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INTERNATIONAL HEALTH STUDIES.

BY FELIX L. OSWALD, M. D.
"Author of Physical Education;" "The Bible of Nature," Etc.

29. — Chili.

THE hardest test of the belief in an all-guiding Providence is perhaps the premature death of men whose mission seemed to have been prepared by ages of preceding generation, and whose days are cut short before their field of labor could ripen a harvest. The history of civilization, however, proves that the work of a life, thus interrupted, is almost sure to be finished by other hands, though its fruits may be gathered far from its first land of promise.

That truth holds good of nations as well as of individuals. When the nations of the Eastern Continent were scattered by the storm following the collapse of the Roman Empire, the noblest tribes of the four mightiest races were by a rare chance united on the fruitful soil of the Spanish peninsula. The surviving aborigines were by far the manliest and gravest representatives of the Celtic race. Rome had sent her most enterprising colonists to the same land which attracted the valiant Visigoths and the heroic Saracens, and about the end of the eleventh century that alliance of physical and mental energy had resulted in the development of a nation superior to all its rivals in commerce, industry, art, and science, and apparently destined to reach the ideal of earthly prosperity. That promise was blighted by the curse of priestly despotism, but the seed withered by the fumes of eight thousand *autos-da-fé* has begun to germinate in the happier soil of the Western Continent and the Cordovas and Toledos of ruined Spain will rise in new splendor in the garden lands of a country which its first discoverers compared to the *Val de Paraiso* (Valley of Paradise). If climate and scenery contributed to the charms of the garden of Eden, that name was certainly appropriate. To the boasted "everlasting spring" of western California that of Valparaiso and Santiago de Chili is as unquestionably superior as the climate of San Francisco is to the broiling summer and Siberian winters of Montreal. "So far as we know," says Prof. John S. Hittell, in his otherwise reliable work on the "Resources of California," "San Francisco has the most equable and the mildest climate in the world." In the same chapter, however, he admits that in the city of the Golden Gate the mercury has been known to fall to 25°, and that freezing-point days are nothing unusual, while the maximum summer heat exceeds 95° — a range of more than seventy degrees Fahrenheit. In Valparaiso, the difference between the hottest and the coldest day, is only 28°. In Santiago, some 1,600 feet higher up, Dr. S. A. Robledo kept a meteorological record for fifteen years, with the following result: Highest temperature, 89½°, observed February 10, 1884; lowest temperature 48°, observed August 24, 1887 (the thermal contrasts of the seasons being reversed on the Southern hemisphere). In other words, the annual range of the thermometer at Valparaiso is forty-three degrees less than that of San Francisco, and at Santiago about thirty degrees less. The difference of the daily range is even more striking. In Oakland, only eight miles east of San Francisco, the mercury has been known to fall *fifty degrees* in twelve hours,

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while the hottest and coolest summer days at Valparaiso vary only sixteen degrees.

For those who prefer a more bracing climate, the slope of the western Andes offers every variety of elevation from the terrace-lands of the foot-hills, to the lofty *alturas*, at the border of perpetual snow. Near Coquimbo, under the thirtieth degree of Southern latitude, a tourist can ascend in twenty hours to the summit-levels of a plateau more than eleven thousand feet above the settlements of the coast plain, and blest — or, as the Chilians would prefer to say, afflicted, with a climate as cool as that of the Norwegian *fjells*. Isolated peaks tower still higher into the realm of perennial winter. Our Canadian neighbors go into ecstasy about the "highlands" on the shores of Georgian Bay, where a few cliffs rise to a height of 1,800 feet, and the poet-worshiped Mole-y-Wyddfa, "the sublime summit," as the Welsh call the apex of the Snowdon range, founds its claim on an altitude of a little less than 3,600 feet, while Mount Aconcagua, the monarch of the Chilian Andes, lifts its peak ten thousand feet above the snow line, to a total height of 22,400 feet. That giant, however, has several rivals. Tupungato, 22,200; Cerro-del Mercedario, 22,300; Cerro de la Ramada, 21,-600; and altogether, the panorama of the Chilian highlands, as viewed from the heights of the coast-hills, must surpass any other mountain scenery on earth, that of the Himalayas by no means excepted, since the snow-capped monster peaks of Northern India do not rise in sight till the traveler has ascended a plateau of nearly 8,000 feet, while the towering chain of the Andes is in plain view from the islands of the Pacific.

Morever, the geographical range of the country implies a great diversity in climate. Chili, with all its mountain and terrace lands, stretches north and south through thirty-two degrees of latitude — a distance exceeding that from Key West to Halifax.

Natura non facit saltum, is a proverb verified in the border-land of Chili and Peru. The natives of Atacama and other northern boundary districts, are morally, as well as geographically, the near neighbors of the indolent Peruvians. They avoid outdoor labor, shun active exercise, and dread the bracing temperature of the highlands, preferring to dawdle away their days in the languid atmosphere of the coast plain, in shops and taverns, leaving agriculture to the hardy Indios. Like their neighbors, they are viciously fond of stimulants, and do not improve their health by their predilection for flesh food, made tempting, less by its excellence than by the cheapness of butchers' meat in a country where black cattle can be bought for the price of their hides.

They marry much and early, and their habits may partly explain the paradox that Chili, as a whole, is

EXAMINADOR OF CHILI.

not considered a healthy country. The sanitary reports show an unaccountably large percentage of pulmonary diseases and of liver affection, and epidemic dysentery would seem frequent enough to upset the current theories of hygiene, if it were not for the circumstance that such plagues are mostly limited to the northern provinces.

South of Valparaiso centenarians are as common as in the Old Spanish highland province of Aragon. There, too, are found those model farms and factories which have earned the Chilians the name of the South American Yankees. Education has made amazing progress in the course of the last thirty years, and the government pays the bill for school books, as well as the teacher's salary; but that liberality has been thrown away on the natives of the *tierra caliente*, the hotland districts, who evade the school laws in every possible way, and fail to see the advantages of knowledge, as long as they can spare a *pesita* to get their letters written by one of the public scribes who display their trade-signs on every market place.

Some thirty years ago a family from Hessen, Germany, settled in the neighborhood of Molinas, in the province of Talca, Chili, and after a few years of miscellaneous agriculture, found that fruit raising would be apt to prove most profitable. They imported oranges from California, and apples and cherries from their native land, and encouraged by constant success, continued their experiments till their orchard plantation comprised thrifty fruit trees of nearly a hundred different species, including olives, figs, guavas, pears, Turkish plums, quinces, peaches, and Italian walnuts. "With the single exception of dates," says the proprietor of that plantation, in a communication to a German agricultural journal, "there is no fruit of any considerable market value that could not be cultivated easily and profitably in this garden of the Hesperides. In the last twenty-three years we have never suffered from frost and only once (slightly) from droughts, which could be obviated altogether by a more extensive system of irrigation. The more profitable trees continue to improve for thirty years, some of them (like the olive) even for a century, and I have no hesitation in saying that the two provinces of Talca and Colchagua could produce fruit enough to supply the civilized world."

Considering such possibilities, it is almost a disgrace that a large portion of the Chilian country population subsist chiefly on *carne secco* (dried beef) and corn cakes, but the Southlanders make amends by raising considerable quantities of brown beans,

ARAGON PEASANT.

and such annuals as melons and pineapples. Pineapple brandy is scandalously cheap and correspondingly popular; for the Chilians share the delusion of their Spanish kinsmen who oppose temperance laws as infringements of personal liberty. The constitutional abstemiousness of the South-European nations counteracts the tendency of that prejudice, but the Chilian half-breeds glory in their republican privilege to get "fighting drunk" every Saturday night.

Knowing that foible of their poor countrymen, many Chilian planters cultivate their estates with the aid of *inquilinos*, or semi-feudal tenants, who do not receive a cent of cash wages, but are permitted to settle on a piece of vacant land, free of rent, and in return agree to assist their landlord for a stipulated number of days.

The best settlers, in a physical sense, are found on the upper terrace lands, where the neighborhood of the Sierras invites to outdoor sports, and where the fish of a multitude of lakes add a pleasant item to the monotonous *menu* of their lowland neighbors. Those *monteros* (half Indians), many of them, furnished the volunteers that beat the Peruvian army almost as easily as Sam Houston's cowboys vanquished the regulars of Santa Ana. In the battle of Huancaya, they flung their muskets away and forced the fight by charging the enemy with *hunting knives;* and an eye witness who visited the battle field on the following day, found it strewn with corpses, every third man of whom had his throat cut from ear to ear. At home they are notoriously apt to settle their quarrels in the same way, but withal, have earned the reputation of being the most hospitable and genial of all South American Creoles, averse to indoor labor, but ever ready for exciting field sports, and as jealous of their independence as Montenegrine border-chieftains. The civil war which is just now clouding the Andes with powder smoke, has an ethical by-purpose as undeniable as that of our anti-slavery crusade. It will for generations, and not for Chili alone, settle the question of Presidential prerogatives. Some of the chief executives of South American so-called republics were as absolute autocrats as Czar Iwan and Gengis Khan, and owed their survival only to the circumstance that the patience of their subjects was less limited than that of the Chilian Monteros.

Alexander Selkirk had private motives for prolonging his Robinsonade in the caverns of Juan Fernandez, but if a hermit should really try to renounce the society of his fellow men, the climate of a Chilian coast-island could possibly reconcile him to the hardships of solitude. No winter frosts, no summer droughts, no troublesome insects; a fair supply of spontaneous fruits and an inexhaustible abundance of fish and mollusks might well offset the absence of dry-goods shops, and the same advantages are enjoyed by the settlers of numerous coast hamlets, especially in the neighborhood of Morena Bay (latitude S. 18°), where wild-growing apples and plums form extensive thickets.

In a country of that sort, temporary homelessness is not a serious evil, and there is no need of theological theories in explaining the disaster-proof equanimity of the natives. Chili is, par excellence, the land of earthquakes, and in the province of Coquimbo not less than one hundred and fifty-six shocks, besides countless *temblores*, or earth-tremors, were observed in the brief period of twenty-five months. Concepcion, Santiago, La Serena, Valdivia, and Talcahuana were utterly destroyed by as many different *terremotos*, or quakes of the first magnitude, and nearly all the coast-towns, including Valparaiso and Iquique, were more or less seriously damaged in the course of the present century. In 1822, the entire coast, sixty miles north and south of Valparaiso, was permanently raised five feet above its former level, and geological indications seem to prove that former upheavals have thus raised the coast hills some five hundred and fifty feet. On that furnace of volcanic activity life might be supposed to be crowded with sensational episodes; but the natives take the matter very calmly, and get used to *terremotos*, as our western settlers to cyclones and blizzards. Their houses are built in a way to resist all but superlative shocks, and incidental damage is repaired by a sort of mutual accident association, *i. e.*, all the inhabitants of a jolted village contribute to the re-establishment of a ruined household. Besides, every settlement has its *adivinos*, or earthquake augurs, who now and then indulge in long-range predictions, *a la* Wiggins, or Mother Shipton, but generally content themselves with "presentiments" that may bode either a storm or a *terremoto* and have often been fulfilled in a couple of hours. The great earthquake of 1730 was thus foretold at Coquimbo and Concepcion by bedridden invalids, like that of Lima by an old dog, who suddenly set up an unearthly howl, soon followed by the crash of falling buildings. Physical prostration seems really to increase the sensitiveness of the nervous system,—possibly on the principle that cripples are in special need of timely warning. In the heroic age of Greece, when weak nerves were a rare exception, the Pythia had to induce an artificial *deliquium* by inhaling the fumes of the Delphic cavern.

(To be Continued.)

THE tobacco habit tends to deaden the sense of honor, as well as of decency; and none are more likely to practice deception unscrupulously than those who use the weed.—*Sel.*

THE UNHAPPY STOMACH.

In an article entitled "Medical Electricity and Electrical Medication," in a recent number of the *Journal D'Hygiene*, edited by our esteemed friend, Dr. Prosper de Pietra Santa, a correspondent of that journal very eloquently pleads the cause of the over-drugged stomach of our modern times, and calls attention to a new method of applying electricity which certainly has the merit of giving the stomach salutary rest, even though its merits as a therapeutic agent may not yet be thoroughly established. We make the following free translation of the article :—

"The principal, almost the only, way by which we introduce medicines into the system is the same as that by which we introduce foods. We charge the stomach with the duty of transporting our remedies to all the diseased organs as well as that of conveying the nutritive elements to the healthy organs. This proceeding seems not to be very rational. It is not probable, in fact, that nature designed one and the same organ for functions so different. On the other hand, it is hardly probable that our remedies arrive at their destination, when they are intended to act upon other organs than the intestinal tube. They must undergo, in the stomach and the rest of the circulatory passage, many alterations and transformations, until they no longer possess the requisite properties when they finally arrive at the end of their pilgrimage. By this method, the physician gropes about in darkness, playing a sort of blind man's buff with the disease, which must, in its corner, make defiant grimaces at him. This mode of administering remedies presents, besides, the grave disadvantage of fatiguing the digestive organs; for medicines are nearly always, not to say always, poisons, and consequently natural enemies of the stomach.

"'One gives only small doses.' 'Little?' Hum! Very well, that is, perhaps, another reason why they may be harmful.

"It is not outside our purpose to remark that it is in civilized countries only that the administration of remedies by the mouth is employed and abused.

"Three fourths of the inhabitants of the globe take almost no remedies in this fashion, and are the better for it. The Indians, said Sunnerat, seldom administer any remedies, and employ sparingly only unguents and poultices. They never bleed. In place of bleeding, they order a spare diet for several consecutive days, and the disease dies of starvation.

"The Chinese do likewise, and in general all the Asiatics. The same is even more true of savages and barbarians of other parts of the world, and their stomachs never complain. They have never addressed a petition to the minister of public health to be secured the privilege much enjoyed by the stomachs of Europeans, to be disgusted with emetics, with purgatives, and the rest.

"It is much more probable that if the stomachs of civilized nations had a strong voice, they would petition against the increase of work with which they are arbitrarily burdened; for it is certain that the ingestion of medicines is one of the principal causes of the frequency and multiplicity of our gastro-intestinal maladies so common to-day, previously so rare, and still unknown to barbarous peoples who have no faculties of medicine. Whatever may be the cause, being possessed of our dyspepsia, our gastrolgies, our gastric inflammations, our enterolgies, our intestinal inflammations, and our gastro-intestinal inflammations, we are no longer wholly able to digest food, thanks to the prodigious exercise of ingenuity and subterfuge. It is only by the force of aperients and stomachics that we are able to maintain our unhappy life.

"If it is thus with foods, how much more so with medicines. It is necessary, then, to cease swallowing them, since we are incapable of digesting them. What shall one do, then, when he is sick? Shall he allow himself to die without doing anything? This is a question. One might as well, perhaps, die of the disease as of the remedy. And who has told you that the malady would kill you? The greatest physicians of our time have maintained that maladies cure themselves. They have acted upon this principle, and it is by this means that they have become the greatest physicians.

"Hypocrates, who was not a hypocrite, said that Nature was the true physician who cures disease, and that she herself followed her methods of cure without knowing them, as we close the eyes without perceiving.

"Celsus believed that the matter which causes fever dissipates itself. In consequence he counseled abstinence during the disease. This sufficed, according to him, to cure the fever.

"Bacon was of the same thought, and his translator, Lasalle, who had seen how Asiatics treat their patients, added still further to his ideas. One might fill a book with citations of physicians who have extolled negative medicine, and it is a fact that we know cases of the cure of all maladies without the application of remedies.

"But to submit ourselves to the regimen of fasting, it needs more patience and philosophy than we have, and especially less gormandizing and more control of appetite; for at the foundation it is this which induces us to partake of remedies when we are no longer hungry, the first symptom of the greater number of maladies. It is, perhaps, for the satisfaction of this capital sin more than for the well-being of man that physicians, recognizing that the stomach is nearly destroyed, seek other means of introducing remedies to the diseased organs, and for driving the disease from its retreat. From remote times, a great number of means have been tried; unctions, frictions, lotions, poultices, cataplasms, cupping, moxas, vaccinations, etc. But these procedures, more or or less ingenious, are not always and everywhere efficacious (are they ever so?).

"Dr. Foveau, of Courmelles, has presented to the Academy of Sciences a new procedure of his invention, having for its object to introduce remedies directly to the diseased organ. Relying upon the principle of electrolysis and the law of Faraday upon the transportation of the substance of conductors, Dr. Foveau has devised a system of medication and also the required apparatus for its introduction. The appliances consist of electrodes charged with medicaments, sounds for introduction into the natural cavities, and trocars for certain organs. He completes the medical action by electric currents, continuous or interrupted. The active substances decompose, and as they are of the same nature at each pole, they recombine in the interior of the body and act upon the organs interposed in the track of the circuit.

