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ZOOLOGICAL HEALTH-STUDIES.

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

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

4. Pampered Pets.

(Continued.)

THE wild ancestors of the domestic dog include some of the most vigilant quadrupeds,—creatures that hunt all day, and devote a large part of the night to predatory or amatory adventures. But their overpetted descendants nevertheless develop a phenomenal capacity for sleep. A dyspeptic pug-dog would slumber away about twenty hours of the tedious twenty-four, if his dreams were not haunted by the dread of rivals; and there is no doubt that nature utilizes the eclipse of consciousness not only as a restorative, but as a refuge from otherwise hopeless misery. It was long supposed that the benumbing effect of a low temperature had something to do with the winter sleep of bears and squirrels; but the explorers of Madagascar have discovered at least four species of lemurs, or night-monkeys, that sleep away the warm season; and during severe droughts the alligators of Southern Brazil take naps of six or eight weeks in the sand-beds of dried-up creeks.

The same anodyne comes to the relief of invalids for whom life has ceased to be worth living; and judging from the conduct of able-bodied dogs, they seem to consider the helplessness of a crapulent relative as the result of a fatal disease, something to be shortened by heroic measures, and, if possible, extirpated in the interest of the species. They try to put the waddling little wretch out of his misery, and, in anticipation of that risk, decrepit lap-dogs often endeavor to conceal their condition by a display of spurious ferocity, snapping and barking away with might and main the minute they suspect themselves of having attracted the attention of a heavy-weight, but flying with squeaks of abject terror if the big stranger betrays a disposition to accept the challenge. The instinct of enforcing the disappearance of the unfit is not limited to dogs. "Domestic sheep that lose their way in the Sierras are sometimes butted to death by the wild big-horns," says the author of a work on the hunting-grounds of Northern Mexico; "but this cruelty is inspired less by malice than by that singular propensity which impels gregarious animals in a state of nature to destroy the decrepit members of their tribe. The cimarron, recognizing the *Ovis domestica* as his near relative, is scandalized at her fatness, stupidity, and awkwardness, and considers it his duty to suppress her before she gets a chance to disseminate the germs of degeneration."

A similar explanation might palliate the crime of the wanderoo monkeys that killed the baby of a British missionary in the garden of a Ceylon bungalow. The little bundle of disabilities having been deposited in the shade of a mango-tree while its nurse attended to a shopping errand, its fretful cries were silenced by the teeth of a committee of its Darwinian relatives. "When I am called upon to admire a prize baby," said Professor Huxley, "I never fail to exhaust the synonyms of all divine attributives; but while I am about it, I take a look at the paragon's feet, to see if the soles curve inward,

and thus betray its arboreal descent." An examination of that sort probably failed to satisfy the wanderoo standard of perfect fitness, and all things considered, they thought it best to terminate the career of a being so little qualified to hold its own in the struggle for existence in the tree-tops.

The love of exercise has become as extinct in some parlor pets as in the abbot of a monastery on the plan of St. Benedict. Rat-terriers of the variety known as "black and tan" are naturally averse to confinement, and on their release from indoor restraint will indulge in extravagant jumps and racing fits, tearing up the road, *ventre a terre*, and down again, as if their fortune had been staked on the issue; but an old female of that species often excites the merriment of my neighbors by her pig-like sloth and the pessimistic frown on her wrinkled face when the flunky of her mistress drags her forth for her morning promenade. Resistance, she knows, would result in strangulation, so she waddles along under protest, utterly weary of a world that grudges her even the cheap negative blessing of peace.

Normal dogs eye her with mingled pity and surprise, and feel reconciled to the hardships of their outdoor life; but their aversion to what we would call domestic comforts may sometimes be traced to an unexpected cause; viz., their dislike of parlor perfumes. "The Hindu fakir who fills his mouth with gall," says an American naturalist, "cannot suffer more for Buddha's sake than many a town-dog has to suffer in the service of a master who keeps a tan-yard or a chemical laboratory. To the nose of a creature able to distinguish the 'cold trail' of a rabbit at a distance of forty yards, odors which offend even our blunt olfactories must be as irritating as the continuous screech of a steam-whistle would be to a delicate human ear."

But tastes differ, and, for all we know, rose-oil and cologne may be torture to animals that revel in the odors of a horse-cemetery. Drawing-room privileges disqualify a hound for hunting purposes, compromising nature blunting his sense of scent, like that of a shepherd dog exposed to the effluvia of a sheepfold. As a compensation, the remaining senses of a thoroughbred collie are sharpened to an almost preternatural degree, while the lap-dog's disabilities are followed by a very different result. He becomes an all-round invalid, a victim of mental as well as physical decrepitude.

During my sojourn in Cincinnati, O., I paid an occasional visit to the headquarters of a specialist who made a business of training animals for circus purposes and for the local trick-dog market. He had his pupils on exhibition in various parts of the town, and his middlemen boasted that he had taken fifty-cent curs and graduated them as fifty-dollar prize performers.

"What breeds of dogs do you prefer, after your long experience?" I asked the proprietor of this high school.

"Poodles and shepherds first," said he, "and not much difference for next best choice. I have come across some wonderfully intelligent mongrels. Setters and terriers, too, will do very well, almost anything, in fact, except pug-dogs and such-like ladies' pets."

"How do you account for that," I asked, "do you think they are too lazy to study?"

"I suppose so," said the old trainer (really a keen observer, as I could infer from his comments on kindred topics), "but the matter is worse; they have n't got much brains to work upon; what sense they had has been petted out of them. The way I explain it to myself," he continued, "is the kind of useless living, curs of that kind usually get; they need not hustle for their board and lodging, so their intelligence gives out, and their pups are born silly."

I have often pondered on that last remark. Is it not true that economical nature eliminates the teeth of pap-fed city dwellers, and the hair of nightcap wearers? Has it not been recognized as a biological maxim that our organs get developed by frequent use, and stunted by non-use? and is there any reason to suppose that brains are an exception to that general rule? Does it not seem highly probable that our mental faculties deteriorate in default of that most potent stimulant, the necessity of "hustling" for the means of existence? Should that not partly explain the number of silly puppies evolved by families blessed, or cursed, with pre-assured incomes— hereditary things and boodle-magnates?

"Partly," I say, for, moreover, there is a curious interaction of physical and mental vigor, and the nerves of the brain appear to participate in the neurasthenia of indolent aristocrats. Intellectual power seems to require a basis of physical potency, and it is a suggestive fact that the golden age of each country's national literature bloomed out during the transition period from military semi-barbarism to the luxurious civilization of science and art. That civilization, once established, becomes perhaps more polished, but less fertile in genius, and has to recruit its best talent from abroad or from the rural districts. "Education is a passion in Scotland," says the historian Froude; "it is the pride of every honorable peasant, if he has a son of any

promise, to give him a chance of rising as a scholar." A similar ambition filled the universities of the middle ages with the sons of the stout Holland burghers and sailors. Hence the remarkably large number of distinguished medieval Netherlanders and modern Scotchmen — the mental flame fed by a reserve fund of bodily vigor.

The danger of ruin may rouse the children of shiftless imbeciles to new exertions, and thus regenerate the lineage (as in the case of the house of Hapsburg); but when it is once understood that the actual work of government is going to be delegated to able viziers, generations of figure-head monarchs are apt to sink to the level of idiocy, as in the dynasty of the few last Abbassid califs, who knew that they had no need of mental exertion, and that their survival would be guaranteed to satisfy the national appetite for the worship of legitimacy.

A curiously similar result has followed the perversion of our canine friends for culinary purposes. The proprietors of mantilla-wearing pugs, after all, encourage their prot gés to display an occasional vestige of intellectuality, but the hairless curs which the Chinese are still fattening for the meat market have no such inducement. "Heaven is paid when man receives," sings Alexander Pope, "to enjoy is to obey;" and the Canton sausage-dog knows that he can please both himself and his master by digesting the largest possible quantity of food,— rice-mash, with an occasional admixture of meat, scraps, or boiled fish. The pampered mash-dog knows that as surely as the sun shall rise, his trough will be filled; but he knows hardly anything else. The little wretches are terrier-shaped, and it must have taken ages of stall-feeding and inbreeding to reduce a relative of the fox to that far-gone state of imbecility.

But the two recipes combined, have answered their purpose as effectively as in the case of a Bavarian bedlam-king. As seen through the slits of his bamboo cage, the sausage-dog stands listening, with his head turned slightly sidewise, watching for the footsteps of the approaching feeder, which is, for months perhaps, the only exercise of his perceptive faculties. If you open the door and coax him, he looks at you, or rather toward you, with an expression of surprise, not unmingled with distrust. Is the day of reckoning at hand — the event that is to solve the mystery of his free-lunch existence? Is he about to be fricasseed for the benefit of his benefactor? At a menacing gesture he starts back, but not at once; it takes some time for the idea of danger to reach the recording center of his brain-box. Outside he wanders about in quest of comestibles, with utter disregard of appeals to his sense of affection; if lassoed and confronted by his captor, he will stand still and await events with a vacant stare that appears pardonable in a pig, but shocking in a primate of the animal kingdom. The Canton terriers have lost their voice,— all but a pig-like squeal of pain,— and their hide resembles that of a crab-apple tree, especially about the rump, where it turns scaly and wrinkled under the influence of frost. In Southern China that breed of curs is also subject to all sorts of cutaneous disorders, including an eruption of tumors that often proves fatal to an organism unprotected by the salt of intellect.

In a suburb of Benares there is a hospital devoted to decrepit monkeys and pious and continent paupers, as its founder expressed it, and the list of its four-handed patients includes a considerable number of sufferers from chronic digestive complaints,— the explanation being found in the superstitious veneration of two or three species of our Darwinian kinsmen, who accordingly take all the liberties of Spanish begging friars. In Hindu settlements, troops of the sacred long-tails roam from house to house collecting contributions in the form of rice-cakes, and an enterprising individual will sometimes suddenly appear in an open window, make a spring upon the breakfast table, snatch up all the portable tidbits, and retreat the way he came.

The Hindus suffer all these things for Brahma's sake, but the Nemesis of greed overtakes the marauders if they get a chance at a large store of rich food, such as ripe mangosteens, yam roots, or oily nuts: they will gorge away till they double up, moaning in gastric torments, or expire in the convulsions of a congestive chill.

On the plateau of the Roan Mountain, in the Alpine borderland of Tennessee and North Carolina, my boy once caught a young woodchuck (ground-hog) that became as tame as a spaniel, but before the end of the year succumbed to an overdose of chestnuts. Those nuts, together with hickories and certain roots, constitute the proper food of its species, but in the airy heights of the East-American Alps, nut-bearing trees grow very sparsely,— there being only about six trees per acre, and frost-stunted at that. Further below, the forests of the Appalachian sylvania still cover the mountains in all their primeval splendor; but there the squirrels and wood-rats enter into competition for the yearly nut harvest, in numbers that prevent an *embarras de richesse* of individual dividends. Nature does not tempt her children with oversupplies of concentrated food.

(To be continued.)

CAUSES AND PREVENTION OF TYPHOID FEVER.

BY A. N. LOPER, M. D.,

Superintendent of the Nebraska Sanitarium, Lincoln, Neb.

AN article upon this subject may seem a little out of season at this time of the year; but the fact that the disease is liable to make its appearance during any month in the year renders the subject one of vital importance at any and all times. Typhoid epidemics are usually expected in the autumn, but on some occasions, and especially in some localities, the disease takes its rise in midsummer or earlier. At any rate, now is the time to begin to take precautions against its next annual uprising.

Typhoid fever is a germ disease; that is, there is a specific germ which, being received into the system, multiplies there, and gives rise to the pathological condition developed as its result. Science has demonstrated that this germ originates most frequently in decaying animal and vegetable matter, — animal excreta especially, — warmth and moisture being necessary for the development of the bacteria.

A wet spring, when streams overflow their banks, and the soil is treated alternately to drenching rains and hot sunshine, followed by a hot, dry summer, furnishes favorable circumstances for a scourge of typhoid fever. Under these conditions the poison originating from decaying animal and vegetable matter easily finds its way through the soil into streams, pools, and wells, and thence, by these water supplies, into the human system. The germs are usually taken in with the food or drink, — through water most frequently, but often through milk, butter, or other food. The milk of cows having access to contaminated water becomes thoroughly poisoned, and when taken into the system in an unsterilized state, often gives rise to typhoid fever. Impure water may also prove to be a source of infection when used without boiling, for washing dishes or cleaning pantry shelves, and for general kitchen work. One can readily see how a lack of care and cleanliness in the culinary department may result in the prostration of the members of a family by this subtle poison.

Our only means of security against the terrible ravages of this dread disease is to boil both milk and water, and exercise "eternal vigilance" in guarding all other gateways through which these mighty foes may enter the citadel of the body. Danger lies in carelessly kept dish towels, neglected milk-pans, foul ice-chests, contaminated creamers and drinking-vessels, the thoughtless use of ice in drinks of various sorts, etc., etc.

When once the disease makes its appearance in a neighborhood, the care and watchfulness in every household should be increased tenfold. What water supply may be risked, and what may not, are always questions of great importance. The best authorities in the West have decided that only that water may be considered safe without boiling which is taken *directly* from tubular wells reaching down to what is known as "sheet water." The water from these wells is forced from a stratum of sand lying between two strata of solid stone, at an average depth of one hundred and fifty feet. Water from tanks, shallow wells, lakes, ponds, or streams must not be presumed to be free from the possibility of contamination with the poisonous typhoid bacilli; for although such water supplies may not be located near barn-yards, cess-pools, vaults, etc., from which the poison is so readily absorbed, they may receive it from the dust whirled by eddying gusts of wind, which in many instances has been proved to be laden with countless millions of these germs.

The medical profession are awaking more and more to the fact that the sterilizing of milk and water is essential to the prevention of this disease. But a few weeks ago the board of health of Chicago recommended that the city water be boiled before using. Although taken from Lake Michigan, several miles out from shore, chemical and microscopical examination has proved it to be unsafe for household purposes unless first sterilized.

To many readers these dangers may seem to be magnified; but in the one hundred cases of typhoid fever that have come under my personal observation during the past four years, I have had evidence sufficient to convince me that all these points are of vital importance, and that if carefully observed, the number of typhoid cases would be remarkably diminished.

TUBERCULOSIS IN SWITZERLAND.

BY P. A. DE FOREST, M. D.,

Bâle, Switzerland.

IN this part of Europe, famed for its beautiful scenery, its manufactures, and for the patriotism of its people, tuberculosis is met with very frequently in its varied forms. The statistics show an average of one seventh more deaths from this disease here than in the United States, which is to be accounted for not only by the fact that more people are attacked with the disease, but that there are fewer recoveries. It is not the province of this article to give a lengthy explanation of all the factors which operate against the recovery of the patient, and enter into the etiology of the disease, but to point out one of its chief causes.

Americans are not the only ones noted for the high temperature at which they keep their living-rooms. Here the debilitating influences of living in hot, ill-ventilated rooms, and also the depressing effect of cold dwellings without ventilation, may be experienced in the same city. Among the watchmakers, whose productions in that line have made Switzerland famous, there is an alarming number of deaths from consumption. These people toil from early morning till late at night in rooms almost entirely devoid of ventilation. Watches being largely made by piece-work, almost every household, in some villages, has its warmest and most perfectly lighted room set apart for that work. In such delicate work of course it is necessary that the room be kept warm; and fuel being high, the plan adopted by nearly all is to seal themselves almost hermetically in their thick-walled houses. At the first breath of winter the double windows are put on, and every precaution is taken to keep out the cold. Houses thus sealed up are easily kept warm by a small amount of fuel. This is burned in porcelain stoves, which give off the heat slowly and pleasantly, but are worthless as a means of ventilation.

The sleeping-rooms are also kept tightly closed in the majority of instances, and thus the occupants are shut in and the pure air is shut out. When there is added to this devitalized air the tobacco smoke which is commonly found therein, the products of the combustion necessary to light the rooms at night (they work as late as midnight), and last but not least, the contamination by sewage from closets without traps, the result is a mixture of poisons powerful to induce disease of the lungs. Then, too, the sedentary nature of their occupation naturally tends to produce digestive disorders, and it is noticed that this is often the beginning of a diseased condition ending in pulmonary tuberculosis, recovery from which is well-nigh impossible unless the patient will stop work, and devote a large portion of his time to building up his exhausted vitality. The watchmakers generally occupy districts of high altitude, where the days are sunny and the air clear and bracing, but that matters little if they have neither time nor inclination to avail themselves of the help it alone could give.

