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HYGIENE OF THE MUSCLES.

BY J. H. KELLOGG, M. D.

FIGS. 1, 2, and 4, show positions which are very commonly assumed by students and others. The figures explain themselves at a glance. Many other bad positions are common, not a few of which are undoubtedly due to the improper construction of chairs, sofas, school seats and desks. In many instances in schools, large students are placed in seats which are too low for them, and which require or at least strongly incline them to lean forward while engaged in their studies, making them round-shouldered and narrow-chested. It is probable, however, that the opposite error is much more common, and is certainly much more injurious; viz., placing small students in seats which are too large and too high for them. When this is done, several evils result. The feet not being properly supported, the weight of the limbs constantly drags upon the spine, and requires that its muscles be kept constantly in contraction, and at a disadvantage. The desk being too high, in writing the arm must be lifted so high as unavoidably to produce curvature of the spine by elevation of the shoulder. Other evils are also almost sure to follow, among which are the disturbances of vision from holding the book too near the eyes, disturbance of the circulation, especially in the lower extremities, due to the unnatural pressure on the under side of the limbs, and nervous affections from the unnatural strain upon the sensitive spine from the want of support to the limbs.

FIG. 1.

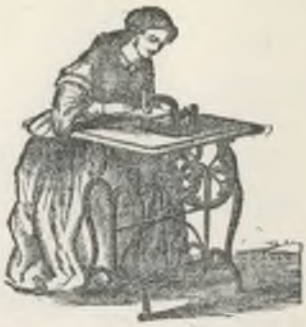

FIG. 2.

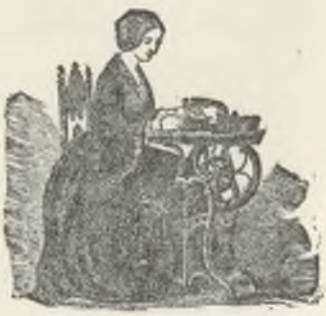

FIG. 3.

Another evil very common in the construction of seats for school children is

placing the desk too far away from the seat (see Fig. 4), thus not only inviting, but actually obliging, the pupil to lean forward in writing, drawing, or ciphering. This evil is of no small consequence, and we are glad to see that it is being remedied by some manufacturers. Still another common failure, is neglect to so shape the backs of seats as to enable them to support the spine at its weakest point. This latter evil is probably as great a cause of curvature as any. The spine becomes tired from want of proper support, and the pupil leans over to get relief. We are glad to know that these difficulties, which have been recognized for several years, but have not been remedied on account of the failure of manufacturers to adapt their seats to the physiological wants of those who were to occupy them, need no longer exist on this account. An ingenious clergyman, who is also a professor in an educational institution, has, after several years of patient labor, succeeded in producing a seat which seems to meet all the requirements of a perfect seat in a manner in which they have never been met before. It has been already introduced into hundreds of schools, and gives universal satisfaction. We present in Fig. 5 a view of this seat.*

Students, and others as well, often assume most improper attitudes while pursuing their studies at their rooms, tilting their chairs back and placing the feet against the wall, upon the top of the table or in some other elevated place. Such a position cannot be long maintained without discomfort, and discomfort is simply an admonition of nature to take a different attitude,—to change the position.

As a rule which may be universally followed, we know of no better than the simple one "sit gracefully." A graceful position is a natural one, and will be productive neither of inconvenience nor injury.

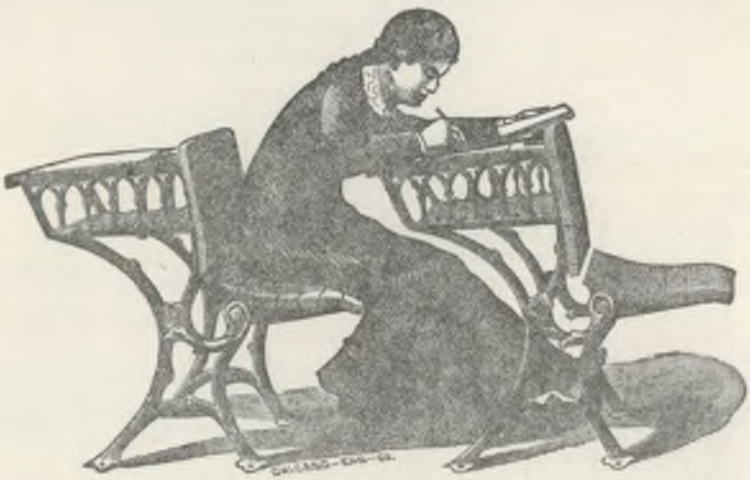

FIG. 4. This cut shows the distorted and unhealthful position which a student is almost compelled to occupy by the old style school seat.

We grant that there are great difficulties in the way, since very few chairs are constructed on physiological principles; but this is a matter which should receive attention in purchasing furniture. It is possible to obtain chairs which are reasonably correct in construction. The principal points which need to be looked at are the following:—

1. A chair should be so constructed that it will properly support the back, not by one or two slats placed crosswise, but by a uniform curve, corresponding as near as possible with the natural curve of the spine. The whole spine should be supported without requiring a person to throw the shoulders forward in order to bring the lower or middle part of the spine in contact with the back of the chair.

*Any one who desires further information concerning it, can obtain full particulars by addressing the inventor, Eld. U. Smith, Battle Creek, Mich.

2. It is also important that the chairs be of proper height, so that the weight of the limbs may be supported by the feet set squarely upon the floor instead of hanging upon the front edge of the chair. Nearly all chairs are made too high, if not for the adult persons in the family, for nearly all the younger members, who most of all need seats properly constructed. There should be chairs of different heights for different members of the family; and the importance of the matter is sufficient to justify the incurment of the expense necessary to secure each member of the family against injury from this cause.

While we are by no means inclined to be ultra upon the subject, we must enter a word of protest against the too common use of rocking-chairs. As usually constructed, they induce an improper attitude in the occupant, one which limits the action of the lungs and produces roundness of the shoulders. We seldom sit in a rocking-chair for a half-hour without finding it necessary to get up and walk about, expanding the chest and filling the lungs to relieve the feeling of oppression which results from the confinement of the chest. We have frequently observed in patients suffering with lung troubles, a careful avoidance of rocking-chairs, and upon making inquiry have found that what we say is true. They avoided the rocking-chair because with their diminished lung capacity, they could not breathe well while sitting in it.

While the rocking-chair is undoubtedly a comfort to thousands, we have no doubt that on the whole it has been a curse to the race, especially to womankind. We may have easy chairs, made as soft and luxurious as possible; but let them be made in accordance with physiological principles. Art has made the models for chairs rather than nature. If we would follow art less and nature more, in numerous ways we should be vastly better off.

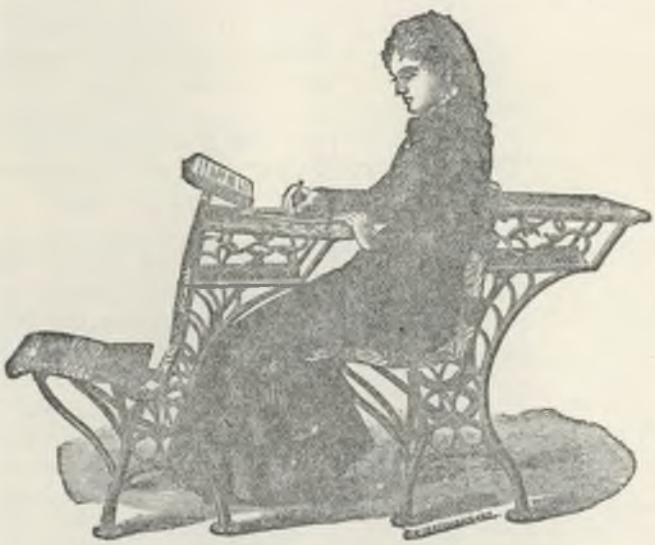

FIG. 5. This is a representation of the Automatic School Seat, which encourages a correct attitude.

BAD POSITIONS IN STANDING.

See Figs. 6 and 7. While there need not be so much said on this subject as on the former, a few points deserve attention. It should be remembered that the muscles are required to act while we are standing as well as when walking or making active movements. It requires a constant exercise of a large number of muscles, particularly those of the trunk, to keep the body erect, to prevent it from toppling over. Hence it is important, especially for those whose occupations require a standing

position much of the time,—as clerks, bank cashiers, etc.,—that correct attitudes should be preserved, so that the muscles may act properly. It is a very common practice with many to throw the weight wholly upon one foot, alternating with the two feet. When this is done, the spine is curved, and parts are thrown greatly out of their natural position. The weight may be easily alternated without so great changes; and when this is done, all the benefit which can be derived from any change of the sort is obtained. The rule should be always to preserve the body

FIG. 6. Improper position in standing, the shoulders being thrown forward.

FIG. 7. A correct position in standing.

erect, the shoulders well thrown back, the chest well expanded, and the spine as straight as nature has made it. It is possible to go to an extreme even in this, but such a defect is so rare that we need not utter any warning against it.

HOW TO WALK.

It may seem at first ridiculous to pretend to teach grown people how to walk, as though they had not learned this in infancy. But we are willing to venture the assertion that not one person in twenty knows how to walk well. How few people there are who do not feel slightly embarrassed when obliged to walk across a large room in which are many persons seated so as to observe well each movement! How many public speakers there are who appear well upon the platform so long as they remain standing still, or nearly so, but who become almost ridiculous as soon as they attempt to walk about. Good walkers are scarce. As we step along the street, we are often looking out for good walkers, and we find them very seldom. What is good walking? We answer, Easy, graceful, natural walking. Nearly all the good walkers there are, will be found among gentlemen, since fashion insists on so trammeling a woman that she cannot walk well, can scarcely make a natural movement, in fact. To walk naturally, requires the harmonious action of nearly every muscle in the body. A good walker walks all over; not with a universal swing and swagger, as though each bone was a pendulum with its own separate hanging, but easily, gracefully. Not only the muscles of the lower limbs, but those of the trunk, even of the neck, as well as those of the arms, are all called into action in natural walking. A person who keeps his trunk and upper extremities rigid while walking, gives one the impression of an automaton with pedal extremities set on hinges. Nothing could be more ungraceful than the mincing, wriggling gait which the majority of young ladies exhibit in their walk. They are scarcely to be held responsible, however, since fashion requires them to dress themselves in such a way as to make it impossible to walk otherwise than awkwardly and unnaturally.

We cannot attempt to describe the numerous varieties of unnatural gaits, and will leave the subject with a few suggestions about correct walking.

1. Hold the head erect, with the shoulders drawn back and the chin drawn in. Nothing looks more awkward and disagreeable than a person walking with the head thrown back and the nose and chin elevated.

2. Step lightly, and with elasticity,—not with a teetering gait—setting the foot down squarely upon the walk and raising it sufficiently high to clear the walk in swinging it forward. A shuffling gait denotes a shiftless character. But do not go to the other extreme, stepping along like a horse with "string halt." A person with a

firm, light, elastic gait, will walk much farther without weariness than one who shuffles along. A kind of measured tread or rhythm in the walk also seems to add to the power of endurance, although, for persons who have long distances to travel, an occasional change in the time will be advantageous.

3. In walking, do not attempt to keep any part of the body rigid, but leave all free to adapt themselves to the varying circumstances which a constant change of position occasions. The arms naturally swing gently, but not violently. The object of this is to maintain the balance of the body, as also by the gentle swinging motion to aid in propelling the body along.

Correct walking should be cultivated. It ought to be taught along with the arts and sciences. In our military schools it is taught; but these schools can be attended by but few. Invalids, especially, should take great pains to learn to walk well, as by so doing they will gain more than double the amount of benefit they will otherwise derive from the exercise.

RELATION OF FOOD TO THE MUSCLES.

While this is not the proper place for a complete account of the subject of food as related to the muscles, we may well notice a few points. Experiments show very clearly that the muscles are wasted by work and exercise of all kinds requiring muscular effort. Equally careful and reliable experiments have determined the fact that the muscles need for their support, certain elements of food more than others; these are the nitrogenous elements. The muscles are themselves substance, and hence they require elements of the same character. It is as impossible to nourish the muscles or supply them with force from starch, sugar, or fat, as it would be to make a brick house out of wood or straw. They need gluten, albumen, fibrine, caseine, and similar nitrogenous elements. It is not necessary to eat animal food to obtain these elements, though they are contained in greatest abundance in animal tissues. Vegetable food, such as oatmeal, peas, beans, and the unbolted meal of all the grains, contains a large proportion of this class of food elements. It is observed, in fact, that in the meal of wheat we have exactly the right proportion of all the food elements necessary to nourish the body and maintain it in health. This fact is also established by the dietetic customs of various nations who use little or no animal food with the exception of milk, and that in moderate quantities. Thousands of persons have been muscle-starved from the attempt to live upon fine-flour bread, which contains very little more than starch, and has been proven by experiment to be incapable of supporting the life of a dog.

