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INTERNATIONAL HEALTH STUDIES.

BY FELIX L. OSWALD, M. D.

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

55.—Arizona.

AN epigrammatic French writer calls Spain an "intensely Christian country with the physical geography of the African continent;" and he might describe Arizona as a part of Northern Mexico under the political administration of the United States. The great territory between the San Juan and the mouth of the Rio Gila is Mexican in climate and topographical characteristics, and largely Mexican from an ethnological and religious point of view. The warm and extremely dry atmosphere resembles that of Durango and Chihuahua. The high table lands are so continuous with those of our sister republic that a team could be driven from Prescott to San Louis Potosi on what the Californians call "high level roads." The fauna, the vegetation, the geological formations, are identical with those of the Mexican border States.

The aborigines, too, belong to the middle American or southern group of Indians, and the difference of their disposition most strikingly illustrates the moral influence of diet. There is a story of an Indian rajah (the prince of Baroda, I think), who, by way of experiment, fed a stallion on grain mixed with pulverized meat, and by and by almost on dry meat alone. After a couple of months the horse became not only reconciled to his new bill of fare, but so fond of it that he supplemented the percentage of animal substance by devouring pigs and dogs, and once got himself into serious trouble by trying to chew up the arm of his groom. His own master finally got afraid of him, and had him transferred to a walled corral, with a raised platform where sightseers could watch his attacks upon his edible fellow-captives.

The contrast between that equine ogre and a gentle family horse cannot have been more remarkable than that between a Maricopa truck-gardener and an Apache man-hunter, though both the Hindoo-like horticulturist and the vindictive warrior belong to the Athalascan tribe of redskins. The Maricopas readily embraced the doctrine of the mission fathers, and often taught their leaders practical lessons in the virtue of non-resistance when tax gatherers and gold-greedy despots added their burden to the yoke of the cross. "Peace and Peas" sums up their earthly ideals, and as long as the aggressive foreigners left them in possession of their adobe cabins and a modicum of *frijoles*, they performed their feudal drudgery uncomplainingly.

The Apache's nectar and ambrosia are bull beef and revenge. Long before the arrival of the Spaniards the Tonto and Givarilla Apaches fought bloody wars on the borders of their hunting plains, but about the middle of the seventeenth century they had joined their Southern kinsmen, the Mescaleros, and turned their arms against the common enemy. Peaceful overtures were more than useless. The commissioners of the Spanish Virey were mostly slain or burned alive, and a chronicle of the Sonora colonies estimates the number of devastated missions and mining towns at 174. Like the Buccaneers of the West Indian archipelago, the red nomads of

Northern Mexico seemed to have devoted their existence to the murder of the greatest possible number of Spaniards under the worst possible forms of cruelty. But the massacre of unoffending colonists continued after the treaty of Guadeloupe Hidalgo. Bloodshed for its own sake appeared to be the only conceivable motive of the implacable savages. They would travel hundreds of miles to surprise a camp of fugitives who had saved their bare lives from a previous raid, kill and mutilate the refugees, and then gallop away without any other booty than a few prisoners who were reserved for future orgies of manslaughter. Not one monkey of a hundred will forego a chance to gratify the kleptomania of his species, and not one Apache of a thousand seems able to resist the temptation of an opportunity for homicide, regardless of ultimate consequences.

In the course of General Crook's second campaign, an old Apache chieftain, with a long semi-Spanish name, was captured by a cavalry detachment and sent back to his reservation under a strong military escort. The prisoner knew that he would be eventually released on the usual repetition of his worthless parole. He also knew that an attempt at escape from a detachment of mounted sharp-shooters would be utterly hopeless; nevertheless, when the attention of the sentry at his side was momentarily diverted, the captive started up from his seat in the government prairie schooner and attacked the driver with a long knife which he had managed to conceal under his blanket. He slashed away, dancing and whooping, till a carbine ball sent him to the paradise of the Barracks. "What 's the trouble?" asked a scout who had galloped up on hearing the report of the shot. "Why, old So-and-so got on the rampage again," said one of the soldiers, "and we had to straighten him out the only way there was." "O, that 's all right," said the scout; "just chuck him out; what 's the use of hauling the carcass? You might as well expect a rattlesnake to behave himself when you give him a chance to strike."

HOME OF THE CLIFF DWELLERS.

Yet unmistakable analogies of physiognomy and speech prove the kinship of these human harpy-eagles to the chicken-hearted and docile Papagos on the Gila River reservation. Under the influence of Christianity and corn bread, Apache children educated at the Spanish missions became model domestics, and abjured the evil passions of their forefathers — all but the roving instinct, which seems to break out in remote generations and makes the descendants of the Suesi (from *schucifer*, to wander or roam), the most irrepressible emigrants of central Europe. A reclaimed Apache may be trusted to join a surveying expedition and sleep in a tent without singing the obscene ditties of his tribe and even without trying to cut his employer's throat; but an attempt

at domestication will make the corn-fed convert restive, and he is pretty sure to vanish some night, though the lessons of the catechism may have prevented him from taking a horse along.

The barbarians (*barbaros*, par excellence), as the Mexicans call the hostiles of the Arizona border mountains, will never forgive the whites the wanton extermination of the buffalo herds that furnished the warriors of old their preferred stock of provisions, but even now there is not a more purely carnivorous race on earth. In the fastnesses of the Sierra Madre they hunt deer, hares, and antelopes, and eke out the supplies of their larder by raids on the neighboring stock farms; but Commissioner J. R. Bartlett confirms the statement of numerous Spanish writers that a starving Apache will wrap himself up in his blanket and die, rather than save his life by a meal of pork. "The mere proposition of such a feast," he says, "makes them raise their shoulders as in a fit of sea-sickness, and with all their savage indifference to the sufferings of their fellow-men, they actually pity the plight of the pale-face paupers who have to still their hunger with expedients of that sort."

The Spanish missionaries probably considered that Mohammedan prejudice of the savages an additional proof of natural perversity; but are we quite sure that anything but the winter horrors of high latitudes induced the Caucasian race to overcome an undoubtedly instinctive aversion of our species? Among the natives of Southern Europe the antipathy to the flesh of the most unclean quadruped not rarely revives with all its primitive force, and an Italian sailor who had found a berth in the cockpit of the Hamburg packet "Jalapa" often amused his messmates by his harangues on the atrocity of their bacon worship, but failed to make converts, though he refuted the charge of fastidiousness by swallowing pepper and seawater.

The beef-enthusiasm of the Apaches may date from a time when the plains of Arizona became too arid to produce satisfactory crops of vegetables, for there seems to have been a time when the valley of the Rio Gila was studded with hamlets, surrounded by *estufas*, aqueducts and reservoirs, many of them constructed of square-hewn masonry, and here and there with a bituminous substitute for hydraulic mortar. The lowest estimate puts the number of those villages at fifteen hundred; what has become of their tenants? Did they die out in the defensive warfare against hostile nomads, or is Prof. Stuart right in conjecturing that they migrated across the Rio Grande when the conquest of Mexico abated the terror of the Aztec arms?

An average yearly rainfall of six inches is, indeed, not very encouraging to agricultural enterprise, but even in the midst of the bleak central plateaux the present state of desolation seems to have been brought about by the same arch folly that has turned the gardens of Syria and Spain into sand-wastes — indiscriminate forest-destructions. On the well-wooded mountain ranges between Prescott and the Moqui Reservation abundant rains cover the slopes with herbage sufficient to feed all the cattle of North America, and within three miles of the highland forests the settlers of the foothills can generally dispense with irrigation. When the hills are too steep for the culture of cereals, the climate would favor experiments with the plan of *substituting perennial for annual food plants*, — a plan which, much more surely than Bellamism or the projects of the universal peace congress, seems destined to effect the physical regeneration of this planet. That bread can be baked from nut meal is a fact well known to the peasants of the Mediterranean islands: "*Sal e polenta me bastan*," is the boast of the Corsican mountaineer. "Leave me salt and chestnut meal, and I shall manage to get along." And how much better would husbandry in general get along

MARICOPA INDIANS.

if the long weary hours spent in plowing, sowing, weeding, and harrowing could be devoted to other branches of agriculture! A meal orchard would take care of itself, survive the great-grandchildren of its planter, and prevent the deterioration of the climate, besides blessing its proprietor with shade in summer and windfalls of fuel in winter, and yield almost as much food-substance per acre as a South Mexican banana plantation.

The military posts of Arizona are rather popular with the soldiers of the United States army. "In a

A YUMA CHIEF.

choice between Paris and a desert," said a cavalry officer of my acquaintance, "there could of course be no hesitation; but the question between a desert and a humdrum farming country or gossiping country town is much less easily decided. In the far West you must forego pumpkin pies, but you enjoy moral and physical elbow room, and besides, the alleged desert is almost sure to be better stocked with game than the neighborhood of Pumpkinville."

And also with the resources of natural hygiene, a sanitarian might add. An expert who analyzed the air of Spitzbergen found its percentage of microbes two hundred thousand times less than that of the Paris atmosphere, but the development of disease germs requires moisture as well as warmth, and on the intensely dry tablelands of central Arizona the air is almost as free from organic impurities as on the islands of the Arctic Ocean. The proportion of indigenous cases of lung disease is remarkably small. Native *peons*, loaded like pack mules, travel the steep mountain trails of the Sierras with an ease that attests their freedom from respiratory troubles, and consumptive immigrants have a fair chance of survival, especially in valleys sheltered from the sandstorms of the western deserts.

"Nature has done a good deal for this neighborhood," writes an invalid from a station of the Atlantic and Pacific Railroad, "and as usual in such cases, man next to nothing. The peaks of the San Francisco Range soar snow-clad in the north, but we have to buy ice from the train porter at ten cents a pound; the slopes of the Sierra form natural parks with pastures rivaling those of the Swiss Oberland, but we have to get our dairy products from Prescott Junction. No region of North America would produce finer fruit or better honey, but for all such things we have to rely on California. The haciendas of a prehistoric race have been laid waste; but the despoilers could not steal the glorious sunshine of the foothills or the keen, bracing air of the uplands that remind one of the southern Alps."

Agriculture, or rather horticulture, has, however, made rapid progress in the course of the last fifteen years. Since 1880 nearly $2,000,000 have been expended on the construction of irrigating canals, with results that have almost verified the prediction that the territory could be made as productive as Northern Italy. In Cochise County, in the extreme southeast, apricots, figs, lemons, oranges, and peaches have been raised in an abundance which repaid all direct expenses before the end of the fourth year; even dates ripen and olives thrive better than in any other part of our national territory, though their extremely slow growth has somewhat discouraged their culture in our land of quick success speculations. In South Carolina the tree comes into bearing about the ninth year; in Arizona, before the end of the seventh, rarely sooner, even under all advantages of climate and careful culture, but it makes up for lost time in the course of five crops, and like the dragon palm, can almost boast a vegetable immortality. In the valley of Caserta, near Naples, there are olive gardens with trees dating their birth from an early period of the Middle Ages if not of classic antiquity, and which have undergone no visible change within

the memory of the oldest inhabitants, and still produce their crops of egg-shaped berries year after year. The ancient Greeks, according to a tradition of their primitive mythology, voted Minerva's gift of the olive a greater blessing than Neptune's present of the two steeds that became the ancestors of our domestic horses, and the introduction of the tree into the United States would undoubtedly tend to promote the cause of vegetarianism by atoning for the unpopular interdict of bacon and butter.

When General Gadsden negotiated the purchase of Southern Arizona in 1853, he moved heaven and earth to secure the cession of Port Guaymas, which he argued would add an ideal winter resort to the watering places of the United States, besides giving the territory a much needed harbor. As a winter residence, the old Spanish city by the sea could certainly be made to rival Los Angeles, but its freedom from summer epidemics is very likely due to the abstemious habits of the natives much more than to any special climatic advantage, and contagious fevers, introduced by foreign visitors, would probably spread as rapidly as cholera in the pilgrim camps of the Red Sea coast lands.

(To be continued.)

MILTON'S DOCTRINE OF ABSTINENCE.

BY WILLIAM E. A. AXON.

(Concluded.)

THE same pervading influence of abstinent control over the lower nature is seen in Raphael's description of the Feast of the Angels: —

"Evening now approach'd
(For we have also our evening and our morn,
We ours for change delectable, not need);
Forthwith from dance to sweet repast they turn.
Desirous; all in circles as they stood,
Tables are set, and on a sudden piled
With angels' food, and rubied nectar flows
In pearl, in diamond, and massy gold,
Fruit of delicious vines, the growth of heaven.
On flowers reposed and with fresh flowerets crowned,
They eat, they drink, and in communion sweet
Quaff immortality and joy, secure
Of surfeit where full measure only bounds.
Excess, before the all-bounteous King, who showered
With copious hand, rejoicing in their joy."

The temptation of Eve is preceded by evil suggestions, conveyed to her in dream by the archfiend. In this vision of the night she sees one shaped like their heavenly visitant.

"... His dewy locks distilled
Ambrosia."

He eats of the forbidden tree, and invites Eve to do the same.

"He drew nigh, and to me held,
Even to my mouth of that same fruit held part
Which he had plucked; the pleasant savory smell
So quickened appetite, that I, methought,
Could not but taste. Forthwith up to the clouds
With him I flew, and underneath beheld
The earth outstretched immense a prospect wide
And various; wondering at my flight and change
To this high exaltation, suddenly
My guide was gone, and I, methought, sunk down,
And fell asleep; but, oh, how glad I waked
To find this but a dream!"

This dream was but too prophetic of the actual course of the temptation. The guileful words of the serpent flattering Eve's ambition and vanity are aided by the claims of hunger.

"Meanwhile the hour of noon drew on, and waked
An eager appetite, raised by the smell
So savory of that fruit, which with desire,
Inclinable now grown to touch or taste,
Solicited her longing eye."

When, after much hesitation, she plucks the fruit,—

"Intent now wholly on her taste, nought else
Regarded; such delight till then, as seemed,
In fruit she never tasted, whether true
Or fancied so, through expectation high
Of knowledge."

When Adam also has eaten of the forbidden fruit, the effect of this indulgence of the appetite appears in remorse and anger.

"Nor only tears
Rained at their eyes, but high winds worse within
Began to rise, high passions, anger, hate,
Mistrust, suspicion, discord; and shook sore
Their inward state of mind, calm region once
And full of peace, now tossed and turbulent:
For understanding ruled not, and the will
Heard not her lore, both in subjection now
To sensual appetite, who from beneath,
Usurping over sovereign reason, claimed
Superior sway."

As all sensations may be supposed to be modifications of the faculty of touch, so Milton appears to refer all vice, however varied in its forms, to the uncontrolled indulgence of the appetite. In "Samson Agonistes" we see the overthrow of the strong man, the judge and deliverer of his people, through sensuality. The "Paradise Lost" has the same theme of the loss of innocence and happiness by yielding to the evil suggestions of appetite. In "Comus" we see the victory over these temptations. In the "Paradise Regained" the same moral purpose shows itself. Compared with the earlier epic, it is a mere episode. It does not deal with the entire life and death of Christ, nor with the

accompanying circumstances attending the planting of Christianity. It is characteristic of Milton's teaching that he selects as the central fact of Christ's life the temptation in the wilderness.

"I, who erewhile the happy garden sung,
By one man's disobedience lost, now sing
Recovered Paradise to all mankind,
By one Man's firm obedience fully tried
Through all temptation."

The Son of man is represented by the poet as sleeping in the wilderness, and in his hunger,

"Dreamed, as appetite is wont to dream,
Of meats and drinks, Nature's refreshment sweet."

Hence Satan appeals to this craving for food in order to accomplish his purpose.

"Our Saviour lifting up his eyes, beheld
In ample space, under the broadest shade,
A table richly spread, in regal mode,
With dishes piled, and meats of noblest sort
And savor, beasts of chase, or fowl of game,
In pastry built, or from the spit, or boiled,
Gris-amber-steamed; all fish from sea or shore,
Freshet, or purling brook, of shell or fin,
And exquisitest name, for which was drained
Pontus, and Lucrine Bay, and Africa coast.
Alas! how simple, to these cates compared,
Was that crude apple that diverted Eve,
And at a stately sideboard, by the wine
That fragrant smell diffused, in order stood
Tall stripling youth youths rich clad, of fairer hue
Than Ganymed or Hylas; distant more
Under the trees now tripped, now solemn stood,
Nymphs of Diana's train, and Naiades
With fruits and flowers from Amalthea's horn."