What is true of the watchmaking districts is true in a less degree of other parts of the country, except that the opposite course is pursued with little better results. It is not so much the temperature at which the houses are kept that is the great factor in the production of this disease, as it is the persistent manner in which the source of life is kept polluted. Man deliberately smothers himself in his own excretions, in direct disobedience to that law which governs the life of all living beings, that "the excretions of any organism are fatal to it."

CURIOUS PARTNERSHIPS. — When one organism lives upon another, at its expense, and without rendering any equivalent for the nutriment which it draws from its host, it is said to be a parasite. In some instances, however, animals or plants or animals and plants are associated together in such a manner as to be of mutual service. Sometimes two animals are found so constantly associated that they have been for a long time supposed to be one individual or species instead of two. The hermit crab sometimes carries about with him, attached to his shell or to a claw, a sea anemone, the two creatures traveling together. The anemone pays for its transportation from place to place (being itself a poor traveler) by protecting its partner, the crab, and by aiding in the killing of its prey.

The acacia tree protects itself against various destructive insects by employing a species of ants, which take possession of the plant, and live in little cells especially provided for them, feeding upon the sweet nutritive fluids produced for their benefit, and defending the plant whenever it is assailed by any danger, rushing out in great numbers to attack predatory insects or animals.

PHYSICAL DECAY.

"If the repair were always identical with the waste, life would be terminated only by accident, never by old age." This is a fact well known to all who have investigated the subject, though the statement is made by G. H. Lewes, in his "Physiology of Common Life." In early years this balance of the human system is admirably preserved. As man advances in life, however, reaching fifty or sixty years, his joints become stiffened, and he begins to 'feel his age.' Renovation of various organs of the body depends on the blood, and if this supply is not at all times furnished in sufficient quantity and quality, a gradual deterioration takes place. The heart and arteries become clogged, and the whole delicate machinery suffers from the lack of nourishment. Deposits of phosphate and carbonate of lime accumulate, and the change, which is really a chemical one, hinders the blood from going to the extremities and performing its work of repair and renovation. Old age, then, is the result of a change in the blood, by which it becomes overloaded with earthy salts; and as it travels here and there throughout the body, it leaves its calcareous matter in the system. The valves of the heart become hardened, or cartilaginous in structure, so that the heart is not able to propel the blood to its destination. The arteries also having become ossified, still further obstruction of the blood takes place, and the whole body languishes.

The blood is the life. If it is kept continually in good order, the years are prolonged. In youth and early manhood, these fibrinous and gelatinous deposits do not accumulate; but as the years go by, the process of ossification gradually extends throughout the system until the person reaches the decrepitude of old age. If some means were discovered by which the blood could be kept in the condition of youth, it would throw off these earthy salts which obstruct the action of the heart and the arteries.

Blood is made from the food and drink taken into the system. To these, then, we should look primarily for the quality of the blood. Without eating and drinking there can be no life, but we may select certain kinds of food containing a minimum amount of the elements which cause ossification. An English physician who has made many researches in regard to food, has come to the conclusion that more fruit should be eaten, especially apples, grapes, and bananas, as they are rich in nutritious elements. Being deficient in nitrogen, they are excellent for elderly people, because they keep the blood in a better condition than does flesh. After the age of sixty years, less beef and mutton should be used, and more apples and nuts of all kinds, the latter being especially rich in many of the nutritious elements of meat. In order to retard physical decay and to keep the blood in a wholesome condition, distilled water is recommended. It has solvent qualities which act upon the earthy salts in the blood, and expel them from the body. . . .

It is an old saying, that a man is as old as his arteries. If they are soft and compressible, the deteriorating effects of old age have not appeared. Flourens, in his well-known work, "Human Longevity," cites the case of the Italian centenarian Cornaro, whose recipe for health and long life was extreme moderation in all things. Flourens himself insists that a century is the normal life, but that fifty years beyond, and even two hundred years, are human possibilities under advantageous conditions. Hufeland also believed in two hundred years as an extreme limit. Sir James Circhton-Browne, M. D., concedes that Flourens is right. Duration of growth gives the length of life. Hufeland held that the human body grows till the age of twenty-five, and that eight times the growth period is the utmost limit of man's age. But if twenty years be taken as the time of growth, even five times that will give us a century.

According to Flourens and Cuvier, man is of the frugivorous, or fruit-and-nut-eating, class of animals, like the gorillas and other apes and monkeys. The teeth of man are not like those of the lion and other carnivorous beasts, neither are they like those of the cow and other herbivorous animals. The intestines in man are seven or eight times the length of his body. Herbivorous animals, like the cow, have intestines forty-eight times the length of the body. So, judging man by his teeth, his stomach, and his intestines, he is naturally and primitively frugivorous, and was not intended to eat flesh. Fruit is a natural aperient. Apples act on the liver.

Perhaps too much stress has been laid upon the effect of certain climates. We find that Thomas Parr, who lived in England, died in his one hundred and fifty-third year. His body was dissected by the celebrated discoverer of the circulation of the blood, Dr. William Harvey, who expressed no doubt of his age. Mr. Parr was never out of his native country. Accounts of men who have lived to extreme age in

Ecuador and Mexico indicate the possibilities of reaching an advanced age. A climate that allows much outdoor living is the best for health. More depends on food than on climate. Exercise, fresh air to live in and to sleep in, daily bathing, and freedom from medicine are the important things.

In July, 1893, the *Courier Journal*, of Louisville, published a long account of James Mc Mullin, who died in Carlisle County, Ky., at one hundred and seventeen years of age. When Buffon, Hufeland, Flourens, and men of that class, who had studied the subject, believed in the possibility of one hundred and fifty or two hundred years of life, the subject is not one to be ridiculed. — *Sel.*

Influence of Tobacco upon the Blood. — The *Popular Science News* asserts that the injurious effects of tobacco-using upon the blood may be readily discovered by microscopical examination. In ordinary blood, corpuscles are sometimes noticed which are irregular in outline, presenting a crenated, or scalloped, appearance of their borders. These corpuscles are very rare, however, the proportion not being more than one to three or four hundred of the ordinary corpuscles. In the blood of the tobacco-user, however, these crenated corpuscles are often found to be present in the proportion of one to ten.

Mark Twain's Sanitary Survey. — In Mark Twain's account of his Mediterranean excursion, he states how he arrived at "Civita Vecchia the forlorn" on a hot day in July, and proceeds to describe the place as follows: —

"This is the vilest nest of dirt, vermin, and ignorance we have got into yet, except that African perdition they call Tangier, which is just like it. The people here live in alleys two yards wide. It is lucky the alleys are not wide, because they hold as much smell now as a person can stand; and, of course, if they were wider, they would hold more, and then the people would die. These alleys are paved with stone, carpeted with slush, decayed rags, decomposed vegetable tops, and remnants of old boots, all soaked with dish-water, and the people sit around on stools and enjoy it. They work two or three hours at a time, but not hard, and then they knock off and catch fleas. This does not require talent, because they have only to grab. If they don't get the one they are after, they get another; it is all the same to them, they are not particular."

Women as Barmaids in Great Britain. — Countess Carlisle, Lady Henry Somerset, and other prominent women of England have taken active steps to abolish the scandalous and degrading custom of employing young women as barmaids. There are fifty thousand women so employed in the United Kingdom, and the greatest opposition will come from the women themselves and those employing them. The women object to having their livelihood taken away, and as the liquor men find it very profitable to have them, the movement will no doubt meet great resistance. — *National Temperance Advocate.*

It is well known that Thomas Carlyle became a pessimist in his latter days, due no doubt to his lifelong dissipation. He smoked a short pipe incessantly, and was fond of dyspepsia-producing viands. One night, when disturbed by the barking of a dog, he expressed a wish that he had the animal by its hind legs within reach of a stone wall. A man with such a feeling toward a poor brute could scarcely be otherwise than savage toward his fellow men.

How Animals Practise Medicine. — Animals get rid of their parasites by using dust, mud, clay, etc. When a dog has lost its appetite, it eats that species of grass known as dog grass, which acts both as an emetic and a purgative. When cats are ill, it is a matter of common observation that they eat grass. Animals suffering from chronic rheumatism always keep, as far as possible, in the sun. If a chimpanzee be wounded, it stops the blood by placing its hands on the wound, or by dressing it with leaves and grass. A dog, on being stung in the muzzle by a viper, was observed to plunge its head repeatedly for several days in running water. Animals that have been injured in the eyes avoid the light and heat. It is also very generally known that when animals are ill, they abstain from food; in fact, many times this is the only way the farmer knows that his horses and cattle are sick. — *Medical Record.*

A New Kind of Thermometer. — "I wish, Susan, that when you give baby a bath, you would be careful to ascertain whether the water is at the proper temperature. Use the thermometer."

"Oh, that's all right, mum. I don't need no thermometer. If baby turns red, the water's too hot; if it turns blue, the water's too cold. I can always tell nicely that way."

THE NECESSITY FOR PHYSICAL TRAINING.

WE quote as follows from an article in the *Canadian Practitioner*, by B. E. McKenzie, B. A. B., of Toronto: —

"The necessity for attention to the physical development of children will be apparent to any one who will notice how many of them, especially in large centers of population, are unsymmetrical, distorted, and imperfectly developed. It is questionable whether the so-called blessings of civilization represent an unmixed good; the intellectual and social attainments of our times are great, but they have not been effected without cost.

"In earlier times, when less humanitarian views prevailed, and the customs of life did not permit a survival of the weakling, a process of natural selection made man more robust; and the great lungs, stout heart, mighty muscles, sturdy bearing, and unquailing nerves of the forest dweller called for no special care to bring him to a high condition of physical efficiency. The rush of modern times, the competition in the schools, the prizes to be attained through intellectual and social advancement, however, seem to have made us forgetful of the fact that man is first an animal in order of development, and that physical vigor is the necessary substratum upon which must ever rest great attainments.

"The examination and careful measurements of primitive and uncivilized races and of the best models of Greek statuary prove that modern modes of dressing have greatly reduced the girth of the waist, displacing the stomach, liver, kidneys, and other abdominal and pelvic viscera, and interfering with their functional activity. The girth of the waist in woman should be but little less than that of the thorax, and normally it is larger proportionately to the height in women than in men. Dr. Seaver, of Yale, reports measurements made of some of the best Greek statues, showing the girth of the waist among women to be only two or three per cent. smaller than the circumference of the thorax.

"The following figures, taken from Kellogg,* obtained in the measurement of women among the Chinese, Indian tribes, French, German, and Italian peasants, as well as English and American women and men, show important facts regarding the relation of waist girth to height: —

	Average Height.	Average Waist.	Per cent.
American women	61.94	24.79	40
Telugu women of India	60.49	24.65	40.6
French women (peasants)	61.01	28	45.4
Chinese women	57.85	26.27	45.4
Yuma women	66.56	36.84	55.2
Civilized American men	67.96	29.46	43.3
Venus de Milo (statue)			47.6
Mrs. Langtry	67	26	38.8

"'At Wellesley College Dr. Anna M. Wood has measured 1100 women between the ages of nineteen and twenty-one years, with the following results: Average height, 63; average waist, 24.6; per cent., 39.

"'Some measurements which I have made of women by whom I have been consulted because of some deformity of the trunk, show the average percentage of waist to height to be below 37 per cent.

"'It is worthy of note that the measurements just given of American women were of those who ordinarily dressed in the conventional styles. The Telugu women wear their skirts supported by a cord drawn tightly about the waist. The French and German peasants, for the most part, support theirs

* "Influence of Dress," by J. H. Kellogg, M. D., Battle Creek, Mich.

from the shoulders, and discard waistbands. The Chinese are low of stature, being two inches below five feet, but have waists two inches greater in circumference than either the ordinary American woman or the women of India. The women of the tribes of Arizona and New Mexico, unfettered by dress, have a waist measurement 55.2 per cent. of their height.

"'A large number of schoolgirls, between the ages of eleven and thirteen years, showed a waist measurement of 23.5 inches. A number of college girls about nineteen or twenty years of age gave an average waist measurement of 23.3 inches, thus showing that while general development had been going on, the waist had been reduced two-tenths of an inch.'

"My purpose in referring to these measurements is to point out some of the evil results of modern customs and fashions, — evils which are very far-reaching, and require varying means for their remedy, but many of which are readily corrected by improved methods of dressing, as taking off the corset, bands, and all such restrictions from the thorax and waist, and following this by a proper attention to physical development. The erectness and symmetry of the trunk must depend largely upon its having an opportunity to develop fully in all its diameters. The injury resulting from restriction, though marked in the atrophy of the muscles, is not limited to these structures, but affects the osseous framework, and cripples the contained viscera, whereby injury is done to the progeny, and a condition results which strongly predisposes to deformities of the trunk, without the intervention of any distinctive pathological state.

"Modern methods of dressing young women and girls cause the circumference of the waist and lower thorax to be reduced from one to five or six inches below the normal amount. Though it is always claimed by women that no part of the clothing is tight, yet it is seldom that more than a half an inch of expansion is permitted in the lower thorax; and it may safely be stated that if the calf of one leg be restricted for a few months or weeks in the same manner as the waist of the ordinary young woman, it would show marked atrophy when compared with the other.

"In woman, the liver is proportionately larger than in man, and her girth at the waist should be proportionately larger. Constriction, therefore, is responsible for much of the displacement found in the abdominal and pelvic viscera, and for atrophy of the trunk muscles, resulting finally in the distorted spine and other trunk deformities."

THE DECLINE OF THE FRAGILE WAIST.

It is a matter for rejoicing that fashion no longer decrees a slender waist as something indispensable to propriety and grace. The natural waist of the woman of average height is about twenty-eight inches, and any less size is attained only through arrested development, or compression by means of whalebone and steel. The amount of room inside these twenty-eight inches is absolutely needed for the proper working of the machinery of the internal economy. In spite of this fact, girls very often bind the yielding ribs into such narrow compass that the waist measures twenty or twenty-two inches only; and you will every now and then hear some mother of a family, with a very different waist now, boast, as if it were something to be proud of, that when she was nineteen years old, her waist measure was nineteen, too. It is, however, of no use to talk to young people about the injurious effect of compression on the stomach, heart, lungs, liver, and the arterial system. They are not anatomists, and they do not comprehend the matter, nor want to do so; they observe that they feel as well now as they did before; and without weighing the thought that it requires time to work ruin, take it for granted that they will always feel well, although they have been told and taught that in post-mortem examinations, wherever tight lacing has been the rule, every organ is found to be out of place and seriously injured. But although it does move them a trifle to be told that red noses and eruptive skins and flat chests are to be laid to the account of the too slender waist, yet, on the whole, neither common sense, nor auld-wife wisdom, nor doctors, have the power of conviction that fashion does; and when fashion says there is no beauty in a wasp waist, but that the lines of mobility and health made by deep breathing are the really lovely lines, fragility being something rather to be avoided than cultivated, why, then fragility begins to decline, and the lines of the Venus de Milo, of the Diana, of the Pallas, begin to come in.

The habit of tight lacing has already done almost irretrievable injury. If it were continued, there is no knowing what shape it might eventually have evolved. Even sculptors declare that a model with

a natural waist, sloping outward rather than inward, is something not to be found, even the most charming figures otherwise having the hour-glass tendency, which, in however slight a form, is sufficient to spoil them for posing for anything demanding the freedom, the beauty, and the grace of the antique. The Greek woman supported and stayed herself with bands of linen, but there was no compression in the swathe, and her natural waist made her of a perfect beauty; and to-day the natural waist of the Circassian does not interfere with the reputation of her loveliness. The adoption of European dress by ladies of the harem and of Japan, showing, as it does, either a want of the knowledge of true beauty or a wilful abandonment of its principles, will probably lead to tight lacing in the Orient just as we are relinquishing it here.

Why any one should ever have imagined that a waist which looked as if it were going to break in two was more attractive than a waist which looked capable of supporting the head and arms and shoulders, is a mystery, — so great a mystery that the effort to solve it is to be given up in satisfaction over the report that the foreign creators of the mode have recently asked themselves the question if the shape that the Creator chose to give to the human body was one they could improve. — *Harper's Bazar.*

HEALTH RULES FOR CYCLISTS.