"Diocles and Herophile had suggested to remove the sick organs, the liver and intestines particularly, from their cavities, to apply to them the appropriate remedies, and to restore them to their normal state. They have had and still have some imitators.

"M. Foveau undertakes, by means of electricty, to send the medicaments to find the diseased organs, and to restore them. One might call this method a sort of medical telegraph. The idea is ingenious; will it be efficacious? This question only the future can answer.

"The inventor attributes to his discovery other advantages. The medicine reaching the diseased organ thus directly, the dose may be considerably diminished. The electric currents which accompany the chemical decompositions destroy the microbes. All the diseases which are caused by these little beasts, if any are, will find their remedy in the new system.

"Let us repeat in conclusion, that experience must say the last word upon this subject. Whatever that may be, the attempt of Dr. Foveau is a laudable one. The members of the human and the social body find themselves to-day in situations diametrically opposed. In the one, the members complain of excess of work and insufficient nourishment, while that the stomach works not enough, and consumes too much. In the human body it is the reverse. The stomach is overwhelmed with work. It is it that is charged with the indigestion and digestion of everything — food and medicines. It is time this state of things came to an end, if one does not wish to see Mr. Gaster go on a strike, and demand the 'three eights,' like other laborers."

MEDICAL TEMPERANCE REFORM IN ENGLAND.

SOME years ago, a number of medical men organized in Great Britain a society known as the "British Medical Temperance Association." Commenting upon this Association and its work at a recent meeting, the *American Lancet* remarks as follows: —

"This Association has been a wonderful power in Great Britain. Its political influence is profound and widely extended. What it lacks in numbers it makes up in intensity of perseverance. When a person desires to be a member of Parliament, he looks about for the teetotal element of his district, and governs his acts according to its strength. Generally, it has held its meetings in its central rooms in London, or at its several branches. But lately it has adopted the plan of holding meetings in different districts and inviting the busy practitioners adjacent to attend these meetings. At a late meeting of this sort the President, Dr. B. W. Richardson, opened the discussion by a model address. All extremes were avoided. Especially (as reported in the London *Lancet*) did he dwell upon the sanitary side of the question. Alcohol produces a large and calculable mortality. The mortality means a large bill of sickness, and the sickness means an enormous loss of labor and the rewards of labor. As a profession, we are the custodians of health, and ought therefore to concern ourselves especially with the wholesale removal of the preventable cause of so much misery and disease.

"If an epidemic from some more obscure cause destroyed a tithe of people so systematically as alcohol does, we would be ambitious to vie with each

other in discovering the means of reaching and removing the root of the evil. It is our duty to do the same thing in regard to this great plague which is always before our eyes.

"Respecting the employment of alcohol as a remedy in disease, he said that whenever used in the treatment of disease, alcohol should be prescribed as a weapon of precision, that is to say, diluted with water in measured doses, without complication. This plan he had followed with great satisfaction, for fifteen years.

"Again: he said that a truthful study of the need of alcohol as a medicine, would greatly diminish its rational prescription. If a practitioner, accustomed to the free and frequent use of alcohol, should stop and study on the other side of the question, he would see remarkable results follow treatment without it; as, for example, cases of hemorrhage, pneumonia, asthenia, etc. Such a study would convince the rational practitioner that quite a revolution in treatment without alcohol would follow. The other side of the question was ably discussed, and all granted the meeting had been instructive as well as pleasant. The experiment is likely to be made in this country, as a society founded upon the same principles as the British, has been organized in the United States, and is likely to adopt such plans of operation as have proved helpful in England."

HOW TO EXCHANGE A POOR CONSTITUTION FOR A GOOD ONE.

[Abstract of Lecture by J. H. Kellogg, M. D.]

THIS question interests a great many people; for the greater share of the children born at the present time have some very serious flaw in their constitutional structure. All physicians are familiar with the fact that constitutional disorders are on the increase. There is no greater error held by the public than the idea that a man can violate all the laws of health, and then antidote the consequences by a few doses of medicine. Not only do the consequences of the violated law remain, but they may be transmitted by heredity.

Physicians in general are not without responsibility in the cultivation of disease, and quite a number in the advance line are coming to realize this. A prominent doctor once said to me, "We are not treating our patients right. We ought to instruct them to live in obedience to natural law, and how to ward off disease. But this is a difficult thing to do. If a man comes to me who has been gormandizing, eating late suppers, and neglecting to take exercise, and I should say to him: 'You are a fool and a glutton; go home and live properly, and you won't need a doctor,' he would simply get angry, and go to my rival across the street, and get the medicine he wanted." We do not hear enough about preventive measures and medicines, although several very excellent books have recently been written upon this subject.

The ordinary method of examining into a case is not without a bad effect upon the patient. The doctor feels the patient's pulse, and asks him all manner of questions about his symptoms; whether this organ or that organ is acting properly, and when and where he has a pain. It sets the patient to looking in upon himself, and as the inquisition is repeated day after day, he soon begins to feel that he is quite an invalid. Perhaps he takes it upon himself to have a fresh supply of symptoms to present to the doctor upon each visit, as if it were a fragrant bouquet; and so between the patient and the doctor, diseased conditions are cultivated.

The ideal relation between doctor and patient would be that of a contract, for a consideration, to keep the family in health. In China an arrangement of this kind is sometimes made, and every time a member of the family gets sick, the doctor is fined for not doing his duty, instead of being paid to make the patient sick, or to cure him after he is sick, as is done in this country. A doctor who was paid to keep families in health, would study their constitutional peculiarities and tendencies, especially with reference to the heredity of the children, and advise wisely as to the course of training necessary to pursue for the well-rounded development of each child.

In the formative period of childhood, a poor constitution may be much more easily developed into a good one than at any subsequent time. The doctor would be expected to give seasonable advice about the proper adjustment and kind of clothing, also about diet, exercise, ventilation, drainage, etc. The doctor, knowing that everybody would be asking questions upon these subjects, would have an additional incentive to study and inform himself, and keep abreast with every new discovery in sanitary science, heredity, and diet. A child born of feeble parents, with weak, flabby muscles, would be given gentle manipulations, and be taught from its earliest infancy the resistive movements of massage. In this way superior muscular tissue could be built

up. Games conducive to development would be devised, and those calculated to over-develop certain organs or parts would be regulated or restrained. For instance, too much running tends to the over-development of the heart, with its long line of consequences. By such means a child would have its constitution developed normally, and the ground-work of good health laid would stay by him all his life.

"Train up a child in the way he should go, and when he is old, he will not depart from it," does not apply alone to mental and moral training. Give a child a symmetrical muscular development, teach him how to walk with firm, elastic step, teach him to stand with ease and grace, and he will not depart from these ways when he is old. There is just as much difference between the carriage and manner of a boy who has had judicious physical training and one untrained, as between the action and bearing of a colt which has been carefully trained, and one which has been allowed to run wild. In this ideal relation between the doctor and patients, the doctor would be advisory counselor with the school-teacher in the training and care of children.

A child needs to be watched that he does not sit down to read or study with lungs cramped and shoulders rounded. Another thing: if a child excels in strength in some particular direction, that is not the point to cultivate as is so often done; but cultivate the rest of the body to bring it up to the same standard. Rowley, the famous walker, has remarkable development in the muscles of the leg and back, but alongside a man who had given all his attention to the development of the muscles of his arms and chest, he would stand no chance at all in a rowing-match; neither would the man with extraordinary muscular development of the arms compete with Mr. Rowley favorably in a walking-match. One-sided developments like these are monstrosities; really perfect development is always symmetrical. George Washington was a fine specimen of a well-developed man. He could throw a heavy weight further than is recorded of any man at the present time, and the same is true of his running jump of twenty-four feet.

The great tendency is to specialization in mental and physical occupations, and, in consequence, we are getting more and more unbalanced all the time. Our educational system should give an all-around development up to the age of maturity. Tendencies antagonistic to this can generally be stamped out if taken early enough. Still, heredity means deformity in many instances, and the bent it gives cannot be wholly worked out; but improvement can be made if the means and efforts brought to bear for this purpose are wise. Give a child the mold of favorable circumstances; place about him a physical and mental environment which will counteract in as great a degree as possible the bad tendencies of his heredity, and much can be done to raise the standard of the human race — how much, nobody knows. The subject of heredity is receiving more attention than formerly, and cannot be studied too carefully by parents and teachers.

DANGERS OF DOMESTIC REMEDIES.

POPULAR delusions, although frequently possessing farcical characteristics, mostly end in producing disastrous results. The craze for economy is widespread, and perhaps inevitable, when the income is small, and expenses are great. The general practitioner protests against the prescribing chemist, and the chemist in turn is never-ending in his denunciations of "stores." According to their means and opportunities, members of the public glide down the scale from the top to the bottom, ever seeking a cheaper market. Necessarily a certain amount of danger attends the downward path, but the danger is greatest when the individual essays both diagnosis and treatment, especially if he attempts to prepare his own remedies. Doubtless there are some simple modes of treatment which may safely be carried out; but in the oral transmission of the details of domestic medication, the risk of a missing link has always to be reckoned with, and, to the experienced onlooker, the problematical nature of the sequel is intensely interesting.

Happily, it is not often that ignorance is so fatal as in the recent instance in Cheshire, England. Two men have died of attempted self-medication. Imagining that they were suffering from itch, the advice of a fellow-workman was taken, and some nitric acid and quicksilver were procured, mixed, and applied to the skin. The druggist had labeled the bottles "Poison," but he does not appear to have made any inquiry as to the purpose for which the substances were to be used. A verdict of "Death from misadventure" was passed, and strong comments on the ignorance displayed were made by the coroner.

As it stands, the case sufficiently demonstrates the dangers and folly of attempting to compound remedies in complete ignorance of the properties they possess. — *London Lancet.*

UNFAIR COMPARISONS.

BY W. M. HEALEY.

MANY persons defend their habits of living by comparing themselves with some one who does not live as they do. The man who uses whiskey, tobacco, tea, coffee, or anything which he can find no other way to defend, will look for some one that does not use the thing in question, and compare him with one who is addicted to the habit. He selects the strongest specimen on his side and the weakest on the other. This is unfair. Because a man is stronger than a child, it does not prove that his habits of living are better. Because a pugilistic fellow, often drunk, can easily toss some temperance man about, that is no evidence that drunkenness adds to one's strength. Because a large dray horse fed on nothing but hay can out-pull a grain-fed Shetland pony, one would not think of concluding it to be on account of the way in which the two horses were fed, but of inherent strength, and if the feeding were reversed, the difference would be still more marked.

It is just so with mankind. The best living produces the best results. Hygiene cannot produce impossibilities, and its friends do not claim that for it. Most people live as they should only when they cannot live any other way. When the constitution has been shattered by violation of nature's laws until it can endure no more, possibly they will then begin to be more careful.

But there is much that is deceptive in the physical appearance of men. Often the tea and coffee drinker and flesh eater points to his red face and full figure, and compares himself with some paler and sparer man, whose habits differ from his own. In Minnesota, I spent a night with a portly Scotchman. We both desired to be at a place nine miles distant, at a very early hour the next morning, but we were told that the road could not be traveled with a team. I had been speaking to my acquaintance of his habits of drinking tea and coffee, and he resorted to the old subterfuge of comparison, about as follows: "Waal neow, look at me. There is no mon in the place like me for strength. I am much bigger and stronger than you!" I tried to show him that a reformation in his habits would give him still more strength, but the argument seemed lost. I then proposed that we should together walk the nine miles in the morning, but he seemed quite averse to the idea, and evidently thought, when we went to bed, that he had convinced me that it was impracticable.

When I renewed my suggestion early next morning, he admitted that he could not endure so long a walk, but when I proposed to go before breakfast, without even a cup of coffee, he was astonished, and declared it would completely prostrate him to do a thing like that. Poor man! he had fine physical endurance given him by nature, but he had so abused it that it was little compared with what it might have been.

I was obliged to leave him and go on my way alone, walking the whole distance easily, and without the stimulus of a cup of coffee.

PHYSICAL HOLINESS. — Miss Frances Willard, President of the World's and National Woman's Christian Temperance Union, in an address before the Seventeenth Annual Convention of the N. W. C. T. U., at Atlanta, Ga., last year, gave utterance to some patent truths upon this subject, so gravely expressed that we cannot refrain placing before our readers the following specimen paragraph: —

"As is the food, so is the man; drink beer, think beer; eat pork, and be porcine. The multiplication table is not more accurate than the law of food; all distempers filter down the throat. Tell me what thou eatest, and I 'll tell thee what thou art. Children can be trained to physical holiness, and the knife and fork may become the flaming swords that guard the gates to their health paradise. God hasten the day of a scientific motherhood that will build into her child before and after birth the beatitudes of wholesome appetite! Then will alcoholic drinks gurgle into their normal home, the gutter, instead of bespattering the temple of God, and tobacco will send the smoke of its torment from the bottomless pit where it belongs, rather than from that holy place, the organs of human speech, and the cradle of that heavenly rainbow — a human smile. But we must begin with the babe in arms, for the grown man is 'up in arms' at the mere mention of such a revolution."

ABSENCE OF CANCER AMONG JEWS.— According to an English journal, a lecturer at Owens College, Manchester, recently asserted "that no Jew or Jewess has ever been found to suffer from cancer," and that "the immunity of the Hebrew race from this terrible scourge is attributable to their abstinence from swine's flesh."

PRIMITIVE PHYSICK.

The Rev. John Wesley's medical knowledge seems to have been wholly of an empirical character. He made no pretence of scientific medical knowledge. His book issued in 1747, from which we quoted in the August number, seems to be simply a collection of popular remedies such as he found in use among the common people of his time. Nevertheless, many of the simple methods suggested have now become a recognized part of scientific medicine. It is particularly interesting to note that both water and electricity were successfully employed in numerous maladies and by various methods nearly a century and a half ago, long before their value was recognized by scientific physicians.

There are a few curious prescriptions for the ague:—

"*For an Ague.*—Go into the Cold Bath just before the cold fit."

This method of treatment was certainly heroic, nevertheless, it was very likely successful in many cases. The reaction produced by a cold bath would doubtless prove quite effective as a means of preventing a chill, which is the first stage in this disease.

Until we had read Mr. Wesley's book, we labored under the erroneous impression that medicated pads were of modern invention. Neverthess, the stomach pad, of which it is said that several train loads have been sold in the State of Indiana within the last two years, for the treatment of ague, seems to have been a favorite method of treating this disease more than a century ago. Here is Mr. Wesley's recipe for a stomach pad:—

"Take a handful of Groundsell, shred it small, put it into a Paper Bag, four inches square, pricking that side which is to be next the Skin, full of Holes. Cover this with a thin Linen, and wear it on the Pit of the Stomach, renewing it two hours before the Fit."

Here is another recipe for a stomach pad, guaranteed a sure cure for ague:—

"Melt two pennyworth of Frankincense, spread it upon Linen, grate a Nutmeg upon it, cover it with Linen, and hang this bag on the Pit of the Stomach."

"Sliced roots of water-lilies," or "a large onion slit," are also recommended.

Here is another cold-water cure for ague, which was doubtless useful: "Drink a Quart of cold Water just before the cold Fit. Then go to bed and sweat." This remedy doubtless succeeded in many cases by inducing profuse perspiration just at the time when the chill was coming on.

A curious remedy, the efficacy of which we hold in great doubt, is the following:—

"Make six middling Pills of Cobwebs. Take one a little before the cold fit; Two a little before the next Fit; (suppose the next day:) The other three, if need be, a little before the third Fit."

The following remedy, however, is still in use in some malarious districts, and has been found on the authority of the Italian government to be of value:—

"Eat a small Lemon, Rind and all."

The following observation is as useful now as then, as a protolactic: "The daily use of the Flesh-brush, and frequent cold bathing are of great use to prevent relapses."

The following directions respecting the use of the cold bath are also very judicious:—

"To go in cool; to immerge at once, but not head foremost; to stay in only two or three minutes (or less, at first),

"Never to bathe on a full stomach:

"To bathe twice or thrice a week at least, 'till you have bathed nine or ten times:

"To sweat immediately after it (going to bed) in Palsies, Rickets, and all Diseases wherein the Nerves are obstructed:

"You may use yourself to it without any danger by beginning in May, and at first just plunging in, and coming out immediately. But many have begun in winter without any inconvenience."

Here is another cure, the value of which is attested by many who have made use of it:—

"Use strong exercise (as riding or walking as far as you can bear it) an hour or two before the Fit. If possible, continue it till the Fit begins. This alone will frequently cure."

The writer knew of a case in which a man was cured of an ague by mounting a horse and riding to a "training" on the day when the periodical "shake" was expected to arrive. Although the gentleman had suffered from the disease for several weeks previously, having chills and fever regularly every other day, the expected paroxysm did not appear either on "training day" or thereafter, a radical cure being effected by the vigorous outdoor exercise; and an old gentleman recommended a patient suffering from ague to fall down stairs head foremost three times three days in succession, then to wait three days and do the same thing again, until he had repeated the experiment three times, asserting that his grandmother tried the remedy and was cured of an ague which had baffled all remedies.