The athletes of ancient Greece and Rome were not reared on fine-flour bread; and it is equally worthy of notice that prize-fighters, wrestlers, and all persons in training for feats requiring the highest physical development, avoid fine-flour bread, and make graham bread, oat-meal, cracked wheat, and such food, a large proportion of their diet. Thus fully does experience corroborate the conclusions of theory in this matter.—*Home Hand-Book.*

PHYSICAL EDUCATION.

BY FELIX L. OSWALD, M. D.

[THE following article contains so much useful and interesting information that we quote it, although we do not quite agree with the writer in all points.—ED.]

How often should we eat, is still a mooted question. For men in a state of nature the answer would be simple enough; but, considering our present artificial modes of life, I must say that the choice of fixed hours is less important than the observation of the following rule: *Never eat till you have leisure to digest.* For digestion requires leisure; we cannot assimilate food while the functional energy of our system is engrossed by other occupations. After a hearty feed, animals retire to a quiet hiding-place; and the "after-dinner laziness," the plea of our system for rest, should admonish us to imitate their example. The idea that exercise after dinner promotes digestion is a mischievous falacy; Jules

Virey settled that question by a cruel but conclusive experiment. He selected two curs of the same size, age, and general *physique*, made them keep a fast-day, and treated them the next morning to a square meal of potato-chips and cubes of fat mutton, but as soon as one had eaten his fill, he made the other stop too, to make sure that they had both consumed the same quantity. Dog No. 1 was then confined in a comfortable kennel, while No. 2 had to run after the doctor's coach, not at a breathless rate of speed, but at a fair, brisk trot, for two hours and a half. As soon as they got home, the coach-dog and his comrade were slain and dissected. The kennel-dog had completely digested his meal, while the chips and cubes in the coach-dog's stomach had not changed their form at all; the process of assimilation had not even begun! Railroad laborers, who bolt their dinner during a short interval of hard work, might as well pass their recess in a hammock; instead of strengthening them, their dinner will only oppress them, till it is digested, together with their supper, in the cool of the evening. In a manner essentially similar, mental activity tends to hinder the digestive process for a considerable time; and I believe, more especially, the digestion of the very substances that are often selected as brain-food *par excellence*. Even after a fashionable dinner of six or seven courses (*curses*, Dr. Abernethy used to call them), two hours of absolute rest will set our wits a-work again; but, if that time be passed behind a double-entry ledger, a feeling of lassitude, often combined with an almost resistless somnolence, will advise the brain-worker that his vital energy is needed for other purposes. "I could eat with more comfort if it was n't for the consciousness of having to hurry back to my drudgery," I heard a poor class-teacher say, and the same consciousness embitters the noonday-meal of millions of school-children and overworked clerks.

Andrew Combe, M. D., informs us that a century ago, the tradesmen of Edinburgh used to indulge in a "nooning," a general suspension of business for two hours in the middle of the day. But an hour or so was thus probably spent in going home and back, dressing, etc., and half an hour at the meal itself; so that, after all, only thirty minutes remained for digestion; and, considering the anachronism of that nooning practice, the best plan, on the whole, would seem to be a general return to the method of the ancient Romans, who postponed their principal meal till their day's work was done. It would be an insult to common sense and humanity to doubt that the eight-hour system will ultimately prevail, and, where it has been already adopted, I can see no reason why mechanics could not arrange to finish their day's job at 4 P. M. Schools should always close at four. Bankers and government clerks often get home before that time, and competitive shopkeepers might carry on their business by relays. At half-past four, or say five o'clock, the *coena domestica* might begin, and conclude before six; then *dolce far niente*, pleasant conversation, and four blessed hours for digestion.

But that principal meal should be the last. It is an important rule that we should digest our food thoroughly before we replenish the stomach. To counteract the effects of overeating, the gluttons of ancient Rome used emetics, the Parisian gastronomes, stimulants. Dr. Alcott wants us to "leave off hungry"; the exponents of the movement-cure prescribe a certain system of gymnastic evolutions before and after dinner. But there is a better plan: *Lengthen the interval between meals.* Two meals a day are enough, perhaps more than enough, though we can accustom ourselves to swallow (not digest) five or six. It all depends on training, and in no other respect is the human system so plastic to the influence of habit. The Rev. Mr. Moffat tells us that the Gonaque Hottentots are no ways incommoded by a five days' fast, and get old on an average of four meals a week.

The Greeks and Romans during the prime of their republics contented themselves with one meal a day; Claude Bernard recommends two, but his countrymen generally eat three; their German neigh

bors, four; the East-Germans, even five: breakfast, second breakfast *(zweites Frühstück)*, dinner, *Vesperbrot*, and supper, to which supper the Vienna burghers actually super-add a *Nacht-bissel*—a "night-lunch, of cold potato-salad with bread and *Wurst*, and often with a mug of beer—"for the stomach's sake"! I get along comfortably with a meal and a half; so does my grand-uncle, an octogenarian, who still masticates his bread with a full set of unbought teeth. Two, or one and two halves, should be enough for any man. The lightest breakfast is the best. At noon take a glass of milk and a couple of biscuits, or in summer a couple of ripe pears or peaches; they will keep you cool during the post-meridian heat and do you more good than a cocktail lunch. Never keep a pocket-flask. Don't stay with flagons; better comfort with apples, if you cannot wait till five. School-children should pass their recess on the play-ground. A biscuit and a pocket full of apples will satisfy the temporary demands of the stomach; and, if they have munched up their comestibles in the course of the morning, as boys are apt to do, they will find it far easier to forego their noonday lunch altogether than to resist the insidious somnolence which would dull their wits after a regular dinner, and often makes the afternoon lesson a protracted struggle between nature and duty.

But at the principal meal they should eat their fill. Let them pitch in, without fear of dangerous consequences—unless your landlord charges by the plateful. Children, like monkeys, have a way of dallying with their food if they are full—picking a crumb here and there, or mumbling their apples without using their teeth. Make them get up if you notice such symptoms, or, better, entice them away by improvising some out-door or up-stairs amusement. But I repeat, never press them to eat—for principle's sake—not even your young visitors; they are not likely to go to bed hungry if your *menu* comprises such items as baked apples or bread-pudding and sweet milk.

Jean Jacques Rousseau holds that intemperate habits are mostly acquired in early boyhood, when blind deference to social precedents is apt to overcome our natural antipathies, and that those who have passed that period in safety have generally escaped the danger of temptation. The same holds good of other dietetic abuses. If a child's natural aversion to vice has never been willfully perverted, the time will come when his welfare may be intrusted to the safe-keeping of his protective instincts. You need not fear that he will swerve from the path of health when his simple habits, sanctioned by Nature and inclination, have acquired the additional strength of long practice. When the age of blind deference is passed, vice is generally too unattractive to be very dangerous. "Why make yourself the slave of such a degrading habit?" says Count Zinzendorf, in his "Hirtenbrief"; "it is so easy never to begin!" I go farther. I say it is difficult to begin. Nature is not neutral on a point of such importance. Between virtue and vice she has erected a bulwark which she intended to last from birth to death. We need not strengthen that bulwark. We need not guard it with anxious care; it will stand the ordinary wear and tear of life. All we have to do is to save ourselves the extraordinary trouble of breaking it down.

Summer brings no repose to the slaves of Mammon; but dull headaches and the stomach's imperative demand for rest convince even the unwilling that intricate arithmetical problems and 90° Fahr. are incompatible with digestion; and I ascribe it to the logic of those gastric arguments that bankers and brokers now close their shops at three P. M., and that business men generally avoid repletion in the middle of the day. "Cheese is gold in the morning, silver at noon, and lead at night," says a mediæval proverb; but the effects of those horrid cheese and porter breakfasts of Queen Anne's time satisfied our grandmas that rotten curd and fermented (i. e., putrid) barley-broth are always lead, except to those who employ the hygienic philosopher's stone—active and long-continued out-door exercise. After recovery

from an exhausting sickness—especially if you decide to promote that recovery by throwing physic to the dogs,—the demands of your stomach will often become exorbitant, but only apparently so; your system wants to repair the waste of the disease. Never fear that the "digestive organs are too feeble yet," etc.; those organs will keep their promise, unless you break yours by resuming medication. Have you eaten more than the wants of your system require? Your appetite will not respond to your invitation at the next meal. Take the hint—wait. Do not increase the troubles of your stomach by mordant spices and alcohol. In the sultry dog-days your system craves a surcease of greasy *ragoûts*, and yearns for something refreshing—sherbet or cool fruit. Get a water-melon. "But isn't the yellow fever in town? Quack, Quinine, and other leading physicians, agree that one must take a course of antiseptics, and avoid vegetables at such seasons." Don't believe them; Nature knows better. Fruit is a better antiseptic than fusel poison and wormwood. The frugivorous Mexican survives where the beaf-eating stranger dies in spite of his bitters. If sailors have been surfeited with salt meat, their craving after lemon-juice or fresh fruit becomes more urgent from day to day; the surcharge of their organism with saline matter requires a neutralizing acid. A single meal of salt herring excites merely thirst; common water is yet sufficient to dilute the ingesta and eliminate the salt. Vegetable substances that consist chiefly of starch and water supply the wants of our organism less completely than those that contain an admixture of gluten, albumen, and fat; and, if we restrict our diet to the first-named class of aliments, out system announces the deficit by means of our senses; without such complements as milk, sugar, or fat, rice-bread is more insipid than bread from unbolted wheat flour.

All dietetic needs of our body thus announce themselves in a versatile language of their own, and he who has learned to interpret that language, nor willfully disregards its just appeals, may avoid all digestive disorders—not by fasting if he is hungry or forcing food upon his protesting stomach, not by convulsing his bowels with nauseous drugs, but by quietly following the guidance of his instincts.

Nature's health laws are simple. The road to health and happiness is not the labyrinthine maze described by our medical mystagogues. In perusing their dietetic codes, one is farely bewildered by a mass of incongruous precepts and prescriptions, laborious compromises between old and new theories, arbitrary rules, and illogical exceptions, anti-natural restrictions, and anti-natural remedies. Their views of the constitution of man suggest the King of Aragon's remark about the cycles and epicycles of the Ptolemaic system: "It strikes me the Creator might have arranged this business in a simpler way."

All normal things are good, all evil is abnormal, is an axiom which has been almost reversed in the principle of our orthodox health theories; for many of our physical educators still hold to the cardinal error of their spiritual colleagues, who consider depravity and wretchedness as the normal condition of man, and happiness as the reward of a self-abhorring suppression of all natural desires and of a blind confidence in the efficacy of an abnormal and mysterious remedy—nay, who despise Earth herself as a "vale of tears," and life as a disease whose only cure is death, whose only anodyne a dream of a supernatural elysium. It is time to awake from that dream. It is time to open our eyes to the well-springs of light and happiness which the bounty of our Mother Earth sends forth in such abundance, and which man might enjoy with all his fellow-creatures if his perversity had not turned them into sources of misery and death. Instead of insulting our Maker by the doctrine of innate depravity, we should learn to distinguish the voice of our natural instincts from the cravings of a morbid appetency. We should try to restore life to its original purity and healthfulness, instead of despising it and looking for happiness beyond the grave.—*Pop. Sci. Monthly.*

DIPHTHERIA.

BY THE EDITOR.

SYMPTOMS.—*Catarrhal Form:* Slight fever; malaise; dryness in throat, with slight pain on swallowing; glands of throat swollen; mucous membrane red; small grayish-white or whitish-yellow spots; frequent nausea and vomiting.

Croupous Form: Symptoms of catarrhal form intensified; more fever; head hot; mind confused; much pain in throat;

Cut, showing a Diphtheritic condition of the Throat.

one or more whitish patches in throat; peculiar offensive odor of breath; tongue coated.

Malignant Form: Foregoing symptoms, with extreme prostration; pulse weak and slow; face sodden; neck swollen and shiny; breath very offensive; false membrane very extensive.

This disease is of so great practical interest on account of its great and increasing prevalence at the present time that we shall be justified in devoting more space to it than usual.

The disease is by no means a modern one, as is generally supposed. Homer and Hippocrates, who wrote several centuries before the Christian era, were each familiar with this disease under the name of *Malum Ægyptiacum*. As the ancient name indicates, the disease was by early writers supposed to originate in Egypt and Syria. An epidemic of diphtheria occurred in Rome A. D. 380. Holland was visited by the disease in 1557. Many other parts of Europe suffered from its ravages in the last two centuries. The first recorded occurrence of this affection on the American continent was in 1771, described by Samuel Bard in 1786. In 1856 another very severe epidemic visited this country, since which time it has been very common, seemingly increasing in virulence from year to year, sometimes abating its ravages for a single season, then breaking out with redoubled fury and fatality the next.

The characteristic feature of the disease when fully developed is a peculiar membranous formation which makes its appearance usually upon the fauces or tonsils, and is called *diphtheritic membrane*, from its resemblance to skin, which is the signification of the Greek word from which the name is derived.

This membrane, or rather false membrane, when first formed, is of a grayish-white color; very tough, of leathery consistency, and adheres to the mucous membrane beneath it with great tenacity, it being very difficult to tear away except in shreds, and then only by laceration of the mucous membrane, leaving a bleeding surface. The false membrane, in fact, is not formed upon the mucous membrane or other tissue where it may occur, but in it. At least it sends down numerous rootlets which are imbedded between the cells of the tissue beneath. In this respect the membrane is very different from that formed in croup, which often separates from the mucous membrane upon which it is formed, leaving the tissues entirely uninjured.

