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PHYSIOLOGY OF THE EYE.

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In order to understand the manner in which the mechanism of the eye operates in producing vision, we must first learn something of the nature of light, that with which the eye has to deal. The generally accepted theory of light is what is known as the undulatory theory, which supposes that all space is filled with a subtile medium known as ether, and that light is simply the waves, or vibrations, or undulations, of this ether, just as sound is the result of the vibrations of air. These vibrations are caused by luminous bodies, as the sun and stars, and by all substances undergoing combustion.

PROPERTIES OF LIGHT.

Objects which allow waves of light to pass through them are called transparent or translucent, according to the readiness with which they allow the passage of light. No substance known is perfectly transparent. Even the atmosphere and the purest water are opaque in some degree.

Light-waves travel in straight lines, radiating from their source. Those which come from a great distance vary so little in direction that they are considered as parallel.

PROPERTIES OF LENSES.

Fig. 1 illustrates the property of a lens to change the direction of rays of light. The rays of light which pass from the arrow at the left of the lens have their course changed so that they cross at a point upon the right of it, and form an image of the arrow inverted. This property of the lens may be readily seen by experimenting with a burning-glass or a pair

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Fig. 1. Diagram showing the Optical Properties of Lenses.

of convex spectacles of considerable magnifying power.

HOW WE SEE.

In studying the use of the eye in vision, it must be considered first as an optical instrument. As we have already seen, it contains a lens, the shape of which is similar to artificial lenses, and the effect of which, in changing the direction of rays of light, is precisely the same. The cornea, having a convex surface, also acts as a lens, so that there are virtually two lenses in the eye. When rays of light from an object fall upon the cornea they pass through it and on to the crystalline lens with a different direction from that in which they were received, being brought nearer together, or made to converge. Passing on to the lens, they are by it made to converge still more, so that they cross just behind the lens and form an image, reduced in size and inverted, upon the retina. This may be seen in the eye of an ox taken from the animal immediately

after it is killed. By removing the outer coverings at the back part with great care, leaving the retina in place, and then placing it in such a position as to receive a strong light from some object, the object may be seen pictured upon the retina upside down.

The delicate nerve cells and filaments which form the retina convey the impressions thus made upon them to the base of the brain, to the nerve center having charge of sight, whence they are communicated to the cerebrum, and the sensation of sight is produced, or the impressions recognized by the brain. Any sort of irritation of the retina or optic nerve will occasion the sensation of light, whether it be mechanical, or electrical by means of a battery.

ACCOMMODATION OF THE EYE.

An opera-glass, when used for viewing objects at different distances, must be adjusted in order to give distinct images of the objects viewed. If turned upon a distant object when rightly adjusted to make a near object distinct, the distant object will appear blurred and indistinct, if seen at all. Like the opera-glass, the telescope, and other similar optical instruments, the eye has an adjusting apparatus. The use of this adjusting mechanism is what is known as accommodation. By its use the healthy eye can be so adjusted as to see with the greatest possible degree of distinctness objects at the extreme limits of vision, as well as objects very near to the eye. This power differs with different persons in accuracy and in the extent of its limits. A near-sighted person has a very small range of accommodating power, that is, he can see clearly only objects which are within narrow limits of distance.

A very simple experiment will make clear to all what is meant by accommodation. Place in a strip of wood two or three feet long, two pins in range with each other, one at either end of the strip. Now hold the strip out horizontally at about the level of the eye, with one end toward the eye. By this arrangement, one of the pins will be two or three feet farther from the eye than the other. Now look at the pin nearest the eye. While doing so it will be observed that an indistinct view is also obtained of the pin at the other end, and that it looks blurred. Then look sharp at the pin at the farther end. The pin nearest the eye will now appear blurred and indistinct. This is because the eye cannot accommodate

FIG. 2.

itself to more than one distance at a time. Another interesting experiment shows the same thing in a different way. Make in a card-board two small holes about the distance apart shown in Fig. 2, in a horizontal line with each other. Place the card very near to the eye, and hold vertically in the fingers a needle at a distance of eight or ten inches from the eye. When the eye is fixed intently upon the needle, it is seen clearly; but if the attention be directed to an object either farther away or nearer by than the needle, it will appear indistinct and also double. If

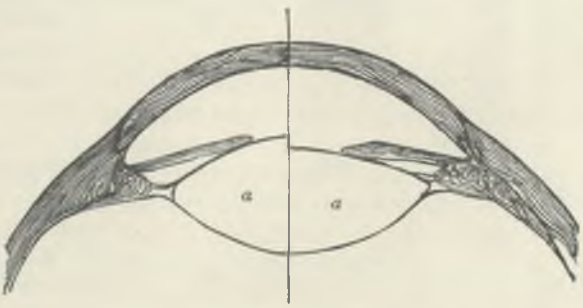

FIG. 3. At the right of the vertical line, the lens, *a a*, is shown flattened, as when adjusted for seeing at a distance; on the left, the lens is thickened, as in near-sighted persons, and when examining near objects.

moved near enough to the eye, it will appear double continually. The nearest point at which it appears single is the near limit of accommodation.

Accommodation is accomplished by the action of the ciliary muscle, by means of

which the form of the lens, and hence its refracting power, is changed, as shown in Fig. 3.

VISUAL JUDGMENTS.

With the exception of the auditory sense and the sense of sight, all of the other senses require for their excitation the actual contact of something. No other sense gives us so much and such varied information respecting external things as the eye; yet a careful study of the knowledge thus gained shows us that the eye is very greatly aided by the other senses. Indeed, with only the sense of sight, we should be very badly off, and the function of sight would render us but little service. In making visual judgments, or forming opinions which seem to be based upon the impressions received through the eye, we never take into account our dependence upon other senses, because we are scarcely able to separate them under ordinary circumstances.

JUDGMENT OF DISTANCE AND SIZE.

The power to judge of distance is evidently acquired. The little child reaches out its hand for the moon, undoubtedly supposing it to be within easy reach. A landsman, at sea for the first time, can form no correct estimate of distance. The same is true of a person accustomed to live in a hilly or mountainous section when he first visits a prairie country. The judgment of distance is formed partly by the combined use of the two eyes,—one serving as a means of correcting the other,—by the amount of muscular effort required to accommodate the eye to see the objects clearly, and by the relative size of objects with which we are familiar. For instance, we are familiar with the size of a man or a horse; if we see a man or a horse some distance away, we judge something of the distance by the apparent size. If we were to look through a reversed telescope, which makes everything look small, we should have the same impression,—that of a person a long distance off, even though he might be very close by. The advantage of using both eyes in judging of distance is well appreciated by one who attempts to thread a needle with one eye closed.

We are aided in judging of the size of an object by a knowledge of its distance. We can form no notion of the size of the moon, because we can form no visual estimate of its distance, and *vice versa.*

JUDGMENT OF SOLIDITY.

We are enabled to form an opinion respecting the solidity of an object by two means; first, by means of the lights and shades of its surface, and second, by the conjoined use of the two eyes, which enables us to see more than half of a sphere, owing to the difference in position of the two eyes.

It is thus evident that we do not form opinions respecting objects exactly as we see them, but as the impressions of sight are corrected by comparison with each other and with the impressions received through the other senses.

CURIOUS FACTS ABOUT THE SENSE OF SIGHT.

There are many curious facts about sight well worth mentioning, only a few of which we have room to consider. First we may mention that although every one is familiar with the fact that color, as well as simple light, may be appreciated by the eye, no explanation has yet been found for the power to distinguish color. The color of objects is due to the fact that light is compound, and that some objects have the power to absorb some portions of the constituent elements of light and reflect others, the elements reflected determining the color. For example, an object reflecting red rays only, is red; one reflecting blue only, is blue, etc. It was formerly supposed that red, yellow, and blue were the primary colors, or color sensations; but an eminent scientist has recently shown that the old view is incorrect, and that the primary color sensations are red, green, and violet. When all three of these colors fall upon the retina at once, white or colorless light is produced. By their combination in various proportions, all other color sensations may be produced. White may also be produced by combining the following colors: red and blue-green; orange and blue; yellow and indigo-blue; green-yellow and violet; purple and green.

AFTER-IMAGES.

After looking at a bright object, as the sun, for a few seconds, and then closing the eyes, the image formed on the retina will persist for some time. The same phenomenon may be noticed in the morning when the retina is rested. If upon first waking, a person looks at the window, he may, upon closing his eyes, still retain the image with all the distinctness with which the objects viewed were seen when the eyes were open, the same form, color, and other visual properties being accurately preserved. Such images as these are known as positive after-images. A more usual form of after-image is that which is produced by looking upon a white ground after the eye has been for some time steadfastly fixed upon some dark or colored object. If a person has been looking at a white spot upon a dark ground, upon looking at a white ground, as the wall, he will see a dark spot of the same size and form as the light spot. When the spot is of a red color, the image seen on the white ground will be greenish-blue, which is the complement of red. Orange produces blue; green, pink; yellow, blue; etc. The explanation is that the part of the retina upon which the image of the object is formed becomes weary with receiving the particular sensation, and consequently, while the rest of the retina which is fresh receives a sensation corresponding to the color of the object viewed, the tired spot responds to but a part of the rays, and so shows a different color, really making a physiological decomposition of the rays of light. Images of this sort are called negative.

THE BLIND SPOT.

The portion of the retina which possesses most acute vision is the visual center, which is a little to one side of the point at which the optic nerve enters the eye. The point of entrance of the optic nerve is wholly insensitive to visual impressions, as there are at this point none of the terminal elements of the optic nerve, which alone possess the power of receiving impressions. The existence of this insensitive portion of the retina, commonly termed "the blind spot," can be easily shown by a simple experiment with Fig. 4. Holding the book squarely before the face and so that the figure will be on a

FIG. 4.

level with the eyes, place the hand over the left eye, and with the right eye look steadily at the small cross at the left end of the figure. Now place the book at a distance of about four inches from the eye. Both the cross and the round white spot will be distinctly visible; but as the book is moved from the face, the white spot will disappear at a distance of six to eight inches. With a little care any one can perform the experiment. Another way of showing the same fact without the figure is this: Pin two cards upon the wall about two feet apart, and on a level with the eyes. Now close the left eye and look at the left card with the right eye, or *vice versa*. Both cards will be visible, the right one indistinctly, of course. Keeping the right eye fixed upon the left card, walk backward. At a distance of six to eight feet from the cards the right one will vanish.

CONTRAST.

A white stripe placed between two black stripes looks much whiter at its edges than in the middle, which may even look a little dull in contrast with the edges, though the color is uniform. A small sheet of gray paper placed in the middle of a larger sheet of green paper

and covered with a sheet of thin tissue paper, appears of a pink color, which is complementary to green.

ANNIVERSARY MEETINGS IN MANCHESTER, ENGLAND.

BY ELD. J. N. LOUGHBOROUGH.

FROM October 17 to October 20 I was in Manchester. This city of nearly half a million of inhabitants, situated on an extensive plain by the River Irwell, about 180 miles north-west of London, is set down in the "British National Encyclopedia" as the largest manufacturing city in the world,—the leading manufacturing interest being cotton and woolen fabrics.

It is a place of great antiquity, having existed from the time of the Roman occupation of Britain under the Cæsars. It was then called Mancunium, being a settlement of the Brigantes,—*Mancenion*. Modern changes have obliterated the narrow crooked streets, so peculiar to ancient cities, and stately structures have taken the place of all that would indicate the antiquity of the city. Among its most famous buildings we notice the Town Hall with its central tower 36 feet square and 280 feet in height. This hall was opened in 1877, after having been ten years in course of construction at a cost of about $4,000,000. Among the many establishments of education and art we notice Owen's College, constructed from a bequest of half a million dollars, made by Mr. John Owen in 1846.

Three important societies of Great Britain held their anniversary meetings in Manchester on October 17, 18, and 19 respectively. They were the "English Anti-Tobacco Society and Anti-Narcotic League," "The United Kingdom Temperance Alliance," and "The Vegetarian Society." Being a member of each of these, I thought it would be good to enjoy this three-fold conference with those so earnestly engaged in these great and important moral reforms. In this I was not disappointed; I know not when I have spent three consecutive days more pleasantly.

The meeting of the Anti-Tobacco Society, the youngest of the three, came on the evening of the 17th. It was presided over by Dr. Muir Howie, of Liverpool, late President of the Royal Medical Society, Edinburgh. A valuable and instructive paper was read by him on "The Effects of Tobacco on Nutrition of Nerve and Muscle." After this several of us had the privilege of speaking on the evil effects of tobacco using, the importance of the work of the society, etc. That this society is becoming one of importance and influence, appears from the fact that it has among its members and officers some men in high positions. The Treasurer is a member of Parliament. He indicated his interest by sending to the meeting a donation to the society of 20 guineas (a little more than $100).

The interest, attendance, and enthusiasm of the meeting exceeded the most sanguine expectations of the members. It was the largest meeting yet held, every available space in the hall being occupied; and it was decided that a larger hall must be secured for the next anniversary meeting.

The United Kingdom Temperance Alliance was formed June 11, 1853, and has as its object the securing of laws for the suppression of the liquor traffic. It has battled on for years, amid difficulties and discouragments, until it now seems about to secure from Parliament the passage of a Local Option law.

The exercises of this twenty-eighth anniversary of the Alliance were held on the 18th, and were opened by a breakfast in the mammoth Free Trade Hall, to which over two thousand persons sat down. From this we were adjourned to the General Council of the Alliance, which was held from 10 A. M. to 4 P. M. in the Friends' Meeting House. Here at least two thousand assembled and were addressed by members of Parliament, Mayors of different cities, and earnest Temperance and Teetotal workers.

In the evening, every available space in the Free Trade Hall was occupied, as many as five thousand being present, and probably one-third as many more who could not gain an entrance, assembled in

another hall near by, so that two meetings were in progress at once.