Here is another of Mr. Wesley's ague cures, which doubtless proved efficacious in many cases, when

taken according to directions: "Before the cold Fit begins, go to Bed, and continue a large Sweat by Lemonade (that is, Lemon, Sugar, and Water), for six or eight hours. This usually cures in three or four times, if it does not, use the Cold Bath between the Fits."

St. Anthony's Fire.— This disease is well described in a foot-note as follows: "St. Anthony's Fire is a Fever attended with a red and painful Swelling, full of Pimples, which afterwards turn into small Blisters, on the face or some other part of the Body. The sooner the eruption is, the less danger. Let your Diet be only Water-Gruel, or Barley-Broth, with roasted Apples."

The most radical vegetarian could not criticise the dietetic suggestions — indeed the advice on this point is in accord with the very best medical practice of the present time. The following remedies are suggested for the treatment of this disease, more technically known as erysipelas, both of which were doubtless found to be more or less beneficial: "Take a glass of Tar Water warm, in Bed, every hour, washing the parts with the same.

"Tar water is made thus: Put a gallon of cold Water to a Quart of Norway Tar. Stir them together with a flat stick for five or six Minutes. After it has stood covered for three days, pour off the Water clear, bottle and cork it."

Tar water contains creosote and other germicides, the use of which in the treatment of erysipelas, a germ disease, have been proven to be of great value.

"*The Apoplexy.*— An Apoplexy is, A total Loss of all Sense, and voluntary Motion, commonly attended with a strong Pulse, hard Breathing and Snorting. To prevent, use the Cold Bath, and drink only Water."

"*The Asthma.*— An Asthma is a Difficulty of Breathing from a Disorder in the Lungs. In the common (or moist) Asthma, the Patient spits much. Take a Pint of cold Water every Morning, washing the Head therein immediately after, and using the cold Bath once a Fortnight; Or, half a Pint of Tar Water. twice a Day. Or, live a fortnight on boiled Carrots only It seldom fails. For present Relief, vomit with a Quart or more of warm Water. The more you drink of it the better. Do this whenever you feel any motion to vomit; and take Care always to keep your Body open."

For "A Dry and convulsive Asthma," the author recommends to "use the Cold Bath thrice a Week," and adds, "In any Asthma, the best Drink is Apple water: That is, Boiling Water poured on sliced Apples."

Bleeding at the Nose.— "To cure it, Apply to the Neck behind and on each side, a Cloth dipt in cold Water. Or, wash the Temples, Nose, and Neck with Vinegar. Or, snuff up Vinegar and Water. Or, steep a Linen Rag in sharp Vinegar, burn it, and blow it up the Nose with a Quill. In a violent case, go into a Pond or River."

Of the above remedies, the first, second, and third doubtless proved very useful. Vinegar is an excellent styptic. Its use for stopping hemorrhage has recently been revived.

The Bleeding of a Wound.— Here are some quaint remedies recommended to stop the bleeding of a wound, all of which were doubtless more or less useful in one way and another: "Make tight Ligatures on the Arms: Or, apply Tops of Nettles bruised: Or, Leaves of All-heal bruised: 1. Or, strew on it the Ashes of a Linen Rag, dipt in sharp Vinegar and burnt: Or, take ripe Puff-Balls. Break them warily, and save the powder. Strew this on the Wound and bind it on. 1.— This will stop the Bleeding of an amputated Limb without any Cautery."

Blisters.— Here is a very excellent method of drainage: "On the feet, occasioned by Walking, are cured by drawing a Needle full of Worsted through them. Clip off at both ends, and leave it till the skin peels off."

Boils.— The fact that most of the following remedies for the treatment of boils are still in use is an indication that they must be more or less efficient: "Apply a little Venice Turpentine: Or, a Plaister of Honey and Wheat Flour: Or, of Figs: Or, a little Saffron in a white Bread Poultis."

ACCORDING to Josephus, the workmen who erected the pyramids of Egypt, lived almost solely upon lentils.

Mr. Pinkie (10 P. M.) — "My dear, the doctor says a brisk walk before going to bed will insure sleep to insomnia sufferers like myself."

Mrs. Pinkie — "Well, dear, I will clear the room so you can walk. Please carry baby with you."

ACCORDING to the *New York Sun*, Thomas A Edison is a vegetarian, "eschewing flesh, fowl, and fish. He enjoys fruit of all kinds, grains of every variety, and likewise vegetables, especially those that ripen in the sunshine. He is very careful about his diet, holding that it has a powerful influence upon the mind and its action, as well as upon the health and vigor of the body."

HEALTH, GRACE, AND BEAUTY. — NINTH PAPER

The Hygiene of Sitting. — Continued.

LAST month attention was called to some of the evils resulting from the use of improperly constructed chairs, and the suggestion was made that certain physical deformities might be avoided by the employment of chairs so constructed as to allow the hips to reach the back of the chair on a level with the seat, while the shoulders rested against the upper part of the chair, the middle of the back not coming in contact with the chair at all. Forcible sitting is as necessary for health as forcible standing. If the muscles of the waist are completely relaxed in sitting, a posterior curve is given to the trunk, which results in a flattened chest and drooping shoulders, a position which becomes permanent when the sitting position is maintained a considerable length of time.

FIG. 1.

In Fig. 1 we give a reproduction of the chair recommended by Sir Astley Cooper, the eminent English surgeon. This chair, at the recommendation of Sir Astley Cooper, has for many years been extensively employed in educational institutions in England for the purpose of correcting the habit of stooping, so prominent among school children. The chair has been objected to on the ground that the energized position of the muscles, in maintaining the upright position necessitated by it, is likely to cause the muscles to become exhausted, and so lead to deformities. This objection is based upon the want of appreciation of the facts in the case. The muscles which are intended to sustain the body in an erect posture should always be in an energized position when the body is held upright. They should never be relaxed except when the body is in a horizontal position, as when at perfect rest. The reason for this will be apparent to any one who is acquainted with the functions of the muscles of the trunk, particularly those which form the anterior abdominal wall. The tension of these muscles is the principal means of support to the liver, stomach,

FIG. 2.

FIG. 3.

bowels, and other organs of this portion of the trunk. When these muscles are relaxed, the organs referred to easily fall down out of position, the spine bends forward, the chest is flattened, the chest cavity diminished, and the functions of numerous organs within the trunk are interfered with.

If Sir Astley Cooper's chair has proved a failure, it is only because its use has not been accompanied by proper physical training. A person whose trunk muscles are weak, will naturally find it impossible to maintain an erect posture, either in sitting or standing, for any considerable length of time; but one whose muscles have been properly developed will naturally, and without conscious effort, hold the chest nicely balanced upon the pelvis, in a correct poise, whenever the body is in such a position as to require such an action of the muscles.

It is, nevertheless, not at all difficult to assume an incorrect sitting poise in a chair, which, if properly used, is conducive to a healthy attitude, as will be seen by reference to Fig. 2. In this figure, there is seen the same relaxation of the muscles of the waist, the same dropping forward of the head and falling of the chest as appears in Fig. 1 (August number), although not to quite so great an extent. Persons who habitually sit in this relaxed condition will certainly acquire various deformities of figure which can only be corrected by long and continued effort.

Young ladies not infrequently acquire round shoulders, flat chests, and other deformities, as the result of spending many hours at piano practice while sitting in a bad poise. The attitude shown in Fig. 3, is a not uncommon one. Girls who spend several hours a day in piano practice between the years of fifteen and twenty years, easily acquire deformities of the figure which are not only a conspicuous defect from an æsthetic standpoint, but which are conducive to disease of the stomach, bowels, and pelvic organs, which may be the cause of chronic and obstinate invalidism.

Fig. 4 shows a correct attitude for a person practicing upon a piano. It will be found that the freedom for lung activity and the balanced position of the muscular system which is maintained in the correct sitting attitude, will obviate to a very considerable degree the evil results which are recognized as connected with piano practice, but which are doubtless, in many instances, not due to the practice itself, but to an incorrect and unhealthful attitude assumed in sitting while thus engaged.

Children are especially likely to suffer from incorrect attitudes in sitting. The soft, undeveloped, and growing bones of a child, the comparatively weak

FIG. 4.

and yielding ligaments by which the different parts of the skeleton are held together, render particularly injurious any attitude, long maintained, in which the bodily organs are seriously displaced or improperly disposed. Children should have seats adapted to their size. It is necessary, in order that the correct attitude in sitting should be maintained, that the feet, as well as the thighs, should be properly supported. When a child sits in a chair intended for a grown person, the excessive width of the seat is almost certain to induce him to sit upon the front edge of the chair, where the legs hang pendant, too short to reach the floor, while the shoulders are only able to reach the back of the chair by a complete relaxation of the muscles of the waist, and a backward bowing of the spine, which, if frequently assumed or long maintained, is certain to result in more or less permanent deformity of the spine, as well as of the chest and other portions of the trunk. Fig. 5 represents the attitude commonly assumed by a child when siting in a chair intended for a grown person.

FIG. 5.

The hygiene of sitting is a matter of too great importance to be safely ignored. In every household where there are young and growing children, there should be a series of chairs of different sizes and heights, adapted to children of different ages and sizes. Each child should have his own chair, and as much care should be taken in reference to his sitting poise as with reference to his table manners, his use of language, and other matters of discipline which go to make up his education. Teachers commonly neglect to give this matter proper attention. Children are often allowed to bend over their books, to rest upon one elbow placed upon the desk, to sit forward in the seat, allowing the middle of the trunk to settle back, to assume a hundred other abnormal positions which are conducive to ill health, and which result in many blemishes of form as well as positive deformities.

ATHLETICS GONE MAD.

THE prevailing enthusiasm for athletics is a much-needed reaction from a most unwise indifference. The last generation neglected physical development. It, perhaps, did not matter so much years ago; for a large proportion of the young men of the land were then raised upon farms. They found their gymnasium in the harvest field and behind the plow. Milking developed their grip, and pitching hay developed their shoulders. Instead of swinging Indian clubs they sawed wood; and instead of pulling chest-weights they hoed corn. This is after all the best of methods. Constitutions built up by such exercises have a toughness of fiber and power of endurance which no gymnasium can impart.

To-day, however, the conditions are changed. The thousands of young men in great cities do not swing flails or mow grass. They are cramped in artificial and unfavorable circumstances. Our system of school life keeps them many hours in badly ventilated rooms. Under such conditions it is a kind providence that has brought athletics into such prominence and awakened such an interest in physical development in the hearts of our young men. I am glad of it. I recognize its necessity. I have great hopes for its results. The gymnasium of to-day will cure, or what is better, will prevent, the dyspepsia of to-morrow. If the past generation had taken more exercise, the present generation would be taking fewer pills. So far as I had any influence, I would use it among all young people to interest them in physical development. A vigorous and healthy bodily life is something that may be lost by neglect, and, to a degree at least, secured and established by the energetic observance of well-known laws. I am glad that the spirit of athletics is busy among our young men, enlarging muscles, broadening shoulders, deepening chests. The result will be a finer race, and that paragon of animals, the noblest result of the ages — a strong man.

While I am thus heartily in sympathy with this spirit and bid it God-speed on its mission, nevertheless I am not blind to certain absurdities and extravagances which are committed in its name. Athletics is altogether desirable. But *athletics gone mad* is not so entirely admirable. The danger lies not in development, but in one-sided development. The object should be not merely to increase strength. A strong *brute* is not a worthy achievement. A strong *man* is the result to be desired. There are two things to be secured — muscle and manhood,

strength and character. If either is developed without the other, we have only a monstrosity on our hands. Strength without character is revolting. Character without strength is pitiable. The two need to be blended together. The character needs to be permeated with strength, and the strength needs to be shaped by the character. The manhood needs to be muscular, and the muscle needs to be manly. Each must be full of the other. When thus blended, they represent two things which God has joined together; in their combination they produce the grandest earthly being, a strong man. — *Sel.*

MUSCLES AND MANNERS.—Good manners are a passport alike to the favor of rich and poor, learned and ignorant, aristocrat and plebeian. As self-respect and respect for others is the keynote of good behavior, good manners are surely one of the best heritages possible to leave our children. But they do not come by nature, as reading and writing according to Dogberry's theory. Manners are largely physical, and there must be a definite discipline of the body to insure the happy way of doing things. And that discipline must train the muscles, the joints, the attitudes, the breath, the play of the face, hands, feet, the expressions of the eye, the tones of the voice, the pronunciation of words, the bearing of the head, the style of walking, sitting, reclining, in fact, everything in the bearing and deportment of the body. There is much, indeed, besides all this in the best manners. But this discipline is the foundation and basis of all the rest.

How to stand is one of the essentials of good manners. It is always wrong to make the bony structure do most of the work in keeping the body upright. The muscles should hold it in position. The greater number of muscles used, the greater the strength, agility, and grace. The correct position in standing is when the lips, chin, chest, and toes come upon one line, and the feet are turned out at an angle of sixty degrees. In walking, says Checkley, keep face and chest well over the advanced foot, and preserve the habit of lifting the body with the muscles and by the inflation of the lungs.

Proper breathing is the fundamental essence of grace, as it is of health and strength. The lungs have their own muscular power, and this should be fully exercised. While standing or sitting, with the chest free, take in a slow, long, deep, breath, until the lungs seem full, being careful not to strain in any way the lungs or muscles. Hold the breath thus taken for a second, and then let it out slowly. In all lung exercises endeavor to inflate the lungs upward and outward. Carry the chest and lungs as if the inflation were about to lift the body off the ground. This gives a feeling of buoyancy that is genuine, and will add grace to all the movements of the body.

Manners, it will be seen, are largely an affair of muscles and their use. The muscles must be trained for manners. This training should begin early, in the nursery, among little children, during the plastic age when practice can make perfect at comparatively little cost. In importance this branch of education is second to none; for it is a large factor in human advancement, and adds greatly to human happiness. A little thought will show how much our pleasure depends upon the way others carry themselves — how they stand, sit, speak, and how they do things. Address and accomplishments — trained muscles — gives to their happy owner the mastery of the best things of life. — *Louise Fiske Bryson, M. D.*

WALKING. — In English and French books on the military drill and physical training, whole chapters discuss the subject of walking. We are told that this or that part of the foot must touch the ground first — that the ankles must be so and so, etc. I will not say this advice is not right, but I will say that very few have been helped by it.

Look at a good walker. Shoulders, head, and hips drawn well back, and the chest thrown forward. What a firm, vigorous tread! Such a walk may easily be secured by carrying a weight upon the head. An iron crown has been devised for this purpose. It consists of three crowns one within the other, each weighing about nine pounds. One or all three may be worn at a time.

The water-carriers of Southern Europe, although belonging to the lowest class, have a noble bearing. Certain negroes in the South, who "tote" burdens upon the head as a business, can readily be pointed out in a crowd. The effort required to keep the burden directly over the spine so develops the muscles of the back and neck that in the absence of the burden, the head is carried in a noble, erect attitude.

By carrying one of these crowns upon the head half an hour, two or three times a day while walking in the garden or through the halls of the house, one may soon become a fine walker. One tenth of the time occupied in learning a few tunes on the piano, given to this exercise, would insure any girl a noble carriage. The crown is not necessary. Any weight which does not press upon the very crown of the head, but about it, will answer the purpose equally well. — *New York World.*

PHYSIOLOGICAL BREATHING.

[Abstract of lecture by J. H. Kellogg, M. D.]

IT would seem unnecessary to instruct human beings how to breathe, but as a matter of fact one half the civilized world do not know. Babies, horses, dogs, and cats know how to breathe, but civilized women do not. By reason of corset-wearing and other constrictions, thousands of women of the present day have never known since childhood, what it is to breathe in a truly physiological manner.

At the outset, let us consider the breathing apparatus. The chest cavity which incloses the lungs, is a bony cage with ribs on either side, the sternum, or breast bone, in front, and the spinal column behind. The ribs are connected with each other and with the spinal column and other bones of the upper portion of the body, by large, strong muscles which are used for moving the ribs outward, thus increasing the size of the chest cavity. In breathing, by a contraction of the muscles which are attached to the ribs, the ribs are pulled upward and outward; the chest walls, thus being drawn asunder, the air rushes in to fill the space. The amount of air taken in depends upon the degree of enlargement of which the chest cavity is capable. The seven upper ribs are attached to the backbone by ligamentary hinges, and to the sternum by long cartilages. Below these are three or four floating ribs which are attached to the spinal column, but not directly connected with the sternum in front. At the same time that the chest is being enlarged laterally, it is enlarged perpendicularly through the contraction and descent of the diaphragm. This is a strong, dome-shaped muscle fastened to the ribs by its lower edges, and constitutes the floor of the chest cavity. It is straightened as the ribs are pulled apart, and is flattened by its own contraction. The expansion of the chest at the waist serves to fix the ends of the diaphragm so as to secure the greatest efficiency of these muscles in action. This is an admirable arrangement for getting the greatest possible amount of work out of the diaphragm. In normal respiration, the diameter of the chest cavity is increased in every direction, when there is no constricting clothing.