The membrane is not confined to the fauces. It may occur on any portion of the structures of the mouth, the inside of the cheeks, the gums, the tongue, the edges of the lips, as well as on the tonsils, the uvula, the soft palate, and the pharynx generally. It may also occur in the nasal cavity, either primarily or secondarily, extending upward from the fauces.

We recently treated a case in which the whole back portion of the mouth was covered with the diphtheritic membrane, which also extended throughout the nasal cavity and even appeared at the edges of the nostrils. The exudation may also occur at any other parts of the body where there is a union between skin and mucous membrane. Even the stomach and intestines sometimes become the seat of a diphtheritic membrane.

The exact nature of this membrane has been the subject of much experimental inquiry. Besides being subjected to a most careful microscopical inquiry by hundreds of skilled microscopists in the Old World as well as the New, eager pathologists have submitted it to the test of physiological analysis by applying it in various ways to lower animals. The results of these inquiries have seemed to establish the following facts:—

1. The active cause of the characteristic features of diphtheria are vegetable organisms.

2. The false membrane is formed by the growth of these vegetable parasites in and upon the infected mucous membrane, and the vital resistance of the tissues to the depredations of the organisms.

These conclusions are disputed by physicians of eminence, while warmly defended by Oertel, and others, and cannot be said to be absolutely proven; but since the most successful mode of treating the disease is that which is based upon this theory of its nature, it is a perfectly safe and practical one for us to adopt.

Exciting Causes.—The minute organisms peculiar to this disease act as the immediate exciting cause in all cases. These germs find ready access to the throat and nasal cavity, the parts most readily affected by the disease, being taken in by the act of respiration. The particular germs which are thought to be characteristic of this disease are more or less common in the air, especially in proximity to decomposing matter. It is their enormous numbers and extraordinary activity which give to diphtheria its dangerous character.

Parasitic Fungi of Diphtheria. *a*, Micrococcus; *b*, Bacteria Termo.

In the accompanying cut may be seen a representation of the microscopical appearance of the *Bacterium Termo* and the *Micrococcus*, the two varieties of germs thought to have most to do with the production of diphtheria.

Since the disease is probably caused by germs, and since these very germs are produced in great abundance in the body of a person suffering with the disease, and thrown off with the breath and other excretions, it is evident that it may be communicated from one person to another. Clinical experience has verified this fact innumerable times. Experiments upon animals have also shown that the disease is communicable by inoculation. The affection is very appropriately called by one author a "miasmatic, contagious disease." On no other hypothesis can observed facts be reconciled. The disease is now generally recognized as contagious, and is treated as such by all enlightened physicians. The certain knowledge of this fact is sufficiently useful to well repay all the labor and time which have been devoted to the investigation of this malady. The period of incubation is usually two to eight days.

We believe that diphtheria may very appropriately be included in the class of diseases latterly known as filth diseases, since the parasitic organisms by which it is probably caused are apparently identical with those which flourish in organic filth. There can be no doubt that in decomposing, putrefying organic matter the germs

of this disease are produced. One great source of such poisonous matters may load the air of a whole village with the poisonous germs, and thus expose to its ravages a whole community at once.

Neglected cesspools, foul vaults, leaky sewers, damp, unventilated cellars, moldy walls, all these, and every other source of organic decay, are the favorite haunts of these destructive organisms; and the only wonder is that cases of profound poisoning by these parasitic pests are not more common than they are. It is a mystery that so many escape.

What are termed spontaneous cases of the disease, that is, those which originate without previous exposure to contagion from a person suffering with this affection, are not uncommon. These cases undoubtedly originate from the production of germs by the usual sources of disease germs, which have already been indicated with sufficient definiteness. There are some who maintain that the spontaneous origin of the disease is impossible; but so many cases have appeared in which no connection could be traced to a preceding case that it seems to us to be pretty clearly established that it is possible for the disease to arise otherwise than by contagion. A few months since, a lady from an Eastern State came under our care for treatment of the effects of diphtheria, a very severe attack of which she had suffered. Upon inquiring into the history of the case, we found it impossible to trace the disease to any other cause then exposure to the germs and spores of lower vegetable organisms. The house in which she was stopping was exceedingly damp, the walls, and even the door and window-casings being stained with green and brown mold. In personal conversation with Dr. Snow, of Providence, Dr. E. L. Griffin, President of the State Board of Health of Wisconsin, Dr. Ezra M. Hunt, of New Jersey, Dr. R. C. Kedzie, President of the State Board of Health of Michigan, and various other distinguished sanitarians, we have learned of a large number of isolated cases of diphtheria which can be explained in no way satisfactorily but by the supposition that the disease originated where it occurred.

It is an observed fact that these germs, as well as those of other sorts, are remarkably tenacious of life. It is almost impossible to destroy them, either by boiling or by freezing, as they will endure both extremes for hours without losing their vitality. The germs will even retain their virulent properties for months. A house in which a family had suffered with diphtheria was vacated for several months, and on being again occupied, communicated the disease to its new inmates.

Drinking-water, milk, and even beer, have been proven to be the vehicles of typhoid poison in many instances. There is good reason to believe that diphtheria may be communicated in this manner also, the liquids named being contaminated by absorption of the emanations of prolific sources of germ poisons, or by direct contamination with the excretions of a diphtheritic patient.

The common custom, most prevalent among the gentler sex, of rather indiscriminate kissing, bestowing especially frequent favors of this sort upon small children, cannot but be deprecated, at least during the prevalence of a diphtheria epidemic. There are on record numerous instances of the communication of the most loathsome diseases through the seemingly harmless medium of a kiss; and there is a special danger respecting this disease which is well worthy of consideration. When an epidemic of diphtheria is prevalent, there are numerous cases, especially among adults, which are so very trivial in their general symptoms that the individual considers the difficulty nothing more than a cold, when he is really suffering with diphtheria, having distinct patches in his throat, and is, unconsciously, sowing broadcast the seeds of disease wherever he goes. Such a person calls to see a neighbor, and, as usual, smothers the baby with kisses, and, perhaps, also kisses the larger children. What is the result? Very likely a week has not passed before the little one has diphtheria in a very se-

vere form, and, possibly, dies. Thus an act intended as one of affection, becomes, literally, the embrace of death. This hint is worth thinking of. Life is too valuable to be sacrificed by a kiss.

A few other means of contagion which we do not remember having seen mentioned are perhaps worthy of attention in a practical article like this. The disease may unquestionably be spread very rapidly by the use of a common drinking-cup at school or elsewhere. One of the worst cases of diphtheria we ever saw was in a little child who had taken the disease from a workman employed on the premises, by sipping water from the man's drinking-cup. The man suffered but slightly; but the little boy narrowly escaped without serious injury after a very severe illness, with extensive production of the false membrane. Toys and even books may also become the medium for communicating the disease, as well as articles of clothing, and anything that may become infected by the breath or expectorations of the patient.

DETECTION OF THE TRICHINA.

[THE *Scientific American* calls attention to the fact that butchers and dealers in meat are likely to be involved in serious trouble soon by suits for damages for selling trichinized pork, also describing the mode of examination for the detection of the parasites. We hope the butchers will take warning, and stop selling pork unless they are willing to subject every cubic inch of each porcine carcass sold to microscopic inspection.]

Another death from *trichiniasis*, under exceptionally severe circumstances, having recently occurred, public attention is again being directed to the ravages of that terrible parasite, the *Trichina spiralis*.

A young German butcher, Franz A. Axler, apparently suffering from a severe attack of rheumatism, was lately admitted into Bellevue Hospital. For several days the physicians who visited the ward to which Axler was assigned were unable to make a diagnosis of his case; but eventually, and as a result of close watching, the conviction grew that he was suffering not from rheumatism, but from trichiniasis. This disease not yet having been relegated to that class about which it may be said "we know all about it," it is not to be wondered at that the greatest interest in this case was immediately manifested by many distinguished medical men. Upon due inquiry having been made, the fact was elicited that Axler had a short time previous to the first indications of disease been freely partaking of raw pork, a practice to which he, in common with some others of his countrymen, appears to have been somewhat addicted. To make "assurance doubly sure," Professor Janeway one day with his lance removed from the patient a small piece of muscular tissue, which, having been placed under the microscope, revealed the presence of numerous living, active trichinæ.

Axler eventually died; although, as we shall show, the disease, while formidable, is not necessarily *fatal* in all cases. A *post mortem* examination with the microscope, of course, showed that the active parasites had increased and multiplied to such an extent that every muscle in his body (which was teeming with parasitic life) had been attacked and destroyed by this apparently insignificant creature of nature.

In the case now recorded, and for obvious reasons, death ends all; but indications are not wanting that much trouble may yet arise, and much legal skill and acumen be imported into the settlement of other cases of trichiniasis, and that the pork butcher or even middlemen may be liable to be proceeded against at law by the relatives of those who have succumbed to disease contracted through eating diseased meat.

When Mrs. Eliza Greifelt sued Figge Bros., in Brooklyn, for $5,000 as *solatium* for the death of her husband, who died from trichiniasis claimed to have been produced through eating of a ham supplied by this firm, a significant fact in the rendering of the verdict (which was against the plaintiff) lay in the allegation that it had not been proved that the disease had been contracted from eating that ham in par-

ticular, but, on the contrary, that death had ensued before the time when disease from such a source could have run its course; while, more directly, the evidence was such as would lead to the belief that the disease from which Mr. Greifelt died had been contracted by indulging, at a previous date, in certain pork sausages imported from Cincinnati.

The verdict leaves for the butchers or dealers the slight unpleasantness that it might have been otherwise rendered had it been clearly shown that the trichiniasis from which the man died had been caused by the Brooklyn ham instead of by the Cincinnati sausage. The inference from this is too palpable to escape due notice, or to require special attention being directed to it. But another portion of the charge of the judge in this case is still more significant, and to the public at large more important. In trade, he observed, persons were only bound to use "ordinary care and skill," and not the most scientific processes. This opens up the question as to what constitutes the "ordinary care and skill" standard on the part of dealers, and whether it be not possible to raise this standard a good deal higher than it appears now to be without entailing upon the butchers or sellers the necessity of incurring undue pecuniary expenditure or the acquiring of any special degree of scientific skill.

Previous to indicating simple means to both the butchers and the housewife by which diseased pork can be discovered, and showing the latter by what means the parasitic life forming the disease can be stamped out with certainty, a glance at the life history of that parasite is necessary.

In nearly every case of trichiniasis the disease has been contracted, as already observed, by the eating of raw or underdone pork. But it must also be observed that the pig is not the only animal eaten by man the flesh of which forms an abiding place for trichinæ. It has been said that the flesh of fowls is sometimes not exempt from them; that they are to be met with in rabbits, we know, having seen several well developed examples in the flesh of that animal. Having partaken of a meal of raw, or even "rare," or underdone meat containing trichinæ, the recipient has in his stomach probably many thousands of the animal, if not in the full grown, at any rate in the condition of larvæ, which are not affected by contact with the gastric juice. In forty-eight hours they will have passed from the larval into the adult condition, arrived at which they immediately commence their destructive march through every tissue of the body. The life-cycle of these creatures appears to be completed in about three weeks, although there is much yet to be learned of their history. Two days suffice for their passing from the capsuled to the adult condition; the eggs from the adult take about six days to be developed into embryos.

Both the butcher and dealer, as well as the lay portion of the public, are interested in the best and easiest methods by which the presence of trichinæ in pork may become known. Every scientific man, of course, knows that the microscope is the revealer of this parasite; but it is not so generally known that a simple hand magnifier shows their presence with a degree of certainty and perfection that puts beyond the realm of doubt the fact of any sample of flesh being trichinized or not.

To examine pork, cut off in the longitudinal direction of the fiber, by means of a sharp razor, a *thin* slice of the flesh about half the size of the nail of the little finger, and having placed it *in situ* on an ordinary microscopic slide, or any other suitable piece of glass, put on it a drop of liquor potassæ, cover it with another thin slip of glass, and keep the two firmly pressed together by means of spring clips —the ordinary spring clothes pegs being very convenient for this purpose. Upon examination by the microscope, the thin and almost transparent layer of muscle will show the worms coiled up in their cysts, or moving about freely, according to the stage at which their development has arrived. This, of course is on the assumption that the specimen undergoing examination is infected.

TEMPERANCE AND MISCELLANY.

Devoted to Temperance, Mental and Moral Culture, Social Science, Natural History, and other interesting Topics.

SAMPLE ROOMS.