The larger meeting was addressed by members of Parliament, eight of them, all teetotalers, being on the stand. This was said to be the most enthusiastic meeting ever held by the Alliance.

What gave special life to the meeting was the fact that after all former defeats, at the last session of Parliament, a resolution respecting the propriety of a Local Option law met with a majority of 42 votes in favor of such action, followed by a statement from the "Premier," Hon. W. E. Gladstone, that such a measure would be introduced during the next session. In the midst of the meeting a telegram was received and read from Hon. Herbert Gladstone, Junior member of Parliament, advising the Alliance to make their "voice" to the Parliament "heard above the rest." The enthusiasm of this meeting can only be appreciated by those who have witnessed the hand-clapping on such stirring occasions.

The Vegetarian Society was organized Sept. 30, 1847. This society has a more difficult task to bring people to the acknowledgment of its principles than the Temperance society, from the fact that the evils of improper diet are not so readily perceived by the masses as the ravages of strong drink, yet the society has made good progress in that it has won its thousands to the principles of true diet reform.

The General Council of this society was held in the afternoon of the 19th. In the council, the officers for the year were elected, and there was a free exchange of thought relative to the best ways and means of advancing the work. At 6 P. M. we met in the hall of the Young Men's Christian Association for a repast of the fruits and grains of nature's bounty. This feast, "unstained with blood," was followed at 7 P. M. by the public meeting of the society. This meeting was presided over by Mrs. A. Kingsford, M. D., of Paris. In her opening address, full of excellent thoughts, she incidentally reminded us of the fact that she was born the same day that the Vegetarian Society was first organized. Speaking of the advancement of these principles in France and Germany, she told us that the youngest child of this reform was a society lately organized in Paris, and at last accounts "the infant was doing well."

Addresses were delivered by different persons, elucidating the advantages of the vegetable over the ordinary flesh diet. The Rev. Canon Molesworth, who had recently made a trip around the world, *via* the straits of Magellan and San Francisco, spoke of the advantages he found in adhering to this diet all the way around.

Mr. Hanson, of Bradford, who had recently made a trip to Jerusalem and the eastern countries, bore testimony to the same benefits of the vegetable diet. He also spoke of meeting, in Palestine, descendants of Jonadab, the son of Rechab, who adhere unto the instruction of their father "unto this day." They "drink no wine," and are a hardy race. I was requested to speak, and occupied about fifteen minutes in giving some account of our work in the United States. The members and officers of the society were greatly encouraged by this meeting.

For my own part it was refreshing to meet so many, who for years have adhered to the vegetarian diet; and to see (contrary to what many might expect) such a hardy looking people. One says, "I have not used a particle of flesh, neither liquor or tobacco, for forty years, and do not know by experience what pain is."

The Vegetarian Society use as one of their strongest arguments the *moral* phase of the subject, *i. e.*, that God's original design was that man should not shed blood for the purpose of sustaining his own life, and that to attain to mildness of temper and true godlike disposition we should eat only that which is good, and not be found among riotous eaters of flesh.

My stay at Manchester was most agreeable. I take pleasure in speaking of the kind hospitality I received at the home of the Hon. Secretary of the Anti-Tobacco League. To look at the father of this gentleman, a man 76 years of age, who has used neither liquor nor tobacco in any form for fifty years, and who is now as

hale and blithe as many a man of forty-five, is of itself a good temperance lecture.

Southampton, England, Nov. 2, 1881.

THE TREATMENT OF SCROFULA, OR KING'S EVIL.

As in cases of diseases of nutrition, the adoption of measures for the prevention of scrofula, or the development of the hereditary predisposition to it, is of the first importance. The most effective measures of prevention would be some means of preventing the marriage of persons of scrofulous tendencies. The intermarriage of families with a well-marked scrofulous tendency, should be regarded as a culpable transgression of one of the plainest laws of nature. The children of such parents cannot escape a constitutional tendency which will surely result in an untold amount of suffering, and premature death. As this cannot be done, however, even when especial attention is called to the matter in cases in which the injunction is in the highest degree applicable, the best that can be done in most cases is to adopt such measures as will prevent the development of the inherited tendencies, or the new production of scrofulous disease. The most efficient of these measures will of course be a careful avoidance of all exciting causes of scrofula, to which attention has already been called.

Where there is the slightest ground for suspicion of the inherited scrofulous constitution, preventive measures should begin with the very earliest period of infant life. The greatest pains should be taken to secure for the child proper food. The natural food of infants is milk, and this should be given until the period arrives when the development of the teeth indicates the propriety of adding other food to the diet. If the mother is consumptive, or has at any period in her life manifested a scrofulous tendency, or if she is for any reason unable to supply her child with its natural food, a wet-nurse should be employed. Great care should be taken to secure for a nurse a healthy person whose family history is wholly free from scrofulous or consumptive habits. If such a nurse cannot be obtained, as is many times the case, cow's milk is the next best substitute; but care should be taken to secure milk from cows in a healthy condition. No milk should be given to the child until a careful investigation has first been made of the character of the cow from which it is obtained, the condition under which it is kept, the character of the food, etc. Candy, and things of a like character, with which the friends of the little ones often supply them to their hurt, should be wholly interdicted. Excessive feeding should also be avoided, as scrofulous children often have a voracious appetite, and it is of the greatest importance that the digestive organs should be preserved in a healthy condition. Children should be very early accustomed to an abundance of fresh, pure air. Even when a very few weeks old, they should be taken out of doors and exposed to the fresh air and sunshine, in a moderate way, of course, at first, and should sleep in rooms which are thoroughly ventilated, and not too warm, never being exposed for any length of time to a temperature above 70°.

The eniment German author, Dr. Birch-Hirschfeld, recommends very highly the employment of cold sponging, which he insists should be begun very early and practiced daily. We suggest, however, that it is unnecessary to submit infants to so disagreeable a process as that of daily sponging with cold water, as all of the beneficial effects can be obtained by water which is only a few degrees less than the normal temperature. In general, it will not be necessary to employ water of a lower temperature than 80° or 90°, and it is best to begin with lukewarm water, making it gradually cooler from day to day. By this process the skin will be fortified against the invasion of the irritating elements which are supposed, as we have intimated, to produce scrofula and to develop any latent scrofulous tendencies.

As soon as the child is of sufficient age, moderate exercise in the open air should be secured. It should be dressed in such a manner as to secure thorough protection

of the entire body, so as to maintain the equilibrium of the circulation, and then be allowed to play in the open air as much as possible—several hours a day at least. Too warm clothing, and especially too warm covering at night, should be avoided, as by this means the system is rendered susceptible to climatic and atmospheric changes, which have a marked influence in exciting scrofulous affections. The measures of prevention suggested should also be employed in all cases in which the symptoms of the disease are already present, as they are equally efficient when applied as curative measures as when applied for prevention.

In the medicinal treatment of scrofula, nearly every remedy in the *materia medica* has at one time or another been recommended and highly extolled as a specific. Each remedy, however, has in its turn fallen into disrepute and been replaced by others of a different nature, and indeed, of an entirely opposite character. Even remedies which appeal to the imagination alone have been used, and with marked success. One of the most popular remedies of this sort was the touch of the king's hand, which was supposed to expel the disease, and from which this malady acquired the name "king's evil." Quacks have fattened on the sale of anti-scrofulous and blood-purifying mixtures which had no effect upon the user except to render the blood still more impure, and the constitution less able to institute a successful remedial process.

In modern times the remedy which has been most lauded for the cure of scrofula is cod-liver oil. This remedy is the oil obtained from the livers of codfish. The only way in which it differs from other fish or animal oils is the admixture with it, as an impurity, of considerable quantities of bile expressed from the liver. This remedy was first employed in Holland and in Northern Germany for rheumatism more than half a century ago. By accident, it was first introduced as a domestic remedy for scrofula, and has by degrees attained to the eminence of being considered as the most potent of all drug remedies for this disease. That it is by no means a specific, however, is readily admitted by all who have had a large experience in its use and have studied its effects intelligently. Prof. Niemeyer well remarks that in many cases of scrofula, cod-liver oil "is absolutely pernicious." Iodine in some one of its numerous combinations is still employed by the great majority of physicians in all cases of scrofula, but it has long been abandoned by the most advanced and scientific members of the profession as a remedy of no practical value in the treatment of this disease. Even those who recommend cod-liver oil do not pretend to employ it as a curative agent, but simply as a means of counteracting the tendency to emaciation and deficient nutrition by which one class of cases is characterized. One of the most enthusiastic advocates of its use asserts that "no remedy has ever been so much abused as this one."

In the rational treatment of this affection it is of primary importance that the principle should ever be kept in mind that the patient is to be treated, and not the disease from which he is suffering. If a cure is effected, it must be through the wonder-working operations of nature, and not through the agency of any drug or other remedy administered to the patient. Hence it will of course be utterly useless to attempt to apply any routine method of treatment to all cases of this disease. Indeed, it is essential to success that the most careful discrimination should be made in the treatment of different cases. It will be far better to do nothing more than to surround the patient with the most favorable hygienic conditions than to apply active measures of treatment not suited to his case. As a general principle of treatment, however, it may be said that the two varieties of scrofulous habit, denominated as irritable and torpid, require the application of nearly opposite remedies in order to obtain good results.

In the first, or irritable class of cases, in which the patient is usually thin, inclined to be anæmic, and evidently suffering from deficient nutrition through imperfect assimilation of food and excessive waste, such measures should be adopted as will

improve the energy and character of the nutritive processes. Care should be taken to supply the patient with an abundance of the most wholesome, simple, and easily digestible food, although equal care should be taken to avoid excessive feeding. All reducing measures should be avoided. Daily sun-baths, frequent inunctions with vegetable oil, tepid sponge baths daily or every other day, and, if possible, the tonic application of electricity, are especially indicated. If there is a feverish condition of the system, meat should be wholly avoided and the dietary of the patient should consist principally of fruits and farinaceous articles. Milk obtained from cows known to be healthy may be freely employed. The diet should in all cases be unstimulating and free from condiments and other irritating substances. Tea and coffee should be wholly abstained from. Acorn coffee may be used to advantage as a harmless substitute for these beverages, and one with which experience has seemed to connect some degree of remedial virtue.

For the opposite class of cases, those in which there is evident torpidity of the system, inactivity of the excretory functions, and retained excretions, the same measures of treatment should be employed, but in addition more or less active eliminative treatment should be used, according to the requirements of the case. The German authorities recommend the wet-sheet pack and frequent cold bathing, the use of which is especially advocated by Schroth. We recommend caution, however, in the use of this active measure of treatment. We much prefer to employ such mild measures as the vapor or hot-air bath, administered at as low a temperature as will produce sweating, the warm, full bath, and the electric bath. The pack may be employed occasionally, however, with benefit, but should never be administered cold, as it is usually employed in Germany. With reference to the use of water in these cases, the eminent Dr. Niemeyer remarks as follows: "In recent times the cold-water cure has earned for itself the most favorable reputation as a remedy for scrofula; and, indeed, a series of cases is on record in which complete and perfect cures have been obtained by this means after all other modes of treatment had been applied in vain. We are certainly justified in asserting that cod-liver oil treatment cannot be substituted for the water-cure."

A few remarks should be made in this connection respecting the treatment of local affections incident to this disease. Scrofulous skin eruptions seldom require in addition to the measures of treatment mentioned the application of other remedial measures than those necessary for cleanliness, and the application of simple vaseline ointment or carbolated vaseline. For scrofulous catarrh of the nose, the nasal douche is to be recommended as a means of applying mildly astringent washes such as are recommended for milder forms of catarrh.

For scrofulous sore eyes, the continuous employment of tepid applications two or three times a day will usually secure recovery after a time. For chronic discharges from the ears, a carbolic acid lotion, composed of one part carbolic acid to three of glycerine or alcohol, and fifty of water, should be employed two or three times a day in the form of a douche, the mode of application of which is elsewhere described. A solution of permanganate of potash, consisting of a tablespoonful of the crystals dissolved in a quart of warm water, is a most successful remedy in some cases. With reference to the treatment of enlarged glands, Dr. Birch-Hirschfeld remarks as follows: "The application of the cold douche to scrofulous humors of the glands has in our experience several times produced a favorable result. Obstinate tumors of this kind, which have resisted all kinds of salves and plasters, disappear sometimes under the continued application of cold water." Much more certain results can be obtained by the application of the alternate hot and cold douche, as by this means we are able to intensify the effect of both agents, which, when employed separately, are very efficient in causing the disappearance of abnormal growths.

The bronchitis of scrofula, to which the person suffering from the irritable variety is chiefly subject, should receive the most

prompt attention as soon as its presence is discovered, as by this means it is possible to prevent the fatal consumption to which sufferers from this form of scrofula are especially liable. The same importance is attached to the prompt and persistent treatment of derangements of digestion, which have a decided tendency to the production of mesenteric consumption.

We have dwelt thus at length upon this subject on account of its great importance, as well as the great prevalence of erroneous views concerning it. J. H. K.

DRUNKENNESS AND HEREDITY.

THE SCOURGES OF HUMANITY.

In a treatise on Race Education, of which the prevention of human deterioration by forestalling bad habits or hereditary evil tendencies through correct early training and teaching, forms a not unimportant part, drunkenness, often hereditary and more frequently the child than the parent of poverty, but often the parent of insanity, of suicide, and of crime, claims our attention.

Morell, who has made human deterioration a specialty, mentions in his pathological studies the case of F——, who was the son of an excellent workman early given to hard drinking. He inherited the tendency to strong drink, and had seven children. The first two died in infancy of convulsions, a nervous affection. The third attained some skill in handicraft, but fell away into a state of idiocy at twenty-two years of age. The fourth attained a certain amount of intelligence, and relapsed into profound melancholy, with a tendency to suicide, which terminated in harmless imbecility. The fifth is of a peculiarly irritable temper, and has broken all relations with the family. The sixth was a daughter, with the strongest hysteric tendencies, and has been repeatedly and seriously troubled in her reason.

