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ANATOMY, PHYSIOLOGY, AND HYGIENE.

BY THE EDITOR.

BONES OF THE HEAD.

OF the twenty-two bones forming the head, eight enter into the structure of the skull, or *cranium*, the remaining fourteen forming the face.

THE SKULL.—The cavity of the skull is designed for the reception and protection of the brain, a purpose to which it is most admirably adapted both by its general shape and its minute structure. The bones of the skull each consist of two plates of compact tissue, which are connected by a layer of very spongy tissue called *diploe*. See Fig. 23. This gives to the skull a degree of elasticity which it would not otherwise possess, thus protecting it from fracture, and also serves to deaden the effect of blows upon the head before the force has been transmitted to the delicate brain beneath. The bones of the skull are firmly joined together by means of *sutures*, which in infancy allow of some degree of motion; but as the skull assumes its full size, the sutures become knit together so firmly as to preclude the possibility of motion. It is owing to this fact that various nations are enabled by different modes of dressing the head to cause it to assume different shapes. For example, certain Indian tribes, by applying a flat surface to the forehead and binding it firmly in place in early infancy, are enabled to produce a permanent flattening of the forehead. A class of the natives of India are noted for the peculiar cone-shaped

form of the head which they produce by a similar process.

A number of openings are found in the skull, the largest of which, called the *foramen magnum*, from its large size, is located in the inferior and back part, and affords a passage for the spinal cord. The numerous smaller openings are for the passage of blood-vessels and nerves.

The interior of the cranial cavity presents many ridges, depressions, and processes, which correspond with the uneven surface of the brain, which with its membranes exactly fills the cavity.

The names and location of the eight bones forming the skull are, the *occipital*, which forms the whole posterior portion; the two *parietal*, which chiefly form the sides and upper portion; the two *temporal*, situated low down upon the sides; the *frontal*, forming the whole front portion of the skull; the *ethmoid*, which is placed in the lower part of the skull near the root of the nose; and the *sphenoid*, which joins all the other bones together at the base. At birth it is usually the case that the frontal bone is in two parts, it being always formed in this way, the two halves being afterward joined together very early in life. At birth, ossification of the bones of the cranium has not fully taken place, the deficiency being very apparent at two points, one at the anterior portion of the head and the other at the upper and back part. At these points the covering of the brain is so thin that it yields readily to pressure, and the beating of the arteries can be easily felt. On this account, these points

are commonly termed "soft spots." The medical term is *fontanelles*. As ossification progresses rapidly after birth, the fontanelles are soon closed up.

THE BONES OF THE FACE.—The fourteen bones which form the face are named as follows: two *nasal*, two *lachrymal*, two *malar* or cheek-bones, two *upper maxillary*, two



FIG. 22. The Skull, showing the sutures, or points of union between the several bones.

palate, two *turbinated* or spongy bones of the nose, the *vomer*, and the *lower maxillary* or *under jaw-bone*.

The two *nasal* bones form the upper part or bridge of the nose, joining the frontal bone of the skull. They are small bones, and are lengthened out upon the sides of the nose by cartilage.

The two *lachrymal* bones are so called because they contain a small canal which conveys the tears from the eye to the nose. They are situated at the inner corners of the eyes, and join the nasal bones.

The *malar* or cheek-bones are situated at the outer and upper part of the face. In some nations, as the Tartars and North American Indians, these bones are very prominent, giving an angular appearance to the features.

The *superior maxillary* bones constitute the greater portion of the face, joining in front beneath the nose. They also form the greater portion of the roof of the mouth, and afford a place for the insertion of the sixteen

upper teeth. Each of the maxillary bones has in its upper portion a cavity of considerable size which is lined with mucous membrane and communicates with the nasal cavity through a small opening. This cavity is known as the *antrum of Highmore*. It often becomes a seat of disease through the formation of abscesses and the production of polypi or other morbid growths, which occasion very great trouble and annoyance on account of the difficulty of gaining access to the diseased part. It is supposed that the object of these cavities is to improve the quality of the voice.



FIG. 23. The Skull with the outer plate removed, showing the diploe and the channels for blood-vessels.

The superior maxillary bones usually unite together at birth or soon after, being joined by two small intervening bones called *intermaxillary* from their position. In case the maxillary and intermaxillary bones fail to unite, a fissure is left which usually extends down through the roof of the mouth as well as through the lip, producing a deformity which from its peculiar resemblance to the lip of a hare is known as hare-lip. When the deformity exists on both sides, it is known as double hare-lip. The only remedy is a surgical operation.

The *palate* bones are small structures placed at the back part of the mouth, forming the upper part of the roof of the mouth and extending upward to aid in forming a socket for the eye.

The *turbinated* or spongy bones are located in the upper part of the nostrils. They are very spongy in character, and by their scroll shape, present an extensive surface for the nasal mucous membrane, in which are located the nerves of smell.

The *vomer* derives its name from its resemblance to a plowshare. It is a thin, flat bone, and forms the septum of the nose.