1. No one should become an habitual cyclist without medical authorization. Before committing himself to an opinion, the medical man consulted will do well to examine the beginner on dismounting from the machine as well as beforehand; there are certain cardiac defects which become recognizable only when the subject is under the influence of excitement or fatigue.

2. A cyclist should at first be contented with a moderate pace, not exceeding twelve kilometers per hour (about seven miles and a half). A higher rate of speed should only be indulged in after the rider has gone through a regular course of training. If a break in the practise occurs, lasting even for a few days, the cyclist should recommence at the slower rate.

3. The temptation to go fast must be controlled as far as possible. A bicycle travels well-nigh of its own accord, and it is very hard to resist the "delirium of speed." With a light machine on a good road, and helped ever so little by the breeze, an amateur, even when only half trained, can easily achieve his twenty-five kilometers within the hour (fifteen miles and a half). This is too much, seeing that when doing from fourteen to sixteen kilometers, the rider's pulse rises to 150. — *London Lancet.*

TRAINING THE BRAIN.

THE home has been compared to the ship-yard, where the vessel's construction is slowly and painstakingly elaborated step by step, so that the structure may be able to outride the strains and disintegrating tendencies that are sure to attack it later, just as the growing human organism is built up, under fostering influences, by the gradual incorporation of helpful habits and useful physical reactions. Self-control and transparent honesty in the parent are as essential as obedience and self-reliance in the child. "He that will have a cake of the wheat must tarry in the grinding." The child does not exist who can grow up natural or healthy without a fair share of wholesome neglect and judicious exposure. Few realize the tremendous risk of over-caution and over-attention. A youngster is invariably happier with few and simple playthings than with a multitude of complicated toys.

There is no such good fun or good training as making one's self useful, and it is cruelty to deprive the child of this pleasure and stimulus. Let the brain and body be trained through hand, foot, and eye. Dump a load of sand into the back yard, and let the children roll in it. Give the boys a carpenter's bench; encourage the girls to do housework. Where possible, let both boy and girl have a little garden-patch, if only a few feet square, and the care of a few plants. A woman in her home, a man in his garden: this seems to be a fundamental type from which we cannot entirely depart without risk to body and mind. The training of the muscular reflexes should go hand in hand with the cultivation of simple, natural, beneficent reactions in the higher planes. Cheerfulness, sincerity, industry, perseverance, and unselfishness may be acquired by practise and constant repetition, as much as the art of cor-

rect speaking or of playing the piano, and are far more necessary to health.

How often is a physician hampered in his efforts to help some sufferer because the latter has never acquired the art of obedience, or because he cannot tolerate a tongue-depressor, or swallow a pill or any unpalatable mixture, or take milk or some mainstay of diet; or because he cannot be left alone, or sleep in the daytime, or wear flannels, or sit still, or bear pain, or use his muscles, or take in certain classes of facts or ideas! These and similar peculiarities, which are a formidable hindrance to the physician, and may be a matter of life and death to the sufferer, can usually be prevented by a little care, or overcome by proper training. They are often the result of carelessness or over-indulgence, or that kind of cowardice which instinctively avoids the disagreeable, instead of facing a difficulty fairly and conquering it.

The children of the poor, in spite of many drawbacks, fare better in some respects than those of the well-to-do. They often respond better to treatment when they are sick; they are at least not deprived of contact with their fellows and that struggle for existence which are absolutely essential to health; whereas the children of the so-called higher classes are too often educated in sensitiveness and false and hurtful views of life — not always by precept or example, but by force of circumstances. A colleague who is intimately acquainted with the physical condition of some eight thousand children, taken from the worst classes, who have in the course of several years passed through a public institution under his care, says that they improve so much after having enjoyed for a few months the ample diet and simple and regular life provided, that their physical condition compares favorably with that of any class of children.— *Popular Science Monthly.*

THE HEAD AS A COMMON CARRIER.

SOUTHERNERS who have from infancy been accustomed to seeing negroes "tote" on their heads burdens of various kinds, are familiar with the carrying capacity of that organ. But at the North the head is usually considered either in the character of a thinking-machine, or, in extreme cases, as "a knob to keep the man from raveling."

Apart from any trivial suggestions or comparisons, however, the head is really an excellent burden bearer, and should be more commonly used as such. The New Yorker who takes a brief walk down Center street need not journey to Italy in order to admire the erect forms and graceful carriage of the Italian peasant women. They may be seen there any morning with sacks of rags much larger than themselves, and weighing more than the ordinary person would care to lift, poised carefully on the top of the skull, swaying perilously sometimes, but never falling, as the almost hidden woman dextrously avoids collision with the numerous passers-by, many of them laden like herself. In some of the Italian cities, fine-looking women may be seen carrying in this way brick and mortar up the ladders of buildings in course of construction.

In Spain as well as in Italy burdens are far more frequently carried aloft than in the arms. The people of the far East also use the muscles of the arms for lifting, and those of the neck for sustaining either heavy or light weights. Rebecca goes to or returns from the well with her huge jar resting gracefully on her head or shoulder, and its weight causes her no apparent discomfort, for she never stoops as she traverses the steep path.

It would be well for children to become accustomed from their earliest years to the carrying of various articles, light at first but gradually increasing in weight, on the bony superstructure which seems to have been adapted by nature to this purpose.

Heavy weights carried in the hands or on the arms drag the shoulders forward, curve the back in what is anything but a line of beauty, and thereby compress the lungs, and tend to displace various internal organs. Carried on the head, these same weights necessitate an erect spine, a chest raised to its fullest height and properly expanded, shoulders squared as they were meant to be, and breathing that is deep and full. The gain is immense, both in health and beauty; for the woman who has been so trained walks like a princess, and has little or no need of doctors or medicine. — *Will Carleton, in Every Where.*

CONDUCTED BY

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

TRAINING OF THE APPETITE.

THE appetite, like all natural instincts, is susceptible of education both in a right and a wrong direction. Many mothers fail to realize this fact, and the child's appetite is left to chance development, which, far more frequently than otherwise, leaves him subject to it rather than ruler of it. Depraved appetites are often inherited, but are as frequently created through lack of proper care and training. The education of the appetite begins at the very outset of life. Picture, if you will, the first epoch of the life of the average child. Eating is about the first, and, for some time, the chief activity of his babyhood. During this period of helplessness he is fed in season and out of season, without thought or regulation. Expressions of pain and discomfort are habitually met with proffers of food, until the gustatory sense, habitually gratified to appease the demands of the senses, becomes the *regnant* propensity. The immediate result of this treatment is the inauguration at the very outset of life, of a disordered digestion and a morbid condition of the stomach, which creates a constant craving for the pleasurable sensation produced by eating and drinking. The ultimate outcome of such management is that it teaches the child to crave animal sensations and to establish a dominance of appetite,— a love of gratifying the senses for the sake of the sensation, which, indulged in one direction, will be hard to restrain in others, and will be apt to cast its influence over his entire life.

The abnormal appetite created by deranged digestive functions opens a door through which, if unguarded, the whole train of evils, gluttony, intemperance, and impurity may enter later on in life. Purity of heart is a condition quite incompatible with sensual pleasuring of the appetite. How hardly, then, shall the soul that has, through years of wrong education in childhood, been brought into bondage to the appetite and other natural propensities, arise and shake off its shackles and bring the body under when the years of youth and maturity are reached? Wrong tendencies as well as right ones are continuously strengthened by exercise. The desire to gratify inclination and satisfy taste does not lessen with the increase of years. As has been aptly said, "Impressions, inclinations, appetites, which a child may have derived from his food, the turn it may have given to his senses, and even to his life as a whole, can only with difficulty be set aside when the age of self-independence has been reached. They are one with his whole physical life, and therefore intimately connected with his spiritual life."

Dr. Horace Bushnell says upon this point: "The child is taken, when his training begins, in a state of naturalness, as respects all the bodily tastes and tempers; and the endeavor should be to keep him in that key, to let no stimulation of excess or delicacy of taste disturb the simplicity of nature, or sensual pleasure in the name of food become a want or expectation of his appetite. Any artificial appetite begun is the beginning of distemper, disease, and a general disturbance of natural proportion. Intemperance! how dismal the story when it is told! how dreadful the picture when we look upon it! From what do the father and mother recoil with a greater horror of feeling than the possibility that their child shall be a drunkard? Little do they realize that he can be, even before he has so much as tasted the cup, or that they themselves can make him so virtually, without meaning it, even before he has gotten his language. Nine tenths of the intemperate drinking begins not in grief and destitution, as we so often hear, but in vicious feeding. Here the scale and order of simplicity is first broken; and then what shall a distempered or distemperate life run to more certainly than to that which is intemperate? False feeding engenders false appetite; and when the being is burning all through with the

fires of false appetite, what is that but a universal uneasiness, and what will this uneasiness more likely do than lead to indulgence in the pleasures and excitement of drink?"

Another writer says: "Many mothers who deplore the intemperance that exists everywhere do not look deep enough to see the cause. Too often it may be traced to the home table. Whoever eats too much of a food that is not healthful is weakening his power to resist the clamor of appetites and passions. Many parents, to avoid the task of patiently educating their children to habits of self-denial, indulge them in eating and drinking at all times. Such children, as they grow up, are slaves to appetite. When they take their place in society, and begin life for themselves, they are powerless to resist temptation."

In how strong a light do these facts place the responsibility of motherhood! At the same time they emphasize the mother's wonderful privilege to intercept temptation and build up bulwarks against vice by the real needs of life. Froebel offers these suggestions to the mother: "Always let the food be simply for nourishment, never more, never less. Never should the food be taken for its own sake, but for the sake of promoting bodily and mental activity. Still less should the peculiarities of food, its taste as a delicacy, ever become an object in itself, but only a means to make it good, pure, wholesome nourishment. Otherwise the food destroys health. Let the food of the little child be as simple as possible, and let it be given in proportion to his bodily and mental activity." The frequency of meals, the amount as well as the character of the food used, are matters of the greatest importance, particularly in the early years of childhood.

No solid food of any kind should be given to a child until it has the larger share of its first teeth. Even then it must not be supposed that because a child has acquired its teeth, it may partake of all kinds of food with impunity. The digestive apparatus of a child differs so greatly from that of an adult in its anatomical structure, and in the character and amount of digestive fluids, that it is by no means proper to allow a child to eat all kinds of even wholesome food which a healthy adult stomach can digest with impunity, to say nothing of the rich, highly seasoned viands, sweetmeats, and epicurean dishes which seldom fail to form some part of the bill of fare. We must nourish our children's bodies without pampering their appetites. We must make our ordinary diet so healthful and palatable that it will be satisfying, and create no desire for that which is unwholesome. Children are not likely to crave unsuitable foods unless a taste for such articles has been developed by indulgence in them.

From the time solid food is permissible, to the age of three, sterilized milk, entire-wheat bread, and such of the grain preparations as contain an abundance of gluten, with easily digested fruits, both raw and cooked, undoubtedly form the best dietary. From the age of three to six years, the same simple regimen, with the addition of legumes prepared without the skins or in soup, macaroni, and a few of the most easily digested vegetables, will be all-sufficient. It is especially important that a dietary for children should contain an abundance of nitrogenous, or protein, material. It is needed not only for tissue repair, but must be on deposit for the purpose of growth, since it is the bone- and muscle-forming element of food.

Of all foods, the seeds and cereals possess this element most abundantly, and for that reason they should be given great prominence in the children's dietary. The cereals are also among the most universal foods, and when well prepared, are palatable and easy of digestion. While other foods may and should be used, a cereal food, rich in gluten, should form the foundation upon which the meal is based.

Strong condiments, pungent sauces, and stimulating foods should be excluded from the children's dietary, as should also articles difficult of digestion, the use of which would tend to impair the integrity of the digestive organs.

The manner of serving food should also be a matter of consideration. The meal-hour should be made cheery with bright and appropriate conversation, that the only attraction about the meal may not be merely the food. The table conversation, if properly directed, can be made to serve as a most efficient help in teaching children that the purpose of eating is not merely the gratification of the palate, but the acquirement of strength for labor or study, that they may be better fitted for usefulness in the world. If meal-time is made the most genial and pleasant of all the family gatherings, and one in which the children can participate, it will be greeted with delight because of the social pleasures it affords, while the mere eating will take a secondary place. The benefits which will accrue from such a "feast of reason and flow of soul" are many. Not only will it help in making the appetite subservient, but it will aid digestion; and if properly planned, the table talk may be an excellent means of stimulating thought and conversational powers in the children.

The habit common with some mothers, of asking when seated at the table, "What would you like,

Georgie?" "What will you have, Helen?" instead of helping the children to some portion of suitable food, and taking it for granted that they will eat of it, is a most potent element in the downward training toward sensuous gratification and the establishment of a love of appetite. A child thus treated thinks he *must* have what he *likes*, whether it is good for him or not. The sense of taste was given us by the Creator, not for animal enjoyment, but to enable us to distinguish between wholesome and unwholesome foods, and as an aid to good digestion. When it is divorced from this, its natural and physiological purpose, it becomes a source of mischief. The natural, unperverted taste of a healthy child will lead him to eat with a relish that food which is best for him, and his appetite can be educated to enjoy all wholesome foods, if the mother is true to her duty. E. E. K.

THE BATTLE CREEK SANITARIUM DRESS SYSTEM.—XV.

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FIG. 1.—VARIÉTÉ COSTUME, SHOWING SILK FRONT.

THIS month we bring forward some old favorites whose style is so undoubtedly good that their popularity will probably never perceptibly wane. The Variét· will always be especially sought after and recommended on the score of economy, as it so easily lends itself to the remodeling of half-worn dresses, wraps, etc. For example, the jacket may be made of a fabric entirely different from the skirt of the dress, and worn over a waist which as a matter of necessity is of a still different kind of goods from either.

In regard to the gown form, a little reflection will convince the observer that too much cannot be said in its favor, as it is really the foundation of all dresses of whatsoever fashion. Its economy as well as its wide range of usefulness and adaptability render it deservedly a favorite with all owners of a narrow purse, or with those who, from scruples religious or otherwise, desire to dress in a quiet, inexpensive manner. It may be made of denim, and in the summer season without a lining, for the woman who does her own housework, tends her own garden, raises her own poultry, or picks her own fruit, while fashioned of some daintier goods and trimmed with silk, satin, or velvet and lace, it fulfils its mission worthily as an elaborate evening gown for a person of wider social obligations and more expensive tastes.

WHEN DOES BODILY EDUCATION BEGIN?

WHEN does physical education begin? and how is it to be conducted? are practical questions that will suggest themselves to many parents desirous of doing the best possible for their children. Must we wait until the child can handle a pair of light dumbbells and be put through a series of gymnastics before we begin to train his body? The truth is, that while physical development comes first in the natural order of things, it depends upon us, as parents, only to furnish the necessary circumstances in which the child can conduct his own physical education. The first breath he draws is the beginning of this education, and all restrictions of clothing interfere with its satisfactory progress. As our breathing power is the measure of our vital capacity, so breathing is the first and most important gymnastic

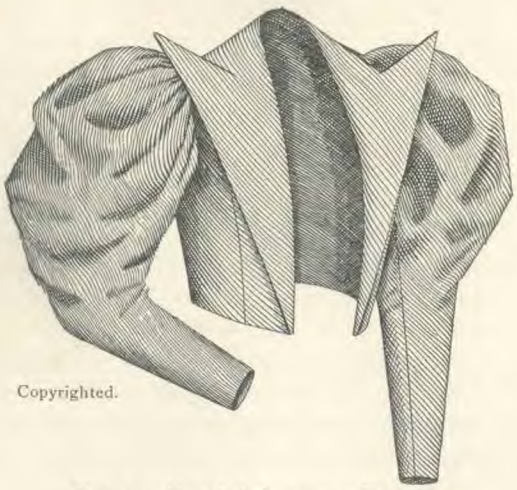

FIG. 2.— VARIÉTÉ JACKET — FRONT.

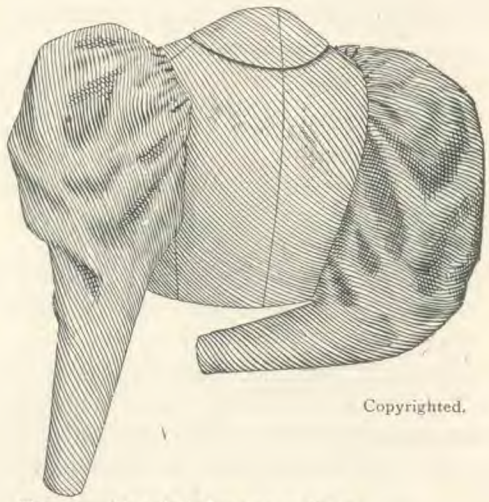

FIG. 3.— VARIÉTÉ JACKET — BACK.