Here is another pathological study of a gentleman of distinction and an inveterate inebriate. Four of his children perished in infancy, as the children of such men usually do; the fifth, a son, in spite of every precaution taken by Education, was at nineteen the heir of his father's vice in an insane asylum; as a child he was extremely cruel, as many children of inebriate parents are,—the terror of their playmates and of innocent little animals.

Morell cites many cases of children of inebriates cursed in later years with the hereditary bent of excessive alcoholism, leaving one insane asylum for the other, and ending in marasmus, general paralysis, in a perfectly brutal condition, and the utter extinction of reason and conscience.

The same great author and physician gives the following analysis of a family under his treatment. In the first generation: immorality, depravity, excessive alcoholism, and moral torpor. In the second generation: hereditary drunkenness, mania, and general paralysis. In the third generation: sobriety, hypochondria, monomania of being persecuted. In the fourth generation: little intellect and homicidal tendencies; at the age of sixteen, fits of mania, stupidity, transition to idiocy, and extinction of the race.

Morell further says: "I constantly find the children of drunkards in the asylums for the insane, in prisons and houses of correction. The deviation from the normal type of humanity shows itself in these victims by the arrest of the development of their constitutional system as well as by a vicious intellectual disposition and cruel instincts."

Dr. Elam justly remarks: "Among children of the poor, in whom this evil tendency remains uncorrected by a good physical and moral Education, and whose surroundings are vicious, and want and misery irritate a weakened constitution, the consequences of drunkenness in the parent are aggravated; and, hence, the frightful amount of insanity among the poor."

The intellectual and moral nature of man is his very essence, and its total degradation betokens a morbidity or deviation from the normal type, which cannot but be hereditary.

A system of Education that aims at the preservation of the human race, cannot lose sight of drunkenness and its prevention, the means of which are many and decided, and form the natural elements of

a practical Education, as we shall have further opportunity to show. The characteristic mental features found by Morell in the children of inebriates, and which demand attention, are an irresistible wandering from place to place, a want of purpose, indecision, lawlessness, moral obtuseness, and a taste for ardent spirits. What a heritage! the very genius of pauperism and the high road to crime to which vagabondage unfailingly leads. The desire for stealing and the taste for the lowest and most vicious associations, as also a spirit refractory to all regulations, accompany the morbid appetite for strong drink in the victim of hereditary dipsomania.

Maudsley says: "Drunkenness in the parent is a cause of idiocy, suicide, or insanity in the offspring, as also insanity in the parent may occasion dipsomania in the offspring; which conclusively proves the deep-seated deterioration of the nervous system arising from drunkenness, the close attendant of pauperism."

Delirium tremens is not the worst nor is it the end of drunkenness, which weighs down humanity with a leaden curse, convulsing it through generations, until, at last, the spirit in man succumbs to the demon, and every trace of divine intelligence and power has been crushed out in the long and painful struggle.

Alcoholism is attended by great weakness, cramps, convulsions, partial paralysis, horrid pains, sleepless nights, restlessness, delirium, haggardness, a complete abolition of the intellectual and moral powers, a perfect obliteration of the will and excited desires, which make the drunkard a brute, lost in indifference to all, and moving like an automaton, without motive or end but drink, with the heart, lung, and liver suffering; and ending in marasmus, dropsy, diarrhœa, or delirium tremens.

Among 1,000 paralytic insane studied by Morell, 200 were reduced to that condition by hard drinking; and of 200 inebriates who found their way into the insane asylum, 35 were obviously hereditary cases.

Four brothers inherited the passion for drink, in which they all indulged to excess. The oldest drowned himself, the second hung himself, the third cut his throat, and the fourth threw himself out of an upper window. And there is, in fact, no end to the sad stories of whole generations of drunkards. The drinking habit of the parent is in most cases an irresistible impulse of disease in the child, uncontrolled by any motive whatsoever. Men are treated by the law as criminals, when they are in fact maniacs.

When the duty on spirits was removed in Norway in 1825, between that time and 1835 insanity increased 50 per cent; but the increase in idiocy was 150 per cent!

Out of 300 idiots, examined by Dr. Howe in the State of Massachusetts, 145 were the children of intemperate parents.

Sweden consumes 25,000,000 gallons of spirits, though it has but 3,000,000 population,—of whom but half are of an age to drink,—and the consequence is that insanity, suicide, and crime are fearfully common among them, notwithstanding every one of them has what passes commonly for an Education.

In two hospitals at Copenhagen, of 1,000 male patients, among mechanics 34, and among day laborers 80, suffered from delirium tremens; among the first class 61, and among the latter 104. cases of deaths were the result of liquor. Of 100 deaths among saloon keepers and bar tenders, 13.4 per cent are caused by liquor.

Neison, the great English statistician, established from extended observations made on 6,111 drunkards, that at the ages of 21–30 the mortality among them is five times, and at 30–50 four times, as high as among temperate people; and while of 6,111 common people, 100 should have died at all ages, the drunkards lost 357.

The expectation of life is at

	With drunkards.	*With common people.*
20 years of age.....	15.5	44.2
30 " "	13.8	36.4
40 " "	11.6	28.7
50 " "	10.8	21.2
60 " "	8.9	14.2

While at 20 years of age a common man has an expectation of living 44 years, a drunkard has but an expectation of 15 years, which cuts his life short 29 years!

Drunkenness is the bridging over from pauperism to insanity, and the three together represent the complete destruction of humanity.—*Deterioration and Race Education.*

NEW DEVELOPMENTS CONCERNING DIPHTHERIA.

NEARLY two years ago, in conversation with Dr. Billings, Vice-President of the National Board of Health, we learned that the Board had planned a series of experiments for the purpose of determining, with as great certainty as possible, the true nature of diphtheria, the disease which annually makes such sad havoc among the younger members of thousands of households. Later we saw the announcement that Drs. H. C. Wood and Henry F. Formad, of Philadelphia, had been selected for this important task. We have believed and advocated the germ and filth origin of this disease for several years, though this theory has met with much opposition, even from eminent medical

authorities. When an investigation was promised, and placed in the hands of men of such eminent scientific ability, we determined to abide by the result. Now we have it, and in a recent address delivered before the Academy of Natural Sciences by Dr. Wood, it is declared in no equivocal terms.

The experimenters produced the disease in rabbits by inoculation with the matter from the throats of diphtheritic patients. When once originated in this way, it was found possible to communicate the disease from one rabbit to another. On examination of a person or a rabbit having died with diphtheria, they found the blood and all the internal organs swarming with the micrococci, a microscopic plant which is undoubtedly the cause of the disease. The accompanying cut is a rude representation of the appearance of these organisms under a powerful microscope. The germs were found swarming in the blood corpuscles, which they finally fill entirely and burst, thus completely destroying one of the most important elements of the blood. The urine is during life found to be filled with the microscopic plant shown above, which belongs to the lowest order of plant life.

The following paragraphs are taken from an abstract of Dr. Wood's lecture in the *Medical Times*, and will give the reader some idea of the interesting character of the experiments and the conclusions to which the experimenters arrived, which may now be considered as conclusive:—

"Our next series of experiments were directed to determining whether the micrococci are or are not the cause of the affection. The experiments of Curtis and Satterthwaite, of New York, have shown that the infectious character of diphtheria depends upon its solid particles; for when they filtered an infusion of the membrane, it became less and less toxic in proportion as the filtration was more and more perfect; and when the infusion was filtered through clay, the filtrate was harmless.

"The urine of patients suffering from malignant diphtheria is full of micrococci, and may contain no other solid material. Following the experiments of Letzerich, we filtered this urine and then dried the filter-paper. Upon experiment we found this even more deadly in its effects than is the membrane. The symptoms and lesions following in the rabbit inoculation with such paper are precisely those which would have ensued had a piece of diphtheritic kidney or membrane been employed. This experiment shows that the solid particles of the membrane, which are the essential poison of malignant diphtheria, are the micrococci, which must be either the poison itself or the carriers or producers of the poison.

"Leaving for a while this point, I will next direct your attention to our culture-experiments.

"We cultivated micrococci from the surface of ordinary sore throats, from furred tongue, from cases of mild diphtheria as we commonly see it in Philadelphia, and from Ludington cases. We found, in the first place, that there were no differences to be detected in the general or special appearance of the various micrococci, and no constant differences in size. We found that they all formed similar shapes in the culture-apparatus; they had this difference, however,—whilst the Ludington micrococci grew most rapidly and eagerly generation after generation up to the

tenth, those from Philadelphia diphtheria ceased their growth in the fourth or fifth generation, and those taken from furred tongue never got beyond the third transplantation. Various culture-fluids were used, but the results were identical. We conclude, therefore, that as no difference is detectable between the micrococci found in ordinary sore throat and those of diphtheria, save only in their reproductive activity, they are the same organisms in different states. As the result of some hundreds of cultures, we believe that the vitality under artificial culture is in direct proportion to the malignancy of the case from which the plant has been taken.

"We next made a series of experiments of inoculating rabbits with cultivated micrococci, and succeeded in producing diphtheria with the second generation, but never with any later product. This success, taken in conjunction with the urine experiments already spoken of, seems to us sufficient to establish the fact that the micrococci are the *fons et origo mali* of diphtheria. The experiments of Pasteur and others have proven that it is possible for an inert organism to be changed into one possessed of most virulent activity, or *vice versa;* and we believe that we can offer direct proof that the micrococci of the mouth are really identical in species with the micrococci of diphtheria, and do not merely seem to be so. We exposed the Ludington membrane for some weeks to the air in a dried condition. There was no putridity or other change detectable in it; but, whereas, formerly it had been most virulent, now it was inert, and its micrococci not only looked like those taken from an ordinary angina but acted like them. They were not dead, they had still power of multiplication, but they no longer grew in the culture-fluid beyond the third or fourth generation. Certainly they were specifically the same as they had been, and certainly, therefore, the power of rapid growth in culture-fluids and in the body of the rabbit is not a specific character of the diphtheria micrococcus.

"As is well known, Pasteur attributes the change from an active to an inert organism to the influence of the oxygen of the air upon the organism. Whether this be true of the diphtheria micrococcus is uncertain, but the effects of exposure of the dried membrane seem to point in such direction.

"With the facts that are known in regard to the clinical history of diphtheria and those which we have determined in our research, it is easy to make out a theory of the disease which reconciles all existing differences of opinion, and seems to be true.

"A child gets a catarrhal angina or trachitis. Under the stimulation of the inflammation products the inert micrococci in the mouth begin to grow; and, if the conditions be favorable, the sluggish plant may be finally transformed into an active organism, and a self-generated diphtheria results. It is plain that if this be correct there must be every grade of case between one which is fatal and one which is checked before it fairly passes the bounds of an ordinary sore throat. Every practitioner knows that such diversity does exist. Again, conditions outside of the body favoring the passage of inert into active micrococci may exist, and the air at last become well loaded with organisms, which, alighting upon the tender throats of children, may begin to grow and themselves produce violent angina, trachitis, and finally fatal diphtheria.

"In the first instance we have endemic diphtheria as we see it in Philadelphia; in the second, the malignant epidemic form of the disease as it existed in Ludington. It is also apparent that in the endemic cases the plant whose activity has been developed within the patient may escape with the breath, and a second case of diphtheria be produced by contagion. It is also plain that, as the plant gradually in such a case passes from the inert to the active state, there must be degrees of activity in the contagium, one case being more apt to give the disease than is another; also that the malignant diphtheria must be more contagious than the mild endemic cases. We think there is scarcely a practitioner who will not agree that clinical experience is in accord with these logical deductions from our experimentally-determined premises.

"It yet remains for us to investigate as to what are the conditions outside of the body which will especially favor the production of active micrococci, and also to study the effects of agents in killing these organisms; for it is very apparent that local treatment of the throat must often be of the utmost importance, and that it will be far more effective if it be of such character as to kill the mirococci, and not simply be anti-phlogistic in its action."

These experiments establish beyond question that diphtheria is a filth disease.

That is, that it may be generated by filthy surroundings which give rise to large numbers of micrococci, the invariable accompaniment of diphtheria.

A CHAPTER FOR GIRLS.

NOTHING is so suggestive of innocence and purity as the simple beauty of girlhood when seen in its natural freshness, though too seldom, now-a-days, is it possible to find in our young girls the natural grace and healthy beauty which were common among the little maidens of a quarter of a century ago. The ruddy cheeks and bright eyes and red lips which are indicative of a high degree of healthy vigor are not so often seen to-day among the small girls in our public schools and passing to and fro upon the streets. The pale cheeks, languid eyes, and almost colorless lips which we more often see indicate weakly constitutions and delicate health, and prophesy a short and suffering life to many. Various causes are at work to produce this unfortunate decline; and while we hope that in the larger share of cases, bad diet, improper clothing, confinement in poorly ventilated rooms with too little exercise, and similar causes, are the active agents, we are obliged to recognize the fact that there is in far too many cases another cause, the very mention of which makes us blush with shame that its existence should be possible. But of this we shall speak hereafter.

Real girls are like the just opening buds of beautiful flowers. The beauty and fragrance of the full-blossomed rose scarcely exceed the loveliness of the swelling bud which shows between the sections of its bursting calyx the crimson petals tightly folded beneath. So the true girl possesses in her sphere as high a degree of attractive beauty as she can hope to attain in after-years, though of a different character. But genuine girls are scarce. Really natural little girls are almost as scarce as real boys. Too many girls begin at a very early age to attempt to imitate the pride and vanity manifested by older girls and young ladies. It is by many supposed that to be ladylike should be the height of the ambition of girls as soon as they are old enough to be taught respecting propriety of behavior, which is understood to mean that they must appear as unnatural as possible in attempting to act like grown-up ladies. Many mothers who wish their daughters to be models of perfection, but whose ideas of perfect deportment are exceedingly superficial in character, dress up their little daughters in fine clothing, beautiful to look at, but very far from what is required for health and comfort, and then continually admonish the little ones that they must keep very quiet and "act like little ladies." Such a course is a most pernicious one. It fosters pride and vanity, and inculcates an entirely wrong idea of what it is to be ladylike,—to be a true lady, to be true to nature as a girl. Such artificial training is damaging alike to mind and body; and it induces a condition of mind and of the physical system which is very conducive to the encouragement of dangerous tendencies.