Satan is foiled by the steadfast disdain of his temptation, and says: —

"By hunger, that each other creature tames,
Thou art not to be harmed, therefore not moved:
Thy temperance invincible besides,
For no allurement yields to appetite."

There are other forms of appetite besides that which seeks the gratification of the palate. The lust of fame, of gold, and of power destroy some who are temperate in bodily pleasures. Satan tries the effect of each of these in order to subdue the Son of God, but in vain.

"What if, with like aversion, I reject
Riches and realms? yet not for that a crown,
Golden in show, is but a wreath of thorns,
Brings dangers, troubles, cares, and sleepless nights
To him who wears the regal diadem,
When on his shoulders each man's burden lies;
For therein stands the office of a king,
His honor, virtue, merit, and chief praise,
That for the public all this weight he bears.
Yet he who reigns within himself, and rules
Passions, desires, and fears, is more a king;
Which every wise and virtuous man attains;
And who attains not, ill aspires to rule
Cities of men, or headstrong multitudes,
Subject himself to anarchy within,
Or lawless passion in him which he serves,
But to guide nations in the way of truth
By saving doctrine, and from error lead
To know, and, knowing, worship God aright,
Is yet more kingly; this attracts the soul,
Governs the inner man, the nobler part;
That other o'er the body only reigns,
And oft by force, which to a generous mind
So reigning, can be no sincere delight."

So through all the phases of the temptation, the self-control of the Son of man triumphs over each of those allurements by which souls are destroyed. The pleasures of the body, the power of wealth, the pomp of authority, the fame of war, and the glitter of philosophy are alike rejected. All forms of appetite are subdued. Thus it will be seen that in Milton's later, as in his earlier poems, there is one consistent purpose. The moral of "Comus" is that also of "Samson Agonistes," of "Paradise Lost," and of "Paradise Regained." In each the poet's aim is to show the pain and desolation following in the train of excess and intemperance of every kind, and of the pleasure, the happiness, and the delights that flow from the abstinence from evil things, and from the self-control which rules with temperance all the actions of life.

"CERTIFIED MILK."

BY HELEN L. MANNING.

THE importance of milk as an article of diet, particularly for the young, cannot be questioned. Neither can it be doubted that it is one of the most easily contaminated of foods, and when tainted, either from carelessness in drawing or setting it, or from unsanitary surroundings, it becomes a menace to health and even life. Thousands and thousands of children, particularly in large cities, are starved to death from using an inferior quality of milk, or poisoned because the article has suffered from contamination. Enterprises, therefore, which look to securing a pure milk supply for rich and poor, must have a general interest.

A recent issue of the *Rural New Yorker* contains accounts of efforts in both these directions which are certainly noteworthy. The first is that of "certified milk," which is put upon the market by S. Francisco, of Caldwell, N. J., at twelve cents per quart. He is an old and reliable dairyman, and three years ago contented himself with furnishing five hundred quarts of milk per day of such superior quality and so scrupulously cared for, that it brought him eight

cents per quart from the aristocratic people of Montclair. For years, he has been perfecting methods of handling his herds and caring for their milk product, frequently inviting inspection and analysis by physicians and experts.

Doctors agree that with weak and ailing children the milk used for their food is of far more importance than any medical prescriptions, and many physicians consider that there are some objections to the use of sterilized milk. They prefer pure milk, freshly drawn and aerated, which, packed in ice, will keep long enough for ordinary uses. At the request of Mr. Francisco, the doctors took up the subject of requisites for a pure dairy product, and Dr. Henry L. Coit was chairman of a committee appointed by the State Medical Society to investigate cows' milk. He said there were five requisites which physicians should demand in such milk, viz., 1. Good keeping qualities; 2. Uniform quality and percentage of fat; 3. Uniformity in the curd as regards both quality and digestibility; 4. A constant percentage of mineral salts; 5. Freedom from pathogenic bacteria and all poisonous bacterial products.

The three practices which he claimed most injurious to milk were: 1. Use of unwholesome food; 2. Too much filth in the stables; 3. Careless methods of cooling and shipping milk. The use of brewer's grains was especially condemned.

Stringent rules and regulations were drawn up by the doctors, which Mr. Francisco agrees to live up to, and the doctors in turn agree to guarantee the milk and authorize him to certify to its purity. Mr. Francisco pays for bimonthly expert examinations of his milk and for bimonthly inspections of his dairy stock, oftener if necessary, by an approved veterinarian chosen by the doctors. He also pays for the printing and distribution of copies of the reports of these experts. Before erecting any new buildings or selecting any new lands for pasture, he must have the approval of this committee of doctors. The regulations as to the cleanliness of the cows, the hands and clothes of the milkers, and for the care of the utensils and receptacles of the milk, are most stringent. No person is allowed to draw the milk who has been engaged in the care of horses without first washing his hands and changing his clothes. Horse hairs are considered one of the worst forms of contagion and filth, and being so fine and easily shed, no horses are allowed to be kept in the same barn with the cows. The hands and nails of the milkers must be immaculate, and all their outer garments must be clean and are never worn upon any other occasion

A similar enterprise in behalf of the production of pure milk, is carried on in Boston, under the supervision of Dr. Rotch. The *New York Medical Journal* says that he has established the most complete and perfect laboratory in the world for medical supervision of this sort. Physicians, by simply writing a prescription stating the precentage of fat, casein, and sugar desired for any special case, can have it delivered daily in the form of absolutely pure, clean milk, the exact proportion of the various constituents having been determined with mathematical exactness. This must be an incalculable aid in feeding invalids and delicate children. Of course the trouble and expense to dairymen of producing "certified milk," is very great, but with conveniences once established, the profits from the largely increased price and the greater quantities which they can dispose of, will make the production of clean, pure milk pay handsome dividends.

But "certified milk" at from twelve to fifteen cents per quart is entirely beyond the reach of the class who need it most — the poor of the crowded tenement house districts of the great cities. Realizing this, Mr. Nathan Straus, whose benevolence is always practical, has opened a depot on the dock at the foot of East Third street, New York City, where the poor can get the best and purest milk from a carefully selected and inspected herd of cows in Orange County, at four cents a quart, two cents a pint, or a cent a glass. These prices cover cost, and that is all Mr. Straus aims to do. He will be remembered as the gentleman who furnished coal by the bucketful at wholesale rates to the poor of New York last winter, at a time when the local dealers were squeezing them to the last extremity. He does not believe in giving to the poor what they can pay for, thus making paupers of them, but he does believe in selling them the necessities of life at cost price.

Mr. Straus does quite a large business in disposing of milk by the glass to boys about the dock, thus furnishing a wholesome, nutritious beverage as a rival to the pernicious beverages of the saloons. Best of all, poor, sickly infants or suffering invalids find health and strength in this pure and simple food, which they can procure fresh each day in quantities to suit their needs and purses. Sterilized milk diluted with lime water, is furnished when preferred, in small bottles at one cent each, for the use of infants.

The worthy example of Mr. Straus may well be emulated by others who would render beneficent service to struggling humanity.

WHY GROW OLD ?

It may seem a curious assertion to make, but it is nevertheless an absolutely true one, that a man's life is not measured by the years he has lived, but by the way he has spent them. Many a person may be as young and active at seventy as another at twenty-five, and the length of his life, his health, and his ability to enjoy green old age, depend in a great measure on what the surroundings have been in the earlier years of his existence. It is perfectly true that every one may not be born with a strong and healthy constitution. There are certain constitutional defects that are hereditary in certain families, and these under certain circumstances may influence length of life. For instance, we may inherit the scrofulous taint, and fall victims, if not careful, in early life to consumption. We may inherit the gouty taint, and be subject to all the ills that this disease entails in middle age in those who do not learn how to diet themselves. We may be born of families in whom the tendency to obesity is more than usually developed, and this in advancing life may be a serious drawback to comfort, and will undoubtedly tend to shorten existence. But all these weaknesses and idiosyncrasies of inherited constitution may be wonderfully improved, and even, eventually, entirely remedied, if in early life proper care in regard to exercise, food, fresh air, and those surroundings which tend to strengthen the system and improve constitutional stamina, are made a part of the daily routine. A boy or girl should be trained to indulge in athletic exercises of some kind, so that the habit of taking exercise may become established, and this, once acquired, is seldom neglected even as years advance.

Much of the comfort of middle and old age depends upon early training and early feeding, and I refer here more particularly to school life. Neither mind nor body should be forced. While the intellectual faculties are being trained, the bodily requirements should be attended to. The constitution is being built up during the year that a boy is being educated for his pursuits in after life. A parent would do well, before sending his progeny to school, to see that the ventilation of the rooms, the sanitary arrangements of the school, and the diet and the capabilities for gymnastics and outdoor exercise, are adequate. These things are of as much, if not of more, importance than the knowledge of Greek and Latin.

There is every reason that, while the intellectual faculties are being trained, proper care should be taken of the material part; in fact, a boy's mind cannot be stored with information which may be useful to him in after life and the health maintained at a standard to resist disease, if, at the same time, the brain is not fed by proper food, and the constitutional stamina kept up by exercise and fresh air. If I were asked what factors would conduce to green old age, and the ability to enjoy life to past the eighties, I should say it was a matter of plenty of good food, fresh air, and exercise in early life. But alas! how few people take the trouble to consider for one moment what food would be most suitable for their particular requirements, or the requirements of their children, at a time when this is all-important! We cannot put old heads on young shoulders, but we can suggest to those who have young lives in their charge that they have a serious trust, and what their duty is in this respect.

Work of some kind or another seems essential to the well-being of the human organism. Even a machine keeps in better order when it is worked, looked after, and oiled, than when it is neglected and allowed to rust. Up to middle age, persons may indulge in any amount of hard physical exercise—that is, if they are wiry and of proper physical proportion; but if a tendency to corpulency supervenes, certain changes in the blood vessels and other organs, on whose healthy action robust health depends, take place. These become weakened and altered in texture, so that any attempt at undue exercise is attended with a certain amount of risk. Hence, any one who wishes to live to old age, and enjoy it, should look with anxiety at the first indication of corpulency.

If old age is to be put off to its farthest limits, the individual who wishes to attain it should live carefully up to middle age, taking plenty of exercise, and so adapting the diet that corpulency, gout, and other diseases due to taking too much and improper food without doing sufficient physical work to consume it, cannot be developed.

Mental and physical occupation are an absolute necessity, if the constitution is to be kept in healthy working order, and this applies equally to both sexes. The human economy will rust out before it will wear out, and there are more killed by idleness than by hard work. Human energy must have some

outlet, and if that outlet is not work of some kind, habits are acquired that are not always conducive to long life. Old age is the proper termination of human life, and, as Cicero says: "The happiest ending is when, with intellect unimpaired, and the other senses uninjured, the same Nature which put together the several parts of the machine takes her own work to pieces. As the person who has built a ship or a house likewise takes it down with the greatest ease, so the same Nature which glued together the human machine, takes it asunder most skillfully." —*Dr. N. E. York-Davies.*

CIGARETTES.— Do you care to know how they are made? I think I can enlighten you. An Italian boy only eight years old was brought before a justice in New York City as a vagrant, or, in other words, a young tramp. But with what did the officer charge him?— Only with picking up cigar-stumps from the streets and gutters. To prove this, he showed the boy's basket, half full of stumps, water-soaked and covered with mud.

"What do you do with these?" asked His Honor. What do you think was his answer? "I sell them to a man for ten cents a pound, to be used in making cigarettes." Not a particularly agreeable piece of information, is it, boys?

In our large cities there are a great many cigar-butt grubbers, as they are called. It certainly is not a pretty name, though very appropriate; for it is applied to boys and girls who scour the streets in search of half-burnt cigars and stumps, which are dried and then sold to be used in making cigarettes.

But this is n't all, nor even the worst of it. These cigarettes have been analyzed, and physicians and chemists are surprised to find how much opium is put into them. A tobacconist himself says that "the extent to which drugs are used in cigarettes is appalling." "Havana flavoring" for this same purpose is sold everywhere by the thousand barrels. This flavoring is made from the tonka-bean, which contains a deadly poison. The wrappers, warranted to be rice-paper, are sometimes made of common paper, and sometimes of filthy scrapings of rag-pickers bleached white with arsenic. What a cheat to be practiced on people!

Think of it, boys! the next time you take up a cigarette, drop it as you would a coal of fire. The latter would simply burn your fingers; but this burns up good health, good resolutions, good manners, good memories, good faculties, and often honesty and truthfulness as well.

A bright boy of thirteen came under the spell of cigarettes. He grew stupid and subject to nervous twitchings, till finally he was obliged to give up his studies. When asked why he didn't throw away his miserable cigarettes, the poor boy replied, with tears, that he had often tried to do so, but could not.

Another boy of eleven was made crazy by cigarette smoking, and was taken to an insane asylum in Orange County, New York. He was a violent and dangerous maniac, exhibiting some of the symptoms peculiar to hydrophobia.

The white spots on the tongue and inside the cheeks, called smoker's patches, are thought by Sir Morell Mackenzie to be more common with users of cigarettes than with other smokers.

"Does cigarette smoking injure the lungs?" asked some one of a leading New York physician. For his answer, the doctor lighted a cigarette, and inhaling a mouthful of smoke, blew it through the corner of his handkerchief which he held tightly over his mouth. A dark brown stain was distinctly visible. "Just such a stain," said the doctor, "is left upon the lungs." If you ever smoke another cigarette, think of the stains you are making.— *Christian at Work.*

UNITED STATES FRUITS.— There are now more than half a million almond trees bearing in the United States; there are hundreds of thousands of bearing cocoanut trees; there are more than a quarter of a million olive trees producing fruit equal to the best Mediterranean varieties. There are more than half a million bearing banana plants, two hundred thousand bearing lemon trees, four million orange trees, and twenty-one million pineapples. And the value of tropical and semi-tropical fruits grown under the American flag is nearly twenty million dollars.— *Sel.*

OIL OF SWEET ALMONDS.— The United States Consul in Liverpool recently received orders from the government to inquire into the manufacture of oil of sweet almonds in England. He reports that two London firms, whom he names, seem to be the principal, if not the only, firms in England engaged in this business. The kernels are crushed by hydraulic pressure, and from the cake thus formed the oil is distilled. The same process is carried on in Havre; but it is said that there the kernel of the peach is used instead of the almond, and that, consequently, the oil is cheaper in price and not so good.— *Evenings at Home.*

UNWHOLESOME SLEEP.—Not always is sleep "tired nature's sweet restorer." Sometimes, instead of a balm, it brings a bugaboo in the shape of the nightmare. Man is a wonderful piece of work, but his machinery may be thrown out of gear and set a-whizzing by so slight a thing as a late supper. An indigestible Welsh rarebit at eleven P. M. may result in a big suffocating black dog across his chest at one o'clock in the morning. An overplus of loaf pastry, which the gastric juices cannot conveniently assimilate, may precipitate him from a precipice in dreamland into a bottomless abyss; or a surfeit of *pâte de foie gras* send him to a Morphean gallows, there to endure all the tortures of actual strangulation. This sort of thing, by the way, is only one remove from apoplexy, and the incubus-ridden victim of inordinate and untimely self-indulgence is likely enough to be at last bestridden in his sleep by a nightmare too strong for his vitality — even death. The term *nightmare* is supposed to have been derived from *Mara*, the name of a demon which, according to the Scandinavian mythology, pounced upon men in their sleep and held the will in thralldom. The old Saxons called the distemper *Elfsidenne*, or elf-squatting. With the doctors it is *Ephialties*, from a mythic giant of that name who undertook to climb to heaven, but missing his foothold, tumbled into the fathomless depths.

Most of us have probably been convulsed in our sleep with the same sort of horror which the tripped-up Titan is fabled to have experienced during his "lofty fall" from the celestial battlements. There can be little doubt that many of the specters of the Dark Ages were *Maras* begotten of indigestion. Your Saxon gormandiser, who sometimes feasted far into the night on boar's flesh and venison pastry, washing them down with frothy mead, must have gone to bed with his stomach in a nice condition. No wonder that of the internal fermentation caused by such stuffing and swilling, hobgoblins and hippogriffs in endless variety were born. The surest way to avoid the nightmare, and procure that sound, healthful repose with which each day's life should be "rounded off," is to live temperately, regularly, and honestly, ay, honestly, for a troubled conscience, as well as an overladen diaphragm, may engender evil dreams.— *Sel.*

"AND what did the doctor say was really the matter with you?"

