and teachers in the education of children. The course of study will begin with the young infant in the cradle, and cover the period reaching from infancy to ten years of age. The educational needs of the child will be studied from physical as well as mental and moral standpoints. Among the various topics which will be considered, are the following: The Natural Order of Development of the Senses in the Young Infant; The Hygiene of Infancy; Character Building; Physical Culture for Children; and other allied topics.

* *

THE Sanitarium Medical Missionary School for the training of young men and women to act as missionary canvassers, teachers of cooking-schools, physical culture, lecturers on hygiene, and in similar lines of work, opened November 2, with nearly fifty students, a much larger number than has appeared at the opening on any previous occasion. The eminently practical character of the instruction given in the school, and the success with which the efforts of those who have taken the course of instruction in the two previous sessions have been attended, have developed an increasing interest in the work of this educational institution. It is very satisfactory to know that those who are taking the course the present year, are all, without exception, prepared to devote their whole energies to the work as soon as they have acquired a proper preparation for it.

* *

AN evidence of the widespread reputation of the Sanitarium Food Company's products is to be found in the fact that a recent mail brought orders for these foods from that distant corner of the world, the Gold Coast of Africa. The high esteem at which the foods are held will be recognized by the fact that they were ordered sent by mail, notwithstanding the great expense of postage to such a distant and out-of-the-way place.

A good testimony to the value of these foods may be found in the following order, also recently received:—

TOUNGOO, BURMA, Sept. 17, 1891.

"Sanitarium Food Co. :—

"Please send me forty pounds of W. G. grits, put up the same as last order, in tin cans of ten pounds each; also thirty pounds of No. 1 Graham crackers, in tin cans of five pounds each, and one dozen pint bottles of unfermented grape wine.

"My last order came in good condition, and has been a blessing to more than one.

Yours respectfully,

"EMMA O. AMBROSE."

The sender of the order will be gratified on receipt of the goods to find the quantity double the amount ordered, the Sanitarium Food Company having duplicated the order for the benefit of the mission work in which Miss Ambrose has been engaged for so many years. We hope some time in the future to be able to give the readers of GOOD HEALTH some little account of how the health foods are appreciated in Burma.

* *

THE Sanitarium Laboratory of Hygiene is now in full operation, under the skilled direction of Dr. Paul Paquin. One of the interesting departments of the Laboratory is the laboratory for the production of vaccine, which is conducted upon aseptic principles. Vaccine produced in this laboratory secures the most reliable protection from smallpox known, and may be used with perfect safety. Ordinary vaccine frequently produces blood

PUBLISHERS' DEPARTMENT.

poisoning,—in fact, a mild form of blood poisoning usually accompanies vaccination, as is indicated by the great swelling of the part vaccinated, the enlargement of the glands in the neighborhood, severe pain, chills and fever, and not infrequently the formation of huge abscesses. Death sometimes occurs from vaccination through this cause. The prevalent idea that the best protection is secured when the vaccine has "worked well," is an error, as the pronounced symptoms of blood poisoning, which are taken to mean the thorough "working" of the vaccine, are the result of the action of foreign germs with which the vaccine becomes contaminated when produced in the usual way. These germs not infrequently completely destroy the vaccine germs, so that, although a person may think the vaccination has worked remarkably well, he may have no protection whatever. This is doubtless an explanation of the fact that vaccination is frequently found to be of no value.

Vaccine produced under the direction of Dr. Paquin, in the Sanitarium Laboratory of Hygiene, is free from all foreign germs, and is certain to work well in any susceptible person, and guaranteed to produce no symptoms of blood poisoning. We are not aware that this kind of vaccine is produced anywhere else in the world. Although the laboratory has been in operation less than a month, orders for "points" have been received from nearly all portions of the United States, and also from Mexico. An article which appears in the November number of the *Bacteriological World and Modern Medicine*, gives full explanation of the dangers from impure vaccine, and the modes of producing pure vaccine. We feel confident that this advance in the method of producing vaccine will remove the great objections which have heretofore existed to the use of this means of protection against smallpox. If any one wishes to test the merits of this vaccine, he should ask his doctor or druggist to send to the Laboratory of Hygiene, Sanitarium, Battle Creek, Mich., for a package of points. These points are put up in parcels of four each, carefully preserved in glass tubes, and protected from contamination by air germs.