All little girls want to be beautiful. Girls in general care much more for their appearance than do boys. They have finer tastes, and greater love for whatever is lovely and beautiful. It is a natural desire, and should be encouraged. A pure, innocent, beautiful little girl is the most lovely of all God's creatures. All are not equally beautiful, however, and cannot be; but all may be beautiful to a degree that will render them attractive. Let all little girls who want to be pretty, handsome, or good-looking, give attention, and we will tell them how. Those who are homely should listen especially, for all may become good-looking, though all cannot become remarkably beautiful. First of all, it is necessary that the girl who wishes to be handsome, to be admired, should be good. She must learn to love what is right and true. She must be pure in mind and act. She must be simple in her manners, modest in her deportment, and kind in her ways.

Second in importance, though scarcely so, is the necessity of health. No girl can long be beautiful without health; and no girl who enjoys perfect health can be really ugly in appearance. A healthy

countenance is always attractive. Disease wastes the rounded features, bleaches out the roses from the cheeks and the vermillion from the lips. It destroys the luster of the eye and the elasticity of the step. Health is essential to beauty. In fact, if we consider goodness as a state of moral health, then health is the one great requisite of beauty.

Health is obtained and preserved by the observance of those natural laws which the Creator has appointed for the government of our bodies. The structure of these bodies we may do well to study for a few moments.

Go with us to one of the large cities, and we will show you one of the most marvelous pieces of mechanism ever invented,—a triumph of ingenuity, skill, and patient, persevering labor for many years. This wonderful device is a clock which will run more than one hundred years. It is so constructed that it indicates not only the time of day, the day of the month and year, itself making all the necessary changes for leap year, but shows the motions of the earth around the sun, together with the movements and positions of all the other planets, and many other marvelous things. When it strikes at the end of each hour, groups of figures go through a variety of curious movements most closely resembling the appearance and actions of human beings.

The maker of this remarkable clock well deserves the almost endless praise which he receives for his skill and patience, for his work is certainly wonderful; but the great clock, with its curious and complicated mechanism, is a coarse and bungling affair when compared with the human body. The clock doubtless contains thousands of delicate wheels and springs, and is constructed with all the skill imaginable; and yet the structure of the human body is infinitely more delicate. The clock has no intelligence; but a human being can hear, see, feel, taste, touch, and think. The clock does only what its maker designed to have it do, and can do nothing else. The human machine is a living mechanism; it can control its own movements, can do as it will, within certain limits. What is very curious indeed, the human machine has the power to mend itself, so that when it needs repairs it is not necessary to send it to a shop for the purpose, but all that is required is to give nature an opportunity, and the system repairs itself.

As already remarked, mental, moral, and physical health are the requisites for true beauty; and to secure these, obedience to all the laws of health is required. The most beautiful face is soon marred when disease begins its ravages in the body. The most beautiful character is as speedily spoiled by the touch of moral disease, or sin. The face is a mirror of the mind, the character; and a mind full of evil, impure thoughts is certain to show itself in the face in spite of rosy cheeks and dimples, ruby lips, and bewitching smiles. The character is written on the face as plainly as the face may be pictured by an artist on canvas.

To be more explicit, the girl who disregards the laws of health, who eats bad food, eats at all hours or at unseasonable hours, sits up late at night, attends fashionable parties, and indulges in the usual means of dissipation there afforded, dancing, wine, rich suppers, etc., who carefully follows the fashions in her dress, lacing her waist to attain the fashionable degree of slenderness, wearing thin, narrow-toed gaiters with French heels, and insufficiently clothing the limbs in cold weather, and who in like manner neglects to comply with the requirements of health in other important particulars, may be certain that sooner or later, certainly at no distant day, she will become as unattractive and homely as she can wish not to be. Girls and young ladies who eat largely of fat meat, rich cakes and pies, confectionery, iced creams, and other dietetic abominations, cannot avoid becoming sallow and hollow-eyed. The cheeks may be ever so plump and rosy, they will certainly lose their freshness and become hollow and thin. Chalk and rouge will not hide the defect, for everybody will discover the fraud, and will of course know the reason why it is practiced.—*Plain Facts for Old and Young.*

TEMPERANCE AND MISCELLANY.

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

HOPE.

THERE is no vale, however low,
But opens to the sky,
And through the deepest night of woe,
Faith reads the stars on high.

There is no rugged pillow-stone
Upon life's desert plain,
But has a Bethel of its own,
Where angels come again.

There is no bitter Marah spring
But finds its healing near;
And Joy and Gladness sit and sing
Where Sorrow dropped a tear.

There is no cloud, however dark,
But has its heaven-wrought bow,
And Hope sings upward like the lark:
"There's light beyond, we know."

There is no wave of troubled sea
But lifts us nearer land;
He makes the storm a calm for me,
And hides me in His hand!

And as I watch, and hope, and wait,
Life's brighter, better things
Reach forward to the pearly gate,
Where angels fold their wings.

—*Advance.*

A SPITTOON WITH A MORAL TO IT.

MRS. HALL prided herself upon her handsome parlors, and they were very elegant for out-of-town drawing-rooms. The carpets were luxurious, the furniture of rose-wood and reps, the drapery of frosted lace, hung in the most unexceptionable manner. All the ornaments were tasteful, as well as expensive, and the pictures faultless.

Three charming daughters completed its attractions for the young people who congregated there nearly every evening, to enjoy the music and saunter in the grounds, so carefully kept by an English gardener.

Among other requisitions, Mrs. Hall insisted upon her daughters' becoming tidy housekeepers; and she had long since made it a rule that each should take her turn in caring for the parlors. Upon the occasion of which we are speaking, Alice, with a white handkerchief deftly arranged over her beautiful hair, and her hands covered with gloves, was dusting the furniture and giving a finishing touch to the ornaments.

Alice was, by far, the prettiest of the three daughters, and she knew her power quite as well as did the young gentlemen who rode so many miles to call on the Halls. She was as independent as she was beautiful; but as her ideas were usually very correct ones, the independence passed for *esprit*, and her sharp sayings for witticisms.

As she waved the light duster hither and thither, she kept up a flying conversation with her sisters, one of whom was leaning upon the window outside, and the other gathering flowers for the vases.

Suddenly, Alice sent something spinning out through the open window onto the grass plat, and her pretty lips curled into an expression of the most intense disgust.

Then the two girls burst into the merriest laughter.

"There it goes again," cried Grace.

"What goes?" asked Ida, looking up from her flowers.

"That abominable spittoon. Alice never will rest until she makes brick-dust of it."

"Well, such a thing has no right to be in anybody's parlor, and I cannot think what mamma insists upon keeping it here for," said Alice, going to the window and peaking her features up in the most comical way.

"Why, for the accommodation of your young gentlemen," the mother said—whose quick eye had detected the condition of her household goods.

"What need has a young gentleman of a spittoon, more than a young lady, I should like to know?" cried Alice.

"Young ladies are not supposed to chew, my dear."

"No, neither are young gentlemen. Nobody but a rowdy will think of entering a house with a quid in his mouth."

"Aren't you a little fast, Alice?" Grace asked, as the color mounted to her cheeks. "I can think of several of our acquaintances that have occasion for the use of that discarded article, who are very agreeable rowdies."

"Well, that is exactly the term to apply

to them. They are agreeable rowdies; but I repeat, a well-bred person will never enter a parlor, especially with anything in his mouth that will make him a nuisance; any one is a nuisance that keeps hawking and spitting. It's a filthy habit; and if young men cannot call here and deport themselves as gentlemen should, they may get along with their quids the best way they can, for I won't have that disgusting object in this room another day!"

Neither of the girls cared a penny for the article in question; but they all had their admirers, and were rather tender upon the subject of tobacco.

"I would not marry a man that chewed," Alice went on, switching the feathers harder and harder, "no more than I'd—"

"Don't refuse before you are asked," Ida cried out, with a bit of irony in her voice.

"Well, I shall refuse before I am asked—that is the time to refuse. I don't approve of coaxing a young man to make a fool of himself, and then cutting him up like an apple and putting him away to dry."

Ida knew what that thrust meant only too well. So did Grace, who answered with a gay little laugh,—

"Never mind, Ida, we'll pay her for that. I have seen a handsome pacer go by here more than once of late. We'll see if that spittoon doesn't find its way back without our help. Mother, please tell the servants to let that ornamental affair lie where Alice threw it."

The dialogue terminated with a general and good-natured laugh. The parlor was righted and left to take care of itself until later in the day, when, as usual, young Mr. Stanley dropped in, leaving his hat in the hall, but taking his walking cane and quid along with him to the parlor.

As he was one of those universal callers that are only too happy to be tolerated anywhere, he always asked for the Misses Hall. They were accordingly all there to entertain him, to say nothing of entertaining themselves.

Mr. Stanley switched his dainty cane, and remarked upon the "very foine weather," and ran through his programme of small talk, until his mouth began to be troublesome. He sauntered toward the corner where the spittoon had been kept, but in its absence, he could not quite make up his mind to soil the elegant hearth-rug, or to poison himself by swallowing what was in his mouth, so he wisely withdrew.

The girls indulged in a little titter of satisfaction. Presently, Mr. Spruce was heard inquiring for Miss Ida.

Evidently he regarded himself with respect, whatever might be the estimation in which he was held by his acquaintances. He walked into the parlor with the air of one who feels that he is conferring a favor by his attentions.

Ida fluttered toward him much as a moth draws near an astral lamp, and finally the couple settled upon the sofa, and the conversation became general.

After a little, Mr. Spruce became uneasy, and his utterance thick. He, too, sauntered to the corner, and made a little circuit of observation around the room; then he went to the door, and made a spittoon of all creation!

This process was continued until a sense of the ludicrous began to grow painful, and Mr. Spruce, somehow, became conscious that he was being laughed at by the girl he adored.

He then gravely took the quid from his mouth, and deposited it in his pocket for safe keeping, until he retired. As he went out of the gate, the girls saw him replace the identical quid in his mouth again—and such a shout as went up at poor Ida's expense!

Ida was never at home to Mr. Spruce after that. There was an economy and untidiness in that display that quite uncharmed her, and she generally closed allusions to him with the ejaculation, "The filthy creature!"

One and another came in, and conversation was lively, when Mr. Herman was announced.

It was now Grace's turn to be embarrassed, and, as the parties were known to be intimate, they were soon chatting in the bay window in the cosiest manner possible.

Mr. Herman was too much of a gentleman to make use of a quid. He simply placed a bit of tobacco in his mouth, and used it as one does a globule.

So he talked and nibbled, and nibbled and talked, until in a moment of forgetfulness, he ejected the accumulating saliva through the open window.

A fresh breeze was stealing up from the river just then, and bore it back directly upon Grace. At that moment her eyes flashed toward Alice, who was regarding her sister with quizzical satisfaction.

Mr. Herman was never aware of what happened. He only knew that he never could have a cosy chat with Grace after

that interview. He is trying to solve the problem of his disappointment to this day, and has nibbled innumerable pounds of tobacco in the vain attempt to understand why Grace should have cut such a nice young man!

The person who had been seen to ride by the house so often, at last found opportunity to enter. He was quiet, respectful, and never at a loss for cultivated topics of conversation. His breath, when he spoke, did not taint the atmosphere. It was a pleasure to look at the wholesome mouth and polished teeth which gave utterance to his ideas; and there was a straight-forward, manly, honest look about the whole face, as if the man's conscience was clean, too!

There was no need of a spittoon for this young gentleman's entertainment. Whether he read, or sang, or conversed, there was a dignity and appropriateness in all he did that made him a favorite with young and old.

We never knew exactly what became of the spittoon left on the grass-plot; but it certainly never found its way back to Mrs. Hall's parlors, and tobacco chewers came to be shy about taking their quids with them when they went to call upon the ladies there.

On one occasion the missing article was alluded to, and an expression of public opinion called for.

"Well, what is a feller to do, who uses the weed as I do, when he gets into a foine parlor, like this!" asked Mr. Snip, putting his thumbs into his vest pockets, and leering toward Miss Alice, as he shifted his quid from one cheek to the other.

"He would be likely to feel like a pig in a strange pen," was the very saucy answer.

"But suppose a gentleman comes in here"—

"Excuse me for interrupting you, but allow me to say, Mr. Snip, that no gentleman ever has or ever will come into this parlor with tobacco in his mouth."

Mr. Snip subsided.

Mrs. Hall said when she reflected upon the subject, that "if accommodation were not made for the indulgence of bad manners in private parlors, she was certain gentlemen would be more careful and thoughtful about their habits; and that, for her part, she never again would tempt young men to enter her parlors with quids, by keeping there anything that served as a spittoon."

"Miss Alice is a pretty creachoir," drawled Mr. Snip, as he drew on his gloves in the hall, "but, zounds! do n't she slap a feller right in the face—ah."

"A feller deserves to be slapped in the face that cannot open his jaws without salivating himself," was the curt reply.—*Youth's Companion.*

WHERE THE DRUNKARD'S MONEY GOES.

EVERY rag stuck into a window to keep out the cold from the drunkard's home denotes a contribution toward buying new suits for the rum seller and his family. The more elegance and ease in the rum seller's family, the more poverty, degradation and despair in the families of those who patronize him. The corner grog shop, with large plate-glass windows and marble floors, is paid for by the tenants of other landlords for such purposes. The more plate-glass and marble slabs there are in the rum shop, the more old hats and soiled garments must be stuck in the windows of their patrons to keep out the cold air. The more silk flounces upon the dress of the rum seller's wife, the cheaper the calico upon the wife and children of his patrons.