SAMPLES of wine and samples of beer,
Samples of all kinds of liquor sold here;
Samples of whisky, samples of gin,
Samples of all kinds of "bitters"—step in.
Samples of ale, and porter, and brandy.
Samples as large as you please, and quite handy.
Our samples are pure, and also you'll find
Our customers always genteel and refined;
For gentlemen know when they've taken enough,
And never partake of common stuff.
Besides these samples within, you know,
There are samples without of what they can do;
Samples of headache, samples of gout,
Samples of coats with the elbows out,
Samples of boots without heels or toes,
Samples of men with a broken nose,
Samples of men in the gutter lying,
Samples of men with delirium dying,
Samples of men cursing and swearing,
Samples of men all evil daring;
Samples of lonely, tired men,
Who long in vain for their freedom again;
Samples of old men worn in the strife,
Samples of young men tired of life,
Samples of ruined hopes and lives,
Samples of desolate homes and wives;
Samples of aching hearts grown cold
With anguish and misery untold;
Samples of noble youth in disgrace,
Who meet you with averted face;
Samples of hungry little ones,
Starving to death in their dreary homes.
In fact, there is scarcely a woe on earth
But our samples have nurtured or given them birth!
Oh, all ye helpers to sorrow and crime,
Who deal out death for a single dime,
Know ye that the Lord, though he may delay,
Has in reserve for the last great day
The terrible "woe" of whose solemn weight
No mortal can know, till the pearly gate
Is closed, and all with one accord,
Acknowledge the justice of their reward.

—*Sel.*

GERTRUDE'S GRAVEYARD.

GERTRUDE MURRAY was a decided enemy of tobacco. She used to say she hated it. Now hate is a strong, bad word, I know. My mother has often said to me, "My dear, you should hate nothing but sin," and I never use the word but I think of my dear mother and her advice. But I think, as Gertrude did, that it is quite proper to say "hate" in speaking of tobacco, for it is a terrible poison, and injures more persons, body and soul, too, than people are willing to believe.

But she did something besides hating it and calling it bad names. She tried to persuade every one who used it to give it up. She was a queer child. She never acted like other children, but had a way all her own, which sometimes made folks cry and sometimes laugh, and always made them shake their heads, and say, "What a queer child Gertrude Murray is."

She took a notion into her head one day that she would have a little graveyard all her own. There was quite a large piece of ground in the old garden behind the house where nothing was planted. There was a long row of blackberry bushes which hid this corner from the house windows, and she often used to go down there to play alone. It was one day after she had been to visit James True, the village undertaker, that she got the idea of having the graveyard. She went straight off to the woods and brought home four pretty little hackmatack trees, which she planted in the four corners of the lot she had chosen, and then, happening to think it would be better to secure the ground by asking her father to give it to her, she went in pursuit of him.

"Papa! papa!" she called aloud, as he was threshing grain in the barn.

"Papa, will you give me the northwest corner of the garden?"

"The what, child?"

"The northwest corner of the old garden, papa. It is bounded on the north by the seek-no-further apple-tree, east by the walk, south by the blackberry bushes, and west by the field of sweet-corn."

There was a general laugh over this

speech. Father and all the threshers stopped their work, and held their sides, while such peals of laughter resounded through the great barn as brought mamma and Hepsy out to see what was the matter.

"You need not make fun of me," exclaimed Gertie; "I tried to be particular, just to save you the trouble of going down."

"Gertie wants me to deed her the northwest corner of the garden, mother," said Mr. Murray as soon as he could speak; "are you ready to sign the papers."

"What do you want it for, deary?" asked her mother, "are you going to build a doll house?"

Her mother knew that particular spot was her little girl's favorite resort, and that scarcely a day passed but the dollies were taken there, too. So she thought, of course, that Gertrude was planning some sort of a dwelling for them. She was quite unprepared for the answer, and the roar of laughter, which was repeated as the child looked up very meekly and replied, "I want it for a graveyard, mamma."

When her father had recovered the power of speech, he pursued his inquiries further.

"What are you going to bury, dear?"

Quick as a flash of light, Gertrude picked up her father's pipe which lay on the wooden bench by the door. "This first," said she, and off she ran. So quick was her motion and the words that accompanied it, that no one of the amused group perceived what she had done; and as she flitted down the garden walk, they thought that she was only running from their mirth. But when the work was done and the farmer was ready for his evening smoke, the pipe was nowhere to be found.

"Where's my pipe? Who's seen my pipe?" shouted the father, up and down the yard, in no very pleasant tones.

"I buried it, papa, in my new graveyard," said the child coolly. "Come and see." The heavy steps of the tired man and the light trip-trip of the child's feet fell together on the garden walk, as they proceeded to the northwest corner of the garden, where Gertrude pointed to a neat little mound about a foot long, nicely rounded and turfed, at the head of which was placed a bit of shingle with the inscription:

HERE LIES

MY FATHER'S PIPE.

REST FOREVER.

The astonished parent was at a loss what to say. He hesitated whether to laugh or chide. He finally concluded to do neither, but to try to get at the child's meaning in all this. So, sitting down on an overturned wheelbarrow, he took Gertrude on his knees and began to question her.

"Why did you do so, child?"

"Because, papa, I didn't want you to die as Mr. Thurston did, of pipe. It's a fact, papa," seeing a smile gathering in his eye. "I heard Dr. Small say so when we were coming home from the funeral. Miss Simpson asked him what ailed Mr. Thurston, and Dr. Small said, 'Pipe, Miss Simpson, pipe. He smoked himself out of this world into—well, Miss Simpson, I can't say exactly where he has gone. If folks get so used to their pipes in this world, I don't see what they are going to do in the other. Seems to me they will want to keep up smoking, but I'm most sure they can't do it in Heaven; for you know, Miss Simpson, Heaven is a clean place, and they are not going to let anything in there that defileth. So I don't know.' Now, papa, you see I want you to be my papa a long, long while first before you die, and then I want you to go to Heaven. So you see, I thought I would dig a grave and bury the old pipe. You won't dig it up, will you, papa?"

The farmer held his peace for a few moments. Then he spoke slowly, but firmly:

"No, Gertie, your father is no grave-robber. I shall miss the old pipe, I suppose; but I must say about it as we do about everything that's put in the grave, 'Thy will be done.'"

"That's good, papa," said the child with a kiss. "Now I have a good, clean, everlasting papa. Ain't everlasting what we call things that don't die?" she added again, perceiving a smile.

"Yes, dear, but then none of us are everlasting, exactly; we all have got to wither and die sometime."

"Why, no, papa; don't the Bible say we shall live forever?"

"Was that what you wanted this graveyard for?" asked the father smiling again, and seeking to divert the conversation, which he feared might get beyond his depth, "was it only to bury that old pipe?"

"No, indeed," exclaimed Gertrude earnestly, "I'm going to bury lots of such things here. I expect I shall have a funeral almost every day. I'm going to bury old Aunt True's snuff-box next."

"How will you get it?"

"Oh, I'll get it; I'll manage, papa, and then there's Joe's tobacco, and Uncle Henry's cigar, and lots more of the nasty things."

Gertrude proved a busy little undertaker, and before a week had passed more than a dozen interments had been made in the new cemetery. The graves were all made evenly, side by side, exactly the same size, nicely rounded and turfed, and at the head of each a tiny board, on which was printed, with pen and ink, some simple epitaph. These head-boards cost the little girl a good deal of time and labor. On one was "Aunty True's snuff-box. Closed forever." On another, "Joe Tanner's pigtail. Lost to view." On the next, "Cyrus Ball's cigar. Burned out." All were equally characteristic.

The northwest corner lot was at length full. Over sixty neat little graves were there in rows as regular as the children's graves in Greenwood. The seek-no-further spread a friendly shade over the spot, and the blackberries ripened beside them; and many a visitor was taken slyly down the garden walk to see Gertie's graveyard. But the very best part of the whole was that for every little mound in that quiet spot there stood a man or woman redeemed from an evil habit, a living monument above it; and all alike bearing testimony to the faithfulness and perseverance of that queer little girl, the hater of tobacco, the lover of purity and health.—*Our Best Words.*

WENDELL PHILLIPS VS. DR. CROSBY.

THE temperance world is just now considerably agitated by a lecture delivered by Dr. Howard Crosby in this winter's course of Monday lectures in Boston, in which the New York professor took strong grounds against the temperance movement, and warmly advocated moderate drinking. The following are a few paragraphs from the able address of Wendell Phillips, delivered in answer to this unexpected and uncalled for attack upon the work of temperance reform:—

"I am to offer you some remarks on a lecture delivered here a fortnight ago by Chancellor Crosby. He denounced the temperance movement as now conducted. The address was not very remarkable for novelty, or weight of argument, or the correctness of its statements. Indeed, it was rather noticeable for the lack of these qualities; and it was so well handled and so fully answered in several of our pulpits, that I thought it needed no further notice. But you thought otherwise, and perhaps it does deserve it, considering the source from which it comes. And when the health of the Chancellor becomes the standing toast in the grog-shops of our city, and when the journal which published his address prints a second and a third edition day after day, to supply that class of customers, it is evident that temperance men have a text on which an effectual temperance sermon can be preached,—one that will probably arrest the attention of just those we seek to reach.

"Dr. Crosby laments the divisions among temperance men, and lays it down as a principle that we 'cannot conscientiously object to the means employed by others, unless they contain an immorality.' I beg leave to dissent from this. We have had sixty years' experience in temperance methods, and certainly may claim to have learned something. Now when these new converts, these nursling babes of grace, mislead by their crude suggestions the temperance public, obstruct its efforts, and waste its means, are we bound to sit silent and make no protest against such waste and recklessness? The treasury of reform

is not rich enough to bear such extravagance on the pretence of harmony, much less are we bound to silence when a neighbor's mistake seriously harms and hinders the movement. If Boston lived as it did in 1806, with no steam fire engine,—only leathern buckets hanging in each man's front entry,—cheerfully would I stand with Dr. Crosby and a hundred more, to pass buckets of water up to the firemen on a burning building. But, in 1881, I would not obstruct the engine, and crowd it out of its place, merely that I and Dr. Crosby might have a chance harmoniously to unite in passing *empty* buckets toward the flames. Life is too short for such false courtesies; too short for us to postpone working on our line until we have educated every new convert up to our level. This might do very well before the flood, as Sydney Smith suggests, when Methuselah could consult his friends for a hundred and fifty years, in relation to an intended enterprise, and even then live to see the working of his plan, and its success or failure, for six or seven centuries afterward.

"But life now is limited to an average of seventy years, and practical men must put their hands to the plough in the best way they know; and if children stand in their way, move them gently, but firmly, out of the path.

"I think, before Dr. Crosby spoke, he should have studied the history of the temperance movement. If he were as familiar with the literature of our enterprise as he is with that of Greece, he never would have repeated criticisms and suggestions that have been answered over and over again during the last fifty years. As I turn over his essay and find how tediously familiar we all are with his objections, I am reminded of Johnson's objection to Goldsmith's traveling over Asia in order to bring home valuable improvements: 'Sir, Goldsmith is so ignorant of his own country that he would bring home a wheelbarrow as a new and valuable invention.'"

BETTER to hunt in fields for health unbought,
Than fee the doctor for a nauseous draught;
The wise for cure on exercise depend;
God never made his work for man to mend.
—*Dryden.*

ALCOHOL NOT STRENGTHENING.

DR. RICHARDSON, the eminent English physician and scientist, whose researches have done so much for the cause of temperance reform, relates the following interesting incident:—

"In the early part of my life I practiced medicine at Mortlake, and I had under my care a very famous rower,—a champion rower,—and that man once consulted me professionally. He was a little below par, and he came to ask me what he should do. He was training then for a race, and I recommended him to take so much wine in the day. He flatly declined. That was about twenty-five years ago, before the temperance cause was so prominent as it is now. 'Well,' he said, 'I can't take anything of that sort, for I should n't win my race if I were to take what you say.' 'Would half a pint of wine a day make a difference?' 'Certainly,' he said. 'In what way?' 'I will tell you. I once won a race and regained all my honors in a very curious manner. I had against me a competent rower—a man as good as myself—and it was a great occasion. It was a grand match, and I was not very well on the particular morning. I went to the post to be started, feeling that the Fates that day were against me. Most curiously, I lost the toss, so that I got the wrong side of the river, with the sun in my face, and I felt that the race was all up with me; but as my opponent was getting into the boat a friend of his, and a supporter, took out a spirit flask and gave him a nip of whisky, and I said, 'That is as good as the sun to me,' and then, not quite satisfied, he gave him another, and I said, 'That is equal to the right side of the river for me.' 'Now I will tell you, in rowing you want these things: You must know precisely where you are going, and if anything springs up you must be quite ready for it, and you must not take any notice of the cheering going on, and you must have presence of mind in all that occurs.' 'Then,' I said, 'it seems to me that you want precision, decision, presence of mind, and endurance.' He said, 'Those are the four qualities.

We went on a little, stroke for stroke, so that it was quite musical. By-and-by there was a little jingle in his stroke, and I said, That man is not precise; that is a little point for me. We went on toward Chiswick, and when we got opposite that place, there was something floating along which looked like a capsized boat, and it started us both for a moment. It was a question to know which side to take, and I immediately decided and gained a good point in that way, and as we went along I found that my opponent was embarrassed by what was taking place around him. Finally he began to flag. I did n't flag, but improved, and I won the race by a boat's length. Those two glasses of whisky, I believe, turned the scale against my opponent on that occasion, and for that reason I will never take any stimulants while I am training.'