The *inferior maxillary* bone forms the lower jaw, in connection with the teeth which it carries in its upper portion. It is a somewhat V-shaped bone, the apex of the angle being in front and forming the chin. The



FIG. 24. The Spinal or vertebral column.

two lateral portions, after extending backward about one-half their length, take a somewhat abrupt turn upward, thus forming what is called the angle of the jaw. The upper ends of the ascending portions are joined by a hinge-like articulation to the skull. The socket of the joint being rather shallow, the bone not infrequently slips out of place in violent yawning or laughing, producing dislocation.

The length of the jaw gradually increases with the growth of other parts of the body, additional teeth being produced at the back part as there is room for them, so in that adult life we find sixteen full-sized teeth, whereas in childhood there are but ten small ones. The teeth are placed in sockets provided for them by the *alveolar processes*.

When the teeth fall out, from disease or old age, the processes are usually absorbed. It is this which occasions the peculiar prominence of the chin noticeable in elderly persons.

The form and location of most of the bones of the face and skull will be better seen in Fig. 22 than they can be described.

The teeth will be fully described in connection with the organs of digestion.

BONES OF THE TRUNK.

The bones of the trunk consist of the *vertebræ*, the *ribs*, the *sternum*, and the *pelvis*.

THE VERTEBRÆ.—Fig. 24. These bones are twenty-four in number, and are arranged

one above the other, forming a bony column called the vertebral or spinal column, which is the central axis of the body. Each vertebra (Fig. 25) is an irregularly shaped bone, the larger portion of which, called the body, is concave behind, convex in front, and nearly flat on its upper and lower surfaces. Projecting from the back side of the body is a bony arch which has at the center behind a more or less distinct prominence known as the spine of the vertebra, or the spinous process. There are various other projections from the sides of the body and arch which serve as means for joining the vertebrae together and for the attachment of muscles. There is also noticeable a notch at



FIG. 25. A vertical section of two contiguous Vertebrae, showing the spongy structure of the bodies, and the Fibro-Cartilage between them.

the junction of the body and the arch on either side of the vertebrae, both above and below in most cases. When the vertebrae are arranged one above another in the spinal column, the bodies form a bony pillar, while the arches, being placed one above another, form a bony canal for the spinal cord. The notches before mentioned, being also superimposed one above another, form lateral openings through which the spinal nerves and blood-vessels may pass. Between each two vertebrae are placed discs of *fibro-cartilage*, the use of which will be seen farther on.

The vertebrae of the spinal column are divided into three portions: the *cervical*, or neck portion, comprising the first seven, which form the neck, supporting the head; the *dorsal*, or back portion, which are connected with the ribs, consisting of twelve vertebrae; and the *lumbar* portion, the remaining five, comprising the vertebrae of the loins.

Each of these three classes of vertebrae

possesses certain special characteristics by which they may be known; but as most of these are of merely anatomical interest, we will not stop to consider them, only noticing the interesting peculiarities of the first two vertebrae of the neck, those next the skull. The



FIG. 26. The first vertebra, called the Atlas.

first vertebra, called the *atlas* (Fig. 26) instead of having a body, arch, and various processes, is simply a ring of bone made to fit the under

part of the head, surrounding the foramen magnum. The articulation of this bone with the head is such as to admit of free motion backward and forward, hinge-fashion, but no lateral or rotary motion. The second vertebra is equally peculiar, having upon one side a large tooth-like prominence which fits into one side of the ring-shaped bone above, and provides for lateral or rotating motion of the head. This tooth-like prominence, known as the *odontoid process*, is kept in place, and prevented from injuring the delicate spinal cord which passes close beside it, by means of ligaments which inclose it and hold it firmly in position.

Another peculiarity worthy of mention is the fact that the arches of the cervical vertebrae being larger than in other parts, the spinal canal is larger in the neck than in any other part of its length. This is undoubtedly a wise provision of nature to allow of the greatest possible freedom of motion without injury to the delicate structures within.

The skull itself may be considered as simply the expanded upper extremity of the spinal column, representing three or four vertebrae which have been consolidated and greatly modified.

THE THORAX.—This is a bony cavity formed by the spinal column behind, the sternum in front, and the ribs at the sides. It contains the lungs, heart, great blood-vessels, nerves, and other important organs. Having already described the vertebrae, we will now notice—

The Ribs.—These bones are twelve in number on each side. Occasionally there are found thirteen, instead of twelve, and some-

times there are but eleven. The ribs are joined, behind, to the sides of the vertebrae in such a manner as to allow a slight hinge motion. In front they are not united directly to any bone, but by means of an intervening piece of cartilage they are joined to the sternum. The first seven ribs, being united by separate cartilages, are called *true ribs*, while the last five, being joined to a single cartilage which unites them to the sternum, are called *false ribs*. The last one or two ribs, being sometimes not united to the sternum at all, are denominated *floating ribs*.