The more spacious the parlor and brighter the fire of the rum seller, the more scantily furnished and cold are the abodes of those who patronize him. While the rum seller drives his $1,000 span, his customers cannot afford a five cent horse-car. From the bung-hole of every barrel of liquid damnation that is sold by the dram seller, there flows a constant stream of drunkards, criminals, lunatics, and imbeciles, to fill poor-houses, houses of correction, jails, and prisons; while blasted hopes, ruined homes, and paupers' graves are the relics of the trade. Every dollar that the owner of the rum shop and the rum selling tenant put into their pockets comes out of the pockets of the poor men, and is a dead loss as far as the public good is concerned. Worse than that, the more rum sold the more burdens there are imposed upon the honest citizens and tax-payers. The richer the landlord and his rum-selling tenants grow, the poorer becomes the landlord who lets his buildings for tenements and legitimate business. It is an undisputed fact that the laboring man who has a family cannot indulge in liquor drinking and pay his landlord and grocer.—*Sel.*

—No drunkard shall inherit the kingdom of God.—*Paul.*

SKETCHES OF HENRY CLAY.

FEW orators of equal fame have begun their career with so slender an intellectual equipment as Henry Clay. His father having died when he was but four years old, his mother, who was left in poverty with seven children, could do but little for his education. For three years, he was placed under the charge of one Peter Deacon, an Englishman, who taught in a log school-house which had no floor but the earth, and which was lighted by the open door only. Here he was instructed in reading, writing, and arithmetic, after which he was employed in a store at Richmond, Virginia, and thence transferred to a desk clerkship in the office of the high court of chancery in that State. Shortly after he was employed as an amanuensis by Chancellor Wythe, who, perceiving his talents and his fondness for books, urged him to study law, gave him the use of his library, and directed his reading. So rapidly did he devour and assimilate his mental food, that it is said the Chancellor had only to name a book, and the next time he met his pupil he found him not only master of its contents, but "deeply versed in them, and extending his thoughts far beyond his instructors. The youth did not invoke the keepers of knowledge to let him into their secrets, but marched straight into their wide domains, as if to the possession of his native rights." Many years after, when he had acquired a national fame, a plain old country gentleman gave the following toast at a Fourth-of-July dinner: "Henry Clay,—He and I were born close to the Slashes of old Hanover. He worked barefooted, and so did I; he went to mill, and so did I; he was good to his mamma, and so was I. I know him like a book, and love him like a brother."

In 1797, at the age of twenty, Clay removed from Virginia to Lexington, Kentucky, where he began the practice of law. Though penniless at first, he soon received his first fifteen shillings fee, and then, to use his own words, "immediately rushed into a successful and lucrative practice." He was especially successful in criminal cases, often winning verdicts from juries by the magnetism of his oratory, in defiance of both law and evidence. Before his admission to the Kentucky bar, he joined a debating club, at a meeting of which, in his first attempt to speak, he broke down. Beginning his speech with "Gentlemen of the Jury," he was so confused by the perception of his mistake, that he could not go on. Encouraged by the members of the club, he began again with the same words; but, upon a third trial, he was more successful, and gaining confidence as he proceeded, he burst the trammels of his youthful diffidence, and clothing his thoughts in appropriate language, was loudly and warmly cheered. With the exception of a single occasion, when his memory proved treacherous, a quarter of a century later, his thunder was never again "checked in mid volley" for lack of thoughts or language. On that occasion, as he was addressing the legislature of Virginia, he began to quote the well-known lines of Scott,—"Lives there a man," etc., and suddenly stopped, unable to recall the rest. Closing his eyes, and pressing his forehead with the palm of his hand, to aid his recollection, he was fortunately supposed by the audience to be overcome by the power and intensity of his feelings. In a few moments the lines came to his lips, and as he pronounced them in thrilling tones,—

> "Lives there a man with soul so dead,
> Who never to himself hath said,
> This is my own, my native land?"—

a profound sensation pervaded the assembly, which manifested itself, in many cases, by tears.

In person, Clay was tall and commanding, being six feet and one inch in stature, and was noted for the erect appearance he presented, whether standing, walking, or talking. The most striking features of his countenance were a high forehead, a prominent nose, an uncommonly large mouth, and blue eyes, which, though not particularly expressive when in repose, had an electrical appearance when kindled. His voice, was one of extraordinary compass, melody, and power. From the "deep and dreadful sub-bass of the organ" to the most aërial warblings of its highest key, hardly a pipe or a stop was wanting. Like all magical voices, it had the faculty of imparting to the most familiar and commonplace expressions an inexpressible fascination; and in listening to its melting tones an enthusiastic listener might say:—

> "Thy sweet words drop upon the ear as soft
> As rose leaves on a well; and I could listen
> As though the immortal melody of heaven
> Were wrought into one word,—that word a whisper,
> That whisper all I want from all I love."

Probably no orator ever lived who, when speaking on a great occasion, was more completely absorbed in his theme. "I do not know how it is with others," he once said, "but on such occasions, I seem to be un-

conscious of the external world. Wholly engrossed by the subject before me, I lose all sense of personal identity, of time, or of surrounding objects." It is no wonder that when an orator is thus abandoned,—when he becomes all feeling, from the core of his heart to the surface of his skin, and from the crown of his head to the sole of his foot, gushing through every pore and expressed through every organ,—that his sway over his hearers should be complete.

ABSTINENCE AND PROSPERITY.

THE following words are extracted from a speech by Rev. J. W. Monk, at Faversham, England, published in the *Dietetic Reformer*, for April, 1881, London :—

"Lord Derby says that each time a man drains off a pot of beer he swallows a yard of land; and that if the working men of England would only reduce their potations by one-half, they may at no distant day become possessed of half the soil of England. Well, now if to their abstinence from liquor they add abstinence from animal food, the advent of that happy time when every man may sit under his vine and under his own fig-tree will be wonderfully accelerated. Meantime, every day will bring a fresh accession of health, wealth, and wisdom. I appeal to those who are abstainers and vegetarians to say whether your abstinence has not materially contributed to your comfort and enjoyment. I am not ashamed to make such an avowal myself. Nearly five years ago I renounced, at once and forever, alcohol and tobacco in every form, and soon found myself better in every way for my abstention. I next gave up tea and coffee; then fish, flesh, and fowl; and now I am able to say with the late Mr. Brotherton, M. P., 'I count not my wealth by the number of my possessions, but by the fewness of my wants.' I invite you to try the experiment of living more simple lives, to break off the luxurious habits—the *luxe effrene*, as one of our novelists has it—the note of our time, a contagious disease spreading downward from the palace to the cottage, bringing but evil in its train. I ask you in the words of Dean Stanley, spoken in Westminster Abbey, to resist, above all things, the temptation to do things because everybody does them. Take for your motto the words, a translation of which the *Dietetic Reformer* has placed upon its title-page, 'Fix upon that course of life that is best; custom will render it most delightful.' For as Shakespeare says:—

" 'That monster, custom, who all sense doth eat—
Of habits' devil,—is angel yet in this,—
That to the use of actions fair and good
He likewise gives a smock or livery
That aptly is put on: refrain to-night;
And that shall lend a kind of easiness
To the next abstinence: the next more easy;
For use almost can change the stamp of nature,
And either curb the devil, or throw him out
With wondrous potency.' "

Effect of Sunshine.—From an acorn, weighing a few grains, a tree will grow for 100 years or more, not only throwing off many pounds of leaves every year, but itself weighing several tons. If an orange twig is put in a large box of earth, and that earth is weighed when the twig becomes a tree, bearing luscious fruit, there will be very nearly the same amount of earth. From careful experiments made by different scientific men, it is an ascertained fact that a very large part of the growth of a tree is derived from the sun, from the air, and from the water, and a very little from the earth; and notably all vegetation becomes sickly unless it is freely exposed to sunshine. Wood and coal are but condensed sunshine, which contains, three important elements equally essential to both vegetation and animal life—magnesia, lime, and iron. It is the iron in the blood which gives it its sparkling red color and its strength. It is the lime in the bones which gives them the durability necessary to bodily vigor, while the magnesia is important to all of the tissues. Thus it is, that the more persons are out of doors, the more healthy and vigorous they are, and the longer they will live. Every human being ought to have an hour or two of sunshine at noon in winter, and in the early forenoon in summer.

An Old Proverb.—

"There's many a slip
'Twixt the cup and the lip."

The ancient Greeks had the following story as to the origin of this proverb: A king of Thrace had planted a vineyard, when one of his slaves, whom he had much oppressed in that very work, prophesied that he should never taste of the wine raised in it. The monarch disregarded the prediction, and when, at an entertainment, he held a glass of his own wine, made from the grapes of that vineyard, he sent for the slave, and asked him what he

thought of his prophecy now. To which the other replied, "Many things fall out between the cup and the lip," and had scarcely delivered this singular response before the news was brought that a monstrous boar was laying waste his favorite vineyard. The king, in a rage, put down the cup which he held in his hand, and hurried out with his people to attack the boar, but being too eager, the boar rushed upon him and killed him, without his having tasted of the wine.—*Anon.*

POPULAR SCIENCE.

—The successful storage of electricity for transmission in packages of any size to suit customers, accomplished by M. Faure, is attested by Sir William Thomson of the Glasgow University, who carefully measured the electric energy contained in the box recently sent him from Paris, and ascertained that there was no important loss. Sir William can already point out valuable uses for this new reservoir. It can do for electric light-supply what a house-cistern does for domestic water-supply; and steamships can be lighted from a stock of electric energy taken aboard at the start.

A Scientific Fact for House-Keepers.—Glucose possesses only two-fifths the sweetening power of cane sugar, hence it is not profitable for use in sweetening acid fruit. Cane sugar is converted into glucose, or an allied substance, by boiling with a weak acid. Hence sugar should never be cooked with fruit, but added after it is done.

Soap-Bubble Balloons.—Much amusement may be afforded by making soap bubbles with ordinary gas conducted through a caoutchouc tube and clay pipe to glycerine soap solution. A small disk of thin paper, with fine wire from its center to a little paper car with æronaut figures, may be connected to the bubble when it begins to swell. The disk being attached by capillarity to the part where the drop forms, the detached bubble rises with its car.

Astronomical Progress.—Like the sand of the sea, the stars of heaven have ever been used as effective symbols of number, and the improvements in our methods of observation have added fresh force to our original impressions. We now know that our earth is but a fraction of one out of at least 75,000,000 worlds. But this is not all. In addition to the luminous heavenly bodies, we can not doubt that there are countless others, invisible to us from their greater distance, smaller size. or feebler light; indeed, we know that there are many dark bodies which now emit no light, or comparatively little. Thus, in the case of Procyon, the existence of an invisible body is proved by the movement of the visible star. Again, I may refer to the curious phenomena presented by Algol, a bright star in the head of Medusa. This star shines without change for two days and thirteen hours; then, in three hours and a half, dwindles from a star of the second to one of the fourth magnitude; and then, in another three and a half hours, reassumes its original brilliancy. These changes seem certainly to indicate the presence of an opaque body, which intercepts at regular intervals a part of the light emitted by Algol.

Thus the floor of heaven is not only "thick inlaid with patines of bright gold," but studded also with extinct stars; once, probably, as brilliant as our own sun, but now dead and cold, as Helmholtz tells us that our sun itself will be, some seventeen million years hence.

The connection of astronomy with the history of our planet has been a subject of speculation and research during a great part of the half-century of our existence. Sir Charles Lyell devoted some of the opening chapters of his great work to the subject. Haughton has brought his very original powers to bear on the subject of secular changes in climate, and Croll's contributions to the same subject are of great interest. Last, but not least, I must not omit to make mention of the series of massive memoirs (I am happy to say, not yet nearly terminated) by George Darwin on tidal friction, and the influence of tidal action on the evolution of the solar system. I may, perhaps, just mention, as regards telescopes, that the largest reflector, in 1830, was Sir W. Herschel's, of four feet; the largest at present being Lord Rosse's, of six feet; as regards refractors, the largest then had a diameter of eleven and a quarter inches, while your fellow-townsman, Cooke, carried the size to twenty-five inches, and Mr. Grubb, of Dublin, has just successfully completed one of twenty-seven inches for the Observatory of Vienna. It is remarkable that the two largest telescopes in the world should both be Irish. —*Sir John Lubbock, in Popular Science Monthly.*

GOOD HEALTH.

BATTLE CREEK, MICH., DECEMBER, 1881.

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

QUACKISH HEALTH LECTURERS.

SOMEBODY has said that the present is pre-eminently an age of quackery. There are quacks in all departments of life, in every profession, art, and industry,—men who claim to be more than they are, who pretend to knowledge which they do not possess, who profess to be able to accomplish impossibilities for the simple purpose of gaining patronage. Quacks avail themselves of every artifice to enable them to accomplish their purposes, exhibiting the most remarkable ingenuity in playing upon the credulity of their fellows.

Quackery of any sort is bad enough, but medical quackery is by far the most dangerous of any form, yet the most common. Every day, almost, our attention is called to some new development in this line of quackery. The latest of all has recently come to our notice. A man or woman advertises to deliver a series of lectures on health topics in some inland town. An advance agent is employed to go ahead and prepare the way by the publication in the newspapers of articles calculated to excite the curiosity of the public, and lead them to believe that their community is to be specially favored by a visit from so eminent a personage as the wonderful doctor from Boston or some other distant city who is about to come to town. The appointed time arrives. The great doctor makes his appearance. A free lecture is advertised by ingeniously worded posters and handbills, and the credulous populace flock to hear the generous philanthropist who travels at his own expense for the sole purpose of diffusing valuable information among the people. After one or two lectures, which are so managed as to be simply shrewd advertisements for private practice, lectures on private matters are announced with a door fee, and now the cloven foot of quackery appears still more conspicuously. The fears of weak-minded persons are excited to such a pitch that they willingly become victims of the money shark who adopts this mean way of baiting his prey.