"I often laughed at him about this, not believing it for twenty years, but when I came to my scientific research, and to look into the action of alcohol on muscular fiber and on mental action, I found that that man was absolutely right, and I had been going on for twenty years in blind ignorance and prejudice, and there was the plain truth, if I had had the common sense to receive it from a common-sense man."

HISTORY OF TWENTY RUM-SELLERS.

A WRITER in the *American Messenger* says:—

"During a period of twenty-five years, from the year 1830 to 1855, the writer remembers twenty individuals who were, at one time or another, engaged in the business of selling liquor, at or near a little village in South Carolina. Of that number, fifteen failed in business, either while selling or afterward. Five have died from the excessive use of ardent spirits, and six others were addicted to occasional excesses, and have also passed away. Ten of their sons fell early victims to the appetite, and fill drunkards' graves, while nine others have at different times been addicted to drunken sprees, and are in the utmost danger of falling before the same dreadful habit. Ten of their daughters are or have been married to drunkards. Three of their sons are idiots or imbeciles, and there are other indications which, to a close observer, call to mind the denunciation of Holy Writ, 'Woe to him that giveth his neighbor drink, and makest him drunken also.'"

"'BACCA MONEY."

IN England, "lockouts" are much more common than in this, and it not infrequently happens that great suffering is experienced by the employes of large manufacturing establishments, and their families, while thus thrown out of employment. A visitor among the poor laborers, during one of these times of suffering, was particularly struck by the robust and vigorous appearance of a little one who was surrounded by children with pinched features and many evidences of deficient food and care. He tells the following:—

"The wife of a laborer, while looking on at a game of 'hop-scotch,' in which her husband was engaged with other idlers, was describing their way of living. While she was speaking, there came toddling in at the door a splendid specimen of Suffolk infantine humanity, aged about four years, and with limbs like a baby giantess.

"'There, sir,' remarked the old lady, 'she do n't look much the worse for the lockout, does she?'

"I replied that she did not, but rather as though a fair amount of the fat of the land fell to her share. 'What do you feed her on?' I asked.

"'Bacca, sir,' replied the old lady with a grin.

"'Tobacco!'

"'Well that's what they say about here. You see, sir, its this way. She's my gran' young un, and her poor mother has seven of 'em, and the father is locked out like the rest; and so a month ago my old man—him as you see making such a donkey of himself a minute ago—he says, says he,—

"'Old woman, dashed if I can enjoy my pipe,—which costs ten and half pence a week—half an ounce of threepenny a day,'

—a cruel hard smoker he's allers been—'I can't enjoy my pipe,' says the old man, 'and see our Joe's young uns wanting a meal; so I'll make over my 'bacca money to help 'em, an put my pipe out till things mend a bit.'

"'And this is the young un that gets the benefit of it in milk night and morning.'"

How many thousands of little ones and large ones too would be better fed, better clothed and warmer housed, if all the money squandered for alcohol and tobacco was employed for useful purposes! The money thus spent annually would be amply sufficient, if equally distributed, to provide every man, woman, and child in every civilized country with the necessities of life.

A Teetotaler.—Many years ago Colonel Lemanowsky, who had been twenty-three years in the army of Napoleon Bonaparte, arose in a temperance meeting, tall, vigorous, and with the glow of health on his face, and made the following remarkable speech:—

"You see before you a man seventy years old. I have fought two hundred battles; have fourteen wounds on my body; have lived thirty days on horse flesh, with the bark of trees for my bread, snow and ice for my drink, the canopy of heaven for my covering, and only a few rags for clothing. In the desert of Egypt, I have marched for days with the burning sun upon my head; feet blistered with the scorching sand, and with eyes, nostrils, and mouth filled with dust, and with a thirst so tormenting that I have opened the veins of my arms and sucked my own blood. Do you ask how I survived all these horrors? I answer that, under the providence of God, I owe my preservation, my health and vigor, to the fact that I never drank a drop of spirituous liquor in my life; and," continued he, "Baron Larry, chief surgeon of the French army, has stated as a fact that the six thousand survivors who safely returned from Egypt, were all those who abstained from ardent drinks."—*Lever.*

A Shallow Argument Sounded.—The Rev. John Miles very thoroughly exposes the flimsy character of the excuse often made by dram-drinkers that they began to drink by reason of a doctor's prescription. We do not quite agree with the writer on all points, but his argument is unanswerable.

"I find a good many people who say to me, 'I was a teetotaler for many years; but I became rather unwell, and the doctor said that I must take a glass of wine daily for some time. I broke my teetotalism then, and I have not been teetotal since.' To such people I say, 'You did not break your pledge by taking wine as a medicine when you were ill; but you broke your pledge by continuing the medicine after the sickness had left you.' Some forty years ago, I had a severe attack of typhus fever; the doctor ordered wine, and I drank I know not how much to keep the system from sinking. To subdue the inflammation the doctor also shaved my head, and applied a blister. Through the blessing of God on the means employed, I completely recovered my former state of health, and as soon as I was well again, I discontinued both the wine and the blister. Had I continued the wine to this day, many people would have thought that I had done quite right; whereas, had I continued to shave my head and wear a blister for these forty years, every one would have set me down as mad. I have reason to believe, however, that the blister did me more good than the wine, and, on medicinal grounds, had the best claim for being continued; but a word is enough to the wise, and you all understand my meaning."

A New Style of Liquor License.—One of the latest methods devised by the temperance people for curtailing the sale of intoxicating drinks, is that reported from the State of Oregon, by which every man who indulges in the use of liquor is required to obtain a license costing the sum of $5.00 each year. Unless he carries this document, no saloon or hotel has a right to sell him a drop. The names of all who

take out these licenses are to be published every six months in the local papers, so that every one may know who is entitled to the privilege of getting drunk.

The Reign of Rum.—If the people of this country had to pay two billions of money every year to sustain a king over them, who squandered their property, corrupted their young men, debauched their daughters, and destroyed nearly one hundred thousand of their lives annually in ruinous wars, they would rebel. The people of this country do pay that amount every year to sustain a despot who does all this; and instead of rebelling against his authority, they vote—a large majority of them—to put his servants and satraps over them.

An Apt Retort.—It is said that the late Bishop Doane, of New Jersey, was strongly opposed to total abstinence, and his sideboard was loaded with brandy, wine, etc. On one occasion, Perkins, of the Sons of Temperance, dined with the Bishop, who, pouring out a glass of wine, desired him to drink with him.

"Can't do it, bishop. "Wine is a mocker.'

"Take a glass of brandy, then."

"Can't do it, bishop. 'Strong drink is raging.'"

By this time the bishop, becoming excited, remarked to Perkins, "You will pass the decanter to the gentleman next you!"

"No, bishop, I can't do that. 'Woe unto him that putteth the bottle to his neighbor's lips.'"

—A temperance lecturer very aptly said in a recent speech, "Why not pour whisky in the gutter? It is destined for the gutter at last; why not pour it there at once, and not strain it through a man and spoil the strainer. Better pass prohibitory laws, and save the poor convicts from the jail and the penitentiary, than to license the sale of liquor and then tax the people, to keep up prisons and meet the expenses caused by intemperance."

POPULAR SCIENCE.

—The amount of iron wire used in binding the wheat crop on a Dakota farm was over 7,670 miles, almost one-third of the circumference of the earth.

—Recent experiments made in the Lake of Geneva show that the velocity of sound in water is four times as great as in the air, or 4,708 feet per second.

A Mountain of Glass.—A band of explorers recently discovered in the Yellowstone Park a mountain of natural glass, near the foot of Beaver Lake, which rises in huge cliffs to a height of many hundred feet.

The Rose of Jericho.—This is a curious plant which is native to Egypt and Syria, and during the dry season becomes dried and rolls up into the form of a ball, being blown about the dry, sandy deserts for many months. When the first shower of rain comes, however, it has a resurrection, its leaves becoming expanded as before. The same change occurs if it is simply placed in moist earth. No explanation has been found for this singular phenomenon, although the facts have been known for more than three hundred years.

Howe's Cave.—This is a remarkable cavern found in Schoharie County, New York. It has been known for many years, but has only recently been explored. One of the most remarkable features of the cave is a stalagmite thirteen inches in circumference, which has grown four and a half inches in height in six years. A recent writer in describing the curiosities of the cave remarks: "This remarkable growth, compared with rates observed in other caverns will possibly constrain us to modify our estimates of their antiquity."

Reason in Bees.—A remarkable circumstance, illustrating the existence of a high degree of intelligence in bees, has lately been reported from a hot, dry valley in New South Wales: "Last year the drought was of long duration, and the denizens of the apiaries suffered much from it. This year the bees have made provision against a similar emergency.

They have filled a large number of the external cells in every hive with pure water instead of honey. It is thought that the instinct of the little creatures leads them to anticipate a hot summer."

Indian Statistics.—There are at the present time eight official parties in the field engaged in making a study of the habits, conditions, languages, and history of the North American Indians. These parties are also taking a census of the Indians, which will probably be completed this spring. As far as practicable, the name, age, sex, and all important statistics are obtained, the same as of any civilized citizen of the United States. From estimates already made, it is thought that the total number of Indians within the precincts of the United States will reach over three hundred thousand. The exploring parties who are scattered throughout many of the western and southwestern States, have recently discovered a number of old ruins of Indian villages in New Mexico and Arizona. In the northwestern part of New Mexico they have found the largest collection of ruins yet discovered on the Western Continent.

The Language of Insects.—An English scientist has made the surprising discovery that flies have a language of their own, inaudible to unaided human ears, though, no doubt, distinctly audible to the ears of insects. This is not the buzzing tone common to all flying insects, which is produced by the rapid movement of their wings, and is but a mere incidental effect, as meaningless as are the sounds of our footfalls while we are walking and conversing with a friend; but it consists of other tones made voluntarily, no doubt for the purposes of limited communication with one another.

This discovery was made by means of the newly invented microphone, while magnifying the tramp of a fly, walking on a table, till it sounded as loud as that of a horse passing over a wooden bridge. By close observation during these experiments, other sounds were heard different from those of its footfalls and wings, which proved to be its trumpeting-calls, issuing from its proboscis, and resembling somewhat the distant whinnying of a horse. Such are some of the results of that marvelous instrument which acts for the ear of man as the microscope does for the eye. —*Scientific Reporter.*

A New Sort of Bread.—The *American Miller* calls attention to the fact that Prof. Scheuer-Kestner has invented a new kind of bread, out of which soups can be made, for the use of troops on the march. It consists of 550 to 570 parts of flour, 50 parts of baker's yeast, and 300 parts of fresh beef chopped up very fine. To this mixture enough water is added to produce a dough of the ordinary consistency, which is then allowed to remain at the proper temperature for fermentation, like ordinary bread. It is allowed to ferment thus at a moderate temperature for about three hours—two or three hours, according to the size of the loaves. It is then put into an oven and baked like ordinary bread. The peculiar thing about this bread is, that it is based on the astonishing discovery made by the professor, that during the process of ordinary bread-making, a peculiar ferment is formed, which has the remarkable property of causing the complete digestion of fibrine and similar animal matters, such as meat, upon which it acts in a manner very similar to pepsin. This discovery led him to experiment upon making a flesh-flour bread, as above, which can be kept any length of time without undergoing decomposition.

A French Fire-Resisting Preparation.—The French Society for the Encouragement of National Industry has lately awarded a sum of 1000 francs to M. Martin, of Paris, for his preparations, which have been variously tested by a committee of the society. The report briefly is that M. Martin's mixtures render tissues and the superficial parts of wood uninflammable, that they do not alter the tissues nor the colors, and that stuffs so rendered uninflammable retain this property after having been exposed several months, either in a stove at 36° C., or on the stage of a theater. M. Martin's mixtures are not in a sense new. For all light tissues he uses pure sulphate of ammonia, 8 parts, carbonate of ammonia, 2.5, boric acid, 3, pure borax, 2, starch, 2, water, 100. Another mixture applied to painted decorations consists of muriate of ammonia, boric acid, glue, gelatine, water, and lime. Two other preparations are specified. M. Martin's preparations are said to have been used with success for decorations in several theaters in Paris, and in the play of La Venus Noire, for rendering uninflammable the masts of vessels in which a fire is simulated every night by means of oakum wrapped round the masts.—*Sel.*

GOOD HEALTH.

BATTLE CREEK, MICH., APRIL, 1881.

J. H. KELLOGG, M. D., EDITOR. TERMS, $1.00 A YEAR.

EATING WHEN TIRED.

This is one of the most certain causes of derangement of digestion, and one to which a very large number of cases of dyspepsia may be traced. The third meal of the day is almost always taken when the system is exhausted with the day's labor. The whole body is tired, the stomach as well as the rest. The idea that by the taking of food the stomach or any other part of the system will be strengthened, is a mistake. When the stomach "feels faint and tired" at night, as many people complain, what it wants is not food, but rest. An eminent writer on indigestion says very truthfully, "A tired stomach is a weak stomach." When the stomach feels "weak and faint," rest is what is demanded, and is the only thing that will do it good; yet many people insist on putting more food into it, thus compelling it to work when it ought to be allowed to remain inactive until rested. The arm wearies by constant exercise, and so does the stomach, which is largely composed of muscles as well as the arm. Both secretion and muscular activity must be much lessened in a tired stomach, and the habitual disregard of this rule must be disastrous to the best digestion.