FIG. 4.— GOWN FORM — FRONT.

FIG. 5.— GOWN FORM — BACK.

exercise of the child. This is one important reason why the clothing should never be pinned so tightly as to hold it in place, for this tightness interferes with the use of the lungs, and therefore with physical development.

The wise parent is one who gives his child that "wholesome neglect," under wise supervision, which enables the child to learn his own physical powers. He permits the child to develop naturally and slowly, never inciting him to premature use of his muscular system, nor, on the other hand, interfering with his development by forestalling his desires, and preventing his attempts to aid himself. The child that is induced to walk too soon may thereby become bow-legged, but the child who is always carried will never learn to walk. Avoiding these two extremes, the judicious parent places the child upon the floor, and with interest watches the gradual development of his powers of locomotion under self-induced activity.

Perhaps no one exercise develops the whole physical system — muscular, nutritive, and nervous — more systematically than creeping. This is nature's preparation in the child for the strong muscles which will enable him to walk safely. To interfere with this natural order of things is to thwart nature's plan of development.

If in gaining control of his bodily powers the parent perceives that the child is not using his muscles to the best advantage, or is in danger of acquiring a bad habit which will have to be corrected in the future, he can judiciously insist upon a better method, while at the same time he does not interfere with the child's right or education. For example, it is right that the child should be allowed to use his own spoon, knife, or fork, but he should not be allowed to acquire awkward habits in their use which it will cause him much trouble to rectify later. In the same way he should be taught to sit and stand correctly; and to cultivate the use of both hands equally is certainly very desirable.

The plays of children are a very important part of bodily education, and the nervous mother who is continually calling out, "Don't climb that tree," "Don't walk on that fence," "I'm afraid you 'll fall," "I'm afraid you 'll hurt yourself," is seriously interfering with that power of self-control which comes from a cultivation of the muscles through the adventuresomeness of childhood. As girls have as much need of self-control as boys, as they have just as much need of strong bodies, the wise mother will not curtail the activity of her growing girl by constant admonitions to be "ladylike," and not tear her clothes. The instinct of activity in the girl is as divine as in the boy; her muscles are as many in number, and their law of development and growth is the same. Children may be taught to be polite, courteous, chivalrous, and kindly, even in the midst of active childish sports; and the romping little girl is more likely to grow into the well-poised, self-reliant, symmetrically developed woman, than the one whose active instinct has been constantly repressed in childhood. — *Mary Wood-Allen, M. D., in The Mother's Friend.*

MEDIEVAL BOOTS AND SHOES.

SHOEMAKING was one of the first trades followed by man. In primitive times, before people had the least idea of clothing themselves, they found it advisable, or necessary, to put something on their feet; and the cleverest among them made clumsy coverings — which we must call shoes for want of a more appropriate name — of rushes, the bark of trees, and skins. The Bible seems to be the first book to mention shoes; according to Moses the Hebrews covered their feet fifteen hundred years before the Christian era.

When they were slaves in Egypt, the Israelites were not allowed a choice of work; they had to do such work as the Egyptians pleased. They were accordingly forced to undertake the dressing of skins and the currying of leather; they also took to making shoes, in which they became very skilful.

Shoemakers were at first called sandal-makers, and there is little doubt that sandals and rough buskins, or socks (covering the leg like a gaiter), were the first specimens of shoes.

The Israelites originally made their shoes of roughly prepared skins, and afterward of papyrus and cloth. Later on they were made in many styles, and were very elegant. The chief styles mentioned by the ancient books are the military (ornamented with iron and brass) and the religious (covering the whole foot, and thus distinguished from the sandal worn by the common people).

The style of shoe indicated the position of the wearer. The purple shoes of the high priests marked the highest degree of power; the closed shoe (black) was in vogue among the men of the upper classes. The women pushed the love of luxury to extremes;

they ornamented their shoes with crescents of gold, and perfumed the inside with myrrh and incense.

Sandals were more fashionable among the Egyptians than among the Jews. They were worn by women of the highest rank, for we read of the sandals, with long, turned-up points, which the beautiful queen, Nofri-Ari, wife of Sesostris, habitually wore when at home. The common people had wooden sandals. If we may credit the assertions of historians, one of the Egyptian queens expended the revenue of one city solely in keeping herself in sandals.

Among the Greeks, boot and shoe making was raised to the dignity of an artistic profession. They had a light kind of boot for hunting purposes; military boots, called *enemides*, fastened by silver clasps; the military *krepis*, half sandal, half boot, covering the leg and exposing the toes; the civil *krepis*, lighter and more elegant. The *cothurne*, a high boot covering the foot and half the leg, and having very thick soles, supposed to have been introduced by Æschylus, and originally intended for actors only, became popular, and was worn by huntsmen, soldiers, magistrates, and others.

The women wore boots somewhat similar to those of the present time, but without heels. They also wore sandals, richly ornamented, and elegant slippers, always made of saffron-colored cloth, and occasionally decorated with precious stones.

The Romans went to such lengths in the way of luxurious boots and shoes that the Emperor Aurelian issued an edict on the subject. Men were not to wear painted boots, and women were prohibited from wearing red shoes. Green shoes were declared contrary to manly dignity, and only the wives of princes and senators had the right to wear boots and shoes with gold or silver soles, and ornamented with pearls and precious stones!

Before the Gauls were conquered by the Romans, they had boots or shoes with soles in which were silver-headed nails. Some of these have been discovered in recent years.

The later kind of boots and shoes — the long, pointed ones, so familiar in pictures of the fourteenth century, and others — are more generally known.

The first shoemakers in France were called *sueurs;* but as they made a large number of shoes of Spanish leather, to which they gave the name of *cordovan* (from Cordoue-Cordova), the men were afterward called *cordouanniers*. This last word was turned by the French into *cordonniers*, and by the English into *cordwainers.* —*Sel.*

FRUIT SOUPS.

Sago Soup. — Soak one-half cup of sago for one hour in a cup of cold water. Add a quart of water, and cook in a double boiler until transparent. In the meantime cook together one cup of sweet California prunes and one-half cup of raisins in a small quantity of water. When the sago is transparent, add the fruit and juice to it, together with one-half cup of currant, or some other tart fruit juice, and one-half cup of sugar. The quantities given are sufficient for three pints of soup. Serve hot with croutons.

Instead of the above, rice with dried apricots, prune and currant juice may be used. Dried apples with dried cherries may be used, if preferred.

Strawberry and Apple. — Cook three fourths of a cup of sliced fresh apples in one-half cup water, and add one-half cup strawberries. Rub all through a colander, and add three fourths of a cup of boiling water. Reheat, and thicken with corn-starch.

Fruit Soup. — Into one cup of warm water put one rounding tablespoonful of sago, and cook in a double boiler one-half hour. Then add two or three whole cooked prunes, one-fourth cup stewed raisins, two tablespoonfuls stewed cranberries, one teaspoonful lemon juice, and sugar to suit the taste. Allow to heat until the fruit is hot, and serve.

Another. — Vermicelli or pearl barley may be substituted for sago, and dried cherries, with strawberry and lemon juice, used in place of the fruits mentioned.

Another. — Cook together two tablespoonfuls sago, one-fourth cup raisins, and one common-sized tart apple, in one and one-half cups water. When done, add four cooked prunes and one fourth lemon, and one-fourth cup sugar. If too thick, add hot water.

Blueberry Soup. — Cook the berries a long time. Pass through a colander, and thicken with a little cornstarch. Serve with a little sugar and some croutons. — *Sanitarium Cooking-School Recipes.*

THE PREVENTION OF TYPHOID FEVER.

Typhoid fever is an infectious disease, caused by a germ, which is usually taken into the body in water, dust, or food, the same having been contaminated by contact with the discharges from previous cases of the disease. It is not to any great extent directly contagious from one case to another, although uncleanly, careless persons may, by spilling discharges on the floor, the bedding, the patient's clothing, or by soiling their own hands, infect themselves and others. Fecal matter spilled on the carpet soon dries, and is ground up into dust, which fills the air of the room, and falls on everything in it, settles on the mucous surfaces of the lips and eyes, and is inhaled with the breath, thus finding its way into the mouth, and being swallowed into the stomach. The soiled hands of the uncleanly, careless nurse are constantly infecting everything they touch, — her hands are in her own and the patient's food; her soiled fingers, perhaps, with untrimmed, dirty nails, are all the time getting into her own mouth; and she thus infects not only herself, but all others with whom she comes in contact.

Typhoid fever is most prevalent in the temperate zone, and is more common in the autumn than at other seasons of the year. The disease is also more wide-spread and severe after a hot, dry summer, when, all the streams, lakes, and the ground water being low, the sources of water-supply become impure. The air is also filled with germ-infected dust, which contaminates not only food and drink, if left uncovered, but also the mouth and nose of those inhaling the foul, dust-laden air. Undoubtedly the most common source of this contagion is an infected water-supply.

The extensive infection which may be caused by one carelessly managed case of typhoid fever is strikingly illustrated by the experience of the little town of Plymouth, Pa., in the spring of 1885. A case of typhoid fever occurred in a patient residing in a small house on the banks of the mountain stream which furnished the water-supply of the town. The patient was taken ill with the disease in January, and was sick for three months, having, during that time, several hemorrhages, sloughing off of the glands of the bowels, and copious discharges of mucus and fecal matter. All this filth was carelessly emptied out on the banks of the creek without any attempt at disinfecting. During the cold winter months it was frozen fast to the ground, but the living seeds of disease, being thus preserved, were all ready in the spring to do their deadly work among the eight thousand inhabitants of the little town below. There was a thaw and rain the latter part of March and the early part of April. A case of typhoid fever first appeared in the town on the 10th of April. After that the inhabitants sickened at the rate of about fifty each day, until twelve hundred were sick, about seventy of whom died. All business was at a standstill, and it took the little town several years to recover from the results of this ignorance in regard to the contagion in typhoid discharges.

Food and drink are often infected by bad water, milk being especially liable to infection in this way, not only when diluted with impure water, but also when put into vessels that have been washed with it. Typhoid fever germs, under suitable conditions, will multiply outside the body, and milk forms a good culture medium for them. The few germs left on the surface of the vessels containing milk will thus soon infect the whole supply of the dairy. Milk also becomes infected by the fecal matter and other dirt from the body of the cow or from the unclean hands of those who do the milking. This is especially likely to occur if the person happens to be caring for a typhoid fever case at the time. Owing to these sources of infection, milk is the second most common medium by which typhoid poison enters the alimentary canal.

Oysters are another source to which many recent local epidemics of typhoid fever have been traced.

It is a sad commentary on the faulty sanitation of our modern civilization, that the streams and lakes which the aborigines left clean bodies of water, have now become sewers and cesspools for all the filth of the land, and that the water-supply of the country is the broth of all this foul matter. The ocean, boundless in extent as it seems, is, near all our cities, too foul to bathe in with safety; yet it is in just such dirty water that the oyster lives and thrives. A water scavenger, he rejoices in unclean things, and man rejoices in the filth at second hand. And often the toothsome bivalves are subjected to a double pollution by being left to freshen in the mouth of some still more foul fresh-water stream after they are taken from the ocean bed. They are usually eaten raw or but slightly cooked, and thus the typhoid fever germs are all ready to begin active operation in the digestive tract of those who partake of them.

Salads, vegetables, and other uncooked fruits washed in unclean water also become infected on the surface, and may give rise to the disease if eaten uncooked. Dust, as we have already seen, may cause the disease by being taken into the body by way of the mouth and nose. It will also infect the food and drink into which it may be blown in a dry time in large quantities. In such weather, all left-over food should be well covered when set away. It is also better thoroughly to heat it again before putting it on the table for the family lunch. Bread with all food which is usually eaten cold, should be so well covered that no dust can reach it. These precautions should be taken at all times, but especial vigilance should be exercised in the dry autumn season, when typhoid fever is most likely to be prevalent.

We have seen that the original source of typhoid fever infection is from the discharges of persons with the disease. Just how long the germs will remain infectious after they leave the body is not known. Freezing does not kill them; in fact, it seems rather to preserve them alive. Thus they are often stored away in the summer ice supply, and iced water, iced tea, etc., may thus prove infectious. They also remain alive for a long time when dried. Repeated thawing and freezing weaken their vitality, and will finally kill them. Exposure to fresh air and sunlight and heat will also destroy them. They will live for a time in pure water, but do not increase, and seem finally to starve to death. In water filled with organic matter they will exist longer. But the most filthy running stream will finally be purified by natural agencies, if it is not freshly infected by filth running into it. Heat will destroy all disease germs, there being few of them that can survive an exposure to a temperature of above 170° F. for any great length of time. Thus heat may be used to render sterile all food and drink. All drinking-water that is not entirely above suspicion,—and that means nearly all the water-supply of the earth under existing conditions,—should be boiled, and often either strained or filtered, the latter being required when the water contains much suspended matter. This boiled water should be kept covered from dust, and freshly boiled every day. It should be used for all cooking and dish-washing; and especially should all utensils used around milk and butter be cleansed with sterilized water. Butter is often washed in sewage-polluted water, and may thus be rendered very foul. Sterilized water may be cooled by either being set in cold running water or surrounded by ice. It should always be put away in a clean covered can.

Having considered the many mediums by which the typhoid fever poison enters the body, and the best methods for preventing infection, the next most important preventive measure is to do everything to make strong the internal defenses of the body. Every living cell is endowed with a certain power of self-defense. All the natural secretions of the body are disinfectants, and will do their best to destroy and keep out of the tissues all harmful substances. There are some organs which exert a special function in turning back poisons, and keeping them out of the circulation. The most active absorbing surface of the body being the alimentary canal, disease germs and all other poisons enter the circulation most often through the bowels and stomach. To protect the body from this danger, all the material taken in by the venous absorbents of the alimentary tract is subjected to the inspection of the liver. This faithful though much-abused organ always does the best it can to keep harmful things out of the blood. All the secretions of the other mucous membranes and secreting glands, when healthy, are also on guard to detect and destroy disease-producing organisms. The healthy saliva, gastric juice, pancreatic fluid, bile, and intestinal fluid all try to prevent the typhoid fever germs from getting into the glands of the bowels; and it is only when the disease-producing organisms are taken into the body in great numbers, or when the digestion has been so much disordered that the natural defenses are weakened and overwhelmed, that the disease is able to get a start. Even then, if rest is given the digestive organs by fasting, and the system is further assisted

by complete rest in bed, the attack may be warded off, or at any rate made much lighter.

In a time when typhoid fever is prevailing, every precaution should be taken to avoid overeating or in any way overtaxing the digestive organs. Constipation should also be guarded against by a carefully selected dietary. The mouth and mucous membrane of the nose should be kept carefully clean; and all bad teeth should be either extracted or filled. This is very important, as a continued good digestion depends very much on thorough mastication and perfect salivary digestion. The glands of the small intestine are where the disease germs thrive and increase; but if all the digestive fluids are healthy, they will not live to reach them. Active exercise in the open air is also very important. It keeps all the tissues of the body freely bathed in pure, freshly oxygenated blood. This serves to increase healthy cell activity, and oxidizes the broken-down structures, as well as stimulating active elimination.

A sufficient amount of sleep is also a very important precaution against this disease. It is during sleep that the body makes repair of the tissues worn out in the work of the day. It is then, also, that the extra waste is excreted by the eliminative organs.

Sudden changes of temperature should be carefully avoided, especially cooling off quickly when the clothing is damp from perspiration. The sudden chilling of the skin causes congestion of the internal organs, and when the body is tired from exertion, may be just the last straw needed to break down the defenses of the system.