With all this chicanery a little phrenology, a little science, and a slight sprinkling of bogus piety is mingled.

Our city recently indulged in an entertainment of this sort, which probably has at least some utility as a foolometer to measure the gullibility of our citizens. Judging from the number of victims, we fear the indication on the foolometer ran pretty high for a few days; but it was down to zero a few days later when the guise of the philanthropist had disappeared, and the long ears and hoarse voice of the traveling charlatan became too patent to be longer unseen. It remains to be determined whether the cure will be effectual, or whether another outbreak of folly will occur at the first provocation.

We have not called any names, but if anybody wishes to know who officiated as the foolometer in this particular case, we shall not hesitate to give the information.

MICHIGAN STATE BOARD OF HEALTH.

A FEW years ago, the department of public health was a new one among the various departments of the State government. Now it has come to be one of the most important branches of the public service of the State. Michigan was one of the first to lead off in this grand work, and stands foremost in the amount and character of the work done, which is chiefly owing to the energetic and untir-

ing efforts of the eminent secretary of the Board, Dr. H. B. Baker. The following is an abstract report of the last meeting of the Board as reported for GOOD HEALTH:—

The regular quarterly meeting of this Board was held October 11, 1881. An interesting feature was a report by the Secretary relative to work of other State Boards of Health. The Secretary of the Michigan Board desires to continue to receive information from other Boards by which these reports may be made quarterly.

A report relative to work of local boards of health showed increased activity on the part of local health authorities, in the way of isolating those infected with communicable diseases, and enforcing the law requiring from householders and physicians notices of such diseases. In one city a physician had been fined $100 for not reporting cases of diphtheria.

The revised document on the restriction and prevention of scarlet fever, was adopted, and ordered published in English, Dutch, and German. The consideration of this document involved a discussion of the question of recommending health officers to verify diagnoses of reported cases of diseases dangerous to the public health.

A circular giving general rules for the prevention of diphtheria, scarlet fever, and small-pox was adopted. Forms were adopted for annual reports by health officers and clerks of local boards of health, and by regular correspondents of the Board.

Dr. Avery, of Greenville, was requested to visit the overflowed district along the Maple River, in Gratiot county, and report to the Board.

Dr. Lyster, of Detroit, read a paper on "Syphilis in its Relations to the Public Health." It dealt with the facts of the frequent communication of the contagium of syphilis, by direct and by indirect means, to innocent persons; also with the serious effects on individuals, and on the offspring of marriages where one of the parents is thus contaminated. He believed much might be done toward preventing this loathsome disease by wise legislation which shall restrict syphilis, and especially by collecting and disseminating among young men and other people, facts relating to the nature and dangers of this disease.

Dr. Kellogg read a paper on the "Relations of Preventable Sickness to Taxation," showing by the reports of the board of correction and charities, the abstracts of reports of county superintendents of the poor, the abstracts of statistical information relating to the insane and the deaf, dumb, and blind, and the vital statistics reports, that more than three thousand persons in Michigan are annually dependent on the State for support, to a greater or less extent, in consequence of diseases preventable by the adoption of proper sanitary measures. The cost to the people of the State for the support of these persons is over forty thousand annually, a portion of which is paid by every tax-payer. This is but a small part of the actual loss to the State. The number of deaths from preventable sickness in 1880, (*estimated* from returns by supervisors and assessors) was four thousand five hundred and eighty-five. Placing the value to the State of each human being at the low estimate of one thousand, the aggregate loss by deaths from preventable sickness is over four million five hundred thousand dollars. To this must be added a further loss from sickness that did not terminate fatally.

Statistics of the benefit societies of England show that for every person who dies, two persons (on the average) are sick throughout the year. This indicates a total annual loss of time from preventable illness on the part of more than nine thousand persons, to which should be added the expenses of living, etc., certainly more than one million dollars. This gives about five million six hundred and sixty-six thousand dollars as the total loss to this State from diseases generally conceded to be preventable. These figures are regarded as much too small, because of the few diseases included in this estimate as preventable (though it is generally conceded by sanitarians that at least

nine-tenths of all ailments may readily be prevented), and because only sickness and deaths directly traceable to preventable causes have been included, while a large amount of sickness and many deaths are indirectly due to these causes. It is probable that preventable sickness might justly be charged with an expense to the State of not less than ten million dollars. Estimating the loss in other states in the same ratio to the population, the aggregate loss to the whole United States is not less than three hundred million dollars annually, an amount which would pay the national debt in six years.

Mr. Parker, of Flint, presented a report of the Public Health Section of the American Social Science Association, at Saratoga.

The committee on sanitary survey of the State was requested to prepare schedules for the sanitary survey of cities, villages, and townships.

Mr. Parker, reported a proposed bill authorizing all boards of education to exclude from school, persons infected with diphtheria, scarlet fever, or small-pox, or living at houses where any person is infected with one of these diseases.

The Secretary was directed to prepare and issue a weekly bulletin of sickness in Michigan for such papers and medical journals as will publish it.

Dr. Baker was authorized to procure the services of an architect in the preparation of a circular on hospitals for communicable diseases.

Dr. Kellogg reported on the subject of criminal abortion. He and Dr. Hazlewood were requested to prepare a circular designed to collect facts on the subject.

Results of Sanitary Reform in England. —An eminent English Sanitarian has recently called attention to the fact that through the adoption of better methods of living, as the result of the introduction of various sanitary reforms in England and Wales, the death rate has been reduced nearly 5 per cent, which represents the saving of the lives of 250,000 human beings annually, and preventing the sickness of 3,000,000 persons. Surely these are results well worth the effort and expense which they required, but they represent only a very small amount of the good which might be done could the adoption of hygienic and sanitary rules be made general among the people. Could this be done, disease would be almost banished from the earth. Death would seldom occur except from accident or old age; and physicians would find it necessary to seek some other employment to enable them to eke out a precarious living.

PORK VS. RELIGION.

UNDER this heading the *Indianapolis Herald*, discusses the difficulties which stand in the way of the introduction of pork as an article of food into Japan. In the course of the dissertation, quite a number of interesting facts are told about the dietetic habits of the Japanese, which render the article worth quoting. The conclusion reached may be correct, and pork may win the battle, notwithstanding the energetic ravages of the trichina parasite; but it is not alone in Japan that there is a conflict between pork and religion, at least between pork and piety. Anything that defiles the body is antagonistic to moral health; and it is impossible that anything so filthy as the hog can ever become healthy brain and muscle, even by the aid of the wonderful metamorphoses by which food is converted into human blood and tissue. We are sincerely glad that there is at least one nation on the globe which entertains religious scruples against the use of the hog as food. It is to be hoped that they will never be so far Christianized as to be willing to worship at the shrine of the scavenger.

"In Japan the use of nearly every kind of animal flesh as food is prohibited by religion. It seems that the flesh of the deer and the wild boar are excepted, but these animals are found only in remote regions and in small numbers, so that but few of the people are benefited by the exception. The population of Japan is 36,000,000. Reliable statistics show there are, in the whole country, but about

1,000,000 head of cattle. Nearly half of these are bulls, whose emasculation is not permitted, and whose flesh is, therefore, unfit for food. This leaves about 600,000 cows, not more than half of whom are fit for beef, making less than one head to every 100 people, while in the United States there are seventy-three head to 100 people. Last year 36,000 cattle were slaughtered, more than half of which were used by foreigners in the cities and on the ships in the harbors. From these facts it is clear that among the masses of the people beef is almost unknown. Mutton and pork are still more scarce, and are never seen except in the ports where treaties with other countries permit their importation.

"The religious inhibition does not extend to fish or to poultry. The latter is abundant, but so high in price that only the rich can afford its use, and it forms no part of the diet of the common people. Fish is abundant in great varieties, in all the streams of the country, and is the only article, not of a vegetable nature, which forms a staple of daily food.

"The great peculiarity of the Japanese, among all the nations of the earth, is that they are vegetarians. Full 90 per cent of all their food consists of vegetable productions. Rice is the great staple, barley is next, and then follow millet, wheat, rye, and Indian corn. They have many vegetables of the highest value as articles of diet which are unknown to us, and efforts are now in progress to introduce some of these into this country.

"Until within a few years past, Japan has stubbornly refused to admit foreign commerce to her ports, or to permit any kind of commercial intercourse between her people and those of other nations. Even yet, but few of her ports are open to the world, but the advantages of reciprocal trade will soon unlock the rest. She affords a vast field for commercial enterprise, and it remains to be seen whether her religious scruples can withstand the blandishments of savory cheap meats, which other countries, and especially our own, will rapidly supply. There is an impending conflict between religion and pork, and unless there is interference by the villainous trichina, pork is certain to win."

CONDENSED MILK.

A CORRESPONDENT inquires our opinion of condensed milk. We think it a wholesome article of food in small quantities, but it cannot be largely used on account of its too saccharine character from the addition of sugar. It is a very good article for use on long journeys, as it is greatly to be preferred to the milk which is usually obtainable at hotels and eating-houses. The following is a brief description of the method of manufacture:—

"When the milk is brought into the factory it is carefully strained, placed in cans or pails, which are put into a tank of water kept hot by steam coils. When hot, it is transferred to larger steam-heated open vessels and quickly brought to boil. This preliminary heating and boiling has for its object the expulsion of the gases of the milk, which would cause it to foam in the vacuum pan, and also to add to the keeping quality of the milk by destroying the mold germs. A second straining follows, after which the milk is transferred to a vacuum pan, where at a temperature below 150° Fahrenheit, it boils and is rapidly concentrated to any degree desired. The vacuum pan employed is a close vessel of copper, egg-shaped, about six feet high and four and one-half feet in diameter. It is heated by steam coils within, and by a steam jacket without,—inclosing the lower portion. In one side of the dome is a small window through which gas illuminates the interior, while on the opposite side is an eyeglass through which the condition of the contents may be observed. The pan is also provided with a vacuum gauge and test-sticks. Much of the milk used in cities is simply concentrated without any addition of sugar. The process of concentration is continued in the vacuum pan until one gallon of the milk has been reduced to a little less than a quart—one volume of condensed milk corresponding to about four and three-tenths volumes of milk. Condensed milk, intended to be preserved for any length of time, has an

addition of pure cane sugar made to it during the boiling, and is usually put up in sealed cans. This sugar or 'preserved' milk, when properly prepared, will keep for many years."

ADULTERATED VINEGAR.

CHIEFLY through the efforts of Hon. Israel Putnam, of Chelinsford, Mass., Massachusetts has a stringent law against the adulteration of vinegar, one of the most commonly used condiments with which American stomachs are afflicted. Pure cider vinegar is objectionable enough, but when the article is made of oil of vitriol and similar poisonous drugs, it becomes tenfold dangerous. We recently received the first annual report of the inspector of vinegar for the city of Boston, in which he asserts that nine-tenths of all the vinegar made is adulterated. According to this authority,

"The principal supply of vinegar is now obtained from molasses, glucose, acetic acid, sour ale, lager beer, distillers' slops, alcohol, &c., &c. Vinegar made from such material by the new process can be prepared in a few days, sharp and smart, from five to eight cents per gallon, according to strength; with the addition of coloring matter and a small per cent of cider, it will pass for *sharp* cider vinegar; by the use of mineral acids, vinegar of the same strength can be made for one or two cents per gallon. One cents' worth of sulphuric acid will furnish acid enough for four gallons of vinegar. When disguised with other material, it can hardly be determined by the taste alone. I have good reason to believe that vinegar of this kind has been sent into this market and sold in large quantities in times past. A very large quantity has been sent from Chicago and other Western cities, branded in large letters 'Pure Apple' vinegar, &c. &c., delivered free of expense, for seven and eight cents per gallon. Taking out the freight and cost of package, it left but two cents per gallon for the contents. This has passed from the hand of the jobbers to the retailers, and sold from seventeen to thirty cents per gallon to the consumers. It must be apparent to every one what such material is composed of. Previous to the enactment of our present vinegar law, Boston and many of our Eastern cities were, so to speak, cesspools for the reception of all the brewers' slops, waste products of distilleries and glucose factories, that might be sent there under the name of vinegar. I have the satisfaction of knowing that one shipment of fifteen hundred barrels of this vile compound was stopped by the operations of the new law, and the principal agent here has abandoned the business. Another lot of fifty barrels was found in a wholesale establishment in a sister city, and shipped back to its former owners. Soon after this, I was visited by the agent of one of the largest bogus vinegar manufactories in Chicago, and received the gratuitous information that the Massachusetts vinegar law was an outrage and ruining their business here. Aside from the fact that 'I did not know my business,' admitting the latter part of his statement to be true, I think he was satisfied that the business was satisfactorily attended to.

"The wholesale price of vinegar in Boston from the manufacturers averages nine cents per gallon, large quantities are sold at as low as six and seven cents per gallon. The retail price is from seventeen to forty cents,—average about twenty-five cents per gallon. It will be seen from these figures that the wholesale price is too low for the average sale of cider vinegar, and the retail price sufficiently high to pay for the genuine article. The margin of profit is so large between the price of artificial and the genuine, that the temptation is very great to substitute one for the other. So skillfully is the work performed, that a large part of the dealers are not aware of the deception practiced upon them, and the consumers have been so long imposed upon that they cannot tell good from bad, and anything '*sharp*' passes for good vinegar."

We take not a little satisfaction in knowing that GOOD HEALTH has been, in some degree at least, instrumental in securing to Boston and to Massachusetts so efficient a law as now exists for the protection of the stomachs of her citizens, the attention

of the first mover in the matter having been called to the subject by an article in this journal.

Bristles and Beer.—A Chicago journal recently remarked that that city used 70,000,000 gallons of water daily, to which the *Baltimore American* rejoins that half of the amount is made into beer, and the other half used to scald the bristles off of hogs. This is undoubtedly somewhat exaggerated but for what is Chicago so celebrated as for its beer and pork. Brewing and pork-packing are among the greatest industries of the western metropolis; and millions of dollars are invested in those enterprises, which contribute only to the production of disease and the deterioration of the race.