"Well, Miss, his very words was, 'You are sufferin' from a guitar in the stomach, with a great want of tone.'"— *Med. Brief.*

THE BEST DISINFECTANTS.—The old saying that dirt is healthful, no longer holds its ground in the light of modern research. Not all dirt is actually disease-producing, it is true; but all places where filth accumulates, or where there is decaying matter of any kind, are very likely to afford abode and sustenance to any disease germs which may be floating about in the air. Here they multiply and wax strong and lie in wait to attack the first animal or human being that comes along, whose vital forces are not strong enough to bar the entrance of these microscopic enemies. No soiled clothing should lie about sleeping apartments, no rubbish should accumulate in the attic, no rotten rags under the sink, no decaying vegetables in the cellar, no soiling matter or dust anywhere. Disease microbes do not crawl about actively like flies; they are invisible, living, organic dust, and can often be gotten rid of as such. The greatest sanitary safety lies in absolute cleanliness.

Powerful disinfectants are mainly useful in the hands of a reliable person, when disease actually exists in the house; but they lose much of their effect, unless all that can be done in the way of cleanliness has already been accomplished. They are substances which, in the liquid or gaseous form, are intended to meet and destroy all living disease microbes which may be floating in the air, lodged in the belongings of the sick room, or which cling to the person or exist in the discharges of the patient. For all ordinary household sanitation, the mistress would better confine her efforts to bringing her house, its furnishings, and its surroundings into a condition as near to perfect cleanliness as possible.

In the prosecution of this sanitary work, sunshine and fresh air are also valuable aids. Direct sunshine is generally believed by investigators to be hostile to many disease microbes. If this be true, there is one more reason why sunshine should be freely admitted to all our rooms. Volumes of fresh air are extremely useful in sweeping out the microbe-laden air of dwellings, and especially rooms which have been used as sick chambers. In fact, the housewife has always three powerful assistants at hand, by whose aid she may largely prevent the entrance and spread of disease in her home,— soap and water (especially at the boiling point), plenty of fresh air, and floods of sunshine. These are ordinarily the best disinfectants.— *Good Housekeeping.*

LIFE is real, life is earnest,
But it might be more sublime
If a man were not kept busy
Dodging microbes all the time.— *Sel.*

THE PUBLIC HEALTH.— The public health is a great public concern. It is the people's cause. It appeals not only to the wage-worker and the bread-winner, but to those of all classes and conditions of society. Whether we will or not, the physical stamina of a nation to a great degree determines its intellectual and political status. A weak man or a weak woman may do great things. But the old age of nations requires robustness. If this is not fostered and continued, the nation itself dies or is crippled in comparative youth. It is the record of the Romans that they showed physical before they did intellectual or moral decadence. It is a great political and social question, and one for wise statesmanship to consider, how the physical welfare of a people is best to be promoted. Labor is healthful, but if allowed its way, goes on under many enforced conditions prejudicial to vigor. Recreation is healthful, yet it may be so conducted as to lead to an ease as ignoble for the body as for the mind. Food is healthful, but it may be so indulged in as to wreck and ruin the noblest framework. Sleep is healthful, and yet the sluggard may need to go to the ant, not only to learn wisdom, but to find an animal living in accord with the laws of its being. It is high time to realize that the great national problem is at hand,— how to preserve the health of the people. Study it as bearing on happiness and contentment, or on intellectual and moral productivity ; it is far beyond astronomy, botany, mechanics, or the ants. Study it as an economic factor, and it is appalling, not only in view of sickness and death, but of the reduced vitality that remains to the nation that survives.— *New York Independent.*

CONFESSIONS OF A MIDDLEMAN.— "What becomes of the old and spoiled poultry ?" we asked of a man formerly in the commission business.

"What, the 'fruit'? That 's what we call poultry too ripe to sell to a man with a good nose."

"Yes, where does it go to ? "

"Most of it is worked off at a big profit by Cheap Johns, who buy it up on purpose."

"How do they get people to buy it? "

"They stick up a sign offering poultry very cheap. Some economist comes along and picks out a good bird. The dealer is very anxious to wrap it up just right, and takes it behind the counter to do a neat job. Out he comes with a fine package, and the buyer goes home thinking he has made a bargain that will tickle his wife to death. When he opens the package that bird is strong enough to knock a man down, and they have to throw it away. How was it done? Simply enough. He did n't get the bird he picked out at all. That dealer had a lot of 'fruit' under the counter all nicely packed. While the customer's eye was turned he slyly substituted the 'fruit' for the good bird. Very likely he gave him short weight, too, by having a fine wire running from the bottom of his scales where he could press it with his foot. When the customer comes back to make a row about it, the dealer 'never saw him before in his life !' "

"Is that the worst of it ? "

"No, lots of this 'fruit' is eaten. Cheap restaurants buy it, pack it in charcoal, and then make it into salad and similar dishes. It all goes — with plenty of mustard. I once sold three tongues every day to a restaurant keeper. One day he said : —

"One of those tongues was a little rank."

"Well," I said, "we' ll make that good — take another !"

"Oh, no ! " said he, "I just put a little extra mustard on it, and nobody tasted the tongue ! "— *Sel.*

HENRY WARD BEECHER ON EATING.— On being asked how he could perform so large an amount of work with apparently so little diminution of strength, Henry Ward Beecher once said : "I attribute my power of endurance to a long-formed habit of observing, every day of my life, the simple laws of health, and none more than the laws of eating. It has become a second nature to me. It ceases any longer to be a matter of self-denial. It is almost like an instinct. If I have a severe tax on my brain in the morning, I cannot eat heartily at breakfast. If the whole day is to be one of nervous exertion, I eat very little till the exertion is over. I know that two forces cannot be concentrated in activity at the same time in one body. I know that when the stomach works, the brain must rest, and that when the brain works, the stomach must rest. If I am to be moving around out of doors a good deal, I can give a fuller swing to my appetite — which is never exceedingly bad ; but if I am engaged actively and successfully in mental labor, I cannot eat much. I have made eating with regularity, and with reference to what I have to do, a habit so long, that it ceases any longer to be a subject of thought. It almost takes care of itself. I attribute much of my ability to endure work to good habits of eating, and constant attention to the laws of sleep, physical exercise, and general cheerfulness."

HORACE GREELEY was a vegetarian for many years. Wendell Phillips was a vegetarian for fifty years, never eating meat unless he was compelled by the lack of other food.

HOW NOT TO BE FAT.

BY J. H. KELLOGG, M. D.

Address delivered at the Bay View Assembly, July 28, 1893

(Continued.)

Now what is the harm in getting too fat? Just consider the condition of a person who is over-fat. A man who weighs forty or fifty pounds more than he ought, is obese. What is his condition? First of all he is overloaded. This fact may not be so apparent, for the over-fat man may not look as though he was badly over-burdened. But take this forty or fifty pounds of fatty tissue away, and in its stead put on his shoulders forty or fifty pounds of iron or sand bags, and make him carry it about with him everywhere he goes, and he will make a bitter complaint about it; you would say he was very badly treated. Here is a man who formerly weighed 150 pounds. He ate more than he consumed, and there began an accumulation of adipose tissue. That is the way people get fat. It is not by a growth of bone and muscle, of the glands, brains, or nerves, but simply by an accumulation of adipose tissue,— of reserve material. Our man now weighs 300 pounds, but ought to weigh only 150 pounds. What is the result? He is carrying on his shoulders another man who weighs as much as himself; not a live man who might assist a little, perhaps, but a dead man. Wherever he goes, up stairs or down stairs, whether walking, running, sleeping, swimming — wherever he goes, he is carrying on his back this dead man weighing as much as his real self. If the fat man weighs three times his ordinary weight, and such cases are not unknown, then he has to carry two other men of his own proper weight. This dead weight hinders his movements, indeed it hinders every vital process. It is not the external man alone that is overloaded, hampered, and clogged, but every little muscular fiber is loaded with fat; fat is in the way everywhere. This over-fat man is so packed with fat that he is literally stuffed. His skin was made for a man half his size. Everything inside is cramped and crowded. He has been packed, and packed, and packed, fuller and fuller constantly, until every nook and corner of his body, every tissue, has been wedged full of fat; and the muscles as well as every other moving organ are greatly hindered in their action. His movements are restricted and slow, and he is quickly tired.

This is not the worst of it. When we come to look into the tissues of the over-fat man, we find that this overloading and crowding extends everywhere. It is not only in his muscles, but there are accumulations of fat in and about his liver. Some years ago I visited, at Strasburg, an establishment where they produce the famous *pate de foie gras* which some of you have tasted at the hotels. I do not suppose you use it at home. At a hotel, some people feel that they must eat the whole bill of fare, in order to get their money's worth. They help themselves to *pate de foie gras* because it has a French name, not appreciating the fact that it is a paste made of the livers of sick geese. The geese destined to supply our gourmands with *pate de foie gras* are shut up in a dark room. Years ago the geese were arranged in a row with their feet tacked to a plank, one plank being placed above another against the wall. Then their eyes were put out; by this means the geese were kept very still and made to lead a

sedentary life. An old woman goes around once every two hours with Indian meal mush, which is made up into little pellets. She puts a few of these pellets into the mouth of each goose, and crowds them down into its stomach with a stick. In this way the geese are stuffed. By and by, by continual over-eating, the goose becomes obese, its liver as well as other organs become filled with fat. In like manner the liver of the obese man is infiltrated with fat, and the liver shows this upon an examination after death, as I have verified with the microscope.

Other organs still more important are also overloaded. The heart is encumbered with fat; not that its fibers are necessarily changed into fat, but they are covered with fat. The heart, when loaded with fat, may be one half larger than it should be. There is also an accumulation of fat in the chest. Then there is the pleura, which lines the chest. I have seen cases in which the fat was half an inch thick on the pleura; sometimes it is an inch thick. A barrel which is lined with ice an inch thick will not hold its full capacity. The same thing happens to the chest, with the heart and pleura in this condition. When there is an accumulation of one inch, or a half inch, or a quarter of an inch, on the inside of the chest, the chest cavity is diminished in capacity by just so much.

There may be still further accumulation of fat within the trunk cavity. Below the diaphragm we have a curious structure called the omentum, which is a sort of apron for the protection of the intestines. It is attached to the border of the stomach, and hangs down over the intestines. Now this omentum is a favorite place for useless fat. Although usually as thin as the thinnest gauze, and transparent, I have sometimes seen, in operations for the removal of abdominal tumors, the whole omentum filled with fat two inches thick. Thus the diaphragm is crowded up by the increase of the contents of the abdominal cavity, and there is not room for it to descend in respiration.

Now you see what an unhappy situation the over-fat man is in when the whole body is overloaded with fat. Sometimes there is also a fatty degeneration of the muscles in consequence of fat in the blood. The muscles of the heart are changed to fat; the muscular walls of the arteries are changed to brittle fat; and the liver is changed to fat. In fact, the process of fatty degeneration extends to the whole body, so that the obese person is really in a dangerous condition. The over-fat man is weak because his muscles are degenerated, and at the same time he is overworked by the dead weight that he must carry with him wherever he goes. Any person finding himself getting over-fat, should consider it a very serious matter, and one to which he should give immediate and careful attention.

Now let us consider some of the causes of this over-fat condition in which we find so many people at the present day. First of all, I may mention overeating. To return to our illustration of the locomotive: If it takes on more coal at the second station than it has used since leaving the last station, and goes on increasing this amount of coal from station to station, the tender will at last begin to run over with coal. The skin is so distensible that the reserve tissue may accumulate enormously, until the material taken equals as much as the whole normal man, sometimes even two or three times as much as the original man.

Overeating is without question the most important cause of obesity. I fancy I hear some one saying, "You are certainly mistaken about that, for although I am over-fat, I surely do not overeat. Nevertheless, I must maintain my proposition. Overeating is wholly a relative matter. The lumberman who chops all day in an atmosphere in the neighborhood of zero may consume in work and heat production two or three pounds of solid, water-free food; while the sedentary business man, sitting at his desk and riding to and from his office in a carriage, may not be able to burn up more than one third as much. In any person eating more than he uses, the unused balance will be deposited as reserve tissue, or fat. The amount of this unused material accumulated, is the true measure of his overeating.

Here is another important cause of obesity: It is readily seen that if a person takes in more food than he can utilize in heat and force production, that excess will be deposited as reserve tissue, and the man will become over-fat. In this way sedentary habits — too little exercise — become indirectly a most common cause of obesity. We find the savage eating enormously, yet he does not become very fat. When he gets an opportunity, he gorges himself like an anaconda, but apparently he does not suffer any inconvenience from this overeating, because his life is an active one, and he uses up all the fat so that there is no excess of reserve tissue. I have been among the Indians in Arizona, Washington, British Columbia, New Mexico, Indian Territory, California, and Old Mexico, and I have rarely seen a very obese Indian. But we find obesity occurring among sedentary people. We see it among our city officials, the City Fathers, but not among the men who dig ditches and pave the streets.

Sometimes a doctor who has reached the age of sixty or seventy, and has acquired what is called an office practice, becomes obese. He does not have his accustomed exercise in running up and down stairs attending to his patients, but goes from his office to his carriage, and from his carriage to his house; and from his house to his carriage, and from the carriage to his office again. Thus he is either riding or sitting constantly, and he becomes obese. It is among sedentary people that we find obesity. The small-footed Chinese woman who makes a cripple of herself, and who hobbles about on her great toes when she attempts to walk at all, and hence walks but little, often becomes fat. But as I stated, among savages we do not often find obesity. And we do not find it among the great buffaloes of the West, or other wild beasts. It is the great oxen which are exhibited at our fairs, which are fat. This condition is produced by artificial cultivation, by shutting the animal up, stuffing it with food, and depriving it of exercise.

We seldom find obesity among women who scrub floors and get a living at the washtub. Such persons never need doctors or medicines to make them thin. The men who are fat are not those who dig ditches and build our railroads and toil and labor hard with their whole bodies. The vigorous exercise of the day-laborer brings the whole body into energetic play. There is once in a while an exception to this rule. We do now and then find a bustling farmer or farmer's wife who is over-fat. He has probably overeaten enormously, or if not, it was a father or a grandfather who was a glutton; for there is another cause of obesity, namely, heredity. This is not a very common cause, but it is one cause of obesity. People inherit a tendency to obesity the same as they inherit scrofula, rheumatism, and gout. We suffer for the sins of our ancestors. The Autocrat of the Breakfast Table says, "Each one of us is an omnibus in which ride all our ancestors." There may be a glutton or an idler riding in our omnibus, and although we may not be guilty of the sins which cause this accumulation of dead weight, we must suffer in consequence of bad inheritance.

It has generally been observed that it is at the period of life when the individual becomes less active, that the fuel of the body, not being consumed as formerly, is accumulated as reserve material in persons who have a hereditary tendency to obesity. This is exactly as it would be with a locomotive if it remained quiet in one place instead of pulling the train, coal being supplied at the same rate as when running. It does not use up the coal in work, consequently the coal accumulates.

Thus far I have spoken of general obesity. There is a form of obesity which is particularly troublesome, and which is, perhaps, more common and more annoying than general obesity. It is local obesity, an accumulation of flesh in some particular part of the body. We sometimes find a person with a mass growing upon the shoulders, the thigh, or the cheek,— a mass of fat assuming the form of a tumor, which may be removed by a surgical operation. More frequently we find local accumulations of fat that are not tumors, but which are due to local conditions which favor the accumulation of reserve tissue. This accumulation of fat sometimes occurs about the thighs and chest, but it is most likely to be found in the abdominal walls. When it appears in this portion of the body, the figure becomes very portly and unsightly. It is those whose lives are sedentary, who become obese in this way. Cavalry men sometimes become abnormally obese and portly by an accumulation of fat about the trunk, because they lead what has been termed a "sedentary life in the saddle," for riding on horseback is not a very vigorous exercise, unless one rides over very rough roads and jumps ditches or fences pretty often. People who habitually sit are likely to get this accumulation of fat about the abdomen, as we see illustrated by the "official class" in our cities, the fat aldermen.