When nursing a case of fever, one should not eat, drink, or sleep in the room with the sick. The hands should always be thoroughly washed and disinfected after handling the patient or anything that has been in contact with him or soiled with his discharges. After leaving the room, before either eating or drinking, the mouth should always be carefully rinsed out and disinfected. This is a sanitary measure which should never be neglected, and one which may be very properly carried out under all circumstances, even when there is no sickness in the family. It is more necessary to do this every morning than it is to wash the face and comb the hair. During the night the mouth and nose become more or less filled with dried mucus at their entrance, and farther in, the membranes are coated with the same in a moist form. This secretion is filled with dust from without, and in disease, with the poisons excreted from the tissues. Unless the mouth and teeth are cleansed and disinfected, all this filth and poisonous matter is swallowed, and in this way the stomach freshly infected with every mouthful of food or drink swallowed.

The first evidence of any disturbance of the digestion should be a signal for a lessening of the food supply, or even a fast for a meal or two. This will give time for the digestive organs to get rid of the spoiled, undigested food which has accumulated; while to keep on eating is to invite an attack of fever. The skin should also be kept clean and active by frequent bathing. A cool tonic sponge bath every morning, and if there has been free perspiration during the day, a warm sponge bath in the evening, will keep the pores of the skin active, and prevent disease. All the measures indicated in this article are preventive.

The most important duty of the nurse is to prevent disease. This is especially so in the case of the house-mother, for it is upon her that the home nursing falls most heavily. The result, in case of a grave disease like typhoid fever, is always more or less uncertain, even under the best of care; but every case of prevention is a success. In future papers I will try to describe the best and most modern methods of nursing patients ill with the disease.

HOW TO CLEANSE AND DISINFECT THE MOUTH.

In all severe cases of fever the mouth becomes very foul and sore, unless it is kept clean and disinfected, and the lips covered with some soothing ointment to keep the skin and mucous surfaces moist and flexible. An untold amount of suffering often comes to the feeble patient because the nurse has neglected to keep the mouth clean and the lips oiled. In every effort to swallow, or speak, or move the muscles of the lips, the hard, unyielding surface tears instead of stretching, and the result is bleeding and chapping of the skin and mucous membrane. A wash should be used to moisten and soften the fever-dried mouth, and a little sterilized vaseline to lubricate the parts. It is not enough to put on ointment once or twice a day; it should be used every time the parts become dry.

There is no need of letting sordes collect on the teeth, or of letting the tongue become black, dry, and cracked. The poisons swallowed from an uncleanly mouth are often enough to bring about a

fatal result in a case which might otherwise have recovered.

The best lubricant is clean, sterilized vaseline. Any kind of oil may be rendered germ-free by heat. Sweet-oil, cocoanut-oil, or fresh butter may be utilized for this purpose, or, if nothing better is at hand, fresh heated tallow. An ointment may be made somewhat aseptic by adding a teaspoonful of boracic acid powder to two tablespoonfuls of the oily substance. Bismuth powder is also useful in the same proportion, as is also oxid of zinc. If no oily substance is at hand, the raw surfaces may be covered with pieces of clean cloth moistened in some mucilaginous fluid, as thin, boiled starch, flaxseed tea, or slippery-elm tea, and the like. To these may be added the antiseptic powders just mentioned, a teaspoonful of either to the half-teacupful of the fluid. The cloths should be changed frequently enough to prevent them from becoming dry, and adhering to the raw surfaces of the wounds. Antiseptic powders, as starch and boracic acid in equal parts, or oxid of zinc powder in the same proportion with the boracic acid, or boracic acid and bismuth powders in equal parts, also constitute useful dressings. If it is desired to make them more astringent, a fifth or tenth part of powdered alum may be added. The powders are most useful after the acute, suppurating stage is past, and the wound fails to heal because the granulations are weak and flabby, forming what is known as proud flesh.

One part lemon juice, one part glycerin, and three or four parts water, boiled or distilled, also makes a ood mouth-wash. Use the same as the other, with the spray. Listerine is another useful compound for cleansing and disinfecting, one part to from four to six of water. This makes a very soothing solution for the mouth. Borax, also boracic acid, a teaspoonful of either powder to a teacupful of water, also soda, in the proportion of a teaspoonful to a half-pint of water, all make useful cleansing fluids. None of the solutions I have mentioned are poisonous when taken internally in moderate quantities. This is a very important point, as unconscious persons and children always try to swallow the mouth-washes.

If a spraying apparatus cannot be had, the patient, if old enough and not delirious or unconscious or too feeble, may wash out his own throat and mouth. In case of infants and the weak and unconscious, the cleansing may be done, if necessary, by using the solution with a swab. The teeth will require cleansing with some good dentifrice. Any of the powders mentioned or a little precipitated chalk powder may be used, or friction with the mouth-washes alone will answer. And in case other things are not at hand, a clean mouth can be secured with only soap and water and a clean rag, and a splinter of wood to make a swab. Just enough of the material should be made up to use once, when the cleansing is done by swabbing. After being used, the swab should be put in the fire and the fluid thrown away. This care is needed to prevent the infection from spreading. Surgical cleanliness, which means freedom from all disease germs, is always the result to be secured.

PERSONS changing occupation, climate, altitude, diet, or drink, should at first be moderate in exercise and food, and, if possible, boil their drinking-water, and sterilize their milk. Mankind are all more or less creatures of habit, and the body becomes tolerant in time to even very unhealthful surroundings and grave dietetic errors. But when a change is made to a new locality, and other injurious surroundings and unaccustomed inferior foods or impurities in water or air, are encountered, the body is not prepared to meet them.

The boy or girl who goes from the farm to the city and engages in some sedentary occupation, still eating as heartily as when at home on the farm, working actively many hours a day in the open air, will suffer from indigestion, torpid liver, constipated bowels, and other evidences of a clogging of the vital machinery by accumulated wastes, on account of the lack of the rapid oxygenation and tissue changes due to the active out-of-door exercise.

The person going from a cold, bracing climate to the relaxing, exhausting heat of the tropics will feel languid and indisposed to make exertion until he has become accustomed to his surroundings. During this transition period, when the bodily energies and recuperative powers of the body are becoming educated to act under new circumstances, and the function of every organ is more or less disturbed, slight errors in diet, overwork, or mental anxiety, may become patent predisposing causes of disease. Every one, in making those changes, should seek to know just what special diseases are prevalent in the changed home locality or foreign land to which he is going, and should seek to provide against the same by every means in his power.

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

TEA-SMOKING.

A FEW years ago, the women of the French demi-monde invented tea-cigarettes, which they took to smoking with great industry. The practise has recently been adopted in New York, where it was introduced by a French countess, and threatens to become a great fad. A cigar-maker of New York, who makes a specialty of manufacturing tea-cigarettes, is quoted as saying, "Women have always wanted to smoke, but they could not bear to do it because there are so many men who do not approve; while some violently disapprove of the practise upon the ground that it lowers a woman, that it makes the vice doubly vicious, etc.; but with the tea-cigarette there is no such argument, and I am catering to what will, I know, become a great rage here." The enterprising caterer to the new vice sends samples of his tea-cigarettes around to leading fashionable ladies, and thus cultivates the vice. Some of the cafés in New York frequented by ladies have small rooms curtained off for tea-smoking.

The tea-cigarette has already been introduced as an after-dinner entertainment in fashionable circles, where it is said to be very welcome, since it enables the ladies to keep their husbands company in their after-dinner smoking. The tea-cigarette is about three inches long, and of the size of a lead-pencil. The New York ladies are making presents of boxes of tea-cigarettes to one another, as they formerly presented bonbons. It is said that men, who are not usually so great tea-drinkers as women, are as much delighted with the tea-cigarette as the ladies.

It is scarcely more than a month since tea-smoking was introduced from Paris into New York City, and it is said that there are already more than five thousand tea-smokers, and this vice is likely soon to become quite the rage. As thein, the poison of tea, is volatile, like the nicotin of tobacco, when tea is smoked like tobacco, it is certain we shall soon have a new series of nervous disorders added to the thousand maladies already on the list of human ailments.

The rage for some nerve-tickler, or means of subjecting the body to the influence of a felicity-producing poison, seems to be on the increase. The penalty of all this physical sinning is not only physical, mental, and moral deterioration of the invalid who thus creates and indulges a depraved taste, but the sins of the fathers and mothers will be visited upon their children to the third and fourth generation through the working of that remorseless force, heredity, which transmits from the transgressor a morbid condition of temperament which medical scientists have named a "toxico-pathetic diathesis."

Has not the time arrived when a crusade against tea and coffee is as necessary as the conflict which has so long been waged against alcohol and tobacco? Alcohol, tobacco, tea and coffee, opium, and cocaine are toxic drugs of kindred character, each of which, while producing its characteristic effects, tends in varying degree to physical, mental, and moral degradation.

NAPOLEON DEFEATED BY A BAD STOMACH.— According to a recent writer, Napoleon owed his downfall to an attack of cramp in the stomach. When dictating an order to Vandamme, one of his principal generals, at a critical moment he suddenly stopped, uttered a sharp cry, doubled up like a pocket-knife, and was utterly unable to speak, think, or act. His inability to put in operation the plan which he had conceived, gave rise to a train of mishaps, the last of which was his utter discomfiture and defeat.

AN OYSTER CONUNDRUM.

WHY is an oyster like a diamond mine in South Africa?

Answer — Because it has millions in it.

A bacteriological examination recently made in the Laboratory of Hygiene of the Battle Creek Sanitarium showed a single ounce of oyster juice to contain more than forty-five million microbes, all living and squirming. It is not surprising that the oyster has a dirty mouth, and that the saliva which drools from his "beard" should be so alive with wriggling germs of every description, when one considers the nature of his diet, and the fact that he never uses a napkin or a tooth-brush. The oyster dines upon the offal of the sea. Its chief food is the slime and ooze and the minute creatures which they contain, which are found adhering to the stone and sunken decomposing wood along the sea-bottom. The oyster is a scavenger of scavengers, a tidbit for a turkey buzzard, but never intended to be eaten by frugivorous man. A self-respecting orang-outang would die before he would eat an oyster, a clam, a frog, or a bloody beefsteak.

In its issue for January 18, the *British Medical Journal* calls attention to a case of oyster-poisoning which occurred at Cape Town, in which nearly the entire company of eighty persons who partook of oysters at a banquet suffered severely the next day in consequence. The oysters were obtained from Delagoa Bay, but were probably neither better nor worse than oysters obtained from other localities.

PHOTOGRAPHY IN THE DARK.— Professor Röntgen, of Würzburg, describes a new method of photography by the aid of a peculiar electrical light which is capable of passing through substances which are utterly opaque to ordinary light. This new form of radiant energy passes through aluminum more readily than through Iceland spar. It readily penetrates wood and various other substances, and in one experiment passed through two complete packs of cards. A photograph of a compass is shown, which was taken through a thick wooden door, the camera being in one room and the compass in the other. Photographs may be taken in daylight, it being only necessary to keep the plate in a dark plate-holder instead of exposing it, as in ordinary photography.

By the aid of this new method, it is possible to take photographs of such internal organs as the bones of the hands, and other parts. Physicians especially will watch with great interest the future development of this new art.

Another new idea in photography which seems to have great possibilities in it is the photography of retinal impressions. Mr. Green, of the Royal Astronomical Society, a few years ago made the following experiment: Looking at an arc light for a few seconds, he then turned off the light, and held a sensitive dry plate close to his eye, which was open, of course. On developing the plate, a distinct image of the arc light was seen on the plate, the image having been obtained from the retina of the eye, the source of light being, of course, the phosphorescence of the retinal cell. The *Amateur Photographer* has recently published an account of a similar experiment.

Placing this experiment alongside the idea recently advanced by physiologists who have made a special study of the nervous system, according to which there is formed in the eye whenever one recalls an object which has once been seen, an image of the object, it would seem that it is not too much to predict that sometime it may become possible to read one's thoughts by photographing the retina of the eye, so that genuine mind-reading may sometime become an actual fact. That there is an actual physical record made upon the body by every experience of life and by every sensation received through the eyes, ears, or other senses, is a well-established fact. It would seem, then, to be not impossible that some means may be discovered whereby this record can be read.

MADE A HOG OF HIMSELF. — "As a man eateth, so is he," is an old German proverb. Professor Bronson Alcott used to say, "If a man eats pig, he becomes pigified." The New York papers recently contained an account of a man who seems to have verified this philosophy. He had become so hoggish in his nature that he ate seven pickled pig's feet at a single meal. He was dead in twenty-four hours, the cause being an acute attack of indigestion. This is one of the ways in which the brutes get even with us for slaughtering them.

A Coffee-Taster's Experience. — A famous coffee-taster from Chicago, while stopping at the Sanitarium at Battle Creek, Mich., for the relief of a serious nervous affection, the result of coffee-tasting, was given a sample of caramel-cereal without being informed that it was a substitute for coffee, and not the genuine article. After sampling it in the usual way, he remarked, "I thought I knew every variety of coffee grown, but this is something different from anything I have ever tasted before; but it is good." When asked in what respect it differed from coffee, he said, "I know it from this fact: it lacks the sort of bilious taste which coffee has. Whenever I take coffee, it makes me feel slightly nauseated; I have had to abandon my business on that account. But I can drink caramel-cereal, and like it." Coffee is a most common cause of biliousness.

A New Food. — One of the most remarkable discoveries made in relation to foods within the last century, is a new food called granose. Granose was invented, or discovered, by a physician who has made the study of foods a specialty for more than twenty-five years, and has had nearly a quarter of a century's experience in the treatment of chronic disorders of digestion. After experimenting with all the various food preparations in this country, and studying the foods of many other countries, to determine their dietetic value, finding something still lacking, he set to work to produce a food which should be so delicately flavored, so delicious and appetizing, as to tempt the most capricious appetite, while at the same time so digestible as to be accepted by the feeblest stomach. After many months of patient experiment, aided by a thorough knowledge of the chemistry of foods and a wide experience in their application to all recognized diseases, he finally succeeded in producing a wholly new and novel food, which combines to perfection the qualities sought.

Granose is so delicious in flavor that everybody likes it, whether sick or well. It is at the same time so digestible that it is accepted by the stomach when all other foods are rejected. It contains all the elements of nutrition, so that it is a perfect food, and, as shown by a careful analysis made by a skilled chemist, has a higher nutritive value than any other known food. The production and manufacture of granose requires special machinery, special appliances, and wholly new processes, which have been devised and worked out one by one; but the demand for the food has been so great, although it is yet comparatively unknown, that the manufacturers have found it impossible to supply it as fast as called for. Arrangements have recently been made, however, by which the public may be liberally supplied. The manufacturers are the Battle Creek Sanitarium Health Food Company, Battle Creek, Mich.

Porous Glass. — A Frenchman has discovered a method of making glass which is, at one and the same time, both porous and transparent. It is recommended as especially useful for the homes of persons who do not appreciate the need of ventilation, and do not make proper provision therefor.

Massage. — The *People's Health Journal*, Chicago, writes as follows of massage: —

"Plutarch says that Julius Cæsar had himself pinched all over daily for neuralgia. This process of pinching was doubtless massage. It is said that massage has been practised from the earliest times by the Hindus and the Persians. Hippocrates made use of it in his practise. In Japan, blind men are employed almost exclusively to give massage. Nearly five thousand years ago the Chinese employed massage. Its value in modern times is coming to be more and more appreciated by the medical profession and their patients.

"A number of works have been written upon the subject. The most recent one is by Dr. J. H. Kellogg, of Battle Creek, Mich., and is the most satisfactory one, for the reason that the various movements are illustrated by photographs, which enable the student to understand the subject. To introduce photographs of all parts of the body to which massage is given, showing the hands of the operator in position, was a happy thought for a work on massage."

SHINGLES. — The painful disease commonly known as "shingles," but among physicians as "herpes zoster," presents three indications for treatment: —

1. The eruption.

2. The pain which precedes and accompanies the eruption.

3. The pain which continues after the eruption has disappeared.

No moist application of any sort should be made. For relief of the pain before the appearance of the eruption, hot fomentations are the most effective measure. After the eruption appears, the parts should be kept absolutely dry. Sprinkle with a powder consisting of starch sixty parts, and oxide of zinc twenty parts, camphor two parts. Keep the affected surface constantly covered with dry cotton or wool. For relief of the pain which remains after the eruption has disappeared, galvanism is the most effective measure.