Bread from Bark.—It is well known to the botanists that many plants besides those commonly used for food, contain nutritive elements. Nearly all plants contain starch. "The barks of several aspens and pine-trees contain so much of this substance that it can be extracted from them as from potatoes by trituration with water. It exists also in the roots and other parts of perennial plants to such an extent as to have been employed in the preparation of bread in families. In illustration of this we quote the following directions, given by Professor Autenrieth for preparing a palatable and nutritious bread from the beech and other woods destitute of turpentine: "Everything soluble in water is first removed by frequent maceration and boiling; the wood is then to be reduced to a minute state of division, not merely into fine fibers, but actual powder; and after being repeatedly subjected to heat in an oven, is ground in the usual manner of corn. Wood thus prepared, according to the author, acquires the smell and taste of corn flour. It is, however, never quite white. It agrees with corn flour in not fermenting without the addition of leaven, and in this case some leaven of corn flour is found to answer best. With this it makes a perfectly uniform and spongy bread; and when it is thoroughly baked and has much crust, it has a much better taste of bread than what in time of scarcity is prepared from the bran and husks of corn. Wood flour also, boiled in water, forms a thick, tough, trembling jelly, which is very nutritious."

Bad Tasting Water.—Bostonians have for some time been complaining of a bad taste in the water supplied the city. Recently a party set out on a tasting expedition, and found sufficient cause for complaint. It seems that several of the brooks which are tributary to Lake Cochiluate are simply sewers from small towns, carrying off the offal of cesspools, water closets, boot and shoe factories, etc. In one village the water is pumped from one of the feeders of the lake, and after being used for all purposes is returned to the lake. Knowing these facts, no one will longer wonder at the bad taste and dirty character of Boston water. But it is not in Boston only that we find water with a bad taste. In every city, wells may be found which furnish water offensive to both the senses of smell and taste; yet, notwithstanding, the water is used day after day, and month after month, as though it were the purest water possible. Water with either bad taste or bad smell is utterly unfit for use, for drinking or cooking, and is often productive of serious disease.

Agriculture in Auvergne.—In the district of Limague, in Auvergne, Italy, one of the most densely populated agricultural regions on the globe, agricultural operations are conducted in a manner which very poorly comports with the advanced state of the art in other parts of the world at the present day. Tilling of the soil is conducted almost wholly by hand, by means of the spade, hoe, and mattock. Sometimes a small, rude plow is used, being drawn by two cows, who furnish milk besides performing the usual labor of the ox. Not infrequently the wife of the laborer takes the place of one of the cows in the team, bearing the yoke along with her humble sister. Here would be an excellent field for the propagation of "Women's

rights" doctrines. A few missionaries might accomplish as much good in such a district as in an African jungle.

Comets' Tails.—There has long been a popular dread of comets; comets' tails, in particular, have been supposed to endanger the lives of the denizens of this mundane sphere by an unfortunate flip, as they whirl through space in their eccentric pathway round the sun.

Professor Ennis, of the Naval Observatory at Washington, believes that the tails of comets are electrical light. "If these tails have any substance," he asserts, "the laws of motion are constantly violated by them. The great comet of 1843 went so near the sun that it passed from one side to the other in a few hours. Its immense tail, 100,000,000 miles long, was shifted completely, so that it pointed directly in an opposite direction. Could that be so if it were composed of any substance? Could a comet swing 100,000,000 miles of tail around so quick as that? The electricity is generated by evaporation. As the comets approach the sun, the heat becomes more intense, the evaporation and accumulation of electricity more rapid, the repulsive force greater, and the tails longer. Sometimes the material becomes completely evaporated. Then the comet has no tail.'

Whisky Underfoot.—Many years ago, before the days of Western railroads, turnpikes, and bridges, a governor of Ohio was traveling in company with several other gentlemen on horseback. They approached a large stream that appeared formidable, but relying upon the swimming qualities of their horses, after some consultation they ventured in. The water became deeper, and the current more rapid as they advanced, but with great difficulty they gained the opposite shore.

Alighting to hold a conference over their perilous adventure and deplorably wet condition, one of the company drew from his dripping saddle-bags, a small bottle of old Bourbon, remarking that as "a precautionary measure," it might be well to take a small drink. The bottle was then passed around, but when the governor's turn came, he poured his portion into the tops of his boots, assigning as a reason that it had been his motto through life to keep that enemy underfoot.

The sequel proved that he alone escaped the evil results of the exposure.—*Sel.*

—The cost of the liquor traffic in the United States is equal to over thirteen Chicago fires in a year—over one Chicago fire in a month. The liquor traffic, therefore, is a conflagration, which every year burns up thirteen Chicagos, and from forty to fifty thousand lives, besides burning out the health and happiness of hundreds of thousands of men, women, and children.—*Ex.*

LITERARY NOTICES.

THE POPULAR SCIENCE MONTHLY. With each year, magazines are more and more taking the place of books in the work of popular instruction; and of the standard periodicals of the day the Popular Science Monthly ranks among the first. Its articles are both instructive and valuable, as well as entertaining. Those who desire to know what is going on in the world of thought around them, cannot choose a periodical of greater value than this. Published by D. Appleton and Co., New York. Terms, $5.00 per annum.

THE NEW BOTANY. This is a reprint from the Transactions of the Twenty-Ninth Annual Meeting of the Michigan State Teacher's Association, of a lecture on the best method of teaching botany, by Prof. W. J. Beal of the State Agricultural College, Lansing, Mich. The lecture is one of the most concise and able productions upon the subject that we have ever read. He exposes the errors in the old method of teaching, and asserts that "teaching properly is simply giving the thirsty a chance to drink." It creates a thirst which the study gratifies, but never entirely satisfies. Prof. B. then explains in detail the proper course to pursue in teaching this science, remarking upon the "fertilization of flowers" and various other points of great interest to every student of this fascinating study. A perusal of this reprint is recommended to all teachers of botany.

NATIONAL TEMPERANCE ALMANAC AND TEETOTALER'S YEAR-BOOK FOR 1882. Fourteenth Year of Publication.

This popular and invaluable Temperance Hand-Book for 1882 is just published, and is filled with new and important information for every family and every friend of temperance in the land. In addition to the calendar and astronomical calculations, it contains the latest and most reliable statistics of intemperance, official tables of internal revenue receipts,

beer and the brewers, results of prohibition, full tables of leading officers of National and State Good Templars, Sons of Temperance, Templars of Honor and Temperance, Woman's Unions, State Temperance Societies, etc.; a list of all temperance newspapers, New York City temperance organizations, eighteen choice engravings, with stories, illustrations, puzzles, etc. We call attention to the department for children, which has stories, illustrated by choice engravings, facts, incidents, and general instruction in the principles and doctrines of total abstinence.

The Almanac contains seventy-two pages, printed on fine tinted paper, and is beautifully illustrated with choice engravings.

Price 10 cents, single copies; $1 per dozen; $7 per hundred; $60 per thousand. Sent by mail on receipt of retail or dozen price. J. N. STEARNS, Publishing Agent, 58 Reade Street, New York.

THE discussion of "The Christian Religion," by Col. Ingersoll and Judge Black, which was commenced in the August number of the *North American Review*, is continued in the November issue of that publication. Col. Ingersoll now replies to the strictures of his opponent, and presents much more fully than he has ever before done the logical grounds for his opposition to Christianity. The article will be received with interest by those who have read the first part of the debate, as well as by all those who believe that the cause of truth is best advanced by free discussion. An early number of the *Review* will contain an exhaustive reply. In a Symposium on Presidential Inability, four of our most eminent jurists, Judge Thomas M. Cooley, the Hon. Lyman Trumbull, Prof. Theodore W. Dwight, and Gen. B. F. Butler, discuss the several weighty problems arising out of Article 2 of the Constitution. "Englands Hereditary Republic," is the title of a significant paper contributed by the Marquis of Blandford, and Senator George F. Hoar writes a statesmanlike article on the "The Appointing Power" of the President of the United States.

LIFE AND WORK OF GARFIELD: Embracing an Account of His Struggles in Childhood; His Career as a Soldier; His Success as a Statesman; His Elevation to the Presidency; His Dastardly Assassination. By John Clark Ridpath, LL.D. J. C. CHILTON & Co., Detroit. State Agents for Michigan.

The preparation of this memorial volume was well and wisely committed to the hands of Professor Ridpath. Being an accomplished scholar of severe and delicate taste, and having a love of research which no difficulty can daunt, he is the man of all others to find the facts and make up the record of the scholar and statesman whose memory now occupies the first place in the hearts of his countrymen. It may be truthfully said of Dr. Ridpath that he has "an elevated and pure discretion, sound and steady judgment; that he has seen and heard and read many and divers books and writings; and, what is more, he has the skill and the practice of turning all this rich and varied knowledge to the best account." He stands in the front rank of living historians, and his contributions to standard literature are not only voluminous, but well-judged, scholarly and finished. He cannot make an uninteresting book upon any subject.

With Garfield for his theme, his pen has acquired a new inspiration and a degree of eloquence which clothes his periods in the most fascinating garb imaginable. He investigates and composes at the instigation of pure love for the great soul erewhile translated "to the other shore;" and although his first care is to find the truth and write it, his determination to make the record in every respect worthy of the subject will culminate in one of the most finished literary efforts ever arrayed in the garniture of print. It will embrace many chapters of history never before published; many points of biography never before investigated; many beautiful pictures of a life that contained more valuable lessons for humanity than any recorded in this age; and which for evermore shall speak to all the generations in words of living light from "the white radiance of eternity."

This is the book that people of taste and judgment will buy in preference to the hastily-prepared campaign "biographies" of Garfield with which the country is flooded; which are crude, unauthoritative, and, in many points, incorrect; without system or regard for questions of fact; mostly anonymous, and altogether worthless to the searcher after truth. In a work like this, the American people want, and they are entitled to have, the best. From all the information we are able to obtain, we are convinced that this "Life and Work of Garfield" will meet their just expectations.

GOOD COMPANY: Springfield, Mass.

Number twenty-four ends the magazine year, in which six articles on Arctic Experiences by Lieut. Schwatka have been given, besides scores of excellent articles less lengthy. *Good Company* is, indeed, what its name implies, a pleasant companion for all. Subscription price $3.00 a year.

"BURY ME NEAR THE OLD HOME," is the title of a very pretty new song and chorus just issued by W. L. Thompson, East Liverpool, Ohio. The sentiment expressed purports to be that of the late President. The melody is very pleasing. Price per copy 35 cts. The same author has also recently published a humorous song entitled "My First Music Lesson."

THE NORTH AMERICAN REVIEW for December is in all respects a good number. The writers, without exception, are men eminently competent for the tasks assigned to them, while of the subjects discussed, there is not one which does not possess a living interest. The most important and most opportune of all the articles is one by the Hon. John A. Kasson, entitled "The Monroe Doctrine in 1881." In this statesmanlike paper or pronunciamento, as it might not inaptly be called and is certain to be regarded by foreign publicists, the obligation of the United States government to effectually assert its supremacy throughout the Western Hemisphere is demonstrated both by the arguments of authority and precedent, and upon the grounds of reason. Then follows a discussion of the Death Penalty, conducted by the Rev. Dr. Cheever, Judge Samuel Hand, and Wendell Phillips. The policy of Mr. Gladstone's Government toward Ireland is strenuously defended by Mr. H. O. Arnold-Forster, son of the Chief Secretary of Ireland. Four physicians and surgeons of the first rank, namely, Drs. W. A. Hammond, John Ashhurst, Jr., J. Marion Sims, and John T. Hodgen, review the history of President Garfield's case. Finally the Hon. David A. Wells treats of reform in Federal Taxation.

Publishers' Page.

CLOSE OF THE VOLUME.

With this number closes another volume of Good Health. For nearly sixteen years the journal has regularly made its monthly visits to thousands of families in all parts of the United States, and in several foreign countries,—a fearless advocate of reform in all matters pertaining to physical and mental health. The publishers feel no little satisfaction in looking back over these years of aggressive work in the direction of reform, in the thought that the journal has been an efficient means of enlightening thousands who would otherwise still be groping in the darkness of ignorance respecting principles which involve the deepest interests of the race. The evidences are too numerous to leave room to doubt that the journal has been an im ortant factor in molding popular sentiment in favor of hygienic and sanitary reform. The good work is still advancing with increasing rapidity, and the field of usefulness for a journal like this is constantly broadening. Hygiene is no longer at a discount. Hundreds of the best minds in the country have adopted the principles which we have so long advocated, and earnestly advocate them in public addresses, popular magazines, and other avenues to the minds of the masses.

Every omen is good. Now is the time for the old friends of reform to rejoice and redouble their efforts in behalf of the cause they love. Let every subscriber become a missionary, and we shall soon have still more glorious results to record.

THE FAMILY HEALTH AND TEMPERANCE ANNUAL FOR 1882.

Every one who has seen it, pronounces the Annual for 1882 the neatest and most interesting number yet issued. It has been prepared with great care and with the expectation that it would have a very large circulation. A great many thousand copies have been already sent out in filling orders received some time ago; and other orders remain yet unfilled, but will receive speedy attention. The Annual contains thirty-two pages, instead of twenty-four as last year, and has a better collection of matter appropriate to such a publication, than any preceding number. We are sure it will give excellent satisfaction to all who are interested in its circulation. Copies will be sent by mail, post-paid, at five cents each. In lots of one thousand, the Annual will be furnished at one cent a copy, or $10 per thousand, which is less than the actual cost. We are only able to furnish the Annual on such liberal terms by the aid of gratuitous contributions to help in meeting the expense of publication. Every family who receives Good Health will want a copy of the Health Annual. Now is the time to send in orders so as to have the Annual ready at the beginning of the year.