Now what is the cause of this local accumulation of flesh? — It is due to muscular inactivity of this part of the body. You never see a very active person with very obese limbs. A person may be very full about the trunk and yet the rest of the body be free from a very great accumulation of flesh. The reason of this is that those parts of the body which are active, consume by work the material which is brought to them. Now all the material furnished to the different parts of the body, to the arm, for example, is carried through blood-vessels.

If all the material brought to the arms through the blood vessels is used up in muscular activity, there will be nothing left to be deposited as surplus tissue, so there will be no accumulation of fat about the arms. Adipose tissue accumulates about the trunk for the reason that in this portion of the body the muscles are likely to be least used. Persons who do not use the trunk muscles, who sit a good deal, so that the muscles of the abdomen are relaxed and not active, are likely to become fat. Those who undertake to combat this condition by girding the

waist, make a great mistake. Everything that is done by such means to prevent the accumulation of fat, will be very likely to have the opposite effect, as compression of the muscles will increase the muscular inactivity.

The trunk is made no smaller by compressing the waist. It is made smaller at one point, but larger at another. It is not like the compression of a sponge, it is like the compression of a rubber ball. All compression of the waist necessarily causes an increase of volume below the waist, because the effect of this compression is to press downward the bowels, stomach, and other organs.

Many of those who undertake to combat a supposed surplus accumulation of flesh about the trunk, are simply combating a relaxed condition of the abdominal muscles, which allows prolapse of the viscera. This prolapsed condition of the stomach and bowels and the protrusion of the lower abdomen is supposed to be an accumulation of flesh, whereas it is simply a relaxed condition of the muscles, allowing the falling down of the internal organs. In view of these facts, it must be clear that the more the waist is compressed, the greater is the muscular inactivity and the greater the accumulation of fat. Follow the banks of an active stream, and wherever you find an obstruction of the current, as a rock or a log jutting out into the water, you will see a little eddy, and a quantity of chips, sticks, etc., will be moving around in the eddy. Just so it is with the vital currents of the body. Wherever there is insufficient activity, there will be an accumulation of waste and residual matter in the inactive places. There will be an accumulation of fat in such parts, because the blood is not used for any useful purpose, and so it is deposited as adipose tissue. This point I have often seen illustrated in practice.

(To be continued.)

PREVENTION OF CONSUMPTION.—I think it is evident that proper development and expansion of the lungs by means of well regulated breathing must be regarded as of the greatest value in the prevention and in the treatment of the inactive stages of pulmonary consumption, says Dr. Thomas J. Mays in the *Century*. The more simple the method, the more effective and practical will be the results which flow from it. Among the many exercises which are recommended for this purpose, the following movements are very valuable: The arms, being used as levers, are swung backward as far as possible on a level with the shoulders during each inspiration, and brought together in front on the same level during each expiration; or the hands are brought together above the head while inspiring, and gradually brought down alongside the body while expiring. A deep breath must be taken with each inspiration, and held until the arms are gradually moved forward, or downward, or longer, in order to make both methods fully operative.

Another very serviceable chest exercise is to take a deep inspiration, and, during expiration, in a loud voice count or sing as long as possible. A male person with a good chest can count up to sixty or eighty; while in a female, even with good lungs, this power is somewhat reduced. Practice of this sort will slowly develop the lungs, and the increased ability to count longer is a measure of the improvement going on within the chest. Or again, the taking of six or eight full and deep breaths in succession every hour during the day, either while sitting at work, or while walking out in the open air, will have a very beneficial effect.

The breathing of compressed and rarefied air is attracting wide attention at the present time in connection with the prevention and the treatment of pulmonary consumption, and is another mode wherewith the chest capacity can be decidedly improved. When air is breathed in this manner, there is felt during each inspiration a gentle distension of the whole chest, while during expiration a feeling of emptiness is experienced.

Consumption is not a disease which originates in a day, but it is the outgrowth of morbid habits and agencies which may even antedate the birth of the individual. Defective breathing is one of these habits, and its pernicious prevalence is more widespread than is generally supposed.

"DISCIPLES of Delsarte may not be willing to admit it," says a physician of good standing, "but the duties of housekeeping — sweeping, bread-making, ironing, making beds, etc. — are the best ways in the world to develop the muscles."— *The Old Homestead.*

A GYMNASIUM for girls has been opened at Weimar, Germany. This is the first step toward introducing higher education for women into Germany. Princess Theresa, of Batavia, has been one of the foremost spirits in promoting it.

Home Culture

THE MINISTRY OF SUFFERING.

BY DR. MARY WOOD ALLEN.

[Extract from a Lecture delivered in the Sanitarium, July 30, 1893.]

THE mystery of pain presses upon us all. We see suffering, sorrow, and disease upon every hand. What does it mean? Christ, we read, was made "perfect through suffering," and perhaps it has lessons for us which we cannot learn in any other way. About thirty years ago I was upon the verge of the grave, and sought refuge at an institution of this kind. While there, I learned a good many things. One was that it was not through drugs or doctors that people were restored to health, but through their inherent *vis medicatrix naturæ*—that is, their vital force. Some have enough to insure complete recovery, while others can only reach a state of semi-comfortable invalidism; some have enough to gain rapidly, others very slowly. The processes of nature are usually slow, so do not be discouraged if you gain slowly. Put a seed into the ground, and it takes it a long time to develop. One who knew nothing about the matter might laugh at the farmer who sowed his wheat in the fall, for when the ice and snow cover the ground, the labor and the seed seem alike wasted. But the warmth of the spring time brings forth the tender blades, and the summer harvests justify the farmer's confidence.

Another lesson I learned was that we are often made worse before we are better. It might be compared to house cleaning. When in the midst of the process, it appears as if bad matters were only made worse, but we can school ourselves to bear a little present discomfort when we understand the satisfactory results which are to follow. Those of us who are to get well may look forward to going into the world with increased knowledge of the laws which govern our physical well being, and an experience which will bring us nearer to all who suffer. We may indeed learn to "bless the sorrows which have brought others' griefs so near." I suppose Christ himself would not have been able to do what he now can do for us, except for his life on earth and the trials and suffering which made him perfect. God can make even the wrath of man to praise him, and out of this suffering, which perchance we have brought upon ourselves, may yet come a rich blessing. So Paul says, "Our light affliction, which is but for a moment, worketh for us a far more exceeding and eternal weight of glory."

But there are others who may never recover the health which they have lost. Some may reach comparative comfort, while others must lie helpless and be waited upon, and their hearts are even now weighed down beneath the heavy trial. But life may still hold very much for even these. Some one has said that every person who is prepared to be a great helper and minister to others, must first be called apart for solitary schooling. The Shut-in Society presents many noble and notable instances of the hallowed influence for good which may radiate far and wide from the chamber of some lonely sufferer. Think of what Jennie Cassidy was enabled to accomplish in her twenty years of bedridden life.

One rainy summer's day, up in the Adirondacks, a number of summer visitors were lounging about and grumbling at the weather, when a distressed looking cripple came up and opened a pack of cheap, common articles, like pins, needles, and tape. The most of the guests thought only of themselves, and refused to buy, but noble Mrs. Garrison, of Camden, New Jersey, who has helped so many poor "Shut-ins" to help themselves, thought of the poor man instead of herself, and proceeded to sell out his goods at two or three times the values which he had put upon them. Ten dollars were counted up at last,

and the man's gratitude was boundless. He had never had so much money before at one time, and said it must have come in answer to prayer, for he had an invalid daughter who was pining for books, and there was a poor family just burned out near by whom he wanted to help. Every year since that time, the bedridden daughter of this crippled father has been sent a box of books, and that lonely farm house has become a center of literature for miles around, doing incalculable good.

Every deprivation carries with it some compensation. The eyes of Milton were shut to the glories of the earth, but his heavenly visions are a light to all the generations which have succeeded him. Beethoven's ears were closed to earthly sounds, but they heard glorious harmonies which entrance us still. Bunyan would have been nothing but a poor tinker but for Bedford jail. Every great soul must be shut away with God for a season. Moses learned his best lessons in mountain fastnesses where he talked with God. David must first be the lonely shepherd boy before he can become the sweet singer of Israel. Christ worked for thirty years as an obscure carpenter to prepare him for his mighty work. "God gives his best scholars the hardest lessons," is a saying of Seneca, and those in the midst of heavy afflictions and trials may console themselves with this thought. If a teacher should say to us, "Here is a problem which I think no one but you can solve," would we not take it as a high honor, and labor ceaselessly upon its solution until it was reached? So with the trials of life, may we not take it as a mark of God's confidence in us that we are called apart to struggle with special problems? Let us look about us for what God wants us to do, and do something and do it now. Even the most helpless may serve mightily. It may be we are but to hold still and wait, and we shall find that the hardest task of all. How often we are enjoined to "Wait on the Lord," "Stand still," and "Rest in the Lord." If we can learn to do this, he will never fail us.

SLOYD WITHIN A CIRCLE.— NO. 11.

BY MRS. M. F. STEARNS.

All children of the kindergarten are familiar with the pleasant rhyme,—

"O where are the merry, merry little men
To join us in our play?
And where are the busy, busy little men
To help us work to-day?
Upon each hand a little band
For work or play is ready;"

and then each little worker is named down to the "baby little finger," who is always the pet in this very busy family.

Perhaps, however, the "mammas" never stopped to consider the pleasing opportunity this offers for teaching the children about the character houses these busy little men are helping them build, that everything they do is like a tiny brick laid in its place; and so the walls of these houses are growing higher and higher all the time, and soon they will have built so much that it will be very hard to pull down and build over again, if it is not done rightly.

So the little men must be very careful how they work. Their houses must not be like the one that Jack built, or the crooked little house that the crooked man lived in; but they must be straight and true within and without, with no wrongsides anywhere about them. They must not think that "because no man sees, such things will remain unseen."

The idea of self-control can also be easily worked in here, by telling them of the wonderful master who trains these ten busy little men, of how, though he

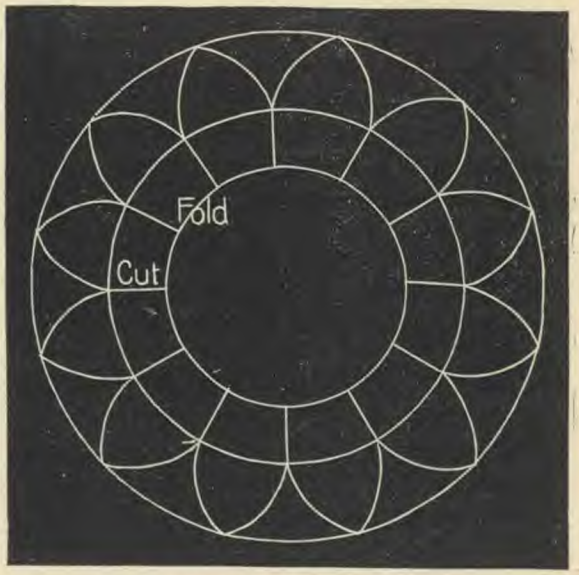

FIG. 31. MODEL NO. 14. WORKING DRAWING.

does not exactly live with them, he sits up in his little round house and telegraphs down to them just *what* he wants done and just *how* he wants it done,

and so the little men have a very merry, busy time of it by seeing who will obey him the quickest.

What our fingers can be to us in working out our mental pictures is really surprising. They can be under such perfect control of the mind as to be

FIG. 32. LILY-SHAPED COLLAR AND CUFF HOLDER COMPLETED.

akin to sight. This is illustrated in Vidal, the blind French sculptor, who was such a remarkable critic. "Keep still," the artist would say, "Vidal is going to feel of my statue." It is this sense of feeling that we want to cultivate in the children's fingers, and there is certainly no reason why, without becoming blind, we cannot have a little more of it, and add to our two eyes what Vidal called his "ten eyes."

In Model No. 14, draw within the twelve-inch circle, one with a four and one fourth inch radius; divide this into twelve equal parts by spreading the compasses two and three sixteenth inches and laying off the circumference. With compasses spread the same distance, draw intersecting arcs to outer circle, then within the smaller circle draw another still smaller with a radius of two and five eighths inches. With a ruler, draw lines from this small circle to the second circle, where each two leaves meet. Cut on these lines, and cut out the crossed portions, fold the leaves thus formed on the smaller circle, and tie with silk, allowing the leaves to overlap a little. This forms the cuff holder, which is placed inside the collar holder, the latter being made in the same manner, except that the leaves are cut only to the first circle, and folded on the same. The collar holder is then glued in the center, the effect produced being that of a water lily, with the cuffs in the center and the collars between the center and the outer petals.

THE REWARDING OF CHILDREN.

IT seems at first sight a much easier thing to reward children than to punish them. It is certainly infinitely more pleasant, and yet the chances of doing them harm in the process are as great in one case as in the other. Injudicious rewarding is almost, if not quite, as pernicious in its effect upon a child's character as indiscriminate punishing. The formation of character is the end and object of all our efforts on behalf of the child. We do not wish so much to compel him to do right at any one time as to train him so that he will desire to do right at all times. We can, to a certain extent, govern his actions, but this is not the most important point. Our fundamental task is to implant in him principles and motives which will enable him to govern them himself, and to insure that they shall always at least "make for righteousness."

Does the giving of material rewards help or hinder this development? This is an anxious question for the conscientious mother who is trying to help her child to help himself. As we are creatures of habit, it seems from one point of view that if we can establish good habits by any means, we are justified in using them. We argue that the habit of right-doing will remain long after the steps by which we ascended to it have been swept away and forgotten. In dealing with children we must remember that processes are results in their effects on the plastic minds. If we lead them to do right by holding out a reward which they are to obtain if they succeed, we have taught them that the tangible possession is the thing to strive for, and the "being good," or doing right, is only the means by which it is attained. Is this likely to strengthen or weaken their moral fiber? When we are no longer at hand with some solid allurement to make virtue profitable, will they not follow their own inclination, regardless where it leads, if by so doing they can grasp a pleasure? The bias that we give to the mind of a child is not easily reversed. As he grows older, and his views of life widen and change, he may, with infinite painstaking, unlearn some of the lessons that he learned at his mother's knee. There will still remain deeply graven in his mind and heart, affecting the whole trend of his character, those cardinal points which her daily conduct in his early years has impressed there. She makes his standards, ought she not to see that they are worthy ones? Preaching to him will not do it, nor even taking him to hear sermons. Nothing will but the constant leading him upward along the path of right endeavor. Implanting principles is like sowing seeds; many fall on barren land and stony places

and produce no fruit, many die and wither away without apparent result. If the process is continued in faith and patience, enough germinate to bring forth high aims and noble fulfillment.

It is never wise to bribe a child to perform a plain duty. There are many motives to be appealed to, and we should be cautious how we substitute a lower for a higher one. When bedtime comes, it is often a struggle for the small people to go off pleasantly and promptly. When we elders have to do things not at all more disagreeable to us, we indulge in some murmurs — audible or otherwise — and a good deal of self-pity. It is not to be expected that our juniors will take up their burdens with more cheerfulness than we do ourselves. Yet as soon as they are old enough to understand anything, they may be greatly helped, or hindered, in doing it. "It is time for Charlie to go to bed now" ought to be enough to persuade him to do so without difficulty. But just as we ourselves sometimes fail to respond to the call of duty, so there will be moments when Charlie feels that his desire to sit up longer entirely overpowers his wish to obey, and he refuses. What is to be done in this case? His mother can probably induce him to go to bed by means of a piece of candy or a promised pleasure, but the next time the question arises he will be less able to do right unaided than he was at first. His mind will naturally revert to the bribe, and he will want another. A quiet talk, gentle argument and persuasion, impressing upon him that every one has to do disagreeable things sometimes, because they are right, will usually prove effectual; if not, it becomes a matter of obedience that must be enforced even at the cost of pain. If we can enlist the will on the side of right-doing, so that the child shall conquer himself and yield a willing obedience, we have accomplished much.

When medicine is to be given, the administration of it should be made as little unpleasant as possible. This is only common humanity. Yet it is not well to say, "Take the nasty medicine and you shall have a spoonful of sugar." It is better to suggest that "brave boys swallow medicine without making a fuss, because it is not manly to complain about little things, and though it is not nice, it is meant to do good." This thought will arise when the dose has to be repeated, and will help to sweeten it more effectually than sugar.

We must try to teach these little soldiers we are training for the battle of life to endure hardness. In this self-indulgent age this discipline is especially needed, and once this power is acquired, it saves the happy possessor from many of the pin pricks that torture those who resent every scratch.