What is the purpose to be accomplished by expiration and inspiration? We exhale to get rid of poisons of the most deadly character. We inhale that we may take in oxygen, the great vitalizer of the body. When a muscle becomes tired from prolonged exercise, it has become poisoned by an accumulation of broken-down tissue which is in excess of the amount which the blood can carry off, and so serves partially to paralyze it. Resting gives the oxygen a chance to burn up these poisons, and thus the muscle is able to resume work.

We need oxygen also for the purpose of digestion. We cannot convert the various food substances into a form fit for assimilation without a free supply of oxygen. The liver might be called the "rendering" establishment of the body, where poisons are converted into something less harmful; and oxygen is the agent by which they are changed. The degree of life and vital activity of an animal depends upon the amount of oxygen it is able to take in. The difference between the life of a frog and that of a bird is in the amount of oxygen consumed. The frog has only a couple of little air bags into which it swallows a small quantity of air, mouthful by mouthful, as we would drink a glass of water; then it is able to go down to the bottom of the pool and stay there fifteen or twenty minutes before it needs to breathe again. Even if deprived of these bags which answer in the place of lungs, the frog is able to live for some days without great discomfort. On the other hand, birds take in a very great amount of oxygen, and breathe with wonderful rapidity. It is this fact which gives to the bird its buoyancy, and the great degree of muscular activity which enables it to soar above the clouds. The person habitually inflating the lungs to their utmost is able also to live up in the clouds in more senses than one; for the highest type

of physical life is attainable only by those possessing ample breathing capacity.

Respiration has further offices than furnishing oxygen to the body for vitalization and for burning up impurities. It is the great regulator of all vital processes. With every breath, the veins of the chest collapse. So the chest acts as a pump in a double way, bringing the air through the passages to the lungs and the blood to the heart through the veins.

Let women wearing clothing which prevents normal breathing, bear in mind that shorter breath diminishes the action of this pump, and so helps to dilate the heart. The same pumping influence affects all the organs in the abdominal cavity. The stomach and liver lying next the diaphragm receive perhaps the greatest aid. It is found by careful study and experiment that this respiratory pumping action is also efficient in drawing food substances from the stomach into the veins. The absorbents of the stomach are bathed in liquid food, and by suction the digested food is drawn up into the capillaries; and the same is true of the lining of the small intestines. When the breathing is physiological, there is a rhythmical action of the stomach and liver and all the other organs below, constantly going on, which keeps them from congestion.

If an arm were put up in a sling for any length of time, its muscles would atrophy; and in like manner the muscles of the organs of the trunk atrophy when they are not given proper exercise. In order to keep these organs in health, their muscles should contract with every breath.

The natural action of the lungs may be aptly likened to that of a pair of bellows. The trachea is the nozzle, and the lower sides of the chest are the handles. But how impossible to fill the bellows with air when the handles are first tied together with a corset string! Yet that is precisely what the women try to do who wear fashionable dresses. Nature has supplied large, strong muscles with which to move the handles of these bellows, yet physiologists have been telling us for a century or more, that women naturally breathe only with the upper part of the chest. Little girls breathe just the same as little boys or as men, but as soon as they grow to be young ladies, they don the corset, and their mode of breathing changes.

It is such a well understood fact that women do not breathe enough, that if a woman faints, the first thing to be done is always to loosen her clothing.

In true, natural breathing the whole lung capacity is used. First the sides are drawn out by means of vigorous action of the inspiratory muscles, and then the abdomen swells out in front, and lastly with a little extra effort more air is taken into the upper part of the lungs. If one would study natural breathing, let him observe a small child asleep, and he will see that there is a slight swelling out of the whole front of the body, and an enlargement of the whole chest, most prominent at the waist.

THE EFFECTS OF TIGHT-LACING.— The *Monitor*, in commenting upon the labor of a scientific physician who has been experimenting as to the effects of tight lacing upon monkeys, suggests that the gentleman need not have been at so great trouble, since the world witnesses every day upon the streets the effects of tight lacing upon monkeys.

SUBJECTION OF WOMEN TO THE DRESSMAKER. — Mrs. Julia Ward Howe, in an address, once thus described woman's attitude concerning the requirements of fashion: —

"The fashionable woman says to the dressmaker, 'Do what you will with me; make me modest or immodest; tie up my feet, or straighten my arms, till use of them becomes impossible; deprive my figure of all drapery, or upholster it like a window frame; nay, set me in the center of a movable tent, make me a nuisance to myself and everybody else, but array me so that people shall look at me, and so that I shall be in the fashion.'"

A PROMINENT lady lecturer of excellent local reputation, Mrs. E. M. King, of Banana, Fla., together with a friend residing in her family, have evidently settled the mooted dress question for themselves. A late lecture given by this lady in the South, to an audience of about five hundred men and women, was delivered in what is described as a "trowser dress," made of gray, English nainsook, with tunic reaching to the knees, and high tan boots coming up halfway, with trowsers or knickerbockers tucked into them. These ladies have worn this dress constantly for five years, and as their life in the interest of W. C. T. U. work is an exceedingly active one, the dress is of great convenience.

ONE of the actresses in a Berlin theater was recently found dead in her bed. She had taken part in the performance the evening before, and had then seemed perfectly well. A *post mortem* showed death to have occurred from syncope, undoubtedly due to tight lacing.

SOCIAL PURITY.

THE CHILD IN THE MIDST.

(Concluded.)

WHAT we eat makes considerable difference as to what we are. Coarse food and drink nourishes the animal in us, until it becomes strong enough to counteract the voice of the spirit. Here, then, is another branch for educators to consider. Let the young people be taught to select a bill of fare as they would choose a course of reading, refusing that which is useless, hurtful, or not of the very best for the building up of the finest structure for the dwelling-place of human intelligence.

When our young men and women are taught to be perfect fathers and mothers in their three-fold natures of man the animal, man the intellectual, and man the spiritual, then, and only then, can their education be pronounced complete. Edward Bellamy's seems a fantastic prophecy of a future civilization, but we boldly foretell a more wonderful era, when through our children our nation shall be made pure. It argues well for the influence of the schoolroom that teaching is becoming more and more a profession, chosen from conscious ability and pure love for it. The schoolroom is no longer the one place where a woman may earn her daily bread; she has elsewhere to choose before her; she may now, like man, follow her natural bent of thought and aptitude, leaving the children to the tender mercies of those who are best able to fulfill to them the sacred duties of instructor. Fools are ceasing to rush in where angels fear to tread.

But there are other means of education aside from the halls of learning. What is the press doing for our young people? Hungry as they are to know, eagerly devouring the newspaper, periodical, and book, what is the food offered to them here? It is a treat to go into our book stores to-day and see there shelves and counters filled with beautiful, pure, bright literature, for the child of six, and for the sage of sixty, the best within the means of nearly all.

Impure reading matter, and even that which is simply inferior, is being slowly and surely crowded out by the steady influx of what is best. But the devil yet has his hold on many a column of type, and wields many a pen. He is an assiduous teacher, to say the least. It is with a shudder of disgust that we pick up the daily paper and read the coarse paragraphs that relate to a drunkard's crime, or a woman's dereliction. In nearly every newspaper there are numbers of advertisements openly or covertly foul. A gambler's history figures on the same page as the report of last Sabbath's sermons, and an advertisement of license to do Lucifer's own work, in the same column with an article on the prevention of cruelty to animals. Have these things no effect upon the mind of the young reader? Are the delicate sensibilities never blunted by them?

Side by side with the free press is the free platform. Many who cannot be reached by the schools can be reached through the medium of the public speaker, and here is surely a call from God to Christian ministers, physicians — to any who love God's pure cause and have in their hearts and on their lips a message from him to the ignorant and sinning, on this vital subject of social purity.

Yes, we must educate. We have good, grand laws, but there is a crying need of legislatures that will enforce them, and where shall we find such, if we do not educate the future members? We have laws that are a shame to any nation; shall we not send out from the ranks of our Christian colleges, just men and pure, who shall frame new ones in accordance with the Divine law? We want more ministers who will not be afraid to preach concerning the social evil, who shall tear aside the cloaks of hypocrisy, exhort, rebuke, teach, plead, warn. We need physicians who will dare to face public scorn and hate, rather than wink at sin, that they may grow rich thereby. We want fathers and mothers, who, understanding the laws of life and health, can people the world with such men and women as these, and it is because of the children whom we mean to educate to a knowledge of the whole truth, and nothing but the truth, that we dare to look forward to so fair a future as we have pictured.

But this is all provision for the days to come. What of the present? The plague is everywhere. Here are men long past young manhood, who have lived impure lives for years, while, hiding away in houses of shame, or flaunting boldly past us on the street, or perhaps striving to regain — oh, the hard, hard struggle! — a lost reputation, are the victims of their hideous selfishness. There are girls who are helping on the march of the pestilence by countenancing those things in their male friends and brothers, which they would not tolerate for an instant in a woman. Others, passing their lives in an absorbed study of the fashions, an exciting competition to lead in society, a daily perusal of frivolous reading, are altogether ignorant of the state of affairs around them, and the need of all hands and hearts to the front. These are no less to blame than their sisters.

What of the fathers and mothers of to-day? We begin with the kindergarten, but before that is the home garden. Are parents such because they have in the true spirit obeyed God's command to be fruitful and multiply? How far do they study or in any way recognize their children's right to be well born?

There are a thousand phases of the subject, each one requiring individual attention. Is education the cure-all? Education and Christian aggression must work hand in hand. Men will not always cease from sinning because they are told they are in sin. Neither will they put the cup of pleasure away from their lips though they know there is poison in it. Every Christian man and woman should study to be an intelligent teacher and counselor on this subject, and every teacher in school and college should work with the Bible in one hand and the text-book in the other. To those who have wandered, to those who are outcasts and lost, to those who are straying on the flowery brink of the precipice of death, let none go save those who go in the name of Him who said: "Neither do I condemn thee; go and sin no more."

It is a mighty work God's people have undertaken, that of purifying the world for him, and at first contemplation well-nigh hopeless. But —

> "Right is right since God is God,
> And right the day must win.
> To doubt would be disloyalty,
> To falter would be sin." — *Ada M. Melville.*

"*Begin farther back*" is the lesson of the hour. Beat not your knuckles against the granite of mature character when you can mold the clay of a three-year-old's habit and intention. The only royal profession in life is motherhood, yet in no other are there so many inexpert members. — *Frances E. Willard.*

THE rock upon which a nation is built is the family. It depends upon men and women, parents and children, to stand together in families, for as soon as the marriage relation is overthrown or violated, just so soon does the nation begin to sink. The man who breaks the seventh commandment deals a deadly blow to the foundation of society. — *Kate C. Bushnell, M. D.*

A NOBLE EXAMPLE. — The following, from an exchange, is a noble instance of self-denial in the interest of purity: —

"Lady Burton was bequeathed by her husband, the late Sir Richard Burton, the manuscript of a collection of very rare but indescribably unchaste and immoral tales which he had translated from the Arabic. Lady Burton was offered $30,000 for this manuscript; but although she had no other property, she preferred to burn it. To a man who assured her that he could easily get 1,500 subscribers for the book, at twenty dollars each, she answered: 'Out of 1,500 persons, 15 would probably read it in the spirit of science in which it was written, while the other 1,485 would read it for the filth's sake, would then pass it on to friends, and the harm done would be incalculable.' The good woman therefore burned the manuscript."

IT is not decorative art, costly furnishing, or luxurious idleness that uplift; but plenty of the blessed sweet air and sunshine of bounteous nature, and sufficient rest, repose, and recreation, to secure harmony with a life of activity and usefulness. "Neither poverty nor riches" is best for human culture and social purity. Poorly paid work, and poorly housed workers must inevitably undermine civilization. No amount of religious zeal, no expenditure that does not reach the springs of economic adjustment and equity, no political economy that permits of great riches and much poverty, can contribute to human culture and social purity. — *Sel.*

IT is a significant fact, says a writer in the *Philanthropist*, that the two States in the Union in which women are voters (Wyoming and Kansas), — in the former on terms of full legal equality with men, and in the latter at municipal elections, — are the first States in the Union also to raise the legal age of protection for girlhood to eighteen years.

THE ELECTROPOISE.—We were laboring under the impression that the epitaph which we wrote for the electropoise some months ago would be sufficient to keep it under the sod for a few years at least, but we understand that the irrepressible promoter of this most contemptible humbug has blossomed out in the State of Tennessee, and is doing a large business there among the unenlightened inhabitants of Nashville and surrounding cities. We published in the May and June numbers of GOOD HEALTH for 1890, a full description of this medical toy, which, on investigation, was found to consist solely of a hollow piece of brass, filled with sulphur and charcoal, fused together, and run into the cavity of the cylinder. There is not in the construction of the instrument even a pretense of an arrangement capable of producing any sort of electrical current. The delicate electrical test to which we subjected it, showed it to be incapable of producing any current whatever. The instrument employed in testing its electrical probabilities was so delicate that it indicated the presence of electricity when a piece of zinc and copper was connected with it and brought in contact with the tongue, but did not indicate the presence of the slightest amount of electrical current when connected with the electropoise, thus showing that if any electrical current whatever is produced by this instrument, it is much less than that consisting of a copper penny and a piece of zinc excited by no more vigorous agent than the saliva. These facts ought to be sufficient to convince any intelligent person of the fraudulent character of the business of those engaged in the manufacture of this so-called *electropoise*.

At a recent lecture before the Sanitarium patients, our opinion of the electropoise was asked, and we were glad to improve the opportunity to expose the knavery of the parties who are engaged in the manufacture of this utterly worthless trinket. A year or two ago one of our patients was induced to invest $50.00 in two of these pretended instruments for the benefit of different members of his family. We made a very careful investigation of the machine, and found it to be utterly devoid of active properties of any sort,—merely a brass cylinder filled with the mixture above referred to, with a single copper wire attached. Although it is claimed by its inventor to be capable of lowering temperature, relieving almost all the ills to which human flesh is heir, it was found on trial, to be incapable of influencing any symptom in the slightest degree. In one case, the temperature of the patient to whom the instrument was applied, steadily rose for several hours. The instrument certainly produced no effect in causing a rise of temperature, neither did it produce the opposite effect.

We have in our possession an instrument made by this company, supplied with three sets of switches, one of which it is claimed is capable of producing ozone in such quantities as to act as an active disinfectant in a room. Another switch is to be used for the treatment of acute diseases, still another for permanent disorders, and still another for chronic alterative effects. The properties of all these switches are found to be absolutely null; not a particle of current is produced by any of them, and not a particle of ozone is shown by the most delicate test.

As quite a number of the Sanitarium patients had been duped by the miscreants who carry on this fraudulent business, a considerable degree of interest was manifested in the subject, and a committee of seven persons was appointed to investigate the merits of the electropoise. The committee included several business men, two ladies, a judge, and an electrician. A report of the investigation will be published in a future number.

We understand that the electropoise is being very extensively sold in all parts of the South, and that thousands of persons are being humbugged by it. The claims made for this instrument are so utterly fallacious, and the lies told by its manufacturers so barefaced, that it would seem that the rascals might be subjected to arrest for obtaining money under false pretences. In our opinion it would only be necessary to call the attention of the post-office au-

thorities to the character of their business, to secure the suppression of the circulation of their advertisements through the mails, and the fact that they have moved their business about from one point to another repeatedly, leads us to believe that the manufacturers have some fears that such an action might be taken against them.

DOUBLE CHLORIDE OF GOLD.—We recently received a letter from a gentleman claiming to be a friend of humanity, but who is doubtless the advertising agent for Dr. Keeler, who claims to be able to cure the appetite for alcoholic drinks by hypodermic injections of a remedy purporting to be composed of chloride of gold, and the administration of the same remedy internally. The *Druggists' Circular* made an analysis of this "double chloride of gold" remedy, and asserts that it is composed of sal-ammoniac, aloes, compound tincture of Peruvian bark and water. Certainly, there is nothing about this mixture capable of eradicating the appetite for liquor. It would be just as sensible to undertake to eradicate a disposition to swear or to steal, by the administration of a drug, as to cure the vice of intemperance by similar means.

ONE OF HALL'S VICTIMS SPEAKS.—Rev. A. Drahms, Chaplain of the California State Prison, located at San Quentin, California, in writing respecting GOOD HEALTH, remarks: "I notice you give a shot at that Prince of Charlatans, A. Wilford Hall. Good! A mass of intense self-conceit. Add my mite to the contempt you feel for him. He wrote me that if I (or any clergyman) would send him a certain number of stamps, he would send his great *discovery* (?). (Do you recollect when air was first discovered?) I complied, and never received his great *discovery*, but have frequently written him and threatened to give him the benefit of some free advertising, which he has emphatically received. Please make my compliments to him through the columns of your magazine, and request him to return my stamps, which he got from me, or at least obtained, under false pretence."