HYDROTHERAPY IN FRACTURES. — The *Times and Register* in the following paragraph kindly credits the editor with an application of hydrotherapy which he has often found very useful, and which may be of service to some reader: —

"More than twenty years ago Dr. J. H. Kellogg treated fractured limbs for a short time with applications of hot water before putting the parts in permanent dressing. He thus avoided much of the pain, swelling, and discomfort resultant the first few days after the application of the dressing, and secured speedy, complete union, with less disability of overlying muscles and contiguous joints. He found that hot fomentation or soaking the affected parts in hot water for an hour or two, almost invariably relieves pain from circulation in contused vessels, prevents swelling, overcomes muscular spasm and rigidity, and promotes recovery. If there be much displacement of the fragments, it is important that the parts be drawn into position; they may be retained by temporary pasteboard splints and light bandages during application, till a permanent dressing is applied.

"Dr. T. S. K. Morton, of Philadelphia, recently reported a case in which an ununited fracture of the leg united four months after the accident, from applications of hot water and massage."

HOW TO CURE A BAD HABIT. — The Eastern Pennsylvania Penitentiary has recently given an example of an excellent method of curing the opium habit, and the method is one which will apply to the whisky and tobacco habits as well. One of the opium takers cured had used the drug for four years; another, for fourteen years; and another, for fifteen years. These persons were committed for various offences. They were put in cells, and treated the same as other prisoners. In ten days they all were enjoying better health than for a long time before.

HOW TO REDUCE FLESH. — One way is to avoid the use of all fluids at meals, living on dry food. Dr. Schweininger by this method reduced the weight of Prince Bismarck forty pounds within three months, without any injurious effects. Another method is to confine the patient to the use of a single article of food — it makes very little difference what, provided only one article is taken. It is scarcely possible for one to eat too much of a single article of food. Exercise, especially before breakfast, is also necessary to rapid and permanent reduction of surplus flesh.

COSTLY ADVICE. — The popular idea that alcohol somehow imparts vigor or energy to the body, and the mistaken notion that stimulation is strength, lead to the consumption, each year, of whisky and beer to the amount, according to the Internal Revenue Commissioner's report for 1892, of $1,226,259,460, the interest of which, for one hour, at six per cent. per annum, would amount to more than $8000.

A NEW CURE FOR DRUNKENNESS. — A habitual drunkard who recently underwent a surgical operation in a London hospital finds that since his recovery he has lost his appetite for alcoholic drinks. Chloroform and ether were used for the anesthesia.

A NOVEL REMEDY FOR HAY FEVER. — Fuber recommends rubbing the ears as a means of relieving congestion of the mucous membrane of the nose present in hay fever. He has observed that when there is fulness and obstruction of the nostrils, the ears are pale. To afford relief they must be rubbed repeatedly, and each time until they are red and hot.

ANSWERS TO CORRESPONDENTS.

SHREDDED WHOLE-WHEAT BISCUIT.— C. R., D. C., inquires: "Is shredded whole-wheat biscuit a wholesome food, and easily digested? It is put up by the Boston Shredded Cereal Food Co."

Ans.— Shredded whole-wheat biscuit is wholesome and digestible. It, however, contains a considerable amount of raw starch, is not perfectly sterilized, and hence is not so easily digested as granose biscuit, and is generally considered less palatable.

GRAPE JUICE.— J. D., Cal., writes thus: "Why is it that I have pain in different portions of my body whenever I drink canned grape juice?"

Ans.— We cannot explain your symptoms, unless it be that the grape juice has been boiled in a poisonous vessel.

PRURIGO.— J. H., Mo., inquires: "What is the cause of prurigo? and what will cure it?"

Ans.— Skin disease, the origin of which is probably in disordered digestion. It must be cured by correcting the stomach disorder by careful dietary, and by the application of soothing preparations to the skin, such as zinc ointments, zinc powder consisting of equal parts of zinc oxid and powdered starch, alkaline lotions, a dram of soda to the pint of water, etc. The general health must be improved.

RHEUMATISM.— J. L. H. writes as follows: "For nearly two years I have had occasional attacks of rheumatism, usually in but one or two joints, and that generally in one shoulder. Last spring I had an attack in one hip (sciatica, I suppose), lasting about three weeks. For a year past one knee has been a little troublesome. It hurts me to bend it to a sharp angle, or to raise myself when both knees are thus bent. It does not interfere with ordinary walking, and there is no special pain, but it seems to be slowly growing worse. Please state the probable cause, and also outline a course of treatment."

Ans.— Your case requires fomentations daily, the application of massage and electricity. You should also take a warm bath two or three times a week; should avoid the use of meat, butter, cheese, and other stimulating and impure foods, substituting granose, granola, and other health foods; live out of doors as much as possible, keep the bowels well open, and, if possible, visit the Battle Creek Sanitarium, as you ought to have treatment for a month or two.

FOMENTATIONS IN CHRONIC CONGESTION.— Mrs. L. G., Mo., writes as follows: "1. I should like your advice in regard to fomentations in chronic congestion of the stomach and bowels. How many times a day should they be used? and how long at a time? 2. Should they be very warm? or would warm applications alternating with cold be better?"

Ans.— 1. Two or three times a day for fifteen or twenty minutes.

2. As hot as can be borne.

CATARRH OF THE BOWELS.— Mrs. J. W. B., Conn., writes thus: "I have great distress low down in the bowels. I should judge it to be in the colon, and I imagine that it is a catarrhal affection. What can I do for it?"

Ans.— The pain referred to may be due to ovarian or uterine disease, disease of the rectum, hemorrhoids, catarrh of the rectum, or simply to irritation of the sympathetic nerve or prolapse of the bowels. A more accurate diagnosis is necessary before a satisfactory prescription can be made. The hot enema, fomentation across the lower abdomen, warm sitz bath, and other local applications may prove helpful.

A TIRED FEELING IN THE BACK OF THE NECK.— Mrs. T. T. S., Tex., writes as follows: "I am troubled with a tired feeling in the back of the neck which is very unpleasant. Sometimes my rest at night is much broken on account of it. My general health is tolerably good, and my appetite is good. I have not been strong enough to do hard work for several years, but feel pretty well when I do not exercise too much. For the past two years I have been doing desk-work in an office. I would like to know the cause of this feeling, and what to do for it?"

Ans.— You are doubtless suffering from neurasthenia — probably have some disturbance of the abdominal sympathetic nerve due to indigestion or to prolapse of the stomach or bowels. You should use health foods, wear the wet girdle at night, take a fomentation to the spine in the morning before rising, to be followed by a cool sponge bath; use a dry diet — granose especially is useful; take out-of-door exercise for one or two hours daily; and if there is a dragging sensation across the lower bowels, wear an abdominal supporter.

TARTAR-INCRUSTED TEETH, ETC.— Mrs. L. C. B., Ind., asks: "1. Are tartar-incrusted teeth, or teeth where the gums have fallen away from them, though otherwise sound or filled, unhealthy? 2. Ought a person having a number of such teeth, but so arranged that none can be used for the mastication of food, to have them extracted and substitute artificial teeth?"

Ans.— 1. The tartar upon the teeth is a formation due to the action of germs, and harbors millions of them.

2. It would doubtless be an advantage to such a person to get rid of his useless teeth and substitute artificial ones.

NERVOUSNESS — BLINDNESS — HEADACHE — SLEEPLESSNESS, ETC.— Miss M. E. H., Me., writes in substance as follows: "I am twenty-eight years of age. Have suffered for years with nervousness, have been unable to work, or even to sew or read. Can only read in a coarse-print Testament or the headlines of newspapers. At times my eyes are so bad that I cannot bear light at all. I have had a headache more or less for seven years. My head is sore most of the time, and I often feel as if spikes were being driven into the top of it. During the last year, I have had a dreadful pain from each end of the spine,— from the

upper portion it seems to extend into the back of the head, and from the lower portion to create a sort of numbness which extends to the feet. If I get too tired, the numbness amounts to a stinging in the first joints of the fingers and toes. For years I have been unable to sleep without hypnotics or sedatives. I am oversensitive to cold, and have chills all winter. I am unable to keep warm in bed. I have pain in my sides as soon as I lie down, sometimes dull, but often quickening into neuralgia. I eat well, only my appetite is peculiar. I have not for some years been able to eat milk or vegetables, on account of the generation of gas in the bowels. I am, however, able to eat meat without any difficulty, but eat very little. If you will give advice as to diet and home treatment in my case, I shall be most grateful."

Ans.— You are evidently suffering from gastric neurasthenia. We would advise a fomentation to the spine, followed by a tepid sponge bath and vigorous rubbing every morning; the wet girdle at night; a diet of granose, granola, and bromose; and antiseptic tablets after each meal. It will probably be an advantage to you to take lavage once or twice a week.

MOUTH-BREATHING.— A subscriber asks: "1. Is it injurious for a child to breathe constantly through the mouth? 2. What are the results of such a practise? 3. What can be done to break the child of the habit?"

Ans.— 1. Yes.

2. Deformity of the face and chest, and general weakness.

3. There is probably some obstruction of the nose, which should be removed.

DO ACIDS DIGEST FATS? — FRUITS AND MEATS — CONSTIPATION, ETC.— H. W. J., Minn., asks the following questions: "1. Do acids assist in the digestion of fats? 2. Is the habit of eating apple-sauce with roast goose and roast pig therefore a good one? 3. Is not fruit and fat or meat a bad combination? 4. Does sugar neutralize acid? 5. Does cane sugar prevent the digestion of starch by the saliva? 6. If the acid of fruit prevents the digestion of starch, is it not poor policy to eat acid fruits with grains? 7. What fruits then ought to be eaten with grains? 8. In "Science in the Kitchen" it is claimed that sugar should not be eaten on grains when cream is used as a dressing. Then again it says that fruit juices make an excellent dressing for grains. As a general thing, fruit juices cannot be used without the addition of some sugar. Thus some who desire to use sugar on their grains with cream argue that it is no more harm used thus than in the fruit juices. Please settle this question. 9. Does constipation have a weakening effect on the system? If so, why?"

Ans.— 1. No.

2. The apple-sauce is good, but the roast goose and roast pig are unwholesome. Apple-sauce is wholesome, but possesses no properties which can render roast goose or roast pig less unwholesome than they naturally are.

3. Certainly not the best.

4. No.

5. Yes.

6. Persons who have hyperpepsia or acid dyspepsia should avoid very acid fruits with grains.

7. Fresh peaches, strawberries, or grapes, baked sweet or subacid apples, stewed raisins or prunes.

8. Many fruit juices can be used without the addition of sugar. Prune purée, the juice of stewed raisins, fig-sauce, sweet apples, and many other fruits may be so used.

9. Constipation is a most damaging condition. The retention of fecal matters poisons the body through their absorption, and the overloaded colon frequently produces irritation by dragging upon the sympathetic nerves.

HONEY — WARMED BREAD — COTTOLENE, ETC.— M. C. H., Md., asks the following questions: "1. Is honey a wholesome article of food? 2. Is cold unfermented bread rendered less digestible by being warmed before it is eaten? 3. What is cottolene composed of? 4. Is bread shortened with cottolene wholesome? 5. My urine contains a whitish sediment, and the stools are accompanied by a mucous discharge mixed with blood. I also have gas in the stomach after a meal. What is the probable cause of such a condition? Please suggest proper diet and treatment. 6. Do you think that graham bread irritates the stomach?"

Ans.— 1. Honey is doubtless as wholesome as any other sweet. It sometimes contains poisonous substances, but rarely. Its use is safer after sterilizing by melting and maintaining at the temperature of boiling water for an hour.

2. No.

3. We do not know.

4. We have had no experience with cottolene.

5. To catarrh of the bowels and indigestion. The white sediment in the urine is probably due to urates. The case should be carefully investigated. You ought to visit the Battle Creek Sanitarium for treatment, if possible, or should have an examination of the stomach fluid made. You will probably be benefited by making granose and bromose your principal articles of diet for a time. You should take antiseptic tablets after each meal. It may be necessary to employ lavage, or washing of the stomach, once or twice a week.

6. Fermented graham bread contains yeast, which often gives rise to fermentation and irritation. In cases in which the mucous membrane of the stomach is very irritable, the coarse bran and chaff contained in ordinary graham flour is very irritating. Granose presents the whole grain in a much more wholesome form than it is found in graham flour or cracked wheat.

ECZEMA — BLOTCHES ON THE SKIN.— Mrs. E. C. writes as follows: "1. My sister's baby, five months old, has a scalding disease of the skin, and the irritation is often so great that she scratches her neck and arms until the blood starts. The difficulty is better at times, then grows worse again. Please advise as to treatment. 2. Also, a lady friend is troubled with rash and blotches on her face. What ought she to do for it?"

Ans.— 1. Bathe the parts daily with a solution of soda, a dram to the pint of water; then apply zinc ointment or zinc lotion, an ounce of zinc oxid to the pint of water, shaken well before applying. The child doubtless has indigestion. This condition should receive attention.

2. The same prescription might relieve the lady. Try it.

LITERARY NOTICES.

AMONG the many good things *Table Talk* gives its readers this month, is a description of "A Mexican Dinner;" the regular department of Housekeepers' Inquiries, which contains nearly fifty recipes — a veritable cook-book in itself; the "New Bill of Fare," which is full of woman's interests; the "New Menus of March," which includes one for every meal of the month; and "The Lenten Calm," in which the writer delves among the fancies of fashion's world. The entertainments, novelties, books, everything for the March season of 1896, will be found in its pages. Our readers may obtain a sample copy of this magazine, free, by addressing the Table Talk Publishing Co., Philadelphia, Pa.

THREE notable papers by American women appear in the March *Arena*. One will prove of special interest to all persons interested in the public school system of the United States, as it ably deals with "The Educational Crisis in Chicago," and is from the facile pen of Marion Foster Washburn. A second is by Abby Morton Diaz, who discusses the "Human Problem According to Law;" and the third is by Margaret Noble Lee, and deals with Bishop Doane and Woman's Suffrage. No great review has ever shown anything like the hospitality to women as does the *Arena;* and this, as well as the prominent part it has taken in the cause of social purity and vital fundamental issues which affect civilization, has made it the special favorite among the great reviews of America with women who think.

THE *Mother's Friend*, a little monthly edited by Dr. Mary Wood-Allen, came into existence a year ago as the official organ of the Purity Department of the W. C. T. U. Its aim is to deal frankly and scientifically with the moral problems that confront parents in the training of their children, to aid them in knowing what it is wise to teach, and showing them how to teach it. That it has attained its purpose is proved by its success. It has accomplished what few periodicals have done in the first year, and words of approval come for it from all parts of the United States and from far-off lands. This success has encouraged the publishers to widen its scope, and under the name of the *New Crusade* it will begin its second year, increased in size as well as enlarged in sphere, but still remaining at the small price of fifty cents per year. In this form it will "wage a peaceful war" along the lines of child-training, home-sanitation, hygiene, heredity, prenatal influence, rescue work, and reform legislation. We can most heartily commend this little magazine not only to parents and teachers, but to all, young and old, who are interested in a great moral uplifting for humanity. For sample copy and further particulars, address, Wood-Allen Publishing Co., Ann Arbor, Mich.

The *Home Science Magazine* claims to be distinctly a periodical for the people — not for experts; for the home circle, and not for the laboratory. It may be read with interest by children of all ages. In this respect it will occupy a new field — one hitherto not covered. It is the only magazine published devoted exclusively to subjects of a scientific nature, which, while written by experts, may be appreciated by the average reader. "From every man according to his ability, to every man according to his need." Every educator and every one interested in the cause of education is earnestly asked to assist in this new departure. The price of subscription is placed at the low figure of one dollar a year, with the hope that all who receive a sample copy will become subscribers, and enroll themselves as "charter members" of the new movement in the cause of "Science for the Whole People." Address, Science Publishing Co., 1009 Locust St., St. Louis, Mo.

"LITERARY LANDMARKS OF JERUSALEM." — By Laurence Hutton. Illustrated by F. V. Du Mond. Post 8vo, cloth, ornamental, $1. Harper & Brothers, New York.

This volume is the result of a visit made by the author, in the spring of 1892, to Jerusalem, where he was much impressed by what he saw and felt, but was greatly hampered in his explorations and study of the Holy City and its many sacred associations by the absence of anything like a guide-book relating especially to Jerusalem and its surroundings. The literature devoted to Bible history, and to the various places connected with it, is enormous and voluminous; but there is no particular work which will tell the visitor to Jerusalem exactly what he wants to know. The present volume, written in a spirit of reverence and with literary skill, is enriched by illustrations from original drawings made by Mr. F. V. Du Mond, who went to Jerusalem especially for that purpose.

PUBLISHERS' DEPARTMENT.