It is touching to see how quickly and surely an unspoiled child responds to an appeal to his better self. For him, as for us, —

> "So close is glory to our dust,
> So near is God to man,
> When duty whispers low, 'Thou must,'
> The soul replies, 'I can.'"

It is a fearful responsibility to substitute any other plea for the right — the righteous one — "You must because you ought."

The trouble in too many families is that the training is not begun early enough. The children are allowed to form habits of disobedience and self-indulgence, and when the consequences of these become unpleasant, the mother tries to break them off by bribes of one kind or another.

Recognizing at last that her child has faults which ought to be cured, the injudicious mother tries to obtain the desired result, not by eradicating the root of the mischief, but by cutting off a shoot here and there. Instead of talking plainly and lovingly with him, teaching him to see that it is a sin he must fight against, and showing him where he can go for help, she bribes him to overcome some special manifestation of it. She rewards him for being prompt at meals, or for getting up early in the morning, or for not teasing his sisters. The selfishness is only turned in another direction, not one step has been taken toward uprooting it.

Is there no reward that we can safely offer to cheer them in the contest beside the abstract satisfaction that comes from a sense of duty done? There is one very potent one. In a household where love rules, and there is perfect confidence between parents and children, it is stronger and more compelling than any that can be devised. This is the warm approbation and loving approval of those in authority freely bestowed when it is deserved. We have all felt our hearts thrill at a word of praise from those we love. No effort has seemed too great to win again the smile of pleasure or the expression of satisfaction that gave such deep delight. Weariness we count as naught, trouble we do not recognize as such while we are striving to call it forth. A few syllables of appreciation and gratitude, one look of love, repay us a thousand-fold for all that we have done.

Few of us realize what a mighty spur to well-doing is contained in words of loving praise, or how we sin against those nearest to us in withholding them when they are deserved.

As the children grow older and begin to go to school, the subject of rewards comes up in a new shape in the form of prizes. There are two ques-

tions that must suggest themselves to every thoughtful mind in this connection: What is the object of prizes, and is this object attained by giving them? Of course, it is supposed that with this incentive, children work harder to acquire knowledge, and make greater progress than they would without it. They are not offered for the benefit of one or two, but as a stimulus to the whole school. Usually very early in the race it is seen that a few of the quicker pupils are far in advance of their competitors, and the contest is practically between them alone. The rank and file feel that they have no chance of winning, and so settle down contentedly to their own slow pace, as unaffected by the prizes as if they had been swept out of existence. Those in front strain every nerve to gain possession of the much-desired trophy. They study with feverish eagerness, not for the love of knowledge, nor the wish to possess it, but that they may distance their companions in the struggle. Only one can succeed, and more often than not, this one gains the first place by some fortunate accident. The second may tread close on his heels and in reality be as deserving of reward as he who gets it. This gives rise to jealousies and heart-burnings, accusations in the mind of the child, if not elsewhere, of unfairness if he is defeated, creating an atmosphere most unfavorable to real advancement.

If study is made so attractive to children that they will learn from the desire of knowing, they will need no other incentive than to be allowed to pursue it. That this can be done has been abundantly shown in the kindergarten. Learning, instead of being a wearisome task, becomes a fascinating and delightful employment. As they advance, difficulties will present themselves, but to the mind that has been properly trained from early childhood, these will only be a challenge to closer application, and the overcoming them its own compensation.

Prizes for good conduct may help to keep the schoolroom in order, that is, in the outward decorum which is desirable. They carry into effect the old proverb that honesty is the best policy, as if there were no such thing as being honest for honesty's sake, and while they may regulate the behavior, they must injuriously affect the character.

It is no generous rivalry that is fostered by offering prizes to children. Let us depend upon awakening their ambition by other and purer means, permitting them to taste the sweets of well-doing for its own sake; leading them on by every method in our power to understand that virtue is its own reward, not a scanty but an exceeding great one, and strengthening them, as far as our earnest efforts can do so, to follow it ungrudgingly.—*Elizabeth Robinson Scovil, in Ladies' Home Journal.*

FALSE MODESTY A CRIME.

THE majority of parents and teachers assume a frightful responsibility in refraining from making known to the youth of both sexes the terrible consequences of sexual vice. Vast numbers of boys are allowed by their fathers to go out into the world subject to overpowering temptations on every side, without a word of warning or of instruction upon this vital subject. The mothers of girls are almost equally guilty in this respect. I say guilty, deliberately; for I esteem it a crime, beside which many so-called crimes are innocence itself. There are in every community debased women who seek to lure boys to destruction, and we send out our innocent sons to meet them without arming them with that knowledge which is their only safety; without that salutary fear which even a slight acquaintance with the terrible and far-reaching effects of vice would inspire in their young minds. Our young daughters, also, we send into the lairs of ravening wolves, without that vital instruction we are too modest to give them. It is not true modesty which deters us. Surely that is a false delicacy which is shamed by speaking of the mystery of life in a proper manner to a child.

But not only do we hesitate to speak to children of these sacred natural truths ourselves, but we leave them to be vulgarly instructed by low-minded companions. And these teachers always omit what in truth they seldom know, the consequences which follow vicious indulgence. Parents who do not entirely refrain from instruction, sometimes omit this. They have a blind faith in their own children, in the instinct toward virtue which is really in most children of virtuous parents, and which is the only salvation of multitudes. But it is not safe to trust this too far. It needs to be enforced by knowledge. Only those stern principles grounded in science, which have been built up with infinite care from early childhood, will avail if temptation has a chance to do its worst. The eternal demand in nature for purity, and the inevitable penalty of impurity, in lasting disease and suffering and disgrace,

cannot be too strongly impressed upon every child, in very early life. Whoever shirks this duty does a wrong whose far-reaching effects cannot be measured, to the child under his care. Is there a man or a woman among us who does not know some sad story of the results of youthful ignorance? Who has not seen some victim of his parent's false modesty go through life with a curse upon his head? The heedless and unthinking may not have noted these things, but surely every thoughtful person knows enough of them to embitter his own life, and to make him cry aloud in warning to every youth within his influence. Let us urge every parent and teacher to impart the knowledge of good and evil to those intrusted to their care, so that no souls may be lost through ignorance of what they should have taught.— *Hattie Tyng Griswold, in Woman's Journal.*

BETTER WHISTLE THAN WHINE.— As I was taking a walk one day, I noticed two little boys on their way to school. The smaller stumbled and fell, and though he was not much hurt, he began to whine in a boyish way, not a regular roaring boy's cry, as though he were half killed, but a little cross whine. The older boy took his hand, in a kind, fatherly way, and said :—

"Oh, never mind, Jimmy, don't whine ; it's a great deal better to whistle."

And he began in the merriest way a cheerful boy whistle. Jimmy tried to join in the whistle.

"I can't whistle as nice as you, Charlie," said he ; "my lips won't pucker up good."

"Oh, that's because you 've not got all the whine out yet," said Charlie. "But you try a minute, and the whistle will drive the whine away."

So he did, and the last I saw or heard of the little fellows, they were whistling away as earnestly as though that was the chief end of life. I learned a lesson which I hope I shall not soon forget.— *Sel.*

THAT which has been done once is easier done the second time. Repetition is the only basis of perdition or perfection. Patient continuance in well-doing conducts by a straight path to glory, honor, and immortality ; while persistent ill-doing as surely conducts to death.— *Frances E. Willard.*

SOME UNFERMENTED BREADS.

Graham Crackers.— Make a dough of one cup of cream and Graham flour sufficient to make a soft dough. Knead thoroughly, and place on ice for half an hour ; then roll thin, cut into small cakes with a cooky-cutter, prick with a fork, and bake on floured pans, in a brisk oven. A tablespoonful of sugar may be added if desired.

Fruit Crackers.— Prepare a dough with one cup of cold sweet cream and three cups of Graham flour, knead well, and divide into two portions. Roll each quite thin. Spread one thickly with dates or figs seeded and chopped ; place the other one on top and press together with the rolling pin. Cut into squares and bake. An additional one fourth of a cup of flour will doubtless be needed for dusting the board and kneading.

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

Corn Puffs.— Beat together one and one half cupfuls of unskimmed milk and the yolks of two eggs, until thoroughly blended. Add two cupfuls of flour, and one cupful best granular corn meal. Beat the batter thoroughly ; stir in lightly the whites of the eggs, beaten to a stiff froth, turn into heated irons, and bake.

Apple Gems.— Beat together one half cup of grated sweet apple, one half cup of rich milk, and one and one half cups of flour. Bake in slightly heated gem irons.

White Flour Puffs.— Two cups of sweet milk, two eggs, and two or more cups of white flour. Prepare and bake as for Graham Puffs.

E. E. K.

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

CHEESE AS AN ARTICLE OF FOOD.

EVERY now and then a new outbreak of cheese poisoning gives rise to a discussion of the dietetic properties of this much-used article of food. Since Prof. Vaughan's discovery of tyrotoxicon, the poisonous substance to which cheese poisoning is in most cases due, the mystery of these frequent outbreaks has been solved. The studies of modern bacteriologists have developed the fact that not only tyrotoxicon, but also the peculiar flavors characteristic of cheese, are the products of decomposition and fermentation. These facts are gradually becoming known to the public, and have doubtless given rise to a falling off in the consumption of cheese. The writer is acquainted with hundreds of persons who have forever renounced the use of cheese as a food, on becoming acquainted with the effects above referred to. Prof. Vaughan has shown that all cheese contains more or less tyrotoxicon, and tyrotoxicon can be produced in poisonous quantities at any time by simply mixing a quantity of cheese with milk and putting it away for some time in a closed vessel. An acquaintance with this and other facts relating to cheese very naturally leads many people to question the propriety of using it as an article of diet, when nature has supplied us with so large a variety of wholesome and wholly innocuous foods.

The cheesemakers seem to have become somewhat anxious lest cheese should fall into such disrepute as seriously to interfere with their business. They cannot dispute the fact that cheese is produced by a process of fermentation and putrefaction, the evidence of which is to be found not only in the accurate flavors produced in the cheese, but by the presence of "skippers" and "mites," and larvæ of flies which are led by instinct to deposite their eggs in masses of decomposing matter.

Prof. Henry, of Wisconsin, has recently come to the rescue of the cheesemakers with the following argument: "In regard to cheese being a fermentative product, I have no defense whatever to offer. Digestion is a fermentative process to a considerable degree, and I do not know why it should be essential that no fermentation should start previous to the food entering the stomach." With all due respect to Prof. Henry as a scientist, we find it necessary to disagree with him in his view of the digestive process. It is true he finds some small foundation for his theory in the views which have been advanced by some modern bacteriologists, but a careful study of the digestive process under normal conditions shows it to be, not a fermentative or putrefactive process, but a catalytic change induced by organic substances improperly called ferments, since they agree in no respect whatever with the living organisms which give rise to the processes commonly known as fermentation and putrefaction. Digestion is sometimes called a fermentative process, but it is in an entirely different sense from that by which cider is converted into vinegar or grape juice into wine.

The digestive process is a change by which organic matter is changed from a solid to a liquid state by a process of hydration, and without any destructive change, and without decomposition products. The fermentation which takes place in cheese is a process in which poisonous products are formed and destructive processes take place. It is impossible to believe that any such process is essential to the digestive process. Fermentation, properly so-called, is the result of the action of germs. It is possible to conceive of a person's being born under circumstances in which germs might be entirely absent. Would Prof. Henry undertake to assert that

an individual born under such happy circumstances would be made better by introducing germs into his stomach, or that he would be likely to die of indigestion because his food was entirely free from germs? On the contrary, every physician knows that the freer the stomach is from foreign microbes the better, and the more perfect is the digestive process.

The writer has made a careful chemical study of over 2500 stomach fluids furnished by nearly 2000 different persons, and has found a constant association between a multiplicity of microbes in the stomach and a deteriorated digestive product. In the treatment of disordered digestion, it has many times been found necessary to suppress altogether foods containing microbes, including yeast bread, unless the latter has been previously sterilized by conversion into zwieback. It is possible to prepare light, wholesome, and toothsome bread without either baking powder or yeast, a fact of which Prof. Henry seems not to be aware, as he gives us no alternative except to eat yeast bread, or bread made from baking powder, or sodden bread. Although eschewing each of the three kinds of bread mentioned, the writer finds himself largely supplied with an abundance of most palatable bread made without yeast or baking powder, and yet as light and toothsome as the most fastidious palate could require.

While anticipating no sympathy for our views on the part of cheesemakers, we do not hesitate to express our most decided opinion that cheese as an article of food is wholly unfit for human consumption. Here is a little experiment which ought to be sufficient to convince anybody of the questionable character of cheese:—

Take a boiled potato, cut it in two, taking pains to use a knife which has been previously well boiled; avoid exposing the cut surface of the potato to contamination with dust from the air, boiling the potato with the cut surface downward; place the potato on a deep plate, with the cut surface up, and cover quickly with a bell-glass,—a glass butter-dish will do. Now cut off a bit of cheese, and quickly and carefully place it in the center of the cut surface of the potato. Replace the glass cover, and pour into the plate a sufficient amount of boiled water to cover the edges. In a few days a luxuriant growth of mold will appear upon the cheese, showing that it contains a great quantity of microbes, and on moving the bell-glass, a most repulsive odor will be observed, a most pungent advertisement of the fact that cheese is filled with the agents of putrefaction and decay.

It is a matter of astonishment to the writer, that persons who are, in many respects, fastidious in their manner of eating, who would not think of touching a morsel of food with their fingers before placing it in their mouths unless the hands had been washed scrupulously clean, and who find it impossible to eat with complacency a dinner served in soiled dishes and with unwashed eating utensils, will, at the same time, with the utmost composure, after eating the most wholesomely prepared meal, well sterilized by cooking and daintily served, proceed at once to inoculate it with the agents of putrefaction and decay, together with the products of decomposition, by swallowing, as a dessert, a portion of "good" (?) old cheese! The writer is very fond of cheese, having acquired an abnormal liking for this unwholesome article when a boy, but nevertheless he has, from principle, abstained from its use for many years, and cannot be induced either to eat it or to recommend it to others as an article of food fit for human consumption under any other circumstances than threatened starvation or the absence of anything else less unwholesome.

WOMEN'S WAISTS.

THE following is taken from a newspaper article entitled, "Medicine for Other People:" "A learned and much respected physician of Battle Creek, Mich., who is said to have made the human form a special study for fifteen years, has spoken his piece about women's waists. Coming from a physician, the tenor of the utterance can, of course, be guessed. Like all other learned physicians, the Michigan doctor's theory is that the nearer the ideal contour of a beer keg a woman can bring her figure, the better. He has the stock argument about the costume of the Venus de Milo, to which the woman's obvious answer is, that when the costume of the Venus de Milo comes in vogue, the corset will be cheerfully discarded. And, like the other doctors again, he makes a tremendous point of how strong some thick-waisted women in foreign countries are. The women of Switzerland, he says, carry heavy loads up and down the mountains, and their waists are a yard around. He might have brought the example nearer home by

adding that the women in this country who carry heavy loads, and do the family washing, and scrub the corridors, usually have waists just to the doctor's taste. All of the doctors tell the same story, but it is a very noteworthy fact that when it comes to marrying, you scarcely ever find them selecting one of their waistless Venuses, redolent of health and suds. Mostly, some shamelessly unhygienic young lady catches them, and it has never been noted that they were less enticed in the matter of a graceful figure and a pretty waist than common men."

It must be admitted that the waist is not the only important thing about a woman. A woman with a very small waist may be a very good woman; she might be even better than another woman having a large waist. Nevertheless, I think a large waist helps a woman to be good, and it certainly enables her to accomplish more in the world than the woman with a small waist. A large waist is just as necessary for a woman who is to be a leader in society or a reformer, as for the woman who is scrubbing the floors and doing the washing — it is just as necessary, because it means not only stronger muscles, but it means a better stomach and better liver — better stomach action, and better liver action; it means that there will be no pressure on the sympathetic nerve; it means better health, purer blood, stronger nerves, and clearer brain, all of which are necessary to make a woman efficient for the ordinary duties of life.