Violent exercise at any time just before or just after eating, is inimical to good digestion, for the reason already assigned when the exercise is taken just before the meal; and because the vital energies are diverted to other parts—thus robbing the stomach of its necessary share—when the exercise is taken immediately after eating. An English physiologist performed an experiment which well illustrates the truth of this position. Having fed a dog his usual allowance of meat one morning, he took him out upon a fox hunt, and kept him racing over the country until night, when, having killed the animal, he examined his stomach at once and found the meat in the same condition in which it entered his stomach, no digestion having taken place. In another dog, fed with the same kind of food, but left quiet at home, digestion was found to be complete.

The hurry and press of business among Americans is allowed to override every consideration of health. It seems never to enter the thoughts of the average business man that any time is required for digestion. Rushing to his dinner from the plow, the workshop, or the counting-room, he swallows his food with all possible dispatch, and rushes back to his work again, begrudging every moment spent in meeting the requirements of nature. Many years ago, it was a custom in Edinburgh to suspend all business in the middle of the day for two hours, so as to allow ample time for meals. A similar custom once prevailed in Switzerland, we have been informed; but we presume that such a sensible custom is now considered too old-fashioned to be tolerated.

It should be remarked that severe mental labor immediately before or after, and especially during meals, is even more injurious than physical employment. The habit many business men have of anxiously scanning the newspapers during their meals and when going to and from their places of business, is a bad one. A full hour, at least, should be taken for the midday meal; and if an hour's rest can be secured before eating, improved digestion would well repay the time spent in re-inforcing the vital energies. For per-

sons of weak digestion, the rest before eating is in most cases indispensable.

The famous *L'Homme serpent* (man snake), of Paris, who astonished the world by his agility and wonderful contortions, ate but two meals a day of vegetable food, and invariably abstained from food for twelve hours before performing, a plan which was undoubtedly mutually advantageous to his muscles and his stomach, as his exercises required great muscular effort.

ARISTOCRATIC VERMIN.

DOUBTLESS not a few of those very refined and fastidious people who spend many hours in the application of all sorts of lotions and other compounds to the face and hands, for the purpose of beautifying those portions of the skin exposed to view—while neglecting as persistently those parts of the skin protected from observation—would be very much surprised to learn the true condition of the unwashed portions of their cutaneous covering. They instinctively shrink with disgust from the sight of a vermin-covered beggar, in whose cuticle burrows the *acarus scabiei* (itch-mite), while troops of larger insects are racing through his tangled locks and nibbling at his scaly scalp. It is quite possible that many a fair "unwashed" would faint with fright if apprized of the fact that her own precious covering is the home of whole herds of horrid-looking parasites which so nearly resemble the itch-mite as to be at least a very near relative, perhaps half-brother or cousin. The name of this inhabitant of skins unwashed is as formidable as the aspect of the creature, though it does not require a microscope to display its proportions, as does the latter. It is called, *demodex folliculorum.* (Fig. 2.)

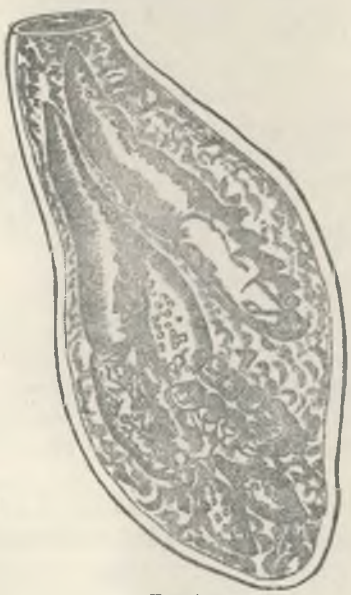

FIG. 1.

FIG. 2.

Figs. 1 and 2 represent a species of Skin Parasite, which burrows in the cuticle of the "unwashed." Fig. 1 shows a nest of these hideous beasts at home in the skin. Fig. 2 is a view of the demodex when dislodged from his cutaneous dwelling.

The *demodex* makes himself at home in the sebaceous follicles, (Fig. 1,) where he dwells with his family. Here the female lays her eggs and rears her numerous family, undisturbed by the friction of any flesh-brush, and only suffering a transient deluge at very long intervals, if such a casualty happens. In studying the structure of these little parasites, we have found several tenants occupying a single follicle, pursuing their domestic operations quite unmolested by any external disturbance.

The *demodex* has been transplanted from the human subject to the dog; and it is found that the new colony thrives very remarkably, and soon produces a disease apparently identical with that known as "mange."

We have not space to describe in detail these savage little brutes, with their eight legs, armed with sharp claws, bristling heads, sharp lancets for puncturing and burrowing into the skin, and their powerful suckers for drawing the blood of their victims. We care only to impress upon the mind of the reader the fact that neglect of bathing and friction of the skin is sure to encourage the presence of millions of these parasites, and that the only remedy is scrupulous cleanliness of the whole person. Like their relatives, the itch-mite, they do not thrive under hydropathic treatment, and are very averse to soap and water. The best way to get rid of them is to drown them out. They do not produce the irritation which charac-

terizes the presence of the itch insect, so that this evidence of their presence is wanting. But they are sure to be present in a torpid, unhealthy, unwashed skin, no matter how delicate or fastidious its possessor.

OLEOMARGARINE MICROSCOPICALLY EXAMINED.

The following is a portion of the report of an examination of bogus butter recently made in Boston; no comment is necessary:—

"Among the most repulsive sights brought to view were corpuscles from a cockroach, and small bits of claws, the blood corpuscles of sheep, and the egg of a tape-worm. The last-named object is said to be commonly found in oleomargarine. Some think that the egg may be swallowed by a man, and that the embryo may take up its lodging in some cavity in the same manner as in a pig; but others are of the opinion that it must first pass through some animal before it can do injury. It is a notable circumstance that many of the forms of vegetation that microscopic examination has shown to exist in Cochituate water, were found also in the specimens of oleomargarine tested. Yeast, which in an uncooked state is reckoned a rank poison, was found sprouting in considerable quantities, and spores of fungi were very prevalent. Among the last named were *peronospora curta*, a genus which belongs to the commonest molds of decaying substances, molecules, about $\frac{1}{2000}$ of an inch in diameter, *mastigociadus larrinosus* (branching), large patches of lichens, a cellular plant, standing between the algæ and the fungi, spores of *oogonium*, a common fungus, *bacterium*, small rods about $\frac{1}{30000}$ of an inch in diameter, and $\frac{1}{10000}$ of an inch in length, etc., etc. In addition, there was brought to view a portion of a *hæmocharis*, a worm found in water, a dead *hydraviridis*, which also comes from water, epithelial cells, small portions of degenerated muscular fibers and fatty cells, pieces of striated muscular fibers, pieces of hair, (not red), eggs from small parasites, and other objects too numerous to mention.

"Enough was brought to light to prove to the satisfaction of the examiners, at least, that oleomargarine is very far from being a pure article of food. Dr. Dollinger, the celebrated English scientist, indorses the idea that, however disguised, oleomargarine is nothing but raw fat, and that those who use it run the risk of trichina, and also infection from certain contagious diseases. The eggs of tape-worms are often taken into the stomach of swine, where they are hatched into cysticeri, which bore into the flesh of pigs. From eating this flesh comes the tape-worm, which is not so formidable a parasite in the human body as is the larva which first comes from the eggs."

WHY ALL SMOKERS DO NOT DIE OF TOBACCO-POISONING.

It is often objected that while chemistry and scientific experiments seem to prove that tobacco is a powerful poison, the experience of thousands of persons disproves the theory of its poisonous character, since if it were so intense a poison as described, cases of death from tobacco-poisoning would be much more frequent.

To this objection we answer,—

1. One reason why so few persons are reputed to die of nicotine, or tobacco-poisoning, is the wonderful faculty the system possesses of accommodating itself to circumstances. Through this means the worst poisons may by degrees be tolerated, until enormous doses can be taken without immediately fatal effects. Corrosive sublimate, strychnia, belladonna, and many other poisons, may be thus tolerated.

2. In our opinion, the majority of tobacco-users do die of tobacco-poisoning. Death as surely results, ultimately, from chronic as from acute poisoning, though the full effects are delayed, it may be, for years. A man who dies five or ten years sooner than he should, in consequence of tobacco-using, is killed by the poison just as truly as though he died instantly from an overdose.

TAKING HOLD RIGHT.

[At the request of a friend, we reproduce the following article as an illustration of what can be done for the advancement of the cause of hygiene by a proper effort on the part of those interested.—Ed.]

The city of Chelmsford, Mass., has the good fortune to number among its citizens two gentlemen who are worth to any State more than money can estimate, for their practical common sense. One of the gentlemen, seeing a copy of Good Health which was sent by some one to a friend on trial, noticed an article calling attention to the adulteration of vinegar with sulphuric acid, and pointing out a simple means for testing vinegar for the presence of the acid. He at once set about devising means to check the manufacture of the villainous stuff, and with the aid of a friend succeeded in securing the passage of a law to prohibit the manufacture and sale of vinegar adulterated in any way. Then, in order to attract public attention to the subject, this enterprising gentleman prepared the following circular, which he has caused to be circulated widely; we quote the whole, in the hope that some one else may be encouraged to go and do likewise:—

"PURE VINEGAR.

"We, the undersigned, have caused a law to be passed to regulate the sale of cider vinegar in the State of Massachusetts. As the masses of the people are ignorant of what they have been using under the name of cider vinegar, we have copied from 'Good Health,' a Journal of Hygiene, an article relating to vinegar, and tests for the same, together with the law. The grocery man no longer has the excuse of ignorance for selling a bad article, as any person can purchase at the drug-store an ounce of muriate of baryta for six cents; dissolve as directed, and keep in small bottle as wanted. We have tried the same, and find it a sure test.

"Agricultural papers please copy for the benefit of farmers, and city papers for the information of their readers. Papers in other States please copy, as some vinegar manufacturers are seeking a market outside of this commonwealth.

"Israel Putnam,
"George A. Byam,
"*Chelmsford, Mass.*

"SULPHURIC ACID VINEGAR.

"As adulteration is the order of the day, it is not surprising that an article which can be sophisticated so easily as can vinegar should be the subject of harmful adulteration. There is no doubt that large quantities of vinegar are sold which contain scarcely a trace of real acetic acid; sulphuric acid, or oil of vitriol, being commonly used as a substitute. This acid is also very largely used for the purpose of giving additional strength to weak cider vinegar. This adulterated vinegar is exceedingly harmful to the teeth and gums as well as to the stomachs of the consumers, and it is very important that everybody who insists on using this condiment should know how to distinguish the pure article from that which has been sophisticated. The following is a simple and reliable plan:—

"Purchase at the drug-store a dram of chloride of barium, or muriate of baryta, as it is commonly called. Dissolve in as small a quantity of water as will completely dissolve it. If the solution is not perfectly clear, allow it to settle. Put a tablespoonful of the vinegar into a wineglass, and add one or two teaspoonfuls of the clear solution. If there is any sulphuric acid present, a white powder will soon make its appearance at the bottom and on the sides of the glass.

"Considerable quantities of vinegar are made from artificial sugar, or glucose, made from refuse starch, sawdust, cotton rags, etc. Vinegar thus made contains considerable quantities of sulphuric acid, and hence it may be detected by the same test given for that which has been directly adulterated with the acid.—*Good Health.*

"AN ACT TO REGULATE THE SALE OF VINEGAR.

"*Be it enacted, etc., as follows:*—

"Sect. 1. Every person who shall manufacture for sale, or who shall offer or expose for sale, as cider vinegar, any vinegar not the legitimate product of pure apple-juice, known as apple-cider, and not made exclusively of said apple-cider, but into which any foreign substances, ingredients, drugs, or acids, have been introduced, as shall appear by proper tests, shall, for each such offense be punished by a fine of not less than fifty nor more than one hundred dollars.

"SECT. 2. Every person who shall manufacture for sale, or who shall offer or expose for sale, any vinegar found upon proper tests to contain any preparation of lead, copper, sulphuric acid, or other ingredient injurious to health, shall for each such offense be punished by a fine of not less than one hundred dollars.

"SECT. 3. The mayor and aldermen of cities shall, and the selectmen of towns may, annually appoint one or more persons to be inspectors of vinegar for their respective places, who shall before entering upon their duties be sworn to the faithful discharge of the same.

"SECT. 4. This act shall take effect upon its passage." [*Approved March* 17, 1880.]

SANITARY MISSIONARY WORK.