☞ Just as we go to press we receive the sad intelligence of the death of Dr. Thomas F. Hicks, who has, for the last ten years, been quite widely known as an able and earnest worker in the cause of hygienic and sanitary reform. Dr. Hicks was a gentleman of rare abilities, fine culture, and most estimable personal qualities, which endeared him to all with whom he became acquainted. His whole life was devoted to the advancement of the interests of his fellow-men. He was a generous philanthropist and an earnest Christian. Humanity loses one of its best friends in his death, and the void made by this sad event will not be easily filled.

Dr. Hicks has been connected with several health institutions, and at the time of his decease was engaged in building up a new institution at Collegeville, Pa., which promised to be quite a successful enterprise. We have enjoyed the friendship of Dr. Hicks for a number of years, and, with all others who have known him, shall deeply mourn his loss.

☞ As will be noticed, we continue the same magnificent offer presented last month. The new "Household Manual" has given great satisfaction wherever it has been received. The present prospect is that a great share of the readers of Good Health will avail themselves of the liberal offer made.

MAGNIFICENT OFFER!

The two most popular works ever issued by the publishers of Good Health are entitled, "The Household Manual" and "Healthful Cookery." The first is a condensation of good advice respecting hygiene in its various branches, the treatment of disease, what to do in accidents and emergencies, etc. The various editions of the work aggregate more than 25,000 copies. Its one hundred and seventy-six pages contain more really practical information than many ponderous volumes.

"Healthful Cookery, a Hand-book of Food and Diet, or What to Eat, How to Eat, and When to Eat," has reached a sale of nearly 20,000 copies, and is a real treasury of knowledge on the subjects of which it treats. It contains one hundred and twenty-eight pages of carefully prepared matter, comprising, in addition to general information on the subject of diet, the best collection of recipes for the preparation of healthful food to be found anywhere. The work is really a compendium of information on healthful cookery.

For several years the first mentioned work has been offered as a premium to new subscribers to this journal, and thousands have availed themselves of the liberal offer to obtain a work which has sold at retail for seventy-five cents, for just one-third of that sum. The efforts of the publishers to give the public a really valuable work at a price even less than that usually charged for worthless pictures, or other articles usually offered as premiums, have been so well seconded by the public, and so thoroughly appreciated, that they now propose to make

A still more Liberal Offer.

The two popular works mentioned are now bound together in one volume, making a work of over 300 pages. The price of the two volumes, as heretofore sold at retail, aggregates $1.00, yet we now offer the two, neatly bound in cloth, for the small sum of 25 cents to all new subscribers to Good Health, making the two cost the subscriber only $1.25. Those who send subscriptions directly to the office of publication, wishing the premiums sent by mail, should add two three cent stamps, to pay postage.

Publishers of GOOD HEALTH.

A GIFT TO OLD SUBSCRIBERS.

Within the last few years the custom of giving premiums to new subscribers has become almost universal among the publishers of periodicals, but very rarely, however, does the old subscriber, who stands by the paper year after year, receive such favors. The publishers of Good Health for two years tried the experiment of offering a small premium in the shape of a Good Health Calendar, and were so well pleased with the results that they concluded to make a still more liberal offer to their old subscribers, and between now and the first of January will treat old and new subscribers alike. The Household Manual and Healthful Cookery together will make one of the most useful books. The Manual treats, in a concise and interesting manner, not only of all the most practical subjects embraced under the head of hygiene, but also of the best method of treatment of nearly all common ailments. Healthful Cookery is undoubtedly the best collection of hygienic recipes published in this country. It is a work which ought to be in every family. The information which it gives on the subject of food and diet is invaluable. In addition, it contains a bill of fare for each month, which housekeepers will find very helpful. These two works, either bound separately or together in one volume, will be sent to every old subscriber who sends his subscription and twenty-five cents before January first, 1882. Six cents should be added for postage, making one dollar and thirty-one cents in all. Where a number of subscribers are located in the same place they can have the books sent by freight or express, and save postage, if they desire.

☞ Now is the time to get your friends to subscribe for Good Health. If the journal has done you good, try to do what you can to bring the same benefit to your friends and neighbors. Canvassing outfits will be sent, postage paid, on receipt of twenty-five cents. Thirty-five cents additional will pay for a specimen copy of the new Household Manual, provided it is to be used only in canvassing. The two works composing the Manual have been sold heretofore for one dollar.

☞ The Sanitarium is more flourishing than ever before at this season of the year. The managers find hard work to accommodate all their patrons at present, but hope to be able to find comfortable quarters for all when they come. The employees of the institution are just now enjoying a visit from Eld. L. McCoy, who for two years acted as business manager of the institution.

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GOOD HEALTH.

The publishers are determined to add several thousand subscribers to their list, and to that end offer the following inducements in addition to the journal itself:—

A VALUABLE PREMIUM.

The publishers of Good Health have never approved of the method adopted by many publishers of palming off cheap chromos upon subscribers as costly works of art. They offer as a premium a valuable book entitled "*The Household Manual*," a work replete with interest, full of valuable information, and well worth more than double the price of the journal. The work retails at 75 cents. More than 25,000 copies have been sold within the last two years. Sent free on receipt of $1.25, with Good Health for one year.

GOOD HEALTH WITH OTHER POPULAR JOURNALS.

The publishers of Good Health have been able to make such arrangements with the publishers of the best periodicals that they can supply almost any one of them with this journal at the price of one, and thus make a great saving to the subscriber. Those who wish to subscribe for one or two good journals besides Good Health, will find this a very advantageous opportunity to do so. The following list comprises some of the principal journals which we are able to furnish thus:—

NAME OF JOURNAL.	Price of Journal Alone.	Price with Good Health.
EDUCATIONAL.		
American Journal of Education	$1 60	$1 80
The Practical Teacher	1 00	1 50
Primary Teacher	1 00	1 50
National Journal of Education	3 00	3 00
The Teacher	50	1 40
Ohio Educational Monthly	1 50	2 10
Musical Herald		2 00
Educational Journal of Virginia	1 00	1 80
AGRICULTURAL.		
Rural New Yorker,	2 00	2 75
American Agriculturist	1 50	2 00
The Cultivator and Country Gentleman	2 50	3 00
Ohio Farmer	1 50	2 30
Michigan Farmer	2 00	2 50
Colman's Rural World	1 50	2 25
Rural Home	1 50	2 25
Fruit Recorder	1 00	1 50
American Miller	1 00	1 75
MEDICAL JOURNALS.		
The Sanitary Engineer	2 00	2 60
Boston Medical and Surgical Journal	5 00	5 00
New York Medical Journal	4 00	4 00
Atlanta Medical and Surgical Journal	3 00	3 00
Buffalo Medical and Surgical Journal	3 00	3 00
Sanitarian	3 00	3 00
Philadelphia Medical Times	4 00	4 00
Medical Record	5 00	5 00
Detroit Lancet	3 00	3 25
Canada Lancet	3 00	3 50
London Lancet	5 00	5 00
Therapeutic Gazette	1 00	1 75
SCIENTIFIC JOURNALS.		
Scientific American	3 20	3 60
Boston Journal of Chemistry (new subscribers only),	1 00	1 65
Popular Science Monthly	5 00	5 00
Scientific Farmer	1 00	1 70
MISCELLANEOUS JOURNALS.		
Boston Traveler (weekly)	1 50	2 15
" " (semi-weekly)	3 00	3 25
Atlantic Monthly	4 00	4 20
Dwight's Journal of Music	2 50	3 00
American Architect	6 00	6 00
Bee-Keeper's Magazine	1 00	1 60
Appleton's Journal	3 00	3 25
North American Review	5 00	5 00
Youth's Companion (new sub's only)	1 75	2 25
American Naturalist	4 00	4 20
Forest and Stream	4 00	4 00
Harper's Magazine	4 00	4 00
Harper's Weekly	4 00	4 20
Harper's Bazar	4 00	4 20
Harper's Young People	1 50	2 20
Lippincott's Magazine	4 00	4 00
Littell's Living Age	8 00	8 00
Arthur's Home Magazine	2 00	2 50
Christian Union	3 00	3 40
New York Tribune (weekly)	2 00	2 00
" " " (semi-weekly)	3 00	3 00
The Methodist	2 20	2 75
The Independent	3 00	3 50
Fireside Monthly	1 50	2 00
The Household	1 10	1 75
Boston Globe (weekly)	1 00	1 75
Christian at Work (new sub's only)	3 00	3 50
Good Times	1 00	1 50
Scribner's Monthly	4 00	4 20
St. Nicholas	3 00	3 40
Frank Leslie's Sunday Magazine	3 00	3 25
Wide Awake	2 00	2 50
Good Words	2 75	3 00
Ladies' Bazar	2 00	2 50
Little Folks' Reader	75	1 50
The Advance	3 00	3 40
Woman at Work	1 50	2 00

We can furnish any other periodical with Good Health at about the same rate. Those who wish premium with Good Health should add to the price named for the journals ordered, 25 cents. When the clubbing journal furnishes a premium, we will supply the same at the publisher's rates.

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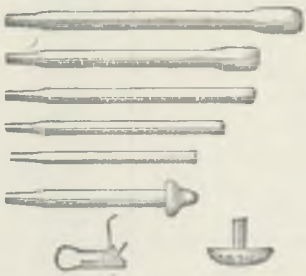

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PLAIN FACTS FOR OLD AND YOUNG.

By Dr. J. H. KELLOGG,

Member of the American Public Health Association, the American Society of Microscopists, the Michigan State Medical Association, the American Association for the Advancement of Science, etc.

This work has passed through five large editions within the last three years, aggregating over 25,000 copies, the most of which have been sold within the last six months. The book is commended by leading journals, clergymen, physicians, and all who examine it thoroughly. The last edition is greatly improved, two chapters being added, "a chapter for boys" and "a chapter for girls," making a beautiful octavo volume of 512 pages.

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Muslin,	*$3.25.*
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A work for every family and every physician. It is the

Only Book Published

which gives the latest scientific knowledge respecting the uses of water as a remedy for disease. The instruction which it imparts is

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Every form of Bath is described, together with the conditions to which it is adapted.

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Paying Work for Energetic Men.

The Home Hand-Book is selling far more rapidly than our most sanguine expectations led us to believe it would do. There have been

6,000 COPIES SOLD SINCE JULY 1, 1880,

And the sale is increasing continually. Agents who want to canvass should send for an outfit and circulars, the cost of which, including a book of special instructions "How to Canvass," is $2.50. The following are the addresses of the various State agents:

Massachusetts, New Hampshire, Rhode Island, and Connecticut—Eld. S. N. Haskell, South Lancaster, Mass.

Iowa and Nebraska—Hall & Nicola, Des Moines, Ia.

Missouri—Dr. W. L. Godfrey, Chillicothe, Mo.

Minnesota—H. Grant, Medford, Minn.

California, Oregon, Washington Territory, Arizona, Utah, and Nevada—Pacific Press, Oakland, Cal.

Other States—J. H. Kellogg, Battle Creek, Mich.

UNFERMENTED

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This wine does not contain a drop of alcohol, hence is as unintoxicating as water. I have undertaken to introduce this article, as I believe it to be an unholy act to use fermented wine at the communion table. It is put up in pint champagne bottles, price 50 cts. Anticipating the needs of each church, I have arranged for shipping a year's supply in one box, four bottles, securely packed in sawdust, in which shape it can be expressed anywhere without freezing. Price of box delivered at express office, $2.00

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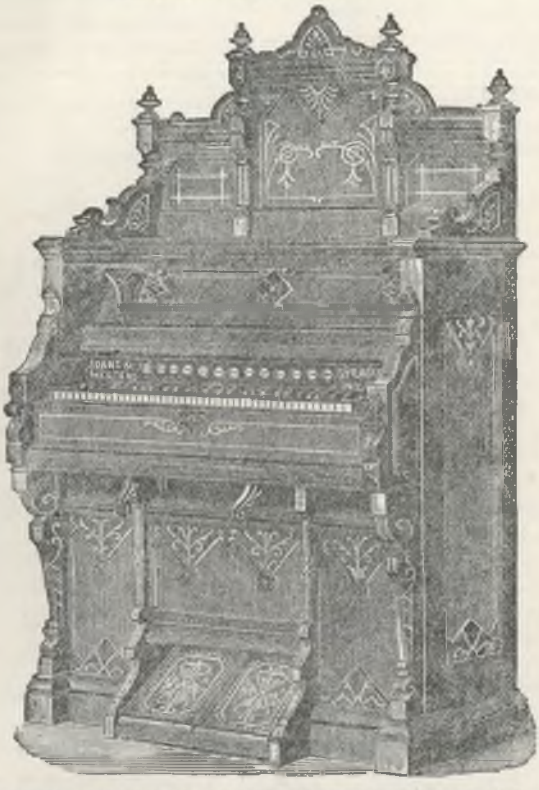
Rome, N. Y., Nov. 28, 1880. B. L. WHITNEY.



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NO TIME or expense has been spared to make this book desirable. It is full of gems.

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FROM SONG MESSENGER, NO. 1.

IN presenting the Song Messenger to the musical world we are not vain enough to promise that it shall be the best edited and most ably conducted musical journal extant. Many excellent journals have come to our notice, which, in their special field, we cannot hope to excel.

We have our ideal, however, of a paper, interesting and instructive in matter, neat in appearance, handy in size, and possessing features which would make it a valuable addition to the piano or center-table of every family musically inclined. And we would announce our intention of making this paper a Song Messenger to the people, which shall help them to acquire a higher and better taste in music.

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MUSIC.

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Should some notes we used to love
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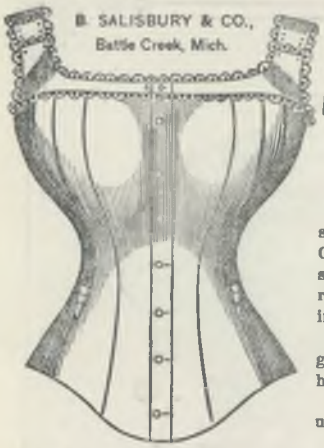

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