These facts are not disputed nor disproved by the critic who speaks above so enthusiastically about small waists, which he considers beautiful only because of his depraved taste. A moment's consideration ought to show him that in admiring a corseted figure it is not the woman whom he is regarding, but her unhealthful dress. The woman's figure, for all he knows, may be as much like a "beer keg" as is the Venus de Milo's, or more so, but by a sufficient effort she is able to pinch it into an hour-glass shape. No one but a fashion-dazzled and reason-bereft person could ever be made to admire such a deformed, stiff, and awkward figure as more graceful than a waist-free mountain maiden, tripping among her native hills.

Fortunately, not all women nor all men are of the opinion of the writer above quoted. Many refined, cultivated, and intelligent women are coming to recognize the value of a large waist and well-developed vital organs, free to act in their proper place. The Wellesley girls are even boasting of their increase in waist capacity, which, under the wise direction of Dr. Wood, is, by active exercise in the splendid gymnasium connected with their college, made to keep even pace with their intellectual growth and culture. We must invite our friend to recognize the fact that the world has moved since he last took observations.

ALCOHOL AS AN AID TO DIGESTION.

It is astonishing how a certain class of physicians will puzzle their brains and stretch points for the purpose of finding some explanation or some apology for all kinds of human foibles. There is not a single abuse in dietetic practice — the use of tea, coffee, tobacco, whisky, and what not — that some medical authority cannot be found for its support. It is astonishing, too, how doctors will change their base, — with what facility they will turn a complete mental somersault. But this is necessary, because they very often find that facts do not correspond with their theories; for example: Dr. William Roberts made an experiment, some years ago, with reference to the effects of alcohol upon digestion. He had maintained (and most physicians maintain it even now) that alcohol aided digestion; he would say to a man, "Your digestion is not so good as it has been,— you are growing older now; you must take a little sherry, or porter, or a little brandy to aid digestion, because your vital powers are decaying, and they need assistance." There are very few physicians who do not hold to this theory, and the reason of this is, that some men who are supposed to be scientific, have pronounced their *ipse dixit* upon it, and the mass of doctors follow these ideas, because they have not the time (or do not take the time) to investigate this point.

Now Dr. William Roberts and others have recommended wines and stimulants for elderly people, supposing that they aided digestion. Dr. Roberts thought so, and he experimented upon it; he thought if he could put his breakfast in a test-tube, and put alcohol also in the test-tube, and keep it in a warm place (of the same temperature as his stomach), and if he could show in this way that alcohol aided digestion, that it would be conclusive, and then these skeptical doctors who do not believe in alcohol, would have a fact before them that they could not gainsay.

Well, unfortunately for Dr. Roberts's theory, the results of his experiments did not coincide with his

previous views ; indeed, he found them directly opposite to what he claimed ; in other words, he found that alcohol hindered digestion ; that even a small quantity of alcohol hindered digestion, and large quantities prevented it altogether, so that digestion absolutely ceased. This was a very sad state of things. Thousands of physicians for hundreds of years have been recommending alcohol as an aid to digestion ; now here a crucial test has been made, and it has been proven beyond controversy that alcohol hinders digestion instead of aiding it. What can be done? But Dr. Roberts is equal to the emergency. He immediately changes his base and says : —

"We have been mistaken about this thing, — we are not suffering from weak digestion, or from indigestion ; the danger at the present time is from too rapid digestion ; and he propounds this remarkable theory : "In these modern times the art of cookery has attained such a high state of perfection, and the food products are so elaborately prepared and rendered so digestible, that the great danger is *an undue acceleration of digestion.* We are in danger of accumulating too much flesh from this, and so we need alcohol, not for the purpose of aiding digestion, as we supposed, but to hinder digestion." You see, it will not do to let old King Alcohol fall, — he must be supported ; and whether alcohol helps digestion or hinders it, it must be good. If it hinders digestion, then digestion needs to be hindered because we are suffering from over-digestion ; if it aids digestion, we are growing old and the vital forces are decaying, and we need alcohol to keep up our strength. The facts must be made to conform to the theory.

GERMLESS BUTTER.

We are glad to note that eminent physicians in different parts of the world are calling attention to the infectious character of butter. As ordinarily employed, milk and its products are the most infectious of all articles of food consumed upon the table, and are perhaps the most productive of disease. Thousands of persons are acquainted with the fact that milk is productive of "biliousness," and that butter produces "heartburn" and other symptoms of indigestion. When it is understood that "biliousness" is simply a popular name for a foul condition of the stomach, the result of the action of germs upon the food substances taken into it; and that "heartburn" is an allied condition in which acrid and irritating substances have been produced by the fermentation of the fat in the stomach, it is easy to see the relation of germ-laden milk and rancid fat taken in the form of butter, to these morbid states. A dose of salts relieves "biliousness" simply because it cleans out and disinfects the alimentary canal. But such remedies afford only temporary relief. It is better far to avoid the cause of these conditions by withholding from the stomach, as far as possible, all sources of contamination and infection. Milk is wholly unfit for food unless properly sterilized. Cheese is by its very nature absolutely unfit to enter a human stomach. Its flavor and characteristic properties are wholly due to the action of microbes upon the caseine of the milk, and it is only by thorough cooking that it can be rendered even moderately wholesome. Butter swarms with germs, which in the conditions afforded by the stomach readily spring into virulent activity, unless the gastric juice happens to be strong enough to destroy them or prevent their development.

The *Klinische Hydrotherapie* recommends germless butter, and describes the following method of producing butter which shall be practically free from germs : —

"The vessel which receives the cream should not be changed until the butter is completely prepared. The process of sterilization, churning, and washing should take place in one and the same vessel. Proceed as follows: Sterilize the cream in a well-closed vessel, first heating it, then cooling it off in the same vessel, taking care to avoid the entrance of germ-containing air. Churn by shaking. Separate the butter from the buttermilk by allowing germless air to enter, and afterward wash with sterilized water in the same vessel."

Butter made as above described will be practically germ free, and can scarcely be considered unwholesome, at least in a healthy stomach. Ordinary butter, as before remarked, is wholly unfit for food. It infects the contents of the stomach, and at the same time introduces the products of fermentation which have already taken place. Butter is more objectionable than milk, for the reason that it contains a larger proportion of microbes. The germs which develop in milk require air for their growth, and hence come to the surface with the cream. In the process of churning they become entangled with the fat, and we consequently have in the butter a concentration of the objectionable qualities of raw milk.

BRAIN TROUBLE THE RESULT OF A DISORDERED STOMACH.

PROBABLY there are more persons suffering from brain trouble as the result of dyspepsia or stomach trouble than from any other one disorder. There is no doubt whatever that there are large numbers of persons in insane asylums to-day, who have been driven there by disordered stomachs. I have been led to this conclusion by my observations in a great number of cases which have come under my professional notice. In one case, a man came to the Sanitarium who had escaped from a lunatic asylum, although nothing was known of this at the time. The condition of this man's mind was wholly due to the state of his stomach. On one occasion he went down to the river with a suicidal intent, and for a time walked back and forth along the bank, determined to plunge in. However, he finally desisted. But during the first weeks of his stay, he was in a state of mind just bordering on the precipice of destruction; but he kept himself under control. In the meantime, his stomach improved; and he improved so rapidly that in the course of three months he was a sound, well man, and he is well to-day.

Another case: A man was brought to the Sanitarium, by his wife, for treatment. His wife said to me, "My husband has been confined in the insane asylum for two or three months; the doctors have given him up, and they tell me that he must die of softening of the brain." Upon examination of the patient, I failed to find any serious brain trouble, but I did find evidences of very serious stomach trouble, although he insisted that there was nothing whatever the matter with his stomach. "Why, Doctor," said he, "I think I could eat wrought-iron nails, if I could chew them. I have no trouble with my stomach. I know you are mistaken, Doctor,—here is my disease, in my head. I don't want you to treat my stomach, for my disease is in my head."

He was dreadfully nervous, and could not sleep, at first, more than half an hour a night. After a little he would sleep two hours; and then three or four; then four or five hours, until he was resting pretty well. When he came, he was taking opium, bromide of potassium, and chloral. All these narcotics were taken away from him. When he began to get better, he would fall asleep and nod a little, even at the dinner table, while waiting for an order. At first, he would not converse, but would go around with his eyes cast down to the ground. He would not look any one in the face. He had not been able for some time to understand anything he read. After awhile he began to converse, and to take pleasure in reading, but it was not until some time after he had showed decided signs of improvement that he would admit that he was "a little better." He then recovered rapidly, and at the end of three or four months, went home in a state of sound mental health, and has so remained.

It is only when we study the sympathetic nerve system that we can get an understanding of the relations existing between the stomach and the brain. We know that the brain is the organ of thought, but the brain is not the only part of the body that thinks. Biological studies very clearly sustain the conclusion that the nerve cells, wherever they are, can think; a nerve cell in one part of the brain does one kind of thinking, and a nerve cell in another part of the brain does another kind of thinking. For example: A nerve cell located among the perceptive faculties thinks in reference to the senses,—ideas of form, color, etc. It is very well established that there is also a little group of cells near by whose duty it is to think about language; then there are the cells which think in reference to memory. These cells are arranged in groups in the brain, and each group has its particular kind of thinking to do

The cells which are found in the upper portion of the brain do the kind of thinking that we call "mind," but the cells in the base of the brain do another kind of thinking, which is lower down in the scale — a sort of automatic thinking.

For example: When an experienced pianist wishes to strike a chord, he does not have to think just where he must put his fingers in order to strike that chord; his hands go right there, and his fingers adjust themselves exactly for the production of that chord. In the beginning, the learner has to put down first one finger, and then another, and another, and then he has to learn to strike them all together. But he cannot strike all his fingers with the same force at the first effort; it is only after long discipline that the fingers all learn to strike together and with an equal degree of force. Why is this? — It is not because the brain has been trained to think where to put the fingers; for the pupil knew this at the beginning; but it is because there are certain cells at the base of the brain, which have been trained to this work. The impulse does not come directly from the cells at the top of the brain, but it acts through the secondary centers at the base of the brain; just as a general does not give his orders directly to his soldiers, but gives them to those next below him in rank, and they give them to those a little lower down in rank, until by and by the order gets to the rank and file. It is just so with the nerve system: The general at the top of the brain sends his orders to the base of the brain, and from there the orders are sent to the various parts of the body, down through the spinal cord. Now these secondary centers, tertiary centers, and the subordinate centers all down the scale, are located, not only at the top and base of the brain, but all the way down the spinal cord. Even these centers are able to do a certain kind of thinking. Some have charge of the muscles; other centers have charge of the various organs of the body,— one center has charge of the liver; another center has charge of the abdomen; another has charge of the heart; another has charge of the lungs; and there is the respiratory center, the cardiac center, the sneezing center, and the hiccoughing center. These various centers are groups of cells having charge of these particular functions. So we have these various sensations presided over by certain cells in the brain.

There is another nervous system in the body known as the organic nervous system, the cells of which are not inclosed in the brain, but are located chiefly outside; they are not in the spinal cord, but in a chain running along down the body, with here and there a large number massed together. These groups of nerve matter are really the most important in the body; the largest and most important of these groups are found in the abdominal cavity. This large mass of nerve matter has been termed "the abdominal brain." It is closely connected with the stomach, and is called the semi-lunar ganglia. It is also connected with the nerves running across what is called the solar plexus, another large mass of nerve ganglia situated directly behind the stomach. The lumbar ganglia, whose nerves directly control those of the lower portion of the back, is found on either side of the umbilicus.

Now this organic nervous system is very closely connected with the nervous system of animal life in the cerebro-spinal system. All along the course of the sympathetic nerve (the great nerve whose fibers are distributed everywhere on the inside of the stomach) are branches running out, each one of which is joined by a branch running from the spinal cord. There are two large nerves, called the pneumogastric nerves, coming out from the base of the brain, and running down the sides of the neck just in front of the spinal column, on either side of the trachea, or windpipe; so that if one presses in deeply on the side of the trachea just above the upper end of the breast bone, he can touch one of those nerves. Nerves are thus distributed to the lungs; and all the organs of the chest and abdomen likewise have branches distributed to them from the pneumogastric nerves. The right pneumogastric nerve is distributed to the back part of the stomach, by its fibers, while the left is distributed to the front portion of the stomach.

Now, bearing in mind that the great pneumogastric nerve, *par vagum*, as it is called, which passes out from the skull, is closely connected everywhere with the sympathetic nerve, let us see what is the duty of the sympathetic nerve: When food enters the stomach, it finds the fibers of the sympathetic nerve distributed everywhere, and it comes in contact with them. The presence of these fibers in the mucous membrane enables the stomach to determine how much gastric juice it should make, and whether it should be very strong in quality, or otherwise — whether it should contain a large amount of pepsin, or hydrochloric acid, or whether a weaker kind of gastric juice will do. If, for example, a person eats starch food, the stomach ordinarily does not make much gastric juice for that; on the other hand, if a person eats food containing gluten, etc., then there is more gastric juice needed. Meats require a large amount of gastric juice, and so irritate the stomach.

The sensibility of these nerves also determines the nerve impressions which are sent out to the nerve centers, and these impressions cause other impulses to travel up into the blood vessels, which allow just the right quantity of blood to flow through the glands to make the proper quantity and quality of gastric juice for the amount of food introduced into the stomach.

SICK-ROOM DISINFECTION.

MUCH has been written upon this subject, and many experiments have been made for the purpose of determining the best and most efficient method of disinfecting the walls of a room which has contained a person suffering from some infectious malady.

MM. Chamberland and Fernbach, connected with the hygienic department of the Pasteur Institute, Paris, have recently undertaken a new study of this important question, and have determined two important facts: First, that disease germs are much less readily acted upon in a dry than in a moist state, and that the activity of the disinfectant is increased from forty to fifty per cent by the addition of heat. They consequently contend that in the disinfection of a room, the walls should be moistened by a spray of hot water. The same end, of course, might be accomplished by filling the room with steam. This should be done one hour before the application of the disinfectant. The experiments made by these investigators show that the commercial chloride of lime and peroxide of hydrogen are the most thorough and active disinfectants. It is found that a 1 to 1000 solution of corrosive sublimate added to the chloride of lime is the most active of the substances named. The following is the method by which it should be employed: Dissolve one part of commercial chlorate of lime in ten parts of water, allowing the liquid to stand for an hour; then filter and decant and dilute the greenish yellow liquid thus obtained with ten times its volume of water. The investigations showed that this dilute solution, for some unknown reason, is more active as a disinfectant than a strong solution.

In disinfecting a room, the walls should be thoroughly washed with this solution, which should be applied to the floor after a thorough scrubbing. This disinfectant may also be applied to garments without injury to the fabric, although it will bleach vegetable colors.

HYDROTHERAPY FOR CHRONIC JOINT DISEASE.—For many years the writer has made successful use of hydrotherapy in the treatment of chronic joint disease, chronic rheumatism, and chronic inflammation of individual joints. A simple method which is very effective, is the hot and cold pour; the joint is held over a tub, and hot and cold water are alternately poured over it. The extremes of temperature should be made as great as the patient can bear without inconvenience. The treatment should continue for twenty or thirty minutes, and be applied once or twice daily. After the treatment, the limbs should be wrapped in a coarse cloth wrung as dry as possible out of cold water. Outside of the damp cloth, a dry wrapping should be applied, and oil muslin outside of all; the covering should be thick, so that quick and thorough reaction will occur. The method, combined with massage and local applications of electricity, will secure a recovery in a majority of cases, while without such effective means, no improvement could be obtained. Medication is of extremely little use in these cases. The same must be said of liniments of all sorts commonly considered valuable, but now almost wholly abandoned.

CHOLERA COMMUNICATED BY FLIES.—These little household visitants are often the means of conveying the contagion of very serious maladies. According to the report of the Hamburg Medical Society, they are now accused of being an active medium of communicating cholera. Nine of the insects, which had been in contact with infected cholera material, were captured, and placed in flasks containing nutrient gelatine. In six of the nine flasks, numerous colonies of comma bacilli were successfully cultivated. The possibility, therefore, of one's falling a victim to cholera through this means, is by no means insignificant.

DANGER IN CATARRH.—While catarrh is not consumption, and does not necessarily end in consumption, it has a tendency in that direction. The constant irritation of the mucous membrane in catarrh, opens a door through which tuberculous germs may enter.

ANSWERS TO CORRESPONDENTS.

GASOLINE STOVES.— C. L. S., Iowa, wishes information in regard to gasoline stoves. "1. Is there anything in the odor emitted by gasoline that is injurious to health? 2. Is it not better for one's health to use a gasoline stove in summer than to work over a hot cook stove?"