WE have felt for years that there was a very urgent need of competent men to go into every city, town, and village, and teach the gospel of hygiene by lectures, colporteuring, etc. Whenever work of this sort has been done, the results have been splendid. A few weeks ago, our friend, Eld. S. N. Haskell, delivered to a large and attentive audience in a New England city, a lecture on the subject of Food Adulterations, which he illustrated by means of tests made with the Sanitary Detective. Since Eld. Haskell has gone to the Pacific coast, we notice that our old friend, Eld. D. A. Robinson, has taken the field on the same subject. We clip the following notice of one of his lectures lately delivered in Plainville, Mass., from the *Evening Standard*, a New Bedford weekly, one of our exchanges:—

"Thursday evening of last week, Prof. D. A. Robinson delivered a very interesting lecture before the Plainville Total Abstinence Society. Though the weather was extremely cold, the lecturer was greeted by a full house, and all listened attentively while he proceeded to explode the various theories that wine-bibbers have tenaciously clung to for ages. The speaker showed conclusively that in no case where wine was used, or countenanced by our Saviour, was it other than the pure, sweet juice of the grape, unfermented. Probably not one individual composing that audience will ever again offer a Bible quotation to substantiate their belief in the right to use as a beverage any drink that will intoxicate. Prof. Robinson not only treated, in the light of science, of the injurious effect of alcohol when taken into the human system, but of tobacco also as a deadly poison. Altogether, the lecture was universally pleasing and instructive. The adulterations of tea, sugar, and other articles submitted to his tests and exposed, were quite astonishing, yet nevertheless are too true. Before and after the lecture, several temperance songs were sung by a choir which volunteered for the occasion, among whom was Miss Hattie Warren, of Acushnet. It is understood that Prof. Robinson will be invited to deliver a second lecture before the society at no distant day, of which due notice will be given."

This is the way to go to work to enlighten the masses who are suffering from ignorance. There is no difficulty about securing popular attention if a little pains is taken to make the subjects presented interesting. We hope others will undertake this work and send us reports of the results.

FOOD ADULTERATIONS.

THE agitation of this subject has finally reached such a pitch as to demand and receive attention from Congress. The committee before which the matter was placed, in their report included reports from many leading chemists, of which the following are a few:—

A Chicago chemist writes:—

"At the request of a highly respectable citizen of Chicago, I have examined fourteen brands of sugar, bought, as I understood, in this city; some granulated, some white, some colored, some coarse, and some fine. I tested them thoroughly for impurities. In twelve of the samples I found tin in the form of chloride, an active poison. The other constituents I can furnish if you desire. I have examined several sirups, made essentially and entirely of glucose, and found in them chlorides of tin, calcium, iron, and magnesia, and in quantities which made them

very poisonous. In one case a whole neighborhood was poisoned, and I was told of one death. I have in several cases found sugar of lead in vinegar. I use no vinegar myself. I look with suspicion upon our vinegar. I use fruit acid in place of it, lemon juice anoc. I never eat pickles. I have found in various cases that they were poisoned with lead and copper. I have tested to some degree the cheap tinware sold in our markets, and have no hesitation in saying that there is great danger in using fruits, vegetables, meats, or fish put up in tin cans of any kind. They are liable to contain lead and tin, both active poisons. Terra alba is largely used in cream of tartar, confectionery, and pretty universally for adulteration. I have found in many baking powders alum instead of cream of tartar, a thing dangerous and injurious in any case. I should say that I have come to expect adulteration and to fear dangerous adulteration in almost every article of the grocery kind. I have had large experience in the analysis of colored poisonous articles of clothing, being employed by one of the largest dry goods firms in this city. I examined, I think, sixteen samples, and nearly all of them were poisonous. I have also analyzed for other parties. In one case a child nearly died from wearing colored stockings. I would like to add that I have analyzed numerous samples of cosmetics and powders used on the face and hair."

Another Chicago chemist writes:—

"*First.*—I have entirely abandoned the use of vinegar generally sold in our markets, believing it to be unfit for use and dangerous. I know that sulphuric acid is largely used in its manufacture.

"*Second.*—I never use the pickles generally sold in our markets. I think the yellow pickles are quite as dangerous as the green. I know that lead is largely used in their manufacture. Verdigris is used in making the green.

"*Third.*—I have examined a large number of specimens of oleomargarine, and have found in them organic substances in the form of muscular and connective tissues, various fungi and living organisms which have resisted the action of boiling acetic acid; also eggs resembling those of the tape-worm. I have them preserved, to be shown to any one who desires to see them. The French patent under which oleomargarine is made requires the use of the stomachs of pigs or sheep. This is probably the way the eggs get in. I have specimens of lean meat taken from oleomargarine. There can be no question that immense amounts of oleomargarine are sold and used as pure butter. I regard it as a dangerous article, and would on no account permit its use in my family.

"*Fourth.*—Enormous amounts of the meats of diseased animals are sold in Chicago. I have made a large number of examinations.

"*Fifth.*—I have been informed of several cases of poisoning in this city from the use of canned meats. I do not dare to use the sirups commonly sold in our markets, and I use but little sugar, as I believe them nearly all adulterated. In regard to glucose, I am informed and believe that seven-eighths of all the sugar sold in Chicago is made of, or adulterated with, glucose. As now manufactured and used, I know that many of our eminent physicians believe it dangerous, and productive of disease of the kidneys. The manufacture of glucose in this country is now enormous, and large factories are being built to increase its manufacture."

STILL ANOTHER REPORT.

Another eminent chemist reports adulterations as follows:—

"Bread, with alum and sulphate of copper; yeast, with alum; baking powder, with alum, terra alba, plaster of Paris, whiting, and kaolin; milk, with a variety of articles; cheese, with potatoes, beans, oleomargarine, vermilion, red chalk, sulphate of copper, arsenic, and corrosive sublimate; lard, with boiled starch, alum, and quicklime; confectionery, with chromate of lead, red lead, vermilion, prussian blue, copper, and arsenic; pickles, with sulphuric acid and verdigris; mus-

tard, with yellow ochre and chromate of lead; vinegar, with sulphuric acid, arsenic and corrosive sublimate; coffee, with roasted acorns, spent tan-bark, logwood, mahogany, sawdust, and burned liver of horses; teas, with a great variety of articles."

Xylotherapy and Metallotherapy.—For the last two or three years there has been considerable interest in France in the treatment of certain forms of nervous disease with metals of different kinds. In some cases remarkable cures have been apparently effected by wearing metallic plates upon the affected parts. The treatment of disease by this method is termed metallotherapy. It has been recently discovered that blocks of wood used in the same way are capable of producing a similar effect. The imagination is a powerful remedy.

School-Room Disinfection.—A "Medicus" recently contributed to the N. Y. *Herald* an article advising "that at the end of each day's session, the schools be thoroughly fumigated, using sulphur, carbolic acid, camphor," etc. Fumigation, as usually employed, is so utterly inefficient when disinfection is really needed, that the *Sanitary Engineer* feels justified in making the following criticism:—

"Probably about the same effect would be obtained by keeping a skunk in the basement, and stirring him up occasionally. Either plan would compel the opening of doors and windows, and the thorough aëration of the house. It is, of course, theoretically possible to open windows and aërate the rooms in the absence of a skunk; but, as a practical inducement to the average janitor to do it, a skunk has many advantages."

Is Glucose Wholesome?—Since the exposure of the almost universal adulteration of sugar and other sweets with glucose, or starch sugar, an attempt has been made on the part of the manufacturers of this adulterant to show that it is perfectly wholesome. The only evidence adduced in support of this view has been the fact that quite a number of prominent chemists have testified to the wholesomeness of glucose or grape sugar. It should be considered, however, that this testimony is based wholly on chemical grounds. Until recently, no physiological tests have been made. In a late number of the *Scientific American*, we find an editorial describing a series of experiments conducted by Dr. J. Nessler of Baden, by which it has apparently been demonstrated that sugar made by the sulphuric-acid process, contains elements of poisonous character in addition to the chemicals used in the process of manufacture. Both Dr. Nessler and Dr. Barth were made very ill by taking a portion of this substance obtained from three ounces of the sugar.

Other experiments are necessary to fully establish the position that glucose is not a wholesome article of food. We have such a series planned, and hope to be able soon to carry them out.

An Indian's Arguments for Vegetarianism.—The following is an extract from a speech made by an Indian chief to his people, to be found in Schoolcraft's "Report on the Indian Tribes of the United States":—

"See ye not that the pale-faces feed on grains, when we feed on flesh? that the flesh takes thirty months to grow up, and that it is often scarce? that every one of those wonderful grains which they strew into the earth yields to them a thousandfold return? that the flesh on which we live has four legs to flee from us, while we have only two to run after it? that the grains remain and grow up in the spot where the pale-face plants them? that winter, which is the season of our toilsome hunting, is to them a season of rest? No wonder, then, that they have so many children and live longer than we do. Therefore I say to every one of you who will listen, that before the cedars of our village shall have died of age, and the maples of the valley have ceased to give us sugar, the race of the corn-eaters will

have destroyed the race of the flesh-eaters, unless the hunter should resolve to exchange his wild pursuits for those of the husbandman."

Tobacco Disease.—A writer in Boyce's *Anvil* testifies as follows respecting tobacco as a cause of disease:—

"For eleven years my right hand was sorely afflicted with a most loathsome disease. Its first appearance was shortly after my *debut* as a telegraph operator, and consisted of four or five very small, watery pimples. They increased in number, however, till they could hardly be counted, and each day became more and more troublesome. Instead of a thin, watery fluid, they now began to exude a thick, offensive matter, and the physicians called it an aggravated case of salt rheum. My hand and wrist became one mass of sores and scabs. I spent some $300 doctoring with physicians and patent medicines, yet nothing seemed to give much relief; but in three months after tobacco was stopped, the disease began to disappear, and to-day there is not a particle of it to be seen about me."

Poisonous Candy.—Notwithstanding the fact that the public have been repeatedly warned of the poisonous character of nine-tenths of the candy sold by confectioners, the demand for this harmful luxury continues as great as ever. In a case recently reported by a Chicago daily, poisoning occurred without eating the candy. The victim was a lad fourteen years of age.

"A short time ago he was trying to make a hole with his knife through a piece of candy, which he held in the palm of his hand. The knife-blade broke, splitting the candy and entering the middle of the hand, making only a slight wound. The boy went to school next day and came home at night with his hand dreadfully swollen, which continued to get worse. A physician was called in who applied all the remedies known to medical skill, without amputating the hand. The swelling spread over the entire body, and the boy lingered in great pain until death put an end to his sufferings. It is supposed that particles of candy got into the wound, poisoning the blood."

Origin of Some Common Plants.—According to a contemporary, cabbage grew wild in Siberia; celery originated in Germany; the potato is a native of Peru; the onion originated in Egypt; tobacco is a native of South America; millet was first discovered in India; the nettle is a native of Europe; the citron is a native of Asia; oats originated in North Africa; rye came originally from Siberia; parsley was first discovered in Sardinia; the parsnip is a native of Arabia; the sunflower was brought from Peru; spinach was first cultivated in Arabia; the horse-chestnut is a native of Thibet; the quince came from the island of Crete; the pear is supposed to be of Egyptian origin; the horse-radish came from the South of Europe.

A New Pork Parasite.—A Berlin microscopist has recently discovered a new parasite in pork, which is described as "a small leech-like worm" which has not been heretofore known. The worms are found crawling about among the muscular fibers, sometimes moving very actively. A German microscopical journal of recent date contains a full description of the worms with illustrations. Notwithstanding, pork and beans still holds its place as a standard article of diet among the masses, and ham and sausage are in as great demand as ever. It is evident that the pork-loving world have become reconciled to a "diet of worms." We prefer to *es*chew the scavenger; let those who will, *chew* him.

—The *New York Observer*, referring to the terrible drink-scourge, in a recent editorial says:—

"Never in the history of the country were the prospects of drying up the chief sources and streams of pauperism and crime, by restricting the sale of intoxicating drinks, so hopeful as at the present time. Among other indications, the State

of Kansas by a popular vote has just adopted a constitutional amendment suppressing the traffic, and the Legislature of Vermont have recently passed a bill making any place where liquor is sold or given away, or where gambling is allowed, a nuisance, and the keeper liable to be fined and imprisoned."

Cow Dyspepsia.—Everybody who keeps cows ought to know that a bad breath in a cow is an evidence of indigestion, which is most often the result of overfeeding and deficient exercise. Cows have dyspepsia as well as human beings; and it cannot be expected that a dyspeptic cow can furnish milk, butter, or flesh that is fit for human food.

LITERARY NOTICES.

One of the handsomest of publications is the ILLUSTRATED SCIENTIFIC NEWS, published by Munn & Co., New York. Every number contains thirty-two pages, full of engravings of novelties in science and the useful arts. Ornamental wood work, pottery, vases and objects of modern and ancient art, are finely shown.

The March number contains, among various other subjects illustrated, a full description of the manufacture of paper hangings, with engravings; how the deceptive curve is produced in casting the ball by the base-ball pitcher, his attitude, how he holds and handles the ball, all fully illustrated. The number before us also contains engravings of Capt. Eads's proposed ship railway across the Isthmus, and a novel hydraulic railway locomotive.

In addition to all this, it contains many valuable recipes for artisans and housekeepers.

This publication will be found instructive and entertaining to all classes, but will be best appreciated by the most intelligent. Published by Munn & Co., 37 Park Row, New York, at $1.50 a year, and sold by all news dealers.

THE "ABDOMINAL METHOD" OF SINGING AND BREATHING AS A CAUSE OF "FEMALE WEAKNESS." By C. E. Wing, M. D., Boston, Mass.