We are glad to give publicity to the facts stated by Mr. Drahms, and have no doubt there are thousands of other clergymen in the country who have been abused in the same manner, but who hesitate to make public the fraud which has been practiced upon them. It seems to us that any person must feel very cheap after having paid $4.00, or any other sum for that matter, to find he has received in return only the information that it is possible to pump from one to four quarts of water into his colon. However, the pious garb which the unscrupulous Dr. (?) Hall assumes, has had the effect to deceive "even the very elect." We trust, however, that his "sheep's clothing" has been sufficiently removed by this time to enable everybody to see the wolf underneath. At any rate we have done our best at stripping off the hypocritical covering with which this most contemptible of swindlers has sought to conceal his true character; and the disturbance which our remarks has caused in his business, leads us to believe that they have not been without effect. The publicity which GOOD HEALTH has given to the character of the man and his so-called discovery, has, we have reason to believe, been the means of practically breaking up his business.

KLINE'S NERVE RESTORER.—This remedy, which has been very widely advertised as a sure cure for epileptic fits, and a variety of other nervous disorders, as will be seen on examination of the following formula, contains a large amount of bromide of potash: Bromide of ammonia 3 dr., bromide of potassium 3 oz., bicarb. of potassium 80 gr., tinct. columbo 6 fl. dr., water 6 fl. oz. Dose: A teaspoonful in water three times a day. A person taking the medicine according to directions will swallow each day nearly ninety grains of the bromides of potash and ammonia. This dose ought to be sufficient to control epileptic paroxysms in almost every case, but it is at the same time certain to be destructive to the digestive organs. It would be quite impossible for a person to continue the use of this medicine for any length of time without serious injury to digestion. Other injuries are also inflicted by the long-continued use of bromides. The mind becomes dull, the whole nervous system is injuriously affected, and in some instances to such an extent as to render persons incapable of walking steadily. The writer has met a number of cases in which persons, from taking bromides in the dose prescribed in this medicine, had become unable to walk. Remedies of this kind should never be taken excepting under the advice of a skilled physician, as not infrequently the mind is so seriously injured by the prolonged use of bromides as to establish a condition bordering on imbecility.

BARNUM, the great showman, apologized for the many frauds which he perpetrated upon the public, by the assertion that "the American people like to be humbugged." The popularity of patent medicines and secret nostrums, which appears to increase rather than diminish, is a confirmation of Mr. Barnum's opinion.

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

PROGRESS IN RATIONAL DIETETICS.

THERE was probably never a time in the history of the world when so much attention was given as at present to the study of dietetics. Unfortunately, much of the study of this question is aimless, and its discussion without tangible results, for the reason that correct principles are not recognized and adhered to. Nevertheless, we are constantly observing indications of real progress, which lead us confidently to look forward with the expectation of seeing very great progress in the direction of rational dietetic reform within the next few years. Less than a score of years ago a vegetarian was looked upon as a fanatic, and was expected to be a sallow, sickly-looking individual, with a meek expression of countenance, weak-kneed and addle-brained. The principles of vegetarianism have proved to possess sufficient vitality, however, to be able to make their way in the world, and especially in the last decade the new discoveries in bacteriology and physical chemistry, have brought so many important facts to the support of vegetarian theories, that they are now daily gaining adherents among the most intelligent classes in all parts of the civilized world.

It is now not only possible to practice vegetarianism without being considered a lunatic, but one finds the means by which to satisfy the demands of hunger at almost any first-class hotel, without indulging in the use of flesh meats.

The literature of this important subject is rapidly accumulating. Among the most important works which have recently appeared, is a volume entitled "*Le Vegetarisme et le Regime Vegetarien Rationnel*" (Vegetarianism and the Rational Vegetarian Regimen), by Dr. Bonnejoy, an eminent French physician, a member of many learned societies, Physician to the Hospital of Chars, and Member of the Archeological Society of Lorraine. This interesting volume, of something more than three hundred pages, is brimful of information, and presents the subject from the standpoint of the most recent researches in physiological and biological science. The subject is one well treated in its several phases, theoretically, dogmatically, historically, and practically. The intrinsic value of this work is so great that we have determined to make an abridged translation of it for the benefit of the readers of GOOD HEALTH, the first chapter of which will appear in the next number of this journal.

An excellent feature of the work is an introduction by the eminent French physician, Prof. Dujardin-Beaumetz, who is a member of the Academy of Medicine, Physician to the Cochin Hospital, and Member of the Council of Hygiene for the same. Dr. Dujardin-Beaumetz is recognized the world over as an authority in therapeutics, hence the great weight which will be attached to his testimony on this subject. The following is a free translation of a portion of the introduction by Dujardin-Beaumetz: —

"Since that Armand Gautier has shown us the presence in flesh of poisonous alkaloids made in the living cells of the body; since that we know, thanks to the working of Pasteur, the toxines (the work of poisonous substances) secreted by microbes; since finally Bouchard has shown us the danger of systematic poisoning from the absorption of poisonous matter through the intestines, the vegetarian regimen has become one of the essentials of intestinal antisepsis.

"Thus in all infectious maladies, in all affections accompanied by intestinal decompositions, in all disorders of the stomach and digestive tube which involve vicious fermentations of the food, in diseases of the liver, that living sentry which opposes the entrance of alimentary poisons into the system, the vegetarian regimen is indispensable.

"Further, this same interest for the vegetarian regimen exists whenever the means by which toxic substances are eliminated, are obliterated, and the most frequent in cases in which the kidneys are

affected; thus in renal insufficiency due to disease of the arteries, a malady which especially affects the old, it is necessary for us to have recourse to this regimen.

"We must, then, thank Dr. Bonnejoy for having presented in this interesting work so full of facts, the basis of the vegetarian regimen.

"For the propagation of such new doctrines it needs apostles who are well convinced of the truth of their beliefs, and possessed of the ardent desire to proselyte; indefatigable, who show by the honorable character of their lives, by their activity of mind, by their preservation of their vigor and youth, even to an advanced age, the benefits of the method which they advocate. Dr. Bonnejoy unites all these qualities, and all those who read this book will be convinced of the good faith and the sincerity of the author.

"As for myself, I have found in the vegetarian regimen my own cure, and am happy to be permitted to thus pay a debt of recognition in calling the attention of the American public to this vegetarian regimen, which is one of the most essential pillars in the system of hygienic therapeutics which I maintain."

SOME UNWELCOME LODGERS.

RECENT studies of the nature and habits of the various parasites which infest human beings, as well as the source of infection, have developed many very interesting facts, a few of the most important of which we have culled for the benefit of our readers. The *sporozoa coccidia*, parasites which had previously been supposed to be derived only from rabbits, have also been discovered to be derived from hen's eggs, which leads to the supposition that these creatures may be introduced into the body by the use of raw or half-cooked eggs. The same parasites have also been observed in ham, in which they appear as small, round, or elliptical nodules, having a dark gray or brown color, varying in size from a minute speck to the size of a millet seed, in each of which could be seen, when placed under the microscope, the egg-shaped parasite. In human beings, these parasites have been found in the kidney and in the spleen, in which they produce a disease which closely resembles consumption.

Tapeworms are among the most commonly known of human parasites, and yet little is generally known concerning the origin and interesting natural history of these strange creatures. The three forms of this parasite most commonly found in human beings, are *tenia saginata*, *tenia solium*, and *bothriocephalus latus*. The origin of the last-named has been especially obscure, but recent studies show that it is commonly derived from fishes, many species of which are found to harbor it in an embryotic form. Observations have shown that these worms frequently give rise to very serious symptoms, which are rarely attributed to the proper cause. A French physician calls attention to the constant increase in the frequency of the most common form of tapeworm, *tenia saginata*, which is most frequently derived from beef and veal. This fact is easily accounted for by the constant consumption of the flesh of these animals by human beings.

The same author made an experiment with the *tenia solium*, by which he showed clearly that the new form of tapeworm, which has generally been supposed to be derived almost exclusively from pork, may be communicated to calves, and thence to human beings.

The *oxyuris vermicularis*, commonly called "pin worm," and which often proves a very obstinate tenant, resisting almost every effort for its dislodgment, is found to be readily destroyed by a large injection of a decoction of garlic, followed by washing of the region of the nose with a 1-to-2000 solution of corrosive sublimate, which would be represented by fifteen grains to two quarts of water. It is necessary to continue the use of the garlic and the application of corrosive sublimate, to prevent a re-appearance of the worms. It is also recommended to add a little garlic to the food occasionally, as a preventive, for a few weeks after the treatment has been instituted.

The cocoanut has been found to be an efficient remedy for tapeworm. This fruit is used for the purpose of expelling tapeworms, in all countries where the tree is native to the soil. It is suggested that its efficiency for this purpose is due to the indigestion induced by eating a large quantity. A curious case is reported in which the pin-worms, which usually congregate about the lower portion of the alimentary canal at bedtime, made their appearance in the mouth of a ten-year-old girl each evening between eight and nine o'clock. They were apparent, wriggling rapidly about the surface of the tongue, from which they were easily scraped off. The importance of careful filtration and boiling of drinking water, is shown by recent studies of the *filariæ*, a curious parasite which infests the blood of human beings. It is claimed that

the creature is disseminated by means of mosquitoes, which suck up the embryo in the blood, and afterward distribute them in the water of cisterns or tanks, from which they are derived by other human beings. A similar creature infests the blood of dogs, which become infected through the agency of the flea, which plays a part similar to that of the mosquito in relation to human beings. The history of the *filaria* is a very curious one. Its embryos are found abundant in the blood of human beings, in which they appear periodically, commencing usually about six P. M. In the mosquito, the embryo is developed into larvæ, which are transmitted from the mosquito to water, and afterwards become a parasite of the alimentary canal of human beings. From the alimentary canal, the parasites work their way into the lymphatic vessels, where the fully developed creatures are found. The presence of these creatures in the blood greatly increases the danger in surgical operations, as they often give rise to serious complications. However, persons seldom die from their presence in the blood, and if new indications can be prevented, the embryos finally disappear through the death of the adult parasite.

It has been found by recent investigations that the "whip worm" is a very much more common inhabitant of the human intestine than is generally supposed. Unfortunately, this parasite has received little attention on account of its supposed harmlessness. Nevertheless, it has been shown that its presence in the alimentary canal is a frequent cause of intestinal catarrh, obstinate diarrhea, chronic dysentery, pneumonia, and other disorders. These worms are found to be very common in herbivorous animals, which sometimes die in consequence of intestinal irritation set up by them. In a case studied by Lichenstein, it was found that nearly one and one-half million of eggs were expelled from the bowels daily, which fact is a sufficient intimation of the enormous powers of propagation possessed by this worm. It is evident that in the use of celery, radishes, and salads made from vegetables which are used raw, and which have been grown in soils fertilized with sewage from city cess-pools, there is very great danger of the introduction of these parasites. The whip worm, or *trichocephalus despar*, makes its home in the secum, or first part of the large intestine.

The fecundity of some of these worms, particularly tapeworms, is something enormous. It has been calculated that if the tapeworm lives to the age of two years, it produces in that time not less than 1600 links. Each link contains both male and female elements, and discharges from the sexual pores on either side, incredible numbers of eggs during the two years; each link would produce more than 53,000 eggs, and all together about 85,000,000. These links continue to live for some time after they leave the body, and may even attach themselves to plants, thus leading to their consumption by herbivorous animals.

A curious fact, and one which should be of interest to flesh-eaters, is the discovery that the larvæ of the common house fly may become an intestinal parasite. Numerous observers have recorded instances of the expulsion and discharge of microbes in quantities of hundreds, both by stool and by the mouth in the act of vomiting. In one case, the eggs from which the microbes were developed, were supposed to have been swallowed with some partially spoiled grapes which had been eaten by the patient. When one considers the great numbers of house flies which frequently infest the pantry and the dinner table, and the great carelessness with which food is exposed to visitation from these insects, it becomes a source of wonderment that maggots do not figure more frequently as intestinal parasites. It is quite possible, indeed, that they may be present more frequently in the alimentary canal of human beings than is generally supposed.

"Vinegar eels" are commonly looked upon as harmless. Indeed, there are many people who suppose that the "sharpness" of vinegar is due to the presence of these lively little creatures. The vinegar eel is able to live independent of oxygen for at least a week. It has been found that these parasites are not always killed by contact with the gastric juice of the stomach, but sometimes take up their abode within the alimentary canal as parasites. Numerous experiments were made in feeding the worms to warm-blooded animals, which prove conclusively that the use of vinegar containing these worms, is by no means harmless, and may be the occasion of great injury. In cases in which the worms had been swallowed, they were still found alive many days afterward, in the lower part of the intestine. They were also found living and active in the discharges of wounds which had been washed with vinegar.

We have already mentioned the fact that minute cystic parasites are sometimes found in eggs. The "thread worm," as well as some other forms of parasites which are capable of transmission to human beings, have also recently been found in hen's eggs.

The moral to be drawn from these interesting observations, is that almost no food, either animal or vegetable, is perfectly safe unless it has either been thoroughly cooked or carefully protected from contact with insects of any sort.

THE GIN LIVER. — Recent studies of the form of liver disease known as hob-nailed or gin liver, which results almost exclusively from the habitual use of strong alcoholic drinks, have shown that this disease is almost always fatal, and that it is preceded by enlargement of the liver, as was formerly supposed, but is practically incurable from its beginning, while enlargement of the liver, more commonly the result of beer drinking, is curable, provided the patient becomes a total abstainer.

THE SANITARIUM LABORATORY OF HYGIENE. — The managers of the Sanitarium have long contemplated the organization of a laboratory for original scientific researches in hygiene. For several years, efforts have been made looking to the establishment of such a department of the Institution, and something has already been done in this direction; but the chief obstacle met with has been the lack of finding the proper person to act as director of this important work, one who has had such a course of training and such an experience as would qualify him for it. It is believed, however, that the right man has at last been discovered, and arrangements have been made for the complete equipment of this new department and the beginning at an early day, of work, the results of which, without doubt, will be of the greatest importance. It is proposed to devote the work in this laboratory chiefly to the investigation of the causes of diseases, especially such causes as germs, as found in the air, water, and foods, and errors in diet, as regards the undue consumption of food elements, the use of foods more or less contaminated by disease, etc.

We hope to be able to place before our readers at an early day a fuller statement of the scope and purposes of this new enterprise.

GERMS IN MILK. — The bacteriologists have discovered more than forty different varieties of bacteria, or germs, in ordinary milk supposed to be perfectly healthy. Careful investigations have shown that the souring, coagulation, and all the various changes which naturally occur in milk, are the result of the action of bacteria. The same must be said of the peculiar phenomenon which sometimes occurs in milk, in which it becomes suddenly blue or red. In these cases, foreign germs not commonly found in milk, have found access to the milk, and the favorable conditions which they have found there, have encouraged their start and development. The color of blue milk, which has not been rendered blue by skimming, is due to the peculiar coloring matter produced by a certain species of germs.

THE ORIGIN OF KIDNEY DISEASE. — The researches of Boulogne and Semnola have shown that the ideas which formerly prevailed concerning the nature of Bright's disease of the kidneys, were very erroneous. They regard this disease not as a primary disorder in the great majority of cases, but simply as a result of an abnormal condition of the blood of other tissues or organs of the body, by reason of which unusual and injurious work is thrown upon the kidneys. For example, certain forms of indigestion result in poisonous substances in the alimentary canal, the absorption of which gives rise to the poisoning of blood, which requires excessive action of the kidneys for the prompt elimination of the offending substance. The poisonous substances not infrequently act in an injurious manner upon the kidneys, setting up diseased processes, which may result in irreparable injury to these tissues.

HOW WE GROW OLD. — Anatomical researches respecting the influence of age upon the bodily tissues, have in recent years revealed some very interesting and important facts. It has been observed that in consequence of advancing age, after middle life the capillary vessels of the body gradually diminish in number, through the withering and obliteration of many of these small vessels, until, in advancing age, the number of capillaries, and hence the area, of this portion of the circulation is very greatly diminished. Another change also begins after middle life, which is of still greater importance. Up to about the age of forty years, the pulmonary artery, the large vessel which carries the blood from the heart to the lungs, is larger than the aorta, the vessel by which the blood is distributed to the body in general. The consequence of this excess in size of the pulmonary artery over the aorta, is a high blood pressure in the lungs, and consequently a more complete purification of the blood from its gaseous impurities than would otherwise occur. After middle life, the pulmonary artery decreases in size, and the aorta increases. This fact, together with the increased resistance which the blood meets in consequence of the diminished capacity of the pulmonary vessels, results in a gradually increasing accumulation of carbonic-acid gas in the blood, which reacts upon every organ and tissue in the body, lessening its activity, and causing a deterioration of every secretion.