Ans.— 1. The odor of gasoline is, of course, due to the gas. The gas itself is irrespirable, and when mixed with the air, is explosive, and hence dangerous.

2. The use of gasoline stoves should only be allowed when great precautions are taken to prevent explosions.

OYSTERS — LIME — FILTERS.— "M." asks the following questions: "1. Do oysters contain sand? 2. Are the oysters sold in bulk as good as those in the shell? 3. Is there a simple test by which lime and lime compounds can be detected in drinking water? If so, what is it? 4. Are the Gate City porous stone filters as good as the makers claim? 5. Will they remove an excess of lime, magnesia, etc., from the water?"

Ans.— 1. We do n't know very much about oysters, except that they are scavengers and not fit to eat.

2. Oysters are all about equally bad; those that are the farthest advanced in decomposition are of course the most injurious.

3. By simply boiling the water for some time the lime is precipitated.

4. We have no experience with these filters; do not know what is claimed for them. If they are claimed to be absolutely and practically germ-proof, we should be obliged to differ.

5. Filters will remove lime only after it has been precipitated or thrown down from the water.

DRY CATARRH — BAD DREAMS.— B. C. M., Mass., states that he is above seventy years of age, and has dry catarrh in the head, with no acute pain, but a heavy feeling. Has a good appetite, but eats moderately. Bowels regular in action, but there is much gas. Is troubled with bad dreams, from which he wakes unrefreshed. He asks for advice.

Ans.—The patient has gastric neurasthenia as well as nasal catarrh. For nasal catarrh I would recommend the oil spray with a small amount of germicidal remedies added, such as essence of cinnamon, wintergreen, etc.

NUTRITIOUS BREAD — FOOD COMBINATIONS — ETC. — L. D., Mass., asks the following questions: "1. Is bread made with milk more nutritious than that made with water? 2. May grapes, berries, squash, or tomatoes, cooked or otherwise, be eaten at the same meal with potatoes or other vegetables? 3. If a person taking two meals a day, the second one at 3 P. M., goes into a public assembly at seven or eight o'clock in the evening, when the place is poorly ventilated, is he not more liable to take disease by having an empty stomach?"

Ans.— 1. Yes.

2. Yes, by persons in ordinary health. Some classes of dyspeptics must avoid such combinations.

3. For a public assembly an empty stomach is better than an empty head, and we are inclined to think the chances for taking disease would be greater in a person delivering a lecture immediately after eating, from the injury done his stomach and nervous system, than from the germs which he might swallow with the stomach empty.

THE LOISETTE MEMORY LESSONS.— S. T. H. B. asks for information about the Loisette memory drill. "Is Prof. Loisette able to do what he promises?"

Ans.— Prof. Loisette can do nothing. It is the student who does the work. If he works well, he ought to be able to accomplish enough to well repay for the effort made. The success of the Loisette, as well as other memory systems, is due to the fact that the exercises required by the system are excellent means for strengthening the memory.

FREQUENT SIGHING — EMPLOYMENT FOR BOYS AND GIRLS.— C. L. D., Ind., asks: "1. What causes sighing? I sigh frequently and heavily. 2. What would you recommend for its relief? 3. What would be a good employment for girls wishing to reform from a sensual life and practice? 4. What for boys, that would place them in the midst of a pure moral atmosphere?"

Ans.— 1. The excitement of the inspiratory center of the medulla oblongata.

2. Sighing is sometimes a habit; it may be broken up by a vigorous effort of the will.

3. Sewing, laundry work, cookery, anything honorable.

4. This branch of the labor problem is one which we are now engaged in studying; have not yet found a very satisfactory solution.

RELIEF DEPARTMENT.

[THIS department has been organized in the interest of two classes: —

1. Young orphan children.
2. The worthy sick poor.

The purposes of this department, as regards these two classes, are as follows: —

1. To obtain intelligence respecting young and friendless orphan children, and to find suitable homes for them.

2. To obtain information respecting persons in indigent or very limited circumstances who are suffering from serious, though curable, maladies, but are unable to obtain the skilled medical attention which their cases may require, and to secure for them an opportunity to obtain relief by visiting the Sanitarium Hospital. The generous policy of the managers of the Medical and Surgical Sanitarium has provided in the Hospital connected with this institution a number of beds, in which suitable cases are treated without charge for the medical services rendered. Hundreds have already enjoyed the advantages of this beneficent work, and it is hoped that many thousands more may participate in these advantages. Cases belonging to either class may be reported in writing to the editor of this journal.

The following list contains the names and addresses of persons who have kindly consented to act as agents for us in this work, and who have been duly authorized to do so. Facts communicated to any of our local agents in person will be duly forwarded to us.

It should be plainly stated and clearly understood that neither orphan children nor sick persons should be sent to the Sanitarium or to Battle Creek with the expectation of being received by us, unless previous arrangement has been made by correspondence or otherwise; as it is not infrequently the case that our accommodations are filled to their utmost capacity, and hence additional cases cannot be received until special provision has been made.

Persons desiring further information concerning cases mentioned in this department, or wishing to present cases for notice in these columns, should address their communications to the editor, Dr. J. H. Kellogg, Battle Creek, Mich.

☞ He wishes especially to state that those who apply for children will be expected to accompany their applications by satisfactory letters of introduction or recommendations.]

A SEVEN-YEAR-OLD (No. 129).— A little boy seven years old, in California, has lost his mother, and the father has given him to some aged people who do not feel able to bring him up right. He is of German parentage, with light hair and good health. Will not some one make a home for him?

TWO BROTHERS (Nos. 131 and 132), from Michigan, are in need of a home. One is five and the other ten years of age. Their mother died some two years ago, and the father is not able to care for them.

TWO MORE BOYS (Nos. 133 and 134) are in need of a home. These also live in Michigan. They are three and five years of age, have good health, with brown hair and eyes. Here is a good opportunity for doing missionary work in bringing up these children to be a blessing to the world. Who will undertake the task?

SAD FACES look out at us from the photograph that has been sent of two little girls (Nos. 139 and 140) about eight and nine years old, living in Michigan, who are just about to be turned away from home. How full the world is of trouble and sorrow! Cannot some one help to lift the sadness from these little faces?

MOTHERLESS.— Another little boy and girl (Nos. 143 and 144), in Kansas, have been left motherless, and the father's health is so poor that he is anxious to find homes for his children before he is called away from them. They are good children, well-appearing, and have good health. The little boy is nine and his sister six years old.

A LITTLE BROTHER AND HIS SISTER.— Here are two little ones from Florida (Nos. 158 and 161) who are in need of a home or homes. The girl is two years and the boy six years old. They both have brown hair and eyes, and are blessed with good health.

WHO WILL HELP? — Here are two boys (Nos. 163 and 164) from North Carolina, who want homes. The father and mother are both dead. They are bright, intelligent boys, and, as the application says, would make somebody's home brighter. They are eight and eleven years old respectively.

No. 165 is a strong, healthy boy, nine years of age, who needs a home. He is in Michigan.

EDDIE (No. 166) is a bright boy twelve years old, who needs a home. He is of a pleasant disposition, and will be a great help in some home.

BEREFT.— A boy (No. 167) eight years old, has lately been bereft of his mother, and his father cannot care for him, so he asks that a home be found for him, and very soon, so the child may not be neglected. He is living in Michigan.

ANOTHER BOY (No. 168) from Michigan, ten years old, is in sore need of a home. He has lived on a farm, and is rather small for his age, though in good health.

TWO BROTHERS.— From Pennsylvania comes another call for homes for two boys (Nos. 169 and 170), three and eight years old. They both have good health, the younger one has dark hair and eyes, and dark complexion, the older one, dark hair and light brown eyes. They have had good care, till their mother died, and have not been allowed to run

on the street, so have good characters to recommend them.

A BROTHER AND SISTER.— These little ones, aged nine and eleven (Nos. 171 and 172) have been five years without a mother, but have lived with their grandparents. The father is a canvasser. They have blue eyes and good health; the boy's hair is dark brown and the girl's light. They live in Iowa.

A BOY eleven years old (No. 174), of German parentage, is in need of a home. He has dark brown eyes and hair, is four feet high, and a good tempered, obedient boy. He lives in Illinois.

Two little boys in Pennsylvania (Nos. 175 and 176), one aged four and the other two years, have been left destitute. They are stout, well-built little fellows, bright and intelligent, and have had very good training. They have never been allowed to run upon the street, and are "real good, attractive boys."

Two little waifs, eight and ten years of age (Nos. 177 and 178), are left without a home or kind care from any one. The only love they know is that which they each have for the other. They are in Minnesota. They have blue eyes, light hair, and excellent health, and seem to be very affectionate.

No. 179 is a little boy in Virginia, nine years old, who has lost a good father and needs a home where he can be raised properly. He has deep blue eyes and brown hair; is of a good disposition, easily influenced, and obedient.

No. 180 is a little boy eight years old, living in Kansas. He has been abandoned by both father and mother. He has good health, and is a bright-lively boy. He needs careful training, but Christian kindness and love will doubtless yield a rich harvest.

A MICHIGAN boy (No. 181), seven years old, needs a home. He has blue eyes, light hair, and good health, and has been taught good manners.

THE baby advertised in the August number of GOOD HEALTH (No. 117), has been placed in a good home.

A HOME WANTED FOR A FRIENDLESS MAN.— Mr. R———, a man somewhat over sixty years of age, a carpenter by trade, who has lived an honest and respectable life, but within the last year has been unable to work, and having lost wife and children three or four years ago, now finds himself somewhat advanced in years and in feeble health, without home and without friends, in the great city of Chicago. Mr. R. is a kind Christian man, and will be glad to do all he can for his own support; and in a private family located on a farm would doubtless be able to do fully enough to bear all his expenses. We can easily keep him supplied with clothing. He is satisfied with the plainest food and clothing, and we do not know of a more worthy object of friendly and Christian sympathy than this. Who will furnish this unfortunate brother a home? We believe he will carry a blessing into any home where he goes. The case is urgent, and we hope to hear from some one soon.

PERSONS making application for children advertised in this department, are requested to send with their applications the names and addresses of two or more persons as referees. If possible these referees should be known, either personally or by reputation, to some member of the Board of Trustees.

CLOTHING FOR THE POOR.

THE call for clothing of all kinds and the numerous offers to supply assistance of this sort, have led us to organize a Clothes Department to receive and properly distribute new or partly worn garments which can be utilized for the relief of the very poor. In connection with this work it is very important that a few points should be kept in mind and carefully observed:—

1. Clothes that are so badly worn that repairs will cost more in money or labor than the garment is worth, will of course be of no service. Garments that are old, though faded, or which may be easily repaired by sewing up seams, or made presentable by a few stitches judiciously taken in some point in which the fabric is nearly worn through, may be utilized to most excellent advantage. But garments so badly worn that they need extensive patching, or clothes which have become much soiled and grimmy by long use in some dirty occupation, should find their way to the rag bag instead of the missionary box.

2. Freight must always be prepaid. It costs as much to send 25 pounds or any amount less than 100 pounds as to send the full 100 pounds; consequently it would be well for those who think of sending clothes to be used in this department, to put their contributions together in one shipment, so as to get the benefit of the 100-pound rates. *We are obliged to ask that freight should be prepaid as a means of preventing loss to the work in the payment of freight upon useless packages.*

3. Clothes that have been worn by patients suffering from any contagious disease — such as typhoid fever, erysipelas, consumption, and skin disorders of all sorts, as well as scarlet fever, measles, mumps, diphtheria, and smallpox — should not be sent. Infected clothes may be rendered safe by disinfection, but we cannot trust to the proper disinfection of such garments by those sending them, who, in the majority of cases, are quite inexperienced in such work; neither should those who unpack the clothes be exposed to the risk of contamination while preparing them for disinfection at this end of the line. Such clothes should, as a rule, be destroyed. If they are not destroyed, almost infinite pains are required to render their use perfectly safe.

4. All articles received here are carefully assorted and classified, and are then placed as called for where they will do the most good.

LITERARY NOTICES.

THE last number of the *Ladies' Home Journal* contains an article from Frank R. Stockton telling how he wrote "The Lady and the Tiger." He tells what came of the writing of the famous story, and the condition of his own mind at the present time, of the correct solution of the problem whether the lady or the tiger came out of the open door.

Popular Astronomy is a new magazine prepared expressly for popular readers, teachers, students of astronomy, and amateurs. It is proposed that all important astronomical topics shall be treated in a popular way, in language wholly untechnical. Its illustrations are many and excellent in kind, and its writers are able and scholarly astronomers, chosen from among the best at home and abroad. Published monthly, except July and August, by Wm. W. Payne. Subscription price, $2.50 per year.

"PROCEEDINGS and Addresses at a Sanitary Convention Held at Stanton, Mich., April 27 and 28, 1893." This is a very complete report of the meetings held under the direction of a Committee of the State Board and a Committee of the citizens of Stanton. Some of the important subjects discussed were "Alcohol in Health and Disease," "Restriction and Prevention of Dangerous Communicable Diseases," "Use and Abuse of Tobacco," "Diseases of Domestic Animals, which are Communicable to Man," "School Sanitation," "Restriction of Cholera and Typhoid Fever," etc. In a slip inclosed in the volume we find the following resolution, which was adopted by the Michigan State Board of Health September 30, 1893: —

"*Resolved*, That hereafter, consumption (and other diseases due to the bacillus tuberculosis) shall be included in the official list of 'diseases dangerous to the public health,' referred to in Sections 1675 and 1676 Howell's Statutes, requiring notice by house-holders and physicians to the local health officer, as soon as such a disease is recognized."

The purpose of this resolution is to secure to the local health authorities and to the State Board of Health, information as to the location of each case of this most dangerous disease, with the view of placing in the hands of the patient reliable information how to avoid giving the disease to others, and in the hands of those most endangered, information how to avoid contracting the disease.

WITH the November number, *St. Nicholas* enters upon its twenty-first volume with brighter prospects than ever before, the present one being the first number issued since its consolidation with *Wide Awake*. The latter magazine has brought to it many good gifts which will serve to enhance the future value of *St. Nicholas*. The present number has a most enjoyable table of contents, contributed by writers of note. Perhaps the most striking of all is the article with which the magazine opens,—"Rikki-Tikki-Tavi," by Rudyard Kipling. In the telling of how a mongoose kills a snake, the versatile Englishman contrives to put forth a greater number of facts in natural history than a person would ordinarily get together in a lifetime, besides telling them in a way which no youngster, certainly, will ever be likely to forget. *St. Nicholas* has a wide and well deserved popularity. Now, at the beginning of the new volume, is the time to subscribe. $3 per year. The Century Publishing Co., New York.

OUR DUMB ANIMALS, though a small paper, is the advocate of a noble cause. The publishers are endeavoring to reach the million mark in subscriptions, and at the low price of fifty cents a year no family in which there are children ought to be without it. The principles of kindness, patience, and gentleness with our dumb friends, so forcibly impressed on the mind of every one who peruses this paper, are both human and Christian. It utters fearless protests against all the abuses of animals, whether freaks of fashion, the result of ignorance, or the expression of anger. The paper is illustrated with fine cuts. A late number contains an exceedingly fine photo-engraving of Herbert Spencer.

Geo. T. Angell, publisher, Goddard Building, 19 Milk St., cor. Hawley St., Boston, Mass.

Our Little Men and Women published by D. Lothrop Company, Boston, Mass., is a treasure book for little folks just beginning to read. Every month it contains twenty-four pages of bright stories, verses, bits of natural history, besides pictures large and small. Everything is made entertaining and is told in simple language. $1 per year.

Babyland is a baby's journal, full of stories, jingles, and play helps for the wee ones, with pictures big and little, pretty and funny. D. Lothrop Company, Boston, Mass., 50 cents a year.

PUBLISHERS' DEPARTMENT.

MRS. JULIA A. POND, one of Michigan's lady managers for the Fair, and a most indefatigable worker, has prepared a sheet containing the substance of the chart that has hung in the rotunda of the Michigan Building, showing statistics of "Michigan Women Tax-payers and Wage-earners," compiled from United States and State Census Reports, from United States Supplementary Sheets for 1890, from Labor Bureau Reports, etc. According to the statistics given, there are 76,419 women in the State, paying taxes on $134,506,179 of property. There are 18,567 professional women in the State, 49,370 giving personal service, 22,605 in manufactures, 5330 in the trades, 1100 agriculturists, 932 in mechanical employments, and 275 engaged in transportation, making 98,179 women workers in the State.