* *

A NEW FOOD.—The importance of gluten as an article of food has been recognized ever since physiologists began to make a scientific study of dietetics.

Gluten, the nitrogenous and flesh-forming element of wheat, barley, and rye, is the most remarkable of all food elements, in that it alone is capable of sustaining life indefinitely, in the absence of all other elements. This is doubtless due to the fact that this wonderful principle sustains, as does no other element, the brain, nerves, glands, muscles and other living tissues of the body. An animal fed upon starch, sugar, or fats, lives but little longer than if wholly deprived of food, while one fed on gluten may maintain health for an indefinite period.

Gluten is that adhesive substance of rubber-like consistence which is left after washing a portion of dough upon a sieve under a stream of water. It is by this or some similar process only that gluten can be separated from the starch and other elements with which it is combined in food. It is by this laborious process that our product is prepared from the finest quality of wheat. Large quantities of bogus gluten are sold under various names, as was shown a few years since in a valuable article published in the *Scientific American Supplement*. Some of the gluten flours (so-called) contained less gluten than good qualities of white flour. The great objection to the employment of gluten as an article of food has heretofore been the impossibility of obtaining it in a palatable form. After several years of experimentation, the Sanitarium Food Company has at last produced a pure gluten

which is not only eatable, but really toothsome. It is furnished either in the form of gluten biscuit or gluten meal. Two grades of gluten are manufactured.

No. 1 Gluten Biscuit or Gluten Meal is pure gluten.

No. 2 Gluten Biscuit and Gluten Meal contain a small proportion of starch.

The special indications for the use of Nos. 1 and 2 gluten preparations are as follows: Cases of diabetes, Bright's disease, slow digestion, acid dyspepsia, general nervous debility, anæmia, or impoverished blood, and in all cases in which there is need of rapid improvement of nutrition, as in the cases of wasting disease, such as consumption, scrofula, chronic rheumatism, and especially cases of convalescence from fevers, surgical operations, and other serious illnesses of any sort.

The gluten biscuit are very bulky, and so satisfying that a comparatively small quantity will take the place of a very much larger amount of ordinary bread. One pound of pure gluten is equal to four pounds of the best beefsteak, in nutritive value, and possesses special dietetic properties which are unequalled by any other alimentary substance.

For circular, address, THE SANITARIUM FOOD CO.,

Battle Creek, Mich.

* *

F. L. MEAD, was recently elected a member of the Executive Committee of the International Health and Temperance Association. Mr. Mead has for many years been interested in the work of the Association, and his extended acquaintance with the workers in this line in all parts of the United States, will enable him to render very efficient service to the Board.

* *

MEMBERSHIP in the American Pharmaceutical Association is obtained only by election at the annual meeting. Every pharmacist and druggist of good moral and professional standing, whether in business on his own account, retired from business, or employed by another, and those teachers of pharmacy, chemistry, and botany who may be especially interested in pharmacy and *materia medica*, are eligible to membership. For blank application and further information, address Dr. H. M. Whelpley, 2729 Washington avenue, St. Louis, Mo., chairman of the Committee on Membership.

* *

7 AT the Commencement Exercises of the Sanitarium Training-School for Nurses recently held, twenty-one young men and women were graduated as nurses from this Institution. The Sanitarium Training-School for Nurses is one of the most thorough training-schools in the United States, and its graduates are always in great demand. These professional nurses easily command from \$12 to \$20 a week salary, when engaged in private nursing.