MICHIGAN, although located between two lakes, is, notwithstanding, blessed with a remarkable amount of sunshine. This is true, at least, of the southern part of the State. The explanation of this may possibly be that the great storm-center at the head of the lakes acts as a sort of outlet for the meteorological disturbances of this region, and thus gives to Southern Michigan a larger proportion of sunshiny weather than is enjoyed by most of the contiguous States.

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THE winter just passed has been marked by a great deal of beautiful weather, made enjoyable by just enough snow to furnish good sleighing, which the patients of the Sanitarium have thoroughly improved. But the snow has now gone, and the bright spring sunshine is warming up the toes of the crocuses, which will soon be pushing their heads above ground, to be quickly followed by tulips and daffodils and the great variety of wild flowers with which the woods and meadows of this region abound in springtime.

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THE Sanitarium Health Food Company report a shipment of nearly thirty tons of foods during one week recently, and those amounting to five tons a day are a frequent record. The demand for these foods is rapidly increasing in all parts of the United States. The peculiarities of the Sanitarium health foods are, first, they are exactly what they are represented to be,— merely health foods, and not combinations of wheat flour, alkalies, and lard, gotten up to please the taste rather than to meet the requirements of the body, which is the only proper object for a genuine health food. Another peculiarity of the foods manufactured by the Battle Creek Sanitarium Health Food Company is the moderate price at which they are sold. While costing more than other similar foods, they are offered at a moderate price, being thereby placed within the reach of all. Still another characteristic of these foods is the fact that those who once become acquainted with them become so attached to them that they do not wish to dispense with them, and continue their use year after year. So long a time has elapsed since these foods were first devised and placed before the public that it is not an uncommon thing to meet people who declare that they were "raised on Sanitarium health foods"— and fine-looking specimens some of these are. There are no foods which present so large a proportion of blood- and bone-making elements in so compact a form, so easily digestible, so palatable, and available at so moderate a price, as do these.

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GRANOSE holds its own wherever it has been introduced. It proves a sound remedy for most forms of indigestion. Almost anybody who has a foul tongue or a bad taste in the mouth can get rid of both by a diet of Granose and fruit or fruit-juice for a week or ten days. Granose is an ideal

cereal food, composed of the whole wheat kernel, in which the bran is so thoroughly disintegrated that it appears only in very fine particles, which are reduced to a condition which renders them wholly unirritating. Granose is a sovereign remedy for that very common malady, constipation, hundreds of people having been cured of an inactive state of the bowels simply by its use. Granose is just the thing for babies. Mrs. President Cleveland, on taking her children on a visit to Buffalo recently, carried with her a supply of Granose as a lunch for Ruth and Esther. Many a child has been cured of its peevishness and irritability, which are generally due to constipation or indigestion, by a diet of Granose and fruit.

* * *

MANY of our Sanitarium patients will be glad to know that Dr. G. W. Burleigh, who is spending a vacation in Colorado to recruit his energies, which had been somewhat impaired by his arduous pursuit of scientific knowledge, reports himself now in the enjoyment of the best of health, which speaks well for Colorado air and climate — at least in the region of Boulder.

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TEN medical students connected with the American Medical Missionary College have been trying an experiment in dietetics for two weeks past, confining themselves wholly to Granose and fruit, of which each one eats as much as he cares for. The result thus far has been most encouraging. The first week every one of these ten young men and women gained a pound or more in weight. One young man gained three and three-fourths pounds. During the second week their gain was more uniform. At the last report the record was still climbing up, and there is no telling where it will stop, if these young people keep on eating Granose. A remarkably interesting fact developed by the experiment is that on a diet of Granose the amount of food required to support life and activity, and to secure a gain in weight, is much less than that given by any authority on dietetics, which proves that Granose is more completely digested and assimilated than other food. Not one of the ten persons engaged in the experiment has yet been able to consume a pound of dry Granose in twenty-four hours. The lighter the food, the higher is the character of the food as represented by Granose.

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CARAMEL-CEREAL A SUBSTITUTE FOR COFFEE. — Caramel-Cereal is a beverage which is possessed of no harmful properties whatever, but if used in moderation,— not more than one cupful at a meal (the free use of liquids of any sort at meals is harmful),— it may in many cases prove even beneficial to digestion. It has been in use for nearly twenty years at the Battle Creek (Mich.) Sanitarium as a substitute for coffee, and is unquestionably superior in this respect to any other preparation, having been selected by the physicians in charge of the institution, after an examination of many similar preparations, and a great number of experiments with various combinations.

It is not claimed for Caramel-Cereal that it makes blood, or that it is in any sense a food. It is simply a beverage which is innocent in character, and hence may well be substituted for tea and coffee by those who consider something of the kind at meals essential. It must be remembered, however, that drinks of any kind at meal-time are harmful, for the reason that proper mastication of the food may thereby be prevented, and so large a quantity of fluid introduced into the stomach as to interfere with digestion. A small cupful of Caramel-Cereal sipped at the close of a meal, quite hot, will be found helpful to digestion by persons suffering from a sluggish condition of the stomach and bowels.

Caramel-Cereal does not, as do ordinary tea and coffee, interfere with starch digestion. These common beverages are responsible not only for indigestion, but for impoverished blood, starved nerves, bad complexion, facial eruptions, and a great variety of ailments, which will quickly disappear when this harmless preparation is substituted for tea and coffee and allied drugs. Those who make use of Caramel-Cereal as an aid to digestion will find great benefit from the use of Granola, Granose, and others of our health foods.

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THE RELIEF DEPARTMENT. — Our readers will probably notice that the Relief Department of the journal is omitted this month. This is the first time since this department was started, over two years ago, that we have not had a single case, a boy or a girl, who desired a home, for whom we have not been able to make provision. Since the department was started, 243 children have been advertised, and, as far as we at present are informed, every one of this number has a good home. It has been a source of great satisfaction to us to receive letters from those who have been assisted, as well as those who have opened their doors to receive homeless little ones or friendless old people, expressing their satisfaction and gratitude for the assistance rendered. Within the last few weeks the offers of places for the homeless have been particularly numerous, so that all the cases in hand have been provided for. However, there are thousands of children whose cases have not been made known to us. Every week brings us information concerning little ones who need the assistance of friendly hands, and the care of loving hearts. Before many weeks have passed we shall doubtless be able to send children to each one of the homes which have been opened for them.

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HOME-SEEKERS' EXCURSIONS. — In order to give every one an opportunity to see the Western Country, and enable the home seekers to secure a home in time to commence work for the season of 1896, the Chicago, Milwaukee & St. Paul Ry. has arranged to run a series of four home-seekers' excursions to various points in the West, Northwest, and Southwest on the following dates: March 10, April 7 and 21, and May 5, at the low rate of two dollars more than ONE FARE for the round trip. Tickets will be good for return on any Tuesday or Friday within twenty-one days from date of sale. For rates, time of trains, and further details, apply to any coupon ticket agent in the East or South, or address Harry Mercer, Michigan Passenger Agent, 7 Fort Street W., Detroit, Mich.

GRANOSE: WHAT IS IT?

A Perfect Food.— This new food has sometimes been termed "wheat chips," from the fact that it resembles that popular but dyspepsia-producing article, Saratoga chips, in its rich crispness, although in no other respect. "Wheat chips" contain nothing but wheat, with the addition of a minute quantity of common salt, but it consists of the entire wheat kernel, and hence is a perfect food.

The Chemistry of the Body.— The chief constituents of the human body are *albumin* in various forms, *animal starch* and *sugar*, *animal fat*, and *organic salts*. The so-called mineral substances said to be constituents of the human body, are not really so, but represent simply the residue which remains after burning or chemically reducing the body after death.

In the wheat kernel is found *albumin*, chiefly in the form of *gluten*, *vegetable sugar*, *vegetable fat*, and *organic salts*. These constituents correspond exactly to those of the human body. The wheat kernel, in fact, is simply a little package especially prepared by nature for the nutrition of the body. It is a complete ration ; that is, it contains the elements of nutrition in just the proportion needed to make a complete and perfect human body, and to nourish and maintain it. This, however, is true only of the wheat kernel in its entirety, since the various elements are not equally distributed through the kernel, but are found in different proportions in different parts of it. The central portion is chiefly starch. Outside of this are several layers containing albumin and organic salts in large proportion, mingled with a certain proportion of starch-filled cells. The outer layers are largely made up of cellulose, or woody material, which also contains a certain amount of albumin and organic salts. There is a large proportion of oil in the germ of the wheat.

In the process of milling, when the dry wheat kernel is crushed between rollers, the central, starchy portion, being light and friable, falls out, leaving behind granular masses consisting of the germ and the outer portions of the grain, which are held together by the tough glutinous layers. These are then separated from the finer starchy portion, and also from the woody portion which cleaves from the kernel in flakes, thus forming the bran. The germ of the wheat is also separated by a special process. In this way various grades of flour are made by the modern processes of milling. The starchy portion forms the ordinary white family-flour. The glutinous, granular masses, together with some of the finer branny portions, are made into the so-called whole-wheat flour. The separation of the branny part so reduces the proportion of gluten that the granular glutinous particles produce a flour containing no larger an amount of gluten, and perhaps less, than that made from the entire grain. The germ portion, containing the rich, nourishing oil, goes with the bran.

Granose, representing the entire kernel of the wheat, constitutes a perfect food, as it contains all the elements represented in the wheat, and all that are required by the human body.

The following are a few of the special advantages claimed for **Granose**, and justified by the experience of thousands who have used it: —

1. **Granose** *is a thoroughly cooked food*, and ready for immediate use. In the process of manufacture the grain is so thoroughly cooked that the starch is completely hydrated, and prepared for the action of the digestive juices.

Almost without exception, the various so called "cooked" cereal foods which have been placed upon the market are so imperfectly cooked that, practically, they require as much cooking as ordinary raw-grain preparations. This is true of the various steam-cooked cereals which are advertised as "ready for use in three minutes," "fifteen minutes," etc. They require cooking at least two or three hours. **Granose** is a twice-cooked food, being more thoroughly cooked than ordinary bread, even when it is well baked. Each delicate flake has the sweetness and the well-known easy digestibility of the crust of well-baked bread. In this respect it resembles the famous zwieback, or twice-baked bread, of Carlsbad.

2. **Granose** *is not only a thoroughly cooked, but a partially digested, food.* In the process of manufacture, it is subjected to the action of natural vegetable digestive agents, whereby a preliminary digestion is effected ; and by subsequent processes, still further digestive changes are produced, so that when taken into the stomach, it is already so far digested as to be readily dissolved and assimilated.

Thousands of persons are rendering themselves nervous, bilious, and rheumatic, and laying the foundation for numerous grave maladies, by subsisting upon a meat diet, which they feel compelled to do because of their inability to digest starch. With rare exceptions **Granose** may be used without difficulty by the most refractory cases of amylaceous dyspepsia, or starch indigestion, one of the most common of all forms of indigestion.

3. **Granose** *is a thoroughly sterilized food.* Ordinary fermented and raised bread, and even such unleavened bread as rolls, gems, etc., contain great numbers of germs derived from the flour, and, in the case of fermented bread, from the yeast. Experiments made in the Laboratory of Hygiene in the Battle Creek Sanitarium, by eminent bacteriologists employed to make special researches upon this subject, have shown that the fluid obtained from the stomach an hour after the eating of ordinary bread, contained vast numbers of germs, while that obtained from the stomach after a test meal of **Granose** contained no germs. This result shows that the stomach may remain free from germs when provided with a food which is entirely free from them, and capable of so facilitating the process of digestion as to enable the stomach to destroy those which accidentally enter from the air in the act of eating.

The importance of this fact will be recognized when it is remembered that most disorders of the stomach are due to the presence and action of germs, of which as many as four hundred thousand million sometimes have been found in the alimentary canal. In one case examined in the Laboratory of Hygiene of the Battle Creek Sanitarium, more than twenty-five million germs were found in a single ounce of stomach fluid. The presence of these microbes in the stomach is indicated by a coated tongue, a bad taste in the mouth, biliousness, gas in the stomach, a sense of fulness, eructations, acidity, and other well-known symptoms of indigestion. A **Granose** diet is one of the best-known means of ridding the stomach of germs. It arrests fermentation by enabling the stomach to destroy the germs to which fermentation is due.

4. **Granose** *cures constipation.* Hundreds of cases might be cited in which the free use of **Granose** at each meal has resulted in the complete cure of chronic constipation of many years' standing. At the Battle Creek Sanitarium its use is one of the chief methods of controlling this very obstinate condition. It is found superior for this purpose to graham bread, cracked wheat, or any other of the whole-grain preparations, and has the additional advantage of not being irritating to the stomach or intestines, a fact which is due to the thorough manner in which the cellulose covering of the grain is broken up.

The use of **Granose** is more than a complete substitute for mineral waters, after-dinner pills, and the various laxatives, liver tonics, etc., which are so largely used to regulate the bowels, and which produce serious disturbances of both the stomach and liver. The habitual use of laxatives is a most pernicious practise, and has ruined the health of thousands.

5. **Granose** *is an excellent food remedy,* not only for constipation, but also for all disorders growing out of dilatation of the stomach, indigestion, poverty of the blood, and similar morbid conditions, such as rheumatism, consumption, and scrofula. Granose makes fat and blood. It is perhaps the best of all foods for building up strength and health, bones, nerves, and muscles. It is an admirable food for all invalids, and especially for aged persons and feeble infants. It is universally liked by children. It may be properly used as a food for infants as soon as the child begins to cut its teeth.

6. **Granose** *is an entire food.* Unlike a great share of grain preparations, **Granose** represents the entire grain, and so furnishes, in due proportion, all the elements of nutrition. The use of superfine flour, from which the germ of the wheat and its nourishing oil, together with the bone- and muscle-making elements contained in the outer covering of the grain, have been removed, is responsible for a great physical deterioration in the American people. We are becoming a toothless race. In the Salem witchcraft days, that quaint genius, Giles Corey, thus described in a vision of the future what we have all seen and realized in recent times as the result of this starvation of the body in depriving it of the elements necessary for building sound bones and teeth, the ultimate outcome of which, a wag has declared, will be to make the cemeteries of the present generation the gold mines of some future one, and the American people a toothless race, unless a speedy reform in diet comes to the rescue : —

> "I saw a man pull all his teeth ;
> It took him but a minute.
> He ope'd his mouth and put them back ;
> I thought the deuce was in it."

7. **Granose** *is often digested when no other food can be retained by the stomach.* It is invaluable in extreme cases of indigestion, and seems to be equally useful in hyperpepsia and hypopepsia. One reason why **Granose** is so easy of digestion is, that it never becomes pasty, as do mushes and most other grain preparations. When moistened, it breaks up into exceedingly fine particles, but never forms viscid masses ; hence it is very quickly dissolved by the saliva and the gastric juice, which act together upon the food in the stomach.

8. **Granose** *is so palatable a food that it is as much relished by the well as by the sick ;* and being ready for immediate use without preparation of any sort, it is a most convenient article of food, espe-

cially as a breakfast dish. Like bread, it combines well with every other article of food, and especially with fruits and grains. It is delicious eaten with milk, cream, or fruit juice. It may also be eaten dry with as great relish as popped corn or nuts, and thus becomes a valuable means of combating the numerous forms of indigestion which result from the excessive use of soups and other "slops" so common in this country.

9. **Granose** *is a thoroughly disintegrated and unirritating food.* Graham flour, cracked wheat, rolled wheat and oats, oatmeal, and other whole-grain preparations present the outer woody, silicious covering of the grain in harsh, sharp-edged flakes of bran, which are more or less irritating to a sensitive stomach; and in many cases of dilatation, these create disturbance by their accumulation in the stomach, which, owing to its feeble muscular power, is unable to discharge them with the fluid portion of the food. In **Granose** the woody envelope of the grain is divided up into such minute particles as to be scarcely detected without the aid of a microscope. Fig. 1 presents a fair comparison between the condition of the bran found in graham flour and that in **Granose.** There is a further difference also, in that the flakes of bran in graham flour are thick and heavy, as well as large, owing to the adhesion to their inner surface of several layers of cells; while the bran in **Granose** is so separated from the adhering parts that it consists only of the thin, woody envelope reduced to minute particles, which, though presenting no nutrient value, are of great service in aiding peristaltic activity, and thus combating constipation, a morbid condition which is perhaps more far-reaching in its harmful results than any other to which the body is subject. **Granose** aids not only stomach digestion but intestinal digestion as well.