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DR. CHARLES W. DABNEY, Jr., the honored President of the University of Tennessee, while on a visit to his wife, who is a patient at the Sanitarium, was prevailed upon to deliver an address upon the "Mission of the Educated Woman." It was scholarly and sympathetic, predicting a yet broader and higher field of usefulness for woman than she has yet reached. The University of Tennessee is certainly to be congratulated on having so gifted and liberal-minded a man as Dr. Dabney at its head.

* *
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MISS JESSIE M. BROWNELL, for three years a teacher in the mission schools for the Pima and Papago Indians of Southern Arizona, is recruiting at the Sanitarium. She is greatly interested in promoting the welfare of our Indian wards.

* *
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JOHN R. MOTT presented the claims of the Students' Volunteer Movement in a stirring address a short time since. This movement doubtless characterizes the most important epoch in the history of missions.

ELDER L. A. HOOPES, a missionary laborer in Nebraska, is a guest at the Sanitarium. He has filled the office of chaplain very acceptably at various times when chaplain Mc Coy has been absent for a short time.

* *
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WE are pleased to announce that Florence Cornell is meeting with excellent success in her work as organizer of Christian Help bands in Colorado. It is hoped she will be able soon to return to the Sanitarium to take some needed rest, and give some attention to her own health.

* *
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THE Sanitarium now has more than thirty medical students pursuing their study at the Sanitarium, in Ann Arbor, in New York, and in Chicago. All these young men and women are preparing themselves for medical work in missionary fields; and they have been selected with such care that it is hoped they will prove faithful exponents of the principles promulgated at the Battle Creek Sanitarium, and efficient workers in the cause of humanity.

* *
*

DURING the summer the managers of the Sanitarium have been erecting a young ladies' dormitory capable of accommodating about 150 persons. For convenience in arrangement and sanitary appointments it is intended to be a model for buildings of this kind. Under the experienced direction of its architect, Mr. W. C. Sisley, it has been rapidly pushed forward to completion, and it is hoped that some portions of the building at least can be occupied within a month of the present writing. The building is placed on an eminence a few rods back of the Sanitarium, and commands a very sightly view. When completed, it will furnish a most excellent home for the noble band of young women who constitute so large a part of the Sanitarium family.

THE Sanitarium recently had the pleasure of entertaining Mrs. Haskell, the generous donor of the Haskell Home for orphan children, which will soon be ready for dedication. Mrs. Haskell is much pleased with the building, which is now so nearly completed. She appears to be in much better health than when we last had the pleasure of meeting her, having spent the summer in the country at the home of friends. This noble woman has recently endowed a hospital in Chicago, and is continually blessing the world with her benefactions. What a grand work might be accomplished for humanity if all persons who have been blessed with a superabundance of this world's goods were possessed of the same spirit of Christian philanthropy of which Mrs. Haskell presents so conspicuous an example.

* * *

THE Medical Missionary and Benevolent Association, whose work in this country is represented by the Sanitarium at Battle Creek, the Sanitarium Medical Mission in Chicago, and numerous other lines of philanthropic work, have decided to enter upon the medical missionary work in Mexico, and will send one or more physicians to open up the work in that country within a few weeks of the present time. Several persons will also be sent in the near future to South Africa, to engage in the work there; and others are being prepared to enter the work on the West Coast of Africa in the near future.

* * *

THE Sanitarium Medical Mission in Chicago is succeeding far beyond the most sanguine expectations of its promoters. Nearly a thousand people a week avail themselves of the various means for relief afforded by the institution. There is no department of the work of the institution in which its managers are more interested, and which seems to be the means of accomplishing more good, than this missionary enterprise. The success of this small beginning is a complete demonstration of what can be done and what ought to be done for the poorer classes. If sufficient money was at the disposal of the managers of this enterprise, to provide for it a more suitable building and larger facilities, ten times as much good might be done. There is a great field for work for the lowest classes in all our large cities, which has never yet been occupied.

* * *

WE recently had the pleasure of meeting at our Branch Sanitarium, 28 College Place, Chicago, Mr. Nanabhoy Muncherji Banaji, an Indian merchant from Bombay, who became acquainted with our friend Mr. Reed, of South Africa, on shipboard while crossing the Atlantic. We found Mr. Banaji an intelligent and very interesting man in all that pertains to modern progress, and especially interested in the enterprises represented by this institution.

* * *

THE Sanitarium patients had the pleasure of listening to an illustrated address by Dr. Kellogg on the evening of October 26, on the physical deformities resulting from an improper mode of dress. The figures thrown upon the screen, more than 100 in all, each taught an impressive lesson which, with the graphic description of the evils consequent on a mode of dress which induces bodily deformity, will not be easily forgotten by those present.

* * *

THE Chicago Branch of the Sanitarium has been filled almost from the time of its opening. Although it was expected to accommodate only from sixty to seventy persons, it has been required to shelter more than one hundred persons at different times, especially during the last weeks of the Fair. The patronage of the institution is steadily increasing.

* * *

THE Sanitarium has received an award for its exhibit. The award given by the judges does not count for very much, but the great interest taken by the people in the exhibit which has been made at the Fair, chiefly in the Anthropological building, has been a great satisfaction to those who have been chiefly responsible for the exhibit and who have devoted considerable time to its preparation and presentation.

* * *

THE branch Sanitarium which it was proposed to start at Milton, Ore., has not yet gotten under headway, as the promoters of the enterprise have met with some difficulties and discouragements, some of which were not wholly unexpected, but which have required patient waiting for the opportunity to arrive when the institution could be placed on a basis which would enable them to present it to the public as worthy of their confidence and patronage. Some time since, arrangements were made with Dr. Gibbs, of California, to take charge of the institution as soon as he could relieve himself from his present obligations. Dr. Gibbs writes us that he has now nearly completed the closing up of his business in Southern California, and will be ready to take hold of the work at Milton in a very short time. The exact date of opening cannot be announced as yet. Our expectations are, however, that the Doctor, with an efficient corps of nurses and assistants, will be on hand at Milton within a month.

Dr. Gibbs was for a number of years superintendent of the Sanitarium at St. Helena, Cal., and has on two different occasions spent a season at the Sanitarium at Battle Creek, for the purpose of making himself familiar with the methods employed. It is the intention of the promoters of the enterprise at Milton, to make it a thorough-going and efficient establishment for the treatment of chronic invalids.

* * *

A NEW through sleeping car line from Chicago to Seattle via the Chicago, Milwaukee & St. Paul and Great Northern Railways, has been established, and first-class sleeping cars will hereafter run daily from Chicago at 10.30 P. M., arriving at Seattle 11.30 P. M., fourth day. This is undoubtedly the best route to reach the North Pacific Coast.

For time tables, maps, and other information apply to the nearest ticket agent, or address HARRY MERCER, Michigan Pass. Agent, C., M. & St. P. R'y, 82 Griswold St., Detroit, Mich.

* * *

WHERE TO LOCATE NEW FACTORIES.

THIS is the title of a 150-page pamphlet recently published by the Passenger Department of the Illinois Central Railroad, and should be read by every mechanic, capitalist, and manufacturer. It describes in detail the manufacturing advantages of the principal cities and towns on the line of the Southern Division of the Illinois Central, and the Louisville, New Orleans, and Texas Railroads, and indicates the character and amount of substantial aid each city or town is willing to contribute. It furnishes conclusive proof that the South possesses advantages for the establishment of every kind of factory, working wool, cotton, wood, or leay. For a free copy of this illustrated pamphlet, address C. C. Power, Foreign Representative, 58 Michigan Ave., Chicago, Ill.

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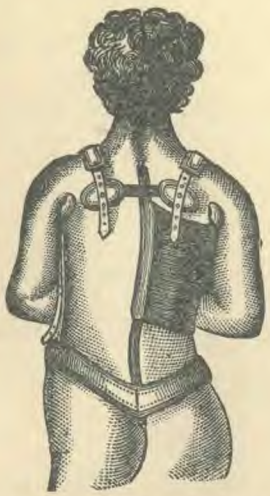

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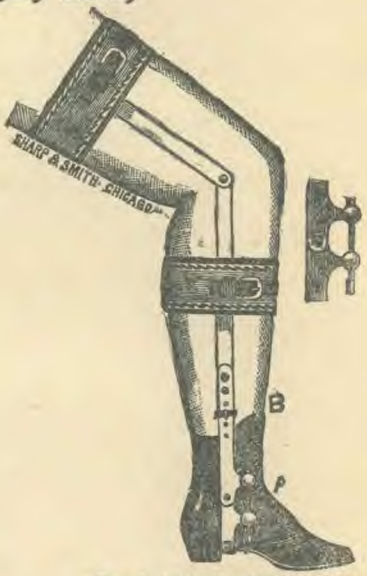

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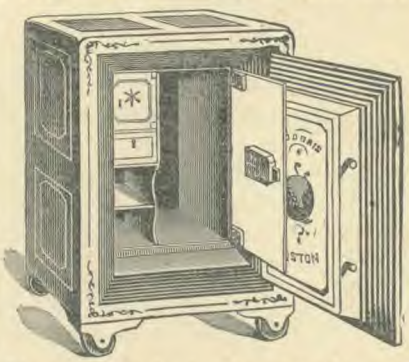

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Time Table, in Effect June 5, 1893.

GOING EAST. Read Down.					STATIONS.	GOING WEST. Read up.							
10 Mail Ex.	4 L'v'd Ex.	6 Atl. Ex.	8 Erie Lim.	2 R'd Ex.		1 Day Ex.	9 P'fic Ex.	7 Erie L'v'd	21 M. & B. Ex	11 Mail Ex.	3 R'd L'v'd	5 Nig't Ex.
a m	p m	p m	a m	p m		p m	a m	p m	a m	p m	p m	a m
8.40	3.00	8.15	11.25	11.30	D. Chicago .A	4.50	7.32	9.30	8.30	7.00	9.00	7.25
11.10	5.00	10.30	1.20	1.36	.Valparaiso..	2.45	5.30	7.35	6.25	4.30	6.35	5.10
p m												
12.45	6.20	12.00	2.35	3.15	.South Bend.	1.20	4.00	6.20	5.00	2.50	5.10	3.35
1.29	6.58	1'.45	3.07	4.05	..Cassopolis .	12.40	3.18	5.45	4.23	2.06	4.37	2.44
2.21	.....	†1.33	.....	4.57	.Schoolcraft.	a m	.....	.....	.....	1.19	.....	1.58
2.33	7.40	1.48		5.10	..Vicksburg .	11.53	2.20	.....	3.28	1.08	3.52	1.48
					D	11.15	1.35	4.25	2.45	12.25	3.20	1.00
3.40	8.20	2.40	4.30	6.40	Battle Creek	11.10	1.30	4.15	2.40	12.10	3.10	.....
4.34	9.01	3.25	5.11	7.31	..Charlotte..	10.29	12.46	3.34	2.01	11.15	2.27	12.05
5.10	9.30	4.00	5.40	8.10	...Lansing...	10.02	12.15	3.07	1.35	10.40	2.00	11.30
6.50	10.20	5.03	6.35	9.30	...Durand...	9.05	11.20	2.22	12.44	9.[illegible]	5	10.30
7.30	10.47	5.40	7.05	10.05	.... Flint	8.35	10.47	1.55	12.16	8.[illegible]	.45	9.35
8.15	11.20	6.15	7.35	10.43	... Lapeer ...	8.02	10.07	1.27	11.45	7.49	12.17	8.51
8.42	a m	†6.35		11.06	Imlay City .	.....	.....	.....	.....	7.28	.....	8.24
9.56	12.30	7.30	8.46	12.05	Pt. H'r'n Tun	6.50	8.46	12 22	10.30	6.25	11.10	7.20
			p m			a m	p m	p m	p m	a m	a m	p m
9.25	.....	7.40	9.25	11.50	...Detroit....	.....	.....	.....	.....	.....	.....	.....
p m	a m	p m		a m								
.....	8.30	7.40		8.10	...Toronto...	.....	.....	.....	.....	.....	.....	.....
	p m	a m		a m								
....	7.50	7.00	.....	7.00	.. Montreal..	.....	.....	.....	.....	.....	.....	.....
	a m	a m		p m								
.....	8.15	9 30	.....	7.15	... Boston ...	.....	.....	.....	.....	.....	.....	.....
	a m	p m	a m	p m								
.....	7.25	4.1[illegible]	3.00	7.30	Niag'ra Falls	.....	.....	.....	.....	.....	.....	.....
	a m	p m		p m								
.....	8.30	5.35	4.15	9.00	... Buffalo ...	.....	.....	.....	.....	.....	.....	.....
	p m	a m	p m	a m								
.....	9.40	7.52	4.52	10.10	..New York..	.....	.....	.....	.....	.....	.....	.....
	a m	a m	p m	m								
.....	7.00	10.00	9.25	12.00	... Boston ...	.....	.....	.....	.....	.....	.....	.....

Trains No. 1, 2, 3 4, 5, 6, 7, 8, 9, 21 run daily; Nos. 10, 11, daily except Sunday.

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STATIONS.							
Chicago	am 9.00	am 11.30	pm 3.10	am 7.05	pm 9.10	pm 4.00	pm 10.00
Michigan City.	11.00	pm 1.13	4.56	9.10	11.15	5.55	11.50
Niles	pm 12.25	2.08	5.55	10.35	am 12.30	7.00	am 1.10
Kalamazoo	2.00	3.18	7.08	pm 12.35	1.53	8.22	2.42
Battle Creek	2.40	4.00	7.38	1.20	2.45	9.00	3.22
Jackson	4.30	5.08	8.52	3.10	4.25	10.18	4.45
Ann Arbor	5.30	6.08	9.45	4.27	5.33	11.12	6.01
Detroit	6.45	7.15	10.45	6.00	6.50	am 12.10	7.45
Buffalo		am 2.05	am 6.25		pm 2.45	8.30	pm 5.00
Rochester		4.45	9.55		5.50	pm 2.40	8.20
Syracuse		6.45	pm 12.15		8.30	4.10	10.20
New York		pm 2.40	5.50		am 6.30	10.30	am 7.00
Boston		4.45	11.45		10.50	am 6.15	10.50

WEST.	† Day Express.	*N.Shore Limited.	*Chicago Express.	*Night Express.	*Pacific Express.	*Chicago Special.	†Mail.
STATIONS.							
Boston	am 8.30	pm 2.00	pm 4.20		pm 7.15	am 5.00	
New York	10.30	4.30	6.00		9.15	9.10	
Syracuse	pm 7.30	11.35	am 2.10		am 7.20	pm 4.20	
Rochester	9.35	am 1.25	4.10		9.55	6.25	
Buffalo	10.45	2.20	5.30		pm 11.50	7.50	
Detroit	am 7.15	8.45	pm 1.00	pm 7.35	9.00	am 3.50	am 8.15
Ann Arbor	8.19	9.45	1.55	8.50	10.20		9.26
Jackson	9.30	10.48	2.55	10.13	11.45	5.45	11.40
Battle Creek	10.45	12.00	4.00	11.55	am 1.12	7.00	pm 1.20
Kalamazoo	11.26	pm 12.38	4.35	am 1.00	1.53	7.45	2.08
Niles	pm 1.10	1.48	6.00	3.20	3.52	8.58	4.00
Michigan City.	2.18	2.45	7.05	4.40	5.22	10.00	5.25
Chicago	4.10	4.30	9.00	7.05	7.15	11.45	7.35

*Daily. †Daily except Sunday.

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Accommodation train goes east at 7.50 a. m. except Sunday.
" west at 9.00 p. m. "

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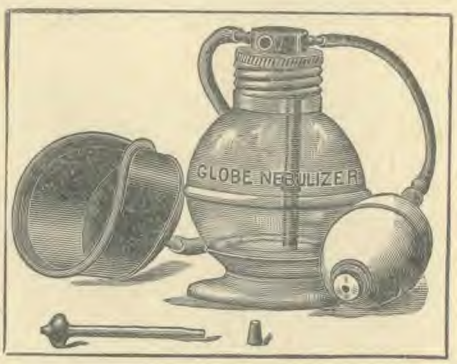

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