In the future, this Training-School will be conducted as a Missionary School, that is, only those will be allowed to enter the school who wish to fit themselves for work as missionary nurses, except such as wish to enter the employ of the Sanitarium. The demand for nurses of this class has become so great that the Managers have found it necessary to limit the pupils of the school to those who wish to engage in these lines of work. Of the present members of the Training-School, numbering about eighty, nearly all have already pledged themselves to missionary work, and with possibly one or two exceptions, all of the class just graduated are enlisted in work for the advancement of sanitary reform in the Sanitarium or elsewhere.



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DR. ROBERT T. MORRIS, of New York. "The Necessary Peroxide of Hydrogen." *Journal of the American Medical Association*, Chicago, Ill.

DR. E. CHAREST, of St. Cloud, Minn. "Peroxide of Hydrogen for Gonorrhœa." *Medical World* of Philadelphia, Pa.

DR. PHILLIP RICORD, of Newark, N. J. "Peroxide of Hydrogen for the Relief of Bites from Venomous Insects." *N. Y. Medical Record*.

DR. JOHN AULDE, of Philadelphia, Pa. "Hydrogen Peroxide—a Résumé." *N. Y. Medical Journal*.

DR. EGBERT H. GRANDIN, Obstetric Surgeon New York Maternity Hospital, Infant Asylum, etc. "Peroxide of Hydrogen in Gynecology and Obstetrics." *The Times and Register* of Philadelphia, Pa.

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Going North and West.				STATIONS.	Going South and East.			
P. M.	1.30	P. M.	8.15	Ar. Allegan.....Lv	A. M.	P. M.	
A. M.	1.45	P. M.	6.45	Ar. Battle Creek..Lv	A. M.	P. M.	A. M.	
P. M.	6.30	A. M.	7.35	Lv. Toledo.....Ar	
.....	A. M.	12.13	Ar. Bryan.....Lv	A. M.	P. M.	
.....	P. M.	3.11	Lv. Cincinnati...Ar	P. M.	P. M.	
.....	A. M.	5.00	

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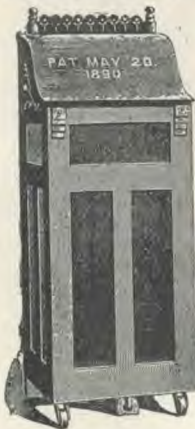
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Chicago & Grand Trunk R. R.

Time Table, in Effect May 10, 1891.

GOING WEST.						STATIONS.	GOING EAST.					
p m	a m	p m	p m	a m	a m	Boston	a m	p m	p m	a m	p m	
3.00	9.00	7.00				New York	8.30	9.50			7.30	
p m	p m	p m				Buffalo	p m	a m	p m	a m	a m	
5.00	6.00	8.00				Niagara Falls	9.55	7.40	5.07	10.10		
a m	a m	p m				Boston	a m	p m	p m	a m	p m	
6.00	6.00	1.00				Montreal	8.55	5.00	4.20	8.30		
a m	a m	p m				Toronto	a m	p m	a m	p m	p m	
7.45	7.35	2.45				Detroit	7.30	8.17	9.10	7.10		
						Chicago	a m	a m	p m	p m	a m	
						Port Huron	8.30	9.50			7.30	
						Lapeer	8.10	7.45			7.45	
						Flint	a m	p m			p m	
						Durand	8.42	5.50			7.40	
						Lansing	p m	a m			a m	
						Charlotte	9.50				11.55	
						BATTLE CREEK	1.00				1.00	
						Haskell's	2.50				1.58	
						Vicksburg	1.58				1.58	
						Schoolcraft	2.52				2.52	
						Cassopolis	5.40				5.40	
						South Bend	6.00				6.00	
						Haskell's	7.21				7.21	
						Valparaiso	8.05				8.05	
						Chicago	9.30				9.30	
						Chicago	pm	am	am	pm	am	

Where no time is given, train does not stop.
 Trains run by Central Standard Time.
 Valparaiso Accommodation, Battle Creek Passenger, Port Huron Passenger, and Mail trains, daily except Sunday.
 Pacific, Limited, Day, and Atlantic Expresses, daily.
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MICHIGAN CENTRAL

"The Niagara Falls Route."