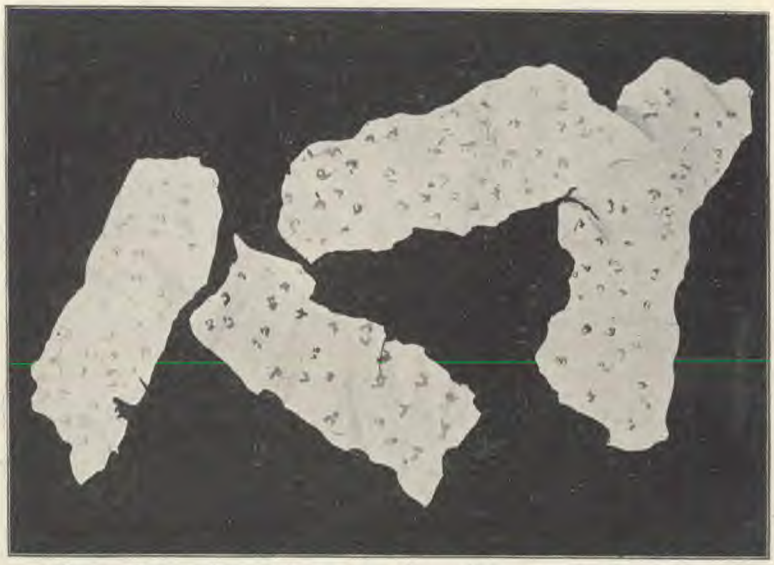

FIG. 1.—GRANOSE FLAKES, SHOWING THE MINUTE DIVISION OF THE BRAN SCALES.

10. **Granose** *is a clean food.* Ordinary wheat contains a vast amount of dirt, particles of which adhere to the surface of the grain, entangled among the minute hairs (Fig. 2), and buried in the little furrow which characterizes the wheat berry. Wheat also contains particles of chaff, straw, etc. The ordinary processes of milling do not perfectly remove these impurities. Every hundred pounds of graham flour contains ten pounds of coarse bran, straw, and other particles of foreign and innutritious character, some of which, taken at random from a mass of this rubbish obtained by sifting a few pounds of graham flour, are shown in Fig. 2. All wheat flour also contains a vast number of germs. This is why flour so quickly becomes musty unless kept thoroughly dry, and it is also the cause of the rising and fermentation of the dough in the making of bread by the "salt-rising" process. Only the addition to the flour of a little water of the proper temperature is required to produce a most active fermentation, and, if the process is allowed to continue a little too long, actual putrefaction. These germs are capable of producing the same action in the stomach; and since in the baking of gems, bread, and biscuit, the temperature to which the interior of the loaf is exposed is not sufficient to destroy these microbes, bread is very likely to ferment in the stomach. This is the reason why many invalids cannot eat raised bread, or biscuit made with baking-powder. An examination of water gems made in the Laboratory of Hygiene of the Battle Creek Sanitarium showed that they ordinarily contain vast numbers of germs, even when well baked.

Granose is wholly free from these impurities and disturbing germs. It is subject to such thorough preliminary processes of cleaning, washing, and sterilizing, that it is guaranteed to be a "dirt free" and "germ free" food. In this respect it is truly unique. With the exception of **Granola** and other of the Battle Creek Sanitarium Health Food Company's products, we know of no cereal foods upon the market of which this can be said.

WHAT IS GRANOSE? AND HOW IS IT MADE?

PROBABLY no new article of food ever devised has sprung so rapidly into favor as has **Granose**. Every one who tastes it declares at once that it touches the right spot, both in the mouth and in the stomach. It combines as does no other food, delicate, delicious gustatory properties, with easy digestibility and exact adaptation to the needs of the body. From the first, there has been a great amount of curiosity to know how **Granose** was made. During its experimental stage, which occupied several months, the methods of manufacture were kept a profound secret, the work being carried on behind closed doors. There was evident necessity for this, as there is during the development of all great inventions. But now that the whole process has been completely elaborated, and both the product and the methods of manufacture protected by a patent, not only in the United States but in all civilized countries of the globe, we are at liberty to tell all about it. The process is this: —

1. The wheat must be the very finest, plumpest, cleanest, that can be found, in order that the flakes may be large, and their fleshy whiteness shall not be soiled by cockle thinly spread out, or yellow masses of crushed straw and chaff, such as are to be found in graham flour, rolled wheat, etc. Therefore only the very choicest wheat will answer the purpose. It is selected with the greatest care, and shipped from all parts of the wheat-growing portion of the United States, even as far West as the Rocky Mountains. Wheat buyers all over the country are enlisted and well paid to keep their eyes wide open for extra fine lots of wheat for our use.

2. The wheat is subjected to a thorough process of cleaning; and the reader would be astonished to see the amount of dirt obtained from wheat which seems to be perfectly clean. The wheat is not only screened again and again, so that every grain of cockle and all chaff, bits of straw, dirt, and shrunken kernels are removed, but it is winnowed, and brushed, and polished until it is delightfully clean, bright, and beautiful.

3. The next step to which the wheat is subjected is a process of cerealine digestion. A German chemist made the interesting discovery that just beneath the bran of the wheat there is a peculiar digestive principle known as cerealine. By exposure of the wheat to the right conditions of temperature and moisture, this digestive principle becomes active, so that the starch of the grain is in part digested and converted into sugar and dextrin. The process of digestion is thus begun, and fine gustatory flavors developed.

4. The next step is the sterilization of the wheat, which is effected by a special apparatus devised for the purpose, whereby the wheat is subjected to a thorough scouring process at a temperature of 212° F. until it is completely sterilized, or deprived of living germs of every description. It is to this process that the remarkable keeping properties of **Granose** are due. **Granose** has been shipped to Australia, the Cape of Good Hope, and the interior of Africa, and found, when opened, to have kept perfectly.

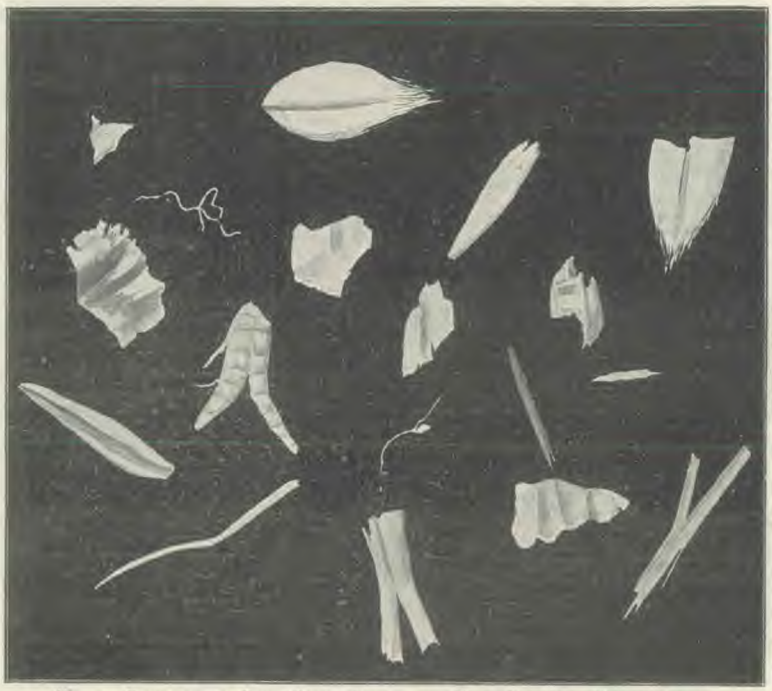

FIG. 2.—PARTICLES OF DIRT, CHAFF, STRAW, AND BRAN TAKEN AT RANDOM FROM SIFTINGS OF GRAHAM FLOUR.

5. After the process of sterilization is complete, the wheat is passed through a specially constructed apparatus by which each grain is subjected to an enormous pressure,— far greater than that required in the ordinary milling process,— by which each kernel is spread out into a thin, translucent film. This is one of the most delicate and difficult steps in the process, requiring the nicest adjustment of apparatus, and constant vigilance on the part of the workmen in

attending it. By an ingenious automatic device the wheat is slowly fed to the apparatus, from which it is received in large pans, and carried to the huge ovens in which the final step of the process occurs.

6. The process of baking the **Granose** is, like the preceding, an extremely delicate one, and requires a practised eye and close vigilance. Each translucent film must assume just the right shade of brown to indicate that the final step of the conversion of the starch into dextrin by the combined processes of digestion, cooking, and baking is completed, and the product finished.

From the oven, the **Granose** goes to the packing-room, where it is dextrously placed in packages, and boxed for shipment. The whole process is conducted by machinery, so that even the clean fingers of the workmen rarely touch the product. It is so perfectly sterilized that it will keep indefinitely, if protected from dampness and access of insects.

No other cereal product upon the market is subjected to such an elaborate, costly, and perfect process, and there is none which so absolutely meets the requirements of a food for the sick and the well, the old and the young, and none which so uniformly excels the highest expectations concerning it. When the great amount of labor and care required for its production and its superior excellence are considered, it is not only the best but the cheapest food offered the public at the present time.

Granose is put up in the form of loose flakes, and also in cakes. The production of the latter has taxed our ingenuity to the utmost, as it has been necessary to overcome immense obstacles to produce a cake which is lighter than the lightest baking-powder biscuit, more flaky than the shortest pie-crust, richer, more delicious, and more delicately flavored than the most tasty pastry, and yet without the slightest admixture of seasoning or raising ingredients of any sort,—indeed, containing nothing but pure wheat, with a very little salt. There is nothing in the food line quite so good as **Granose** biscuit. These biscuit possess all the good properties of **Granose**, with the added advantage of convenience in use. They are put up in neat boxes.

CHICAGO & GRAND TRUNK R. R.

Time Table, in Effect Nov. 18, 1894.

GOING EAST. Read Down.					STATIONS.	GOING WEST. Read up.				
10 Mail Ex.	4 L't'd Ex.	6 Atl. Ex.	42 Mixd Tr'n.	2 Pt. H Pass		11 Mail Ex.	1 Day Ex.	3 R'd L't'd	23 B. C. Pass.	5 P'fic Ex.
a m	p m	p m				p m	p m	pm		a m
9.00	3.10	8.15	a m	.....	.....D Chicago A.....	6.45	1.50	9.10	.....	7.50
11.25	5.05	10.30	6.00	.....	.....Valparaiso.....	5.05	11.35	7.10	.....	5.45
p m										
1.05	6.30	12.00	10.05	.....	.....South Bend.....	3.10	10.15	5.44	.....	4.10
1.46	7.12	1 .45	12.40	.....	.....Cassopolis	2.15	9.40	5.13	.....	3.28
2.33	.....	†1.33	3.42	.....	.....Schoolcraft.....	1.20	.....	.....	.....	.....
2.44	7.56	1.48	4.20	a m	.....Vicksburg.....	1.10	8.52	.....	p m	2.37
3.30	8.36	2.40	6.20	7.01	.....Battle Creek	12.15	8.15	3.55	9.35	1.50
4.33	9.26	3.25	.....	7.47	.....Charlotte.....	11.14	7.23	3.07	8.40	12.58
5.10	9.55	4.00	.....	8.20	.....Lansing.....	10.40	6.53	2.40	8.00	12.20
6.30	10.45	5.03	.....	9.30	.....Durand.....	9.35	5.35	1.55	6.50	11.28
7.30	11.17	5.40	.....	10.05	.....Flint.....	8.35	5.35	1.28	5.47	10.35
8.15	11.50	6.15	.....	10.43	.....Lapeer.....	7.49	5.02	1.00	5.10	10.01
8.12	a m	6.35	.....	11.06	.....Imlay City.....	7.28	.....	.....	4.48	.....
9.50	1.00	7.30	.....	12.05	.....Pt. H'n Tunnel.....	6.50	3.50	11.55	3.50	8.45
	p m					a m	a m	a m	p m	p m
9.25	.....	.....	.....	.....	..... Detroit.....	.....	.....	10.40	4.05	8.45
	a m	p m					p m			p m
.....	8.15	5.25	.....	.....	..... Toronto.....	.....	9.20	.....	.....	1.00
	p m	a m					a m			
.....	8.15	7.25	.....	.....	..... Montreal	.....	9.15	.....	.....	.....
	a m	p m					a m			
.....	8.12	7.15	.....	.....	.....Boston.....	.....	8.30	.....	.....	.....
	a m	p m					p m	a m		p m
.....	7.50	4.25	.....	.....	.....Susp'n Bridge.....	.....	10.15	7.05	.....	2.25
	a m	p m								p m
.....	7.00	5.40	.....	.....	.....Buffalo.....	.....	.....	.....	.....	1.00
	p m	a m					a m	p m		p m
.....	8.53	8.03	.....	.....	.....New York.....	.....	8.15	6.10	.....	8.00
		a m								p m
.....	.....	10.20	.....	.....	.....Boston.....	.....	.....	.....	.....	7.00

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STATIONS.							
Chicago.....	pm 9.30		am 6.50	am 10.30	pm 3.00		pm 11.30
Michigan City	11.30		8.48	pm 12.08	4.50		am 1.19
Niles.....	am 12.45		10.15	1.02	5.55		2.45
Kalamazoo	2.09	am 7.20	11.52	2.16	7.21		4.25
Battle Creek...	2.55	8.10	pm 12.50	2.50	7.58		5.05
Jackson.....	4.30	10.00	2.40	4.10	9.20		6.30
Ann Arbor.....	5.40	11.05	3.50	5.00	10.12		7.30
Detroit.....	7.10	pm 12.20	5.30	6.00	11.15		9.00
Buffalo.....				am 12.10	am 6.45		pm 5.30
Rochester.....				3.00	9.55		8.40
Syracuse.....				5.00	pm 12.15		10.45
New York.....				pm 1.45	8.45		am 7.00
Boston				3.00	11.35		10.50

WEST	*Night Express.	*N.Y.Bos. &Chi.Sp.	†Mail & Express.	*N. Shore Limited.	*Weste'n Express.	† Kalam. Accom.	*Pacific Express.
STATIONS.							
Boston		am 10.30		pm 2.00	pm 3.00		pm 7.15
New York.....		pm 1.00		4.30	6.00		9.15
Syracuse.....		8.30		11.30	am 2.15		am 7.20
Rochester.....		10.37		am 1.20	4.10		9.55
Buffalo.....		11.45		2.20	5.30		pm 3.30
Detroit.....	pm 8.45	am 6.30	am 7.15	8.30	pm 1.00	pm 4.45	11.05
Ann Arbor.....	10.12	7.30	8.38	9.25	2.00	5.55	am 12.15
Jackson.....	11.40	8.35	10.43	10.30	3.02	7.35	1.25
Battle Creek...	am 1.00	9.48	pm 12.15	11.43	4.18	9.11	2.55
Kalamazoo	1.40	10.27	1.05	pm 12.21	4.57	10.00	3.36
Niles.....	3.25	11.48	3.00	1.45	6.27		5.00
Michigan City.	4.35	pm 12.50	4.25	2.45	7.22		6.00
Chicago.....	6.30	2.40	6.35	4.30	9.05		7.50

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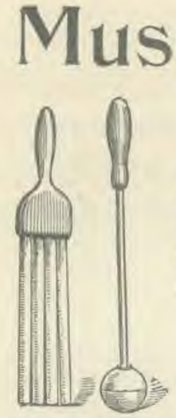

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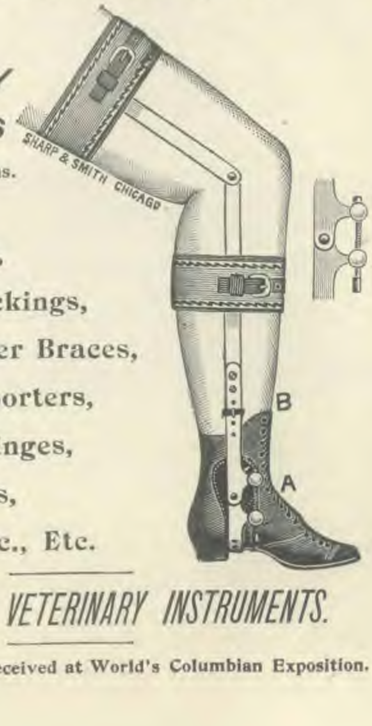

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