A SANITARY writer suggests that rats are not such unmitigated evils as they are usually considered. They are among the most persevering and thoroughgoing of scavengers, and these sanitary officials are much needed in most civilized communities.

HOT BATHS IN URINARY SUPPRESSION.— Dr. Scott reports the case of a girl of seven years who, after a mild attack of scarlet fever, suffered from complete suppression of urine for six days. The patient's pupils became contracted, convulsions occurred, temperature was two degrees below normal, the pulse fifty, the respiration only twelve per minute, and the bladder completely empty, after nearly six days since the previous evacuation. Prolonged hot vapor baths, fomentations, and cupping over the kidney and bladder, and the employment of the enemata, together with other appropriate remedies, maintained the life of the patient during the period named, which is more than double that required to produce death by poison, and finally resulted in her restoration to health.

The great liability to this disease after scarlet fever should be always kept in mind, and the patient should in every case be kept in bed until the end of the sixth week. Warm baths and oil rubbing of the skin should be daily administered.

CONSTIPATION.— In chronic inactivity of the bowels, for immediate relief, no remedy is equal to the enema, although it is possible by its continued use to become wholly dependent upon it through the gradual obliteration of abnormal sensibility of the rectum. A remedy which we have found invaluable in cases of this sort, is the introduction of a small quantity of boracic acid. Either pure boracic acid, in the form of a fine powder, or boracic acid mixed with an equal quantity of starch, may be used. It must be used with an instrument specially made for the purpose, or it may be blown in through a rectal speculum. In more obstinate cases, we have secured excellent results by introducing with the acid small pledgets of cotton, with a string attached. This remedy is also an excellent one for relieving chronic congestion of the lower mucous membrane through relaxation of the tissues.

The accumulation of hardened masses of fecal matter in the bowels is a not uncommon condition. It is quite probable that this condition exists in a large number of persons who are unconscious of it. The presence of a mass of decomposing fecal matter must be highly detrimental to health. The only reason why symptoms of poisoning are not more apparent in these cases, is due to the solidity of the mass, which, to a large extent, prevents the absorption of toxic matters contained in it. The pain, prostration, and other symptoms which accompany attacks of diarrhea, by which such masses are disposed of, is due to the change of the fecal mass from a solid to a fluid condition, thus facilitating the absorption of toxic poison.

MEASLES.— This disease, commonly looked upon as trivial in character, is by no means a trivial ailment. Scarlet fever, which is much more dreaded, is said, upon good authority, to be not more fatal than measles, or rather, it is claimed that measles destroys as many lives in the long run as does scarlet fever; hence the importance not only of preventing the disease by careful quarantine of persons suffering from this malady, but also of giving to persons thus suffering, such care as will insure the most speedy and uncomplicated recovery.

DISINFECTION AFTER INFECTIOUS DISEASES.— Prof. Esmarch has shown that the best method of disinfecting or removing infectious material from surfaces, is thorough rubbing with bread. In disinfecting a room in which a patient has been sick with scarlet fever or diphtheria, the ceiling, walls, wood-work, and furniture are to be thoroughly rubbed with bread, then washed with corrosive sublimate. The paper should be scraped off the walls if possible. If the walls are not papered, a new coat of calcimine or whitewash should be applied, and the wood-work should be painted.

PREVENTION OF DIPHTHERIA.— It is of course necessary that diphtheritic patients should be closely quarantined, and that careful disinfection should follow every case of disease. A person who has recovered from diphtheria should not only have his clothing and person thoroughly disinfected, but should refrain from mingling with susceptible persons for at least three weeks after the disappearance of all local symptoms. It has been found that the germs are still present in the mouth for some weeks after the disease has subsided. It is well known that the germs of this disease find favorable conditions for development and propagation in all kinds of accumulation of filth, which indicates necessity for the utmost cleanliness in the vicinity of modern dwellings.

It has been found that by the use of disinfectant lotions, the contraction of the disease may be prevented. One of the best preparations for the purpose is a saturated solution of boracic acid, which should be thoroughly applied to both the throat and the nasal cavity several times daily.

The filth of sewers affords an excellent soil for the propagation of diphtheria germs, and hence the greatest care should be taken to avoid contamination with sewer gas.

Dr. Smith, of New York, recommends that the following preparation should be used as a means of disinfecting the air of a sick room : —

Oil eucalyptus, 1 oz., carbolic acid, 1 oz., spirits turpentine, 8 oz. Two tablespoonfuls of this solution is added to a quart of water, which is kept simmering over the stove, additions to the solution being made as often as is necessary.

ACIDITY OF THE STOMACH.— Acidity of the stomach is due to germs, and the cure lies in getting rid of the germs. Germs of fermentation in the stomach produce first alcohol and carbonic acid, and then acetic acid. A person troubled with this form of dyspepsia should be careful to take only such articles of food as do not furnish suitable food for germs, and thus starve them out. The worst articles are sugar and all forms of sweets, including ice cream and cake, and all "rich" foods. Boiled milk and unfermented breads are excellent foods. Another thing to be done is to wash the germs out of the stomach by drinking freely of hot water an hour before meals. Some people notice that just as soon as they eat, their stomachs become sour. If food is put into the stomach already sour, of course fermentation will begin immediately. It is just like straining new milk into unwashed pans from which sour milk has been emptied. The third important thing required, is to stimulate the stomach to make more gastric juice. The gastric juice is a natural antiseptic and prevents fermentation. The gastric glands may be stimulated by applying hot fomentations to the stomach for half an hour immediately after eating. A more convenient remedy is a rubber bag, filled with hot water, placed directly over the stomach for half an hour or an hour after a meal. Heat is a natural stimulant, and no possible ill effects are likely to arise from its use in this way.

APPLES FOR GOUT.— The famous Dr. John Hunter, one of the most eminent physicians of his time, and himself a sufferer from gout, found in apples a remedy for this very obstinate and distressing malady. He insisted that all his patients should discard wine and rare roast beef, and make a free use of apples.

Doubtless an apple diet would be found as useful a preventative as a cure.

SUNLIGHT AND CONSUMPTION.— Dr. Ransome, an English physician in charge of the Hospital for Consumption and Diseases of the Throat, has made a variety of experiments for the purpose of determining the influence of various conditions upon the virulence of the germs of consumption. He finds that dry soil, fresh air, and an abundance of sunlight have a distinct influence upon these germs, lessening their virulence and in time entirely destroying them, while the opposite conditions, dampness, darkness, and unsanitary conditions generally, encourage their development and activity.

KOCH'S REMEDY FOR CONSUMPTION.— The great sensation created by the announcement of Prof. Koch's discovery, which induced thousands of physicians from all parts of the world to make a pilgrimage to Berlin, was within a few weeks succeeded by a most painful reaction, and Prof. Koch was condemned as a charlatan, and a mountebank, in the most unstinted terms, by those who had been loudest in their praises of the eminent bacteriologist. This reaction has, however, to some extent disappeared, and we now find the remedy gradually recovering its place in the confidence of the best medical authorities, and it seems to be pretty clearly established that it will, in the future, occupy a prominent place in the treatment of one of the gravest of chronic maladies. Just now, the more conservative members of the medical profession are waiting for the European medical savants to complete their experimental work, and place the use of the remedy upon a thoroughly rational and scientific basis.

To Destroy Lice. — An excellent remedy is a strong decoction of quassia, four ounces to the quart of water, to which an ounce of borax and four ounces of glycerine have been added. Thorough application of kerosene is also an excellent remedy. It should be left on for a few minutes, and then removed by means of a soap shampoo.

Body lice may be destroyed by the application of a solution of one part of corrosive sublimate in 500 parts of vinegar. This solution is a very deadly poison, and should not be applied to the body in general — only to the parts infected. The parts should be first washed with soap and water, then after removing the soap, the solution should be applied. After an hour or two, the parts should be washed with warm water.

Cold Drinks and Enemas as a Means of Lowering Temperature. — Prof. Caspani, an eminent European physician, has been experimenting in the use of cold water by means of copious drinking and administration by enema. In some cases of typhoid fever he caused the patient to take from five to fourteen quarts of ice-water in twenty-four hours in addition to enemas of two quarts each, at a temperature of 52°. He found the cold enema particularly advantageous in cases of typhoid fever. The cold water thus introduced, leaves the body at a temperature of from 98½° to 100°, and consequently subtracts a large amount of heat. The experimenter found that by these means the temperature could be lowered from one to one and one-half degrees, and that the lowering of temperature thus obtained, persisted for two or three hours, and even a longer period.

The results of this method of lowering temperature are claimed to be very excellent. We should hesitate, however, to load the stomach of a feeble invalid with two or three gallons of ice-water in so short a space of time as twenty-four hours.

The Local Treatment of Diphtheria. — Since it has been determined that this malady is a germ disease, and practically local in character, the importance of local measures in treatment has come to be fully appreciated. Numerous experiments have been made, as the result of which it has been proven that the following are the best local applications which can be made, and are in most cases very efficient: —

Corrosive sublimate, 1-to-4000 parts of water. Permanganate of potash, 1-to-1000 parts of water. Alcohol, 1 part to 5 of water. Chloral, 1 part to 5 of water. Boracic acid, 1-to-20. These remedies should be applied with care, as they are all more or less poisonous if swallowed in any considerable quantity. In making the application, the tonsils should be first thoroughly dried by means of a swab consisting of dry absorbent cotton, wound around the end of a lead-pencil or stick of small size, and then by the use of a similar swab, the antiseptic lotion should be assiduously applied.

Another remedy which has been recommended, is equal parts of flowers of sulphur and quinine. A small portion is blown upon the false membrane, and the patient is not allowed to swallow any fluid for an hour or two. This powder is also used in the nasal cavity in the form of a snuff, as a means of preventing an attack of the disease. One physician reports thirty-three cases of the disease treated in this manner, without a single death.

Dysentery. — This disease, so frequent at this season of the year, is now recognized as a germ disorder which demands the employment of remedies capable of destroying microbes. This view of the disease leads to the condemnation of the old-fashioned modes of treatment, which involve the administration of drugs of various description, by the mouth, and leads to the employment of remedies which are addressed directly to the seat of the disease. For more than a dozen years, the writer has employed in cases of this disease, large, hot water enemata. The patient lies upon the back, or, better, upon the right side, while hot water, in quantity of from one to four pints, and at a temperature of from 100° to 110°, is slowly injected. This method rarely fails to effect a cure within three or four days. A dram of tannin mixed with a half ounce of starch water may often be used to good advantage after the bowel has been thoroughly washed out with hot water. Occasionally the introduction of ice water will afford more prompt relief than the use of hot water. The hot water enema should be used very frequently, at least every two to four hours. For chronic cases, washing the bowels twice, daily, is ordinarily sufficient.

Obstruction of the Bowels. — Dr. Jenkins reports the cure of three cases of intussusception, resulting in bowel obstruction, by injecting the bowel with a siphon of Vichy water. As the obstruction was located low down in the bowel, the remedy operated with entire success. In two cases in which the obstruction occurred at the upper part of the rectum, a cure was effected by a rubber bag being introduced and inflated.

ANSWERS TO CORRESPONDENTS.

POISON IN FOOD — ORGANISMS IN AIR, ETC.— R. A. B., South Dakota, writes as follows: "1. It is confidently asserted by many persons that all foods contain a certain amount of poison. Is this true? If so, please state the per cent contained in a few of the principal foods. 2. Is it true that pure water contains living organisms which give to it beneficial qualities? 3. Are the essential qualities of pure air owing to living organisms? 4. Do the intestines of all healthy persons contain worms?"

Ans.— 1. Healthful and natural food rarely contains deleterious substances. It is possible to produce poisonous substances from various foods, but those substances are usually the result of transformations induced in the food substances, and do not originally exist in foods. Taken in the state in which nature gives them to us, wholesome foods do not contain poisonous substances to any degree,— or of sufficient degree to produce any harmful results. 2. Pure water contains no living organism. It is true that some few germs will be found in most specimens of drinking water, but water from very deep wells contains so few germs that it may be termed practically free from living organisms of any sort. "Water tigers" sometimes said to be found in a drop of water, are only found in very impure water, that which contains a sufficient amount of organic matter to offer food to a great variety of animal and vegetable organisms. They are in no way essential to the purity of the water, but are indications of its impurity. 3. Pure air owes none of its life-supporting properties to the living organisms which it contains. These organisms are necessary in the role of nature, as they are the means by which dead bodies are returned to dust. They are, however, as a class, antagonistic to human life, and it cannot be imagined that we should be in any way the worse off for their sudden disappearance. 4. The alimentary canal of a healthy person does not give lodgment to animal parasites of any sort.

BRAIN AND NERVE-FOODS.— Mrs. R. C. P., Mich., asks the question, "What are Brain and Nerve Foods?"

Ans.— The so-called "brain and nerve-foods" advertised in the newspapers and on fence-corners, are humbugs. There is no such thing as a food which will especially nourish the brain or nerves. Good food can be made into good blood, and good blood will always nourish the brain and the nerves properly, provided other conditions are healthful.

ICE WATER FOR DISEASE OF NERVE CENTERS.— H. C., Kans., writes: "While at the Sanitarium last year, my main ailment was pronounced disease of the nerve centers. I am now quite feeble, and a New York physician advises me to apply to the lower part of the spine, every night, a bag filled with ice water. I have some fears of this, in my anæmic condition. Would it, in your opinion, be best?"

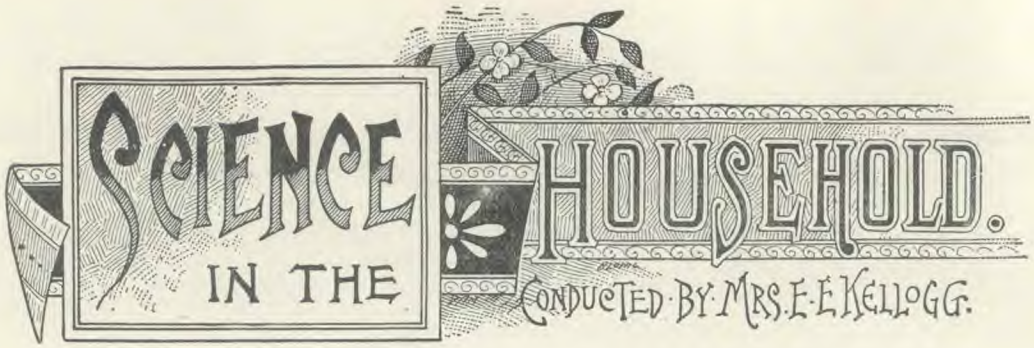
Ans.— Our advice to a patient is always that he should follow the instructions of his physician so long as he remains under the physician's care. As regards the application of ice water to the spine, there are certain cases in which it is a valuable remedial agency. Whether or not it is adapted to the case under consideration, we cannot say.

ELECTRICITY FOR DYSPEPSIA.— E. K. E., Ind., inquires, "1. If a dyspeptic finds on application of electricity to region of stomach, that severe pains follow, is that an indication that electricity ought not to be used? 2. Would you consider electricity advisable in any case of dyspepsia?"

Ans.— 1. Yes. Electricity is rarely beneficial in cases of functional disorders, when it produces pain. 2. Electricity is of great service in a variety of dyspeptic conditions. We have found it valuable, not only as a means of stimulating the muscular activity of the stomach and bowels, but as a means of increasing the secretion of the gastric juice; for that purpose, Galvanic electricity is the most effective, when large currents are required. We have, by the application of Galvanism to the inside of the stomach (the electrical instrument being carried into the stomach through a stomach tube or syphon), been successful in affording relief in cases which had resisted every other means of treatment.

ERUPTION FROM OVERHEATING.— H. L. H., Minn., writes, "A friend is troubled with an eruption which has come out more or less all over the body, and itches constantly. He thinks it is caused by being overheated. What ought he to do for it?"

Ans.— It is impossible to tell, from the brief description, what is the nature of the malady from which the patient is suffering. We would recommend that he consult a competent physician. We suggest, however, that the difficulty may be a common form of *eczema,* in which case, it will be likely to be relieved by sponging the surface with a hot solution of salt or soda in water. Quantity: one or two teaspoonfuls of salt or soda in a pint of water. Zinc ointment is also an excellent palliative.



GRAINS.

[Abstract of lecture by Mrs. M. E. Kellogg before the Sanitarium class in cookery.]

GRAINS are foods deserving of more attention than is generally conceded to them. They are pre-eminently an economical and nutritious food. They contain a representation of all the different food elements, but are especially characterized by an excess of the nitrogenous elements. They are all alike in general composition, but vary in the relative amount of the different food elements they contain. They contain nitrogenous elements in the form of gluten or vegetable albumen, casein and fibrine, and carbonaceous elements in the form of starch, fat, and dextrine, and also a little cellulose or woody tissue which is indigestible. Grains are more nearly perfect in the relative proportion of their constituent elements than any other foods.