The author of this paper takes the ground that the "Abdominal Method" of breathing, as practiced by some singers and elocutionists, is the cause, in women, of uterine displacements and other local ailments of a very serious character. From a careful examination of the evidence he adduces in support of his theory, however, we are very thoroughly convinced that the difficulty is not with the method of breathing, but in the mode of dress practiced by those who suffer in the manner described. It may be true that a woman whose body is encased in a tightly fitting corset, and who has always been accustomed to employ, in breathing, the upper part of the chest almost exclusively, may feel badly when she attempts to expand the lower part of the chest, the abdominal walls being weak and relaxed, and the upper part of the chest so confined that the lungs can only expand by pressing downward out of place some of the abdominal organs; but this is no evidence that a woman who dresses healthfully will suffer any inconvenience from "learning to breathe like a man."

SUGAR ANALYSIS. By M. Benjamin, Ph. B., New York.

We have to thank our friend Mr. M. Benjamin for a copy of his pamphlet on sugar analysis, which we feel safe in saying is the best thing on the subject. It is a model of conciseness and perspicuity. We heartily recommend it to all chemists who are interested in the subject. Price, 25 cts.

SYMPATHETIC AFFECTION OF THE EYE. By C. J. Lundy, M. D., Detroit, Mich.

DIABETIC CATARACT. By the same author.

These two little papers contain many useful hints, and their practical character is evidenced by the ability and extensive experience of the author, who is professor of Diseases of the Eye in the Michigan College of Medicine.

GOOD COMPANY. Springfield, Mass.

The March number of *Good Company* has a second article by Dr. G. H. Hepworth, one of the committee for the distribution of the *New York Herald* relief fund, on "Ireland and Irishmen," in which he relates his personal experiences among the famine-stricken people, and expresses his views as to the situation in decided language. An account of Seargent S. Prentiss is given, the man who attained such wonderful proficiency in eloquence by his twenty-ninth year as to rank with Webster and Clay as an orator. There is also a sketch of modern travel in Egypt, and a paper on the New Testament and Creeds.

THE HEALTH-REFORM COLONIST. Vol. I., number 1, has come to our table. This is a radical reform journal, the prospectus of which states: "The sole end and aim of the *Health-Reform Colonist* is to encourage a spirit of brotherly love between all who are endeavoring to regulate their lives in harmony with the laws of life, and to create a public sentiment among them in favor of colonization." Mr. Clarke is earnest and enthusiastic in his work, and we wish him good success in his worthy enterprise. The subscription price is only 25 cts. a year. Address, J. O. Clarke, Syke's Mills, Elmore Co., Alabama.

PTHISIS PULMONALIS, AND ITS TREATMENT WITH HYPOPHOSPHITES. By L. de Bremon, M. D.

The author makes for his favorite chemicals the claim that "on the one hand they increase the principle, whatever it may be, that constitutes nervous power; on the other hand, they are blood-makers of the very best kind, more rapid and powerful than any heretofore known." If the author were able to produce evidence of the truth of the two assertions made, we should advise our readers to at once abandon the use of such crude things as potatoes, bread, beefsteak, etc.; but as the necessary evidence is wanting, we shall still cling to good old fashioned food as a means of reinforcing nerve power and making blood.

ELECTRICITY IN MEDICINE AND SURGERY. By John J. Caldwell, M. D., Baltimore, Md.

This little pamphlet contains reports of a large number of cases successfully treated by electricity. The author is quite an enthusiast for electricity, and from an extensive experience in its use for a number of years we are convinced that it is one of the most valuable of all remedial agents, and we do not think he has exaggerated its merits in the slightest degree.

We have received a copy of THE JOURNAL OF SCIENCE, published by the Science Publishing Co., Chicago.

This periodical is not, like much of the scientific literature of the day, so devoted to technicalities that none but scientists can appreciate it, but taking for its motto the saying of Prof. Agassiz that "the time has come when scientific truth must cease to be the property of the few, when it must be woven into the common life of the world," it aims to diffuse such practical scientific information as shall be adapted to popular reading. Subscription price, $1.00 per year.

THE MUSICAL HARP: Berea, Ohio.

This is a musical monthly, now in its second volume. The following, which we quote from the prospectus for 1881 will show the design of the journal: "Only the latest and best music, vocal and instrumental, will be given, and each number will contain eight pages of new and choice music by the best writers, besides all the musical news and full information concerning the latest publications." Price, $1.00 per year.

CASSELL'S FAMILY MAGAZINE. Toronto, Canada.

This is an excellent monthly, always full of fresh and interesting matter, especially adapted to the social entertainment of the family. The journal is beautifully illustrated, and each number contains a choice piece of music, besides articles on science, art, natural history and various other interesting topics. Subscription price, $2.00 per annum, post-paid.

THE SELF CURABILITY OF DISEASE, OR THE DIVINE ART OF HEALING. By R. K. Noyes, M. D., Lyons, Mass.

The general tenor of the work may be judged by the remark made by the author in the preface, "that the medical profession is none other than a practice of fundamentally fallacious principles, impotent of good, morally wrong, and bodily hurtful." The author is evidently a hobbyist. Fortunately his hobby is a harmless one. Possibly his work may do more good than harm, however, for the tendency to rely wholly upon the use of drugs is so strong that a little extra zeal in the opposite direction will do something toward counteracting the still more dangerous error. We had much rather be left wholly in the hands of Nature than in the hands of a "shot-gun" practitioner, who would be more likely to demolish the citadel of life than Nature herself, even though she often works blindly and at a great disadvantage.

IN the NORTH AMERICAN REVIEW for April is a noteworthy article by Judge A. W. Tourgee, in which the professed reformers of the civil service are put on the defensive, and their schemes of reform pronounced to be incompatible with American ideas of self-government, and on divers other grounds inadmissible and impracticable. The same number of the *Review* contains, under the fanciful title, "The Thing that Might Be," a profoundly philosophical study of the laws and conditions of human progress, by the Rev. Mark Pattison, Rector of Lincoln College, Oxford. Mr. John Fiske has an article on The Historic Genesis of Protestantism, and Mr. Anthony Trollope, an essay on the Poet Longfellow. Mr. Desiré Charnay, the author of the series of papers on the ruined cities of Central America, has for more than two months been pursuing his researches in regions remote from all avenues of communication with the civilized world, and consequently neither the present number of the *Review* nor the one preceding it, contains any contribution from him. In the May number, however, will be published another of his very instructive papers.

PUBLICATIONS RECEIVED.

"Second Annual Report of the Board of Health of the Taxing District of Shelby County."

"Annual Address of Edward Fenner," Vice President of New Orleans Auxiliary Sanitary Association.

"Report of the Director of the Detroit Observatory of the University of Michigan to the Board of Regents."

"Twenty-fourth Annual Report of the Board of Control of the Michigan State Reform School."

"Fifteenth Biennial Report of the Trustees, Superintendent, and Treasurer of the Illinois Institution for the Blind, at Jacksonville."

"Procedings of the Michigan Press Association at the Second Annual Meeting."

Publishers' Page.

☞ Through the earnest efforts of its numerous friends, the substantial circulation of GOOD HEALTH is increasing more rapidly than ever before. Hundreds of names are added to our lists every month, and it has been necessary to print off repeated editions of the first numbers of the year in order to supply back numbers, though a large surplus was printed in anticipation of the demand.

☞ Specimen numbers will be furnished to agents and those who wish to introduce the journal to their friends, at five cents a copy. The reading matter in each number is equivalent to a pamphlet of over one hundred pages of the ordinary size, making the journal the cheapest form in which reading matter of this character can be obtained for missionary purposes.

☞ We would call especial attention to the new feature of the second department of the journal, which has heretofore been devoted to literary miscellany chiefly, but will now be more especially devoted to temperance. Temperance has always been a prominent feature of the journal, but will be made still more prominent in the future. We believe in a thorough going temperance reform which strikes at the root of the great evil. Tobacco intemperance is becoming almost or quite as great an evil as alcoholic intemperance. Against these twin enemies of the race this journal will wage a ceaseless warfare, not with the hope of reforming all, but of saving a few. We are glad to note that leading temperance workers everywhere are recognizing the evils of tobacco-using, and setting their faces against the practice.

We are pleased to note that many Red Ribbon Clubs, and other temperance organizations, are becoming much interested in GOOD HEALTH and its mission, and we shall endeavor to adapt the journal to the wants of these different lines of temperance effort so far as possible.

THE AMERICAN HEALTH AND TEMPERANCE ASSOCIATION.

THE success of the American Health and Temperance Association has been far beyond our expectations. The Association was organized only two years ago, but now has subsidiary organizations in almost every State in the Union. This Association aims to accomplish a work closely allied to, but in some respects different from, that of other temperance organizations. It gives to the word "temperance" so broad an interpretation as to make it interdict all excesses of every sort, and every kind of hurtful indulgence. It also includes in its platform the idea of health or hygienic reform, which really lies at the foundation of all true reform, including what is generally known as temperance reform. The Association does not, on account of taking broader grounds, ignore or deprecate the work of other temperance organizations; it only endeavors to take up the work where it is left by others and give it a more rotund completeness. The officers of the Association are anxious to co-operate with the friends of temperance everywhere, and are especially desirous to become acquainted with the officers of, and chief workers in, other organizations. There is no occasion for rivalry among the friends of temperance, no matter how different may be the lines of work pursued. The great aim is the same, the amelioration and the elevation of the race, or the depraved part of it; and the more thorough the co-operation of those engaged in this philanthropic work, the greater will be the good accomplished. The following is a list of the officers of the A. H. & T. Association, and the presidents and secretaries of State H. & T. Societies. Any further information desired will be readily furnished by the secretary of the General Association, Miss M. L. Huntley.

President, J. H. Kellogg, M. D.; Vice President, Wm. C. Gage; Secretary, Miss M. L. Huntley, Battle Creek, Mich.; other members of the Executive Committee: Eld. G. I. Butler, Mt. Pleasant, Iowa; and Eld. S. N. Haskell, So. Lancaster, Mass.

The following are the names and addresses of the Presidents and Secretaries of State Organizations:—

CAL. Pres.—Eld. S. N. Haskell, Oakland, Pacific Press.
Sec.—Miss Barbara Stickney, Oakland, Pac. Press.

DAK. Pres.—Eld. S. B. Whitney, Swan Lake, Dak.
Sec.—D. T. Biggs, Howard, Dak.

ILL. Pres.—Eld. R. F. Andrews, Gilman, Ill.
Sec.—Miss Lizzie S. Campbell, Belvidere, Ill.

IND. Pres.—Dr. Wm. Hill, Rochester, Ind.
Sec.—Miss Sadie Edwards, Kokomo, Ind.

IA. Pres.—Eld. E. W. Farnsworth, 814 Pleasant St., Des Moines, Ia.
Sec.—Miss Sarah E. Nicola, Richmond, Ia.

KAN. Pres.—Eld. Smith Sharp, Ottawa, Kan.
Sec.—Eld. J. Lamont, Mound City, Kan.

KY. Pres.—Eld. S. Osborn, Shepardsville, Ky.
Sec.—Miss Bell Campbell, Elizabethtown, Ky.

ME. Pres.—Eld. R. S. Webber, Richmond, Me.
Sec.—T. S. Emery, Cornville, Me.

MICH. Pres.—J. E. White, Battle Creek, Mich.
Sec.—Miss Jennie Thayer, Battle Creek, Mich.

MINN. Pres.—Eld. H. Grant, Medford, Minn.
Sec.—W. B. White, Medford, Minn.

MO. Pres.—Eld. J. G. Wood, Appleton City, Mo.
Sec.—D. C. Hunter, Nevada, Mo.

NEB. Pres.—Eld. Geo. B. Starr, Albion, Neb.
Sec.—C. P. Bollman, Albion, Neb.

NEW ENG. Pres.—Eld. D. A. Robinson, S. Lancaster, Mass.
Sec.—Miss Cora Spencer, S. Lancaster, Mass.

N. Y. Pres.—Eld. M. Wilcox, Oxbow, N. Y.
Sec.—Miss Isadore Green, Sackett's Harbor, N. Y.

O. Pres.—Eld. R. A. Underwood, Mesopotamia, O.
Sec.—Wm. Beebe, Norwalk, O.

NOR. PAC. Pres.—Eld. W. L. Raymond, Cornelius, Oregon.
Sec.—Mrs. Wm. Leavitt, Salem, Oregon.

UP. COL. Pres.—Wm. Russell, Milton, Oregon.
Sec.—J. A. Smith, Milton, Oregon.

PA. Pres.—Eld. D. T. Fero, Ellicottsville, N. Y.
Sec.—Mrs. L. A. Fero, Ellicottsville, N. Y.

TEX. Pres.—Eld. R. M. Kilgore, Peoria, Texas.
Sec.—Mrs. M. J. Bahler, Denison, Texas.

VT. Pres.—Eld. R. S. Owen, Burke, Vt.
Sec.—H. W. Pierce, Bordoville, Vt.

WIS. Pres.—Eld. G. C. Tenney, Kilbourn City, Wis.
Sec.—Mrs. Mary F. Stillman, Madison, Wis.

☞ Back numbers from the beginning of the year can be supplied as long as wanted, as the journal is printed from plates.