Corrected June 28, 1891.

EAST.							
STATIONS.	† Mail.	† Day Express.	* N. Shore Limited.	* N. Y. Express.	* At'ntic Express.	† Eve'g Express.	† Kal. Accom'n
Chicago	am 7.05	am 9.00	pm 12.20	pm 3.10	pm 10.10	pm 9.25	pm 4.55
Michigan City	9.10	11.10	2.00	4.48	am 12.25	11.25	7.00
Niles	10.20	pm 12.48	2.53	5.00	1.45	am 12.40	8.25
Kalamazoo	12.00	2.20	3.55	7.04	3.35	2.17	pm 10.05
Battle Creek	pm 12.55	2.59	4.25	7.37	4.29	3.04	am 6.40
Jackson	3.05	4.25	5.82	8.52	6.23	4.45	9.05
Ann Arbor	4.42	5.25	6.22	9.45	7.45	6.05	10.19
Buffalo	6.15	6.45	7.20	10.45	9.20	7.30	am 11.25
Rochester	am 3.00	am 3.00	am 6.25	am 6.25	pm 5.05	pm 5.05	pm 7.00
Syracuse			8.00	12.15	10.20		am 1.00
New York			pm 3.45	pm 8.50	am 7.00		7.45
Boston			5.40	11.05	10.45		10.45

WEST.							
STATIONS.	† Mail.	† Day Express.	* N. Shore Limited.	* Chicago Express.	* Pacific Express.	† Kal. Accom'n	† Eve'g Express.
Boston		am 8.30	pm 2.15	pm 3.00	pm 6.45		
New York		10.30	4.50	6.00	9.15		
Syracuse		pm 7.30	11.55	am 2.10	am 7.20		
Rochester		9.35	am 1.45	4.20	9.55		
Buffalo	pm 11.00	11.00	2.40	5.30	11.50	am 8.45	
Suspension Bridge			3.25	6.25	pm 12.50		
Detroit	am 8.20	am 7.40	9.25	pm 1.20	9.15	pm 4.45	pm 8.00
Ann Arbor	9.35	8.39	10.19	2.19	10.30	5.52	9.18
Jackson	11.25	9.40	11.18	3.17	11.50	7.15	10.45
Battle Creek	pm 1.00	11.12	pm 12.22	4.25	am 1.23	8.47	am 12.05
Kalamazoo	2.17	11.55	12.59	5.00	2.17	pm 9.30	1.10
Niles	4.15	pm 1.12	2.08	6.17	4.15	7.40	3.10
Michigan City	5.37	2.14	3.08	7.20	5.45	8.55	4.30
Chicago	7.55	8.55	4.50	9.00	8.05	11.15	6.50

*Daily. †Daily except Sunday. †Daily except Saturday.
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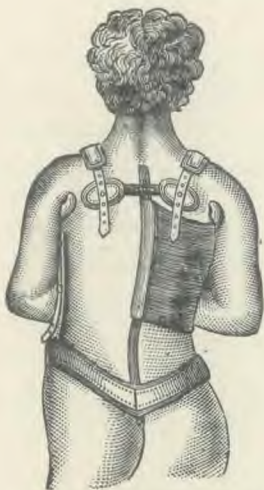
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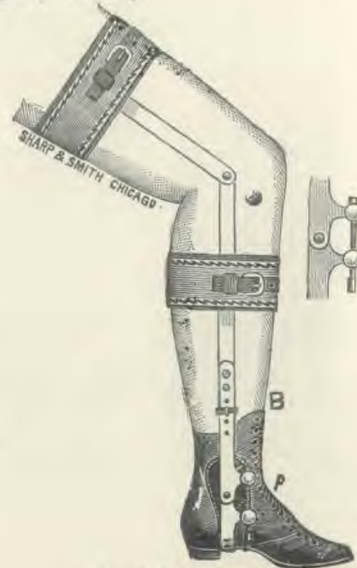
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