Being so nearly perfect foods, and, when properly cooked, so wholesome, palatable, and easily digested, they ought to be more extensively used. The various grains are milled in so many different forms that we may supply our tables with different preparations of grains every day for a week or more, and not make use of the same one twice.

While the grains are particularly nutritious foods, they are likewise exceedingly economical foods; the average cost being only about five cents per pound.

Grains belong to a class of foods which lose most of their water in the ripening process, and consequently it is necessary to add a large proportion of water in cooking. They also require a prolonged cooking to render them perfectly wholesome. Most grains require from three to four hours' cooking to make them digestible. The best cooking utensil is the double boiler. If one does not possess a double boiler, a substitute may be improvised by setting a covered crock or earthen jar inside a kettle of water, or by using two pails, a smaller inside a larger one. The best liquid for cooking grains is soft water or soft water and milk in about equal proportions. To those grains which are largely composed of starch, the addition of part milk is best, because it adds to their nutritive value.

There are four special points to be observed in the cooking of grains. *First*, we should measure accurately both the water and the grains with the same-sized utensil. This is important, and it is where many cooks fail. *Second.* Have the water boiling when the grains are introduced, and turn in slowly so as not to stop the boiling of the water. *Third.* The cooking must be continuous. *Fourth.* Stir the grain continuously until it ceases to settle to the bottom, but do *not* stir afterward during the cooking.

Grains should be cooked rapidly at first. When the double boiler is used, the water in the outer boiler should be boiling on some other part of the stove, and the inner boiler should be set directly over the fire with the water boiling when the grains are put in. As soon as the grain has ceased sinking to the bottom, or in other words has "set," take the inner boiler off the stove and put into the outer boiler, covering it. Then all you have to do is to keep the fire burning and the outer boiler furnished with water. If it is desired to have the grains dry, take off the cover toward the latter part of the cooking stage. Slow cooking develops a finer flavor. In a double boiler the grains will be cooked at a temperature just below the boiling point.

The different grains require different proportions of liquid. The following is the proper proportion of liquid to be added to different grains when cooked in a double boiler. Other cooking vessels require more on account of evaporation.

Grains.		Water.		Time.	
Pearl barley	1 cup	4	cups	4	hrs.
Coarse hominy	1 "	5	"	6 to 10	"
Fine hominy	1 "	4	"	4 to 6	"
Coarse oatmeal	1 "	4	"	4 to 6	"
Rolled wheat	1 "	3	"	2 to 3	"
Rolled oats	1 "	3	"	2 to 3	"
Cerealine	1 "	1	"	½	"
Graham grits	1 "	4	"	4 to 5	"
Cracked wheat	1 "	4½	"	4 to 5	"
Whole wheat	1 "	5	"	4 to 5	"
Pearl wheat	1 "	4½	"	4 to 5	"

The best way to cook rice is to steam it. Soak one cupful of rice in a cupful of warm water for one hour, then add one half cup of water and one cup of sweet milk. Steam for one hour, cooking in the dish in which it is to be served. Do not stir, except at first when it begins to swell, and when it is entirely done, every grain will be perfect and dry. Another very excellent dish is prepared from rice by looking it over carefully, and putting it into the oven and browning it until it is a yellowish brown color. Prepared in this way it does not need soaking. Add two parts of water to one of rice, and steam as before.

Grains should be properly eaten as well as properly cooked. Although soft and easily swallowed they require insalivation just as much as though they were solid foods. Most persons swallow grains without any mastication. It is best to eat them with some hard food. Toasted whole-wheat wafers are most excellent for this purpose. Dish the grain in bowls, and break up the whole-wheat wafers on it, and then pour over the cream. Sugar is no addition to grains served in this way. Thus you will eat hard and soft foods together, and the result will be not only an additional flavor to the grains, but this will obviate the difficulty of swallowing the grains without mastication.

SEASONABLE RECIPES.

SWEET APPLE PUDDING. — Pare, core, and slice enough juicy sweet apples to fill a pint bowl. Heat a quart of new milk to scalding point in a double boiler. Pour it hot over one cupful of good granulated cornmeal, and beat very thoroughly to remove all lumps. Return to the double boiler, and cook until the meal is set. The batter should then be about the consistency of corn mush. Remove from the fire, add a pint of cold milk and the sliced apples, one third a cup of sugar or molasses, and a teaspoonful of flour braided with a very little milk. Turn all into a deep earthen crock or pudding dish, and bake slowly from three to four hours, stirring frequently during the first hour. It should be moderately browned on top when done.

PRUNE DESSERT. — Wash and stew two quarts of sweet California prunes in a small amount of water. When done, rub through a colander to remove the stones and to render the whole homogeneous. Place the prune pulp thus prepared on some part of the range or in a slow oven where it will slowly simmer until the water has all evaporated and the pulp become so thickened that it can be cut with a knife. Turn into a pudding dish, and cover with the white of an egg beaten to a stiff froth with a tablespoonful of sugar and a little grated lemon rind as flavoring. Spread over the top of the prunes, and set for a moment in the oven. Bits of sugar, colored red with fruit juice, strewn over the top, adds to its attractiveness.

GRANOLA PEACH MUSH. — Into a quart of boiling water sprinkle a pint of granola (obtainable from the Sanitarium Food Co.). It will thicken sufficiently in a moment, and being an already cooked food, the granola does not need a second cooking. Mix with the hot mush thus prepared a pint of finely sliced yellow peaches, and serve at once with cream. Sweet bough apples or golden sweets sliced and used in the same manner make a most appetizing dish.

APPLES AND CREAM. — Well ripened sweet boughs make a most delicious breakfast dish sliced and served with sweet cream. Perfectly ripened pears served in the same way are also well liked.

PINEAPPLE DRINK. — An exchange says that "if a pineapple be sliced thin and set away in a jar of water properly sweetened and kept in ice, the sharp, aromatic oil, which most persons find irritating to the mouth, becomes diffused in the delicious flavoring of the fruit, and yields a lively sensation, which we should suppose might make an acceptable substitute for spirituous liquor, without, of course, the slightest intoxicating quality."

WOULD that the drink habit, developed by meat-eating and peppery food, might be antagonized by scientific cooking in every woman's kitchen in the land. — *Frances E. Willard.*

THERE is a growing interest in foods and their manner of preparation, in England. Chief among the training-schools of cookery, of which there are already quite a number, is that at South Kensington, in London. This is extensively patronized by ladies of the highest reputation, many of them intimately related to the nobility, who thus laudably seek, by the force of their own personal example, to raise the standard of cookery among the common people. They meet here regularly, not only for study of the scientific principles underlying the subject, but for actual practice in the preparation of the ordinary dishes which form the food staples alike of rich and poor.

LITERARY NOTICES.

The Pansy for September is already here, and receiving its usual meed of admiration from the children. Among the flock of little ones belonging to the household of the conductor of this journal, *Pansy* is the acknowledged favorite of all the magazines for youth. Simple and pure, elevating while entertaining, it is always safe to turn over *Pansy* — still in its wrapper — to their eager inspection. It is a restful thought to the mother or guardian, that in regard to this little monthly no home censorship is needful, but instead, the young ones are the better and stronger for their association with such a wise friend and companion. $1.00 per year. D. Lothrop Company, Publishers, Boston, Mass.

THE September number of the *Ladies' Home Journal* is as fresh and entertaining as ever, and as sympathetic too, in its appreciation of woman's needs. It has been very truly said of this magazine that it "has a way of entering right into the daily life of a woman, and appeals to her every word, every joy, and every perplexity." To the young and inexperienced it is a good, safe friend, and many a young reader has been made better and stronger by the wise trend of its counsel. Its regular salaried editors now number sixteen,— a small army of bright people, with whose names we are all familiar, — each an acknowledged leader in his special department. These names are, in themselves, a sufficient guarantee of the character of the journal. $1.00 per year. Curtis Publishing Co., Philadelphia, Pa.

POTTER'S NEW ELEMENTARY GEOGRAPHY, and POTTER'S NEW ADVANCED GEOGRAPHY, by Miss Eliza H. Morton. Published by Jno. E. Potter & Co., Philadelphia, Pa. Teachers' edition of the former, $1.00; of the latter, $1.50. These are essentially *modern* text books containing much that is new and fresh,— the results of modern geographical research brought down to date,— which is placed before the young learner by many a method fresh and interesting like the facts themselves, and of inestimable practical value in fixing them in the mind. Herself an enthusiastic and successful teacher of the science, the author's work has here been no mere perfunctory task, but rather a labor of love in seeking to win others, both young and old, to delight in geographical study; to which end she has brought forth and utilized all the gathered treasures of her own valuable experience.

Scribner's Magazine for September contains the fifth and concluding article in the Steamship Series entitled "The Steamship Lines of the World," by Lieut. Ridgely Hunt, U. S. N. "Odd American Homes" is by John R. Spears, who, as a journalist has traveled in many out-of-the-way places of this country, and describes them graphically, illustrating his text with photographs collected through many years. "The city of the Sacred Bo-Tree" — Anuradhapura, in Ceylon — is by James Ricalton, a veteran traveler, who went round the world in search of a fiber for Mr. Edison, and who illustrates his article by photographs taken by himself on the spot. "Browning's Asolo," by Felix Moscheles, interspersed with many a quaint illustration, describes the streets and the interesting characters in the old Italian village where the poet's last days were spent and where his last poems were written. There are many other equally worthy articles and much other worthy and entertaining matter. Charles Scribner's Sons, New York.

Good Housekeeping for September has for frontispiece an illustrated poem, — "The Old School-House," which will awaken peculiar memories in the minds of its many readers whose childhood reaches backward into a former generation. The magazine has, besides, the usual variety of helpful things for the housewife, and also for each member of the family circle. *Good Housekeeping* constantly seeks to promote the health, convenience, and right living of all the inmates of the home, as well as to provide for their entertainment and instruction. It is thus a magazine of high moral tone, pure and refined in every department, and presents from month to month a quantity of valuable and diversified matter. $2.40 per year. Clark W. Bryan & Co., Springfield, Mass.

THE September number of the *Journal of Industrial Education* begins the sixth volume of this excellent little monthly, which represents the philanthropic and public educational work in behalf of the children and youth of our country. This journal is the champion of industrial education everywhere, and gives plans for work, courses for study, as well as places all new movements in this direction before its readers. $1.00 per year. The Owens Publishing Co., 243 State St., Chicago.

PUBLISHERS' DEPARTMENT.

DR. KELLOGG will lecture, by invitation, at Richland, Mich., Wednesday evening, September 2. The subject will be "A Twentieth Century Household." An abstract of the lecture will doubtless appear in an early number of GOOD HEALTH.

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MRS. KELLOGG has just begun a new series of lectures in cookery, in the Sanitarium parlor. The parlor is well filled with both ladies and gentlemen, and it is interesting to note that the latter take quite as much interest in the subject as do the former. It is eminently proper that men should know the possibilities in cookery, so that they may be prepared to demand of their housekeepers the degree of proficiency in the preparation of food which they ought to possess.

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THE Sanitarium had the pleasure of receiving a visit from the Hon. Warren T. Sutton, Consul General for the U. S. in Mexico. The general is enthusiastic concerning the beauties of Mexico as a pleasure and health resort, and insists that the managers of the Institution shall make a survey of that country before locating their Western branch. The General is certainly a very amiable gentleman, and the arguments which he urges in favor of Mexico as a health or climatic resort are certainly worthy of consideration.

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THE NEW EDITION OF SOCIAL PURITY.—The first edition of five thousand copies of this popular little work in its new style, has met with such rapid sales that another edition of ten thousand copies has been ordered put to press at once. This little work with its latest revisions and additions is doubtless one of the most valuable treatises on this subject which has appeared. It contains eighty-two pages of clearly printed matter, and there is not a dull page in it. Among the additions to the last edition is a graphic description of "city dangers," which parents who are anxious to send their children to large cities would do well to read and carefully ponder.

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AN old resident of Colorado, who has spent nearly a year at the Sanitarium, remarked the other day, "This is delightful Colorado weather," a remark which has been often made during the last few months. While the thermometer has risen in some sections of the country during the past summer to 111° in the shade, it has, in this vicinity, only on a few occasions touched 90°, and there has not been a day during the entire summer which could really be called hot. Michigan weather, even during the worst seasons of the year, is acquiring a reputation which places the State in the front rank of localities which are sought for their climatic advantages. There are, probably, during the summer season, a larger number of persons from other States seeking recreation and refreshment from a healthful outing in Michigan, than in any other State in the Union.

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A VEGETARIAN BILL OF FARE.—The Sanitarium managers have recently made a very important innovation in the establishment of Diet Tables. All the tables of the Sanitarium dining-room have been in a certain sense diet tables, as the most harmful articles of food have not been allowed to appear upon them, but for the purpose of facilitating the adaptation of foods to the wants of the many classes of invalids who are under treatment at the Sanitarium, the Medical Superintendent has devised and recently put in operation, a plan by which each patient can secure without the least inconvenience, just the foods which are best adapted to his wants. At the diet tables where this plan is carried out, neither meat, tea, coffee, nor butter ever appear. Nevertheless, the bill of fare contains such a great number of daintily prepared dishes that the appetite of the most fastidious finds ample satisfaction. The following is a copy of the dinner bill of fare for the date named:—

SANITARIUM MENU.

DIET TABLE.—DINNER.

TUESDAY, SEPT. 1.

SOUPS.

4 Pea and Tomato. 2 Oatmeal. 4 Corn and Beans.

VEGETABLES.

4 Baked Potatoes. 4 Lentil Puree. 4 Green Peas.
5 Okra, with Tomato. 5 Mashed Turnip.

GRAINS.

3 Rice, with Oranges. 3 Pearl Wheat.
3 Grains of Gold. 3 Graham Grits. 2 Granola.
2 Avenola. 2 Dry Gluten.

BREADS.

a Corn Puffs. a Toasted Whole-wheat Wafers.
2 Zwieback. a Rolls. a Whole-wheat Puffs.
a Gluten Wafers. a Graham Crackers. a Dyspeptic Wafers.

LIQUID FOODS.

1 Boiled Milk. Caramel Coffee. 2 Lemon Oatmeal.
3 Cornmeal Gruel. 1 Cream.

FRUITS.

3 Apples. 3 Blackberries. 3 Blueberries. 3 Prunes.

DESSERTS.

3 Watermelon. 3 Cantaloupe. Apples. 3 Pears.
3 Apple Manioc. 3 Bread Custard.

ARTICLES PREPARED TO ORDER.

4 Peas Puree. 1 Buttermilk. 1 Milk, with Lime Water.
4 Poached Eggs. 2 Milk Custard. 3 Snowflake Toast.
2 Egg Toast. 2 Cream Toast. 3 Baked Sweet Apples.
3 Tomato Toast. 2 Egg Nogg. 2 Egg Cream.
3 Prune Toast. 2 Floated Eggs. 8 Gluten Biscuits No. 1.
3 Grape Toast. 3 Rice. Charcoal Crackers.
1 Junket. 2 Poached Yolks of Eggs.

Not more than three dishes will be served from this list to one person at a single meal.

Notwithstanding the great number of dishes in the above list, which represents the average dietetic program of the diet table, very extensive changes in the bill of fare are made for each day. The figure placed before each article named is for the purpose of assisting the patient in selecting the foods which are best adapted to his case. All the foods on the bill of fare are classified, and the number before each article indicates the class to which it belongs. The diet prescriptions are made with reference to this classification. Each invalid is instructed respecting the articles of food which are suitable for him, and then he has only to notice the figure in connection with each article on the bill of fare to enable him to make the selection of foods for his case.

This plan commended itself so well to the Sanitarium patients that nearly half the entire family of patients, now nearly four hundred, readily adopted it. The managers find it necessary in carrying out this plan to employ a number of extra cooks, and of course the cooks required for this work must necessarily have had a special course of training to enable them to prepare the great variety of food required, in such a manner as to be wholesome and palatable. Nevertheless, the satisfaction of providing for each patient exactly what his case requires, is such that the managers feel amply paid for the trouble and expense incurred. The diet kitchen at the Sanitarium is a busy place about meal time. Our readers will have a description of the diet kitchen at some future time.

MRS. KELLOGG'S COOK BOOK.—We are glad to announce that this work, which was partly in type at the time of the disastrous fire which destroyed the GOOD HEALTH printing office last spring, is again under way, and the printers have promised to have it in type in six weeks. Within a short time after the plates are completed, the work will be ready to place in the hands of agents, or to supply orders by mail. The price will be announced in an early number. This work has been so much wished for, and so long waited for, that a large and rapid sale is assured in advance. As has been previously stated, it will not be a mere compilation of the work of others in the line of cookery, but a decidedly new departure. Every page will present fresh, new, and original matter—just what everybody wants who is interested in the scientific preparation of food. The fault with the old-fashioned health cookery was that it did not appeal either to the eye or the palate in a manner calculated to win converts to the system. But this is not true of the new cookery which has been evolved by Mrs. Kellogg, a statement to which thousands of patients who have visited the Sanitarium within the last eight or nine years can testify. The delicate and delightful natural flavors of foods which are developed by scientific methods in cookery, serve to recommend these daintily prepared dishes even to the most perverted taste, and furnish what is accepted at once as a most grateful as well as healthful change from the peppery and greasy dishes which appear upon the table of the average household.

* * *

THE SANITARIUM LABORATORY OF HYGIENE.—For several years the managers of the Sanitarium have had in contemplation, the establishment of a Laboratory of Hygiene for the purpose of carrying on, on an extensive scale, investigations in matters relating to health and disease, studying especially such questions as have an important relation to diet and regimen. A small laboratory was equipped some two years ago, and some work has been done in this direction, but the great obstacle hitherto in the way has been the lack of a competent director to devote his whole time to this line of research. The right man has at last been found, in Dr. Paul Paquin, the well-known Professor of Bacteriology and instructor in the State University of Missouri, located at Columbia.

Prof. Paquin made a visit to the Sanitarium during his summer vacation, and became so much interested in the work of the Institution, and the lines of investigation which it is desired to carry on here, that he consented, at the solicitation of the managers of the Sanitarium, to offer his resignation to the curators of the University, and undertake the important work of organizing upon a broad and scientific basis, the Sanitarium Laboratory of Hygiene. The laboratory will be sub-divided into a number of departments, as follows :—

A Physiological Laboratory, in which will be studied the various vital functions of the body, which are capable of experimental study. The subject of digestion will receive special attention.

A Bacteriological Laboratory, in which will be cultivated and studied, all known forms of bacteria, or germs. The relations of bacteria to food, water, air, and contagious diseases, will be studied with minute care, and by the aid of all the resources afforded by the most recent and reliable researches upon this question.

A Pathological Laboratory, in which special study will be made of diseased conditions, and the causes of such diseases as consumption, cancer, and other grave maladies.

A Chemical Laboratory, a necessary supplement to the work of the other departments of the laboratory.

A Vaccine Laboratory, in which will be produced the means of protection from smallpox, charbon, black leg, and that most terrible of all known diseases, hydrophobia. The purpose of undertaking the preparation of the vaccine in this laboratory is a scientific one rather than one related to commercial interests. It has been discovered and clearly demonstrated by Prof. Paquin, that the severe inflammation, and other symptoms of poisoning which not infrequently follow vaccination, and which sometimes, though rarely it is true, result fatally, are the result of the introduction into the system, of pus germs and other poisonous microbes which are not found in absolutely pure vaccine matter, and which are not essential to its activity and efficiency. Means have been perfected by which vaccine may be produced absolutely free from foreign and dangerous germs, so that the great objections which have been urged against vaccination may be wholly removed, and this efficient means of protection against smallpox may be employed with perfect safety.

Prof. Paquin is eminently qualified for these lines of research by long residence in Paris, and study with Pasteur, Corneille, and others whose names are world-famous for their researches and discoveries in this direction. The French language being his native tongue, Prof. Paquin was able to avail himself of the advantages offered him to an unusual degree, and his six years' experience as an original investigator and instructor in these subjects, has eminently qualified him for the important work which he has undertaken. We expect to be able to report to the public through GOOD HEALTH and to the medical public through other channels, many important results of this work within the next few months.

* * *

TWO GENUINE HARVEST EXCURSIONS will be run from Chicago, Milwaukee, and other points on the lines of the Chicago, Milwaukee & St. Paul Railway, to points in Western Minnesota, Northwestern Iowa, South and North Dakota, Nebraska, Kansas, Colorado, Utah, Wyoming, and Montana, at cheap excursion rates, on August 25, and September 29, 1891.

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OPINION OF THE PROFESSION.

Dr. Geo. B. Hope, Surgeon Metropolitan Throat Hospital, Professor Diseases of Throat, University of Vermont, writes in an article headed "Some Clinical Features of Diphtheria, and the treatment by Peroxide of Hydrogen" (*N. Y. Medical Record*, October 13, 1888). Extract :

". . . On account of their poisonous or irritant nature the active germicides have a utility limited particularly to surface or open wound applications, and their free use in reaching diphtheritic formations in the mouth or throat, particularly in children, is, unfortunately, not within the range of systematic treatment. In Peroxide of Hydrogen, however, it is confidently believed will be found, if not a specific, at least the most efficient topical agent in destroying the contagious element and limiting the spread of its formation, and at the same time a remedy which may be employed in the most thorough manner without dread of producing any vicious constitutional effect. . . .

"In all the cases treated (at the Metropolitan Throat Hospital), a fresh, standard Marchand preparation of fifteen volumes was that on which the experience of the writer has been based. . . .

"A steady, coarse spray, with an air pressure of twenty pounds or more, will in a few moments' time produce a more positive action than prolonged efforts to reach the fauces by means of cotton applicators. The force of the spray should be sufficient to cleanse at once the surface accumulations, as it destroys the necrosial elements with which it comes in contact. In this manner the removal of the *débris* and the action on the deeper structures go hand in hand. . . .

"How frequently the treatment is to be followed up depends to a considerable extent on the density as well as the area of the surface involved. It may be said, however, that two applications a day, in the great majority of cases, should be sufficient, if thoroughly performed, to arrest all danger of extension and accomplish the gradual resolution of the local formation. . . ."

Dr. E. R. Squibb, of Brooklyn, writes as follows in an article headed "On the Medical Uses of Hydrogen Peroxide" (*Gaillard's Medical Journal*, March, 1889, p. 267), read before the Kings County Medical Association, February 5, 1889 :—

"Throughout the discussion upon diphtheria very little has been said of the use of the Peroxide of Hydrogen, or hydrogen dioxide ; yet it is perhaps the most powerful of all disinfectants and antiseptics, acting both chemically and mechanically upon all excretions and secretions, so as to thoroughly change their character and reactions instantly. The few physicians who have used it in such diseases as diphtheria, scarlatina, small-pox, and upon all diseased surfaces, whether of skin or mucous membrane, have uniformly spoken well of it so far as this writer knows, and perhaps the reason why it is not more used is that it is so little known and its nature and action so little understood. . . .

"For example, some albuminoids are instantly changed by contact with hydrogen dioxide, as is shown by rinsing the mouth with a dilute solution, when the albuminoid matters of the secretions are at once coagulated. Then, as all virus is albuminoid, whether propagative or not, it is destroyed or by coagulation rendered inert by simple contact with this agent, just as it is by contact with corrosive sublimate. This simple experiment of rinsing the mouth with a dilute solution of hydrogen dioxide and examining the discharged liquid can hardly fail to convince any one of the destructive potency of this active oxygen on some albuminoids, and of its thoroughly cleansing effects upon the mucous surfaces.

"Now, if diphtheria be at first a local disease, and be autoinfectious ; that is, if it be propagated to the general organism by a contagious virus located about the tonsils, and if this virus be, as it really is, an albuminoid substance, it may and will be destroyed by this agent upon a sufficient and a sufficiently repeated contact. . . .

"A child's nostrils, pharynx and mouth may be flooded every two or three hours, or oftener, from a proper spray apparatus with a two volume solution without force, and with very little discomfort ; and any solution which finds its way into the larynx or stomach is beneficial rather than harmful, and thus the effect of corrosive sublimate is obtained without its risks or dangers. . . ."

Further on Dr. Squibb mentions that Charles Marchand is one of the oldest and best makers of Peroxide of Hydrogen, and one who supplies it to all parts of the country.

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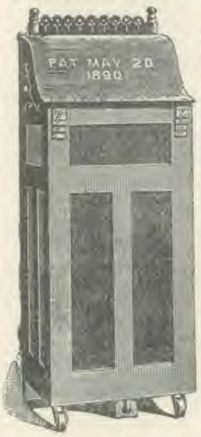

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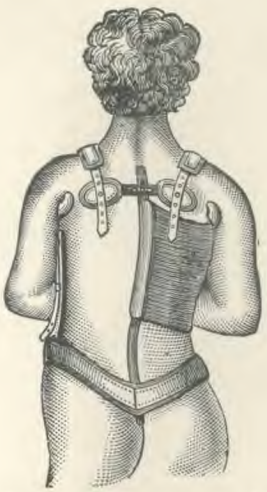

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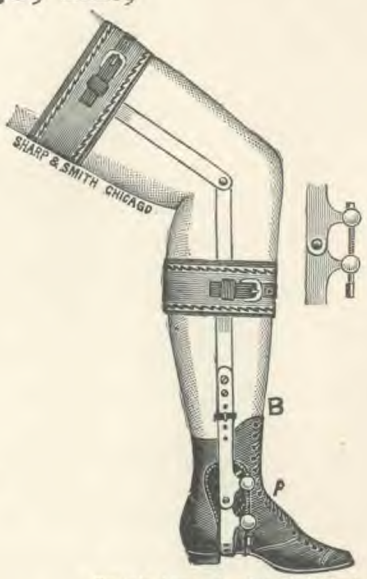

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Going North and West.				STATIONS.	*Going South and East.*			
.....	P.M. 1.30	.....	P.M. 8.15	Ar....Allegan.....Lv	.....	A.M. 7.40	P.M. 2.35	.....
A.M. 1.45	A.M. 11.45	.....	P.M. 6.45	Ar..Battle Creek..Lv	.....	A.M. 9.14	P.M. 4.12	A.M. 5.45
P.M. 6.30	A.M. 7.35	.....	.....	Lv.....Toledo.....Ar	.....	.....	P.M. 8.35	P.M. 12.10
.....	.....	A.M. 12.13	P.M. 3.11	Ar.....Bryan.....Lv	A.M. 6.20	P.M. 1.32	.....	.....
.....	.....	P.M. 5.00	A.M. 7.30	Lv.. Cincinnati ...Ar	P.M. 1.45	P.M. 8.55	.....	.....

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GOING WEST.						STATIONS.	GOING EAST.					
	p m	a m	p m					a m	p m		p m
.....	3.00	9.00	7.00	.....	.....	.....Boston.....	.....	8.30	9.50	.....	7.30
	p m	p m	p m					p m	a m	p m	a m
.....	5.00	6.00	8.00	.....	.....	.....New York.....	.....	9.55	7.40	5.07	10.10
	a m	a m	p m					a m	p m	a m	p m
.....	6.00	6.50	1.00	.....	.....	.....Buffalo.....	.....	8.55	5.00	4.20	8.30
	a m	a m	p m					a m	p m	a m	p m
.....	7.45	7.35	2.45	.....	.....	....Niagara Falls....	.....	7.30	3.17	3.10	7.10
				p m					a m	p m	p m
.....	.....	.....	.....	1.00	.....	.....Boston.....	.....	8.30	9.50	.....	7.30
	p m			p m				p m	a m		a m
.....	8.40	.....	.....	11.55	.....	.....Montreal.....	.....	8.10	7.45	.....	7.45
				p m				a m	p m		p m
.....	.....	.....	.....	1.00	.....	.....Toronto.....	.....	8 42	5.50	.....	7.40
.....	.....	.....	.....	.....	.....	.....Detroit.....	p m	.....	a m	.....	a m
							9.50		7.45	.....	11.55
Chi. Pass.	B. C. Pass.	Lmtd Exp.	Pacific Exp.	Pacific Exp.	Mail Exp.		Mail.	Lmtd Exp.	Atlte Exp.	Day Exp.	Prt.H Pass.
am	pm	pm	pm	pm	am	Dep. Arr.	pm	am	am	pm	am
5.59	4.14	12.13	8.59	7.24	7.16	.....Port Huron.....	10.31	12.31	7.35	8.21	10.45
7.28	5.40	1.20	10.10	8.55	8.31	.....Lapeer.....	8.55	11.15	6.17	7.01	9.17
8.05	6.27	1.48	10.43	9.45	9.05	.....Flint.....	8.00	10.45	5.40	6.27	8.35
8.48	7.24	2.14	11.28	10.30	9.35	..... Durand.....	6.50	10.20	5.03	5.55	7.40
10.00	8.25	3.00	12.33	11.30	10.30	.....Lansing.....	5.37	9.30	4.00	5.05	6.35
10.37	8.58	3.25	1.06	12.05	11.00	.....Charlotte.....	4.58	9.01	3.25	4.37	6.02
1.00	10.00	4.10	2.00	1.00	11.50	....BATTLE CREEK....	4.05	8.20	2.35	3.55	5.15
1.48	pm	.....	2.50	1.48	12.30	.....Vicksburg.....	2.55	7.43	1.48	.....	am
1.58	.....	.....	.....	1.58	.....	.....Schoolcraft.....	2.42	.....	1.33	.....	.....
2.52	.....	5.25	3.48	2.45	1.22	.....Cassopolis.....	1.50	7.00	12.45	2.35	.....
3.40	.....	6.00	4.25	3.35	2.10	..... South Bend.....	1.00	6.20	12.00	1.57	.....
.....	.....	.....	.....	.....	.....	.....Haskell's.....	.....	.....	.....	.....	.....
5.15	.....	7.21	5.55	5.10	3.40	.....Valparaiso.....	11.25	5.00	10.30	12.40	.....
p m	.....	9.30	8.05	7.30	5.50	.....Chicago.....	8.40	3.00	8.15	10.40	.....
.....	.....	pm	am	am	pm	Arr. Dep.	am	pm	pm	am	

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STATIONS.							
Chicago.....	am 7.05	am 9.00	pm 12.20	pm 3.10	pm 10.10	pm 9.25	pm 4.55
Michigan City	9.10	11.10	2.00	4.48	am 12.25	11.25	7.00
Niles.....	10.20	pm 12.43	2.53	5.50	1.45	am 12.40	8.25
Kalamazoo	12.00	2.20	3.55	7.04	3.35	2.17	pm 10.05 / am 6.40
Battle Creek...	pm 12.55	2.59	4.25	7.37	4.29	3.04	7.27
Jackson.....	3.05	4.25	5.32	8.52	6.25	4.45	9.05
Ann Arbor	4.42	5.25	6.22	9.45	7.45	6.05	10.19
Detroit.....	6.15	6.45	7.20	10.45	9.20	7.30	am 11.25
Buffalo.....	am 3.00	am 3.00	am 3.00	am 6.35	pm 5.05	pm 5.05	pm 7.00
Rochester.....			5.50	9.55	8.10		10.00
Syracuse.....			8.00	12.15	10.20		am 1.00
New York.....			pm 3.45	pm 8.50	am 7.00		7.45
Boston.....			5.40	11.05	10.45		10.45
WEST.	†Mail.	†Day Express.	*N. Shore Limited.	*Chicago Express	*Pacific Express.	†Kal. Accom'n	†Eve'g Express.
STATIONS.							
Boston.....		am 8.30	pm 2.15	pm 3.00	pm 6.45		
New York.....		10.30	4.50	6.00	9.15		
Syracuse.....		pm 7.30	11.55	am 2.10	am 7.20		
Rochester.....		9.35	am 1.45	4.20	9.55		
Buffalo.....	pm 11.00	11.00	2.40	5.30	11.50	am 8.45	
Suspen. Bridge			3.25	6.25	pm 12.50		
Detroit.....	am 8.20	am 7.40	9.25	pm 1.20	9.15	pm 4.45	pm 8.00
Ann Arbor.....	9.35	8.39	10.19	2.19	10.30	5.52	9.18
Jackson.....	11.25	9.40	11.18	3.17	11.50	7.15	10.45
Battle Creek..	pm 1.00	11.12	pm 12.22	4.25	am 1.23	8.47	am 12.05
Kalamazoo....	2.17	11.55	12.59	5.00	2.17	pm 9.30 / am 6.00	1.10
Niles.....	4.15	pm 1.12	2.08	6.17	4.15	7.40	3.10
Michigan City	5.37	2.14	3.08	7.20	5.46	8.55	4.30
Chicago.....	7.55	3.55	4.50	9.00	8.05	11.15	6.50

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

Accommodation train for Jackson and all intermediate points leaves Battle Creek at 6.16 P. M., arriving at Jackson at 7.55 P M., daily except Sunday.

Accommodation train for Niles and all intermediate points, leaves Battle Creek at 7.53 a. m. arriving at Niles at 10.05 a. m., daily except Sunday.

Trains on Battle Creek Division depart at 8.03 a. m. and 4.35 p. m., and arrive at 12.40 p. m. and 7.00 p. m., daily except Sunday.

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Plain Oatmeal Crackers	10	Gluten Wafers	30	Granola (bulk 10)	12
No. 1 Graham Crackers	10	Rye Wafers	12	Gluten Food No. 1	50
No. 2 Graham Crackers	10	Fruit Crackers	20	Gluten Food No. 2	20
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