Along the lower and inner border of the ribs runs a groove in which are placed the nerves and blood-vessels of the chest walls, which are thus shielded from injury. The two edges of this groove serve as points of attachment for the two sets of muscles which fill the spaces between the ribs.

The Sternum.—This bone, commonly called the breast-bone, is really made up of four separate parts, three of which are bony, being joined together by cartilage, the fourth and lower part being cartilaginous, and known as the *xiphoid* or *ensiform* cartilage. The sternum receives upon either side the cartilages of the seven upper ribs and the conjoined cartilage of the false ribs, together with the inner ends of the collar-bone, or clavicle. The object of the sternum is to brace and strengthen the ribs and clavicles, and help to inclose the chest.

We should mention that the ensiform cartilage is very variable in its form, sometimes curving outward abruptly, causing a considerable prominence, and at other times curving inward. We have frequently been consulted by persons possessing some peculiarity of this organ who had been made to believe by quacks that they were suffering with some very severe malady. Not long ago we received a letter from a young lady, a former patient, who was in great distress, having been told by a physician whom she had consulted, or a man who called himself a physician and had practiced on the credulity of the people for many years, that she was suffering with cancer and that she should by all means visit a surgeon at once and have the malignant growth removed. Suspecting that there was some blunder in the matter, we

advised the young lady to visit us before having any operation performed, which she accordingly did; and greatly to her relief we were enabled to inform her that no operation was required. The ignorant doctor had mistaken an unusually prominent ensiform cartilage for a cancer, probably considering his diagnosis confirmed by the fact that there was extreme tenderness just beneath the end of the sternum, due to abnormal sensibility of the stomach, the patient suffering from painful dyspepsia. Having met in practice one or two similar cases, we deem it worth while to call attention to this source of error.

THE PELVIS.—This portion of the trunk is situated at its base, constituting the point of junction of the lower extremities with the trunk. It is composed of four bones: the *sacrum*, a wedge-shaped bone behind; the *ossa innominata*, two bones upon the sides; and the *coccyx* below. These four bones are so shaped and joined together as to form a sort of basin by which are supported the upper soft parts of the body, particularly the abdominal organs. The several bones are joined together so firmly that scarcely any degree of motion is possible, especially in the adult. In early childhood, each of the bones named is made up of several separate portions, which are usually described in the anatomies, but which have no special practical interest, and so need not be noticed here except in a general way. Upon the back side of the sacrum is found an incomplete canal which is a continuation of the spinal canal and is occupied by the spinal column, which spreads out upon the lower portion of the bone in a peculiar manner that has given it the name of *cauda equina*, from a fancied resemblance to the tail of a horse. Through large openings in the sacrum the spinal nerves pass forward to supply important organs within the pelvis and the anterior portions of the lower extremities.

At the outer and inferior part of the *os innominatum*, at the point of junction of the three original portions of the bone, is found a deep socket called the *acetabulum* from its resemblance to an ancient Roman vinegar cup. This deep pocket is for the reception of the head of the femur, the bone of

the thigh, by which is formed the hip joint. In life the socket is further deepened and strengthened by a rim of cartilage which surmounts its edge, as also by a strong band called the capsular ligament which surrounds the socket and the head of the bone, being attached to each, an arrangement which also exists in most other joints.

Upon the lower side of the two hip bones are broad prominences which support the weight of the body in sitting.

The female pelvis differs from that of the male in being larger, smoother, and less curved. This difference is so marked that it is an important means of distinguishing between male and female skeletons.

THE HYOID BONE.—This little bone, though situated so near the head as to be hardly included in the bones of the trunk, is yet of sufficient importance to require mention and description, and may as well be noticed here as elsewhere. It is the bone of the tongue, to which it is attached, and is not connected with any other bone. It is shaped some like a horseshoe, and is situated about an inch below the chin, between the root of the tongue and the upper part of the larynx. It carries the epiglottis, the cartilaginous valve which guards the entrance to the windpipe. It also forms the center of attachment for the muscles which move the tongue and throat.

CHAIRS: THE HYGIENE OF SITTING.

Of all the machines which civilization has invented for the torture of mankind, and of womankind more especially, there are few which perform their work more pertinaciously, widely, or cruelly, than the chair. It is difficult to account for the almost universal adoption, at least in this country, of such an unscientific article of furniture. There is, without doubt, an instinct in the human race which prompts them to raise their bodies to a higher level than that which nature has assigned. There is a feeling of satisfaction and superiority in being able to look down, even physically, upon our fellow-creatures. The throne is elevated to do honor to the sovereign. The table is raised on a dais to show respect to the principal guests. Sitting in the dust is a sign of humility. This instinct of self-elevation displays itself in the absurd

fashion, which never quite dies out, of wearing high heels and tall hats—the former, besides absurd, being unmistakably injurious, distorting the foot, destroying the perfect poise of the body, and producing abnormal pelvic inclination.

Perhaps, then, it was due to this peculiar vanity of physical exaltation that men first began to sit on stilts. There were, however, probably other reasons. The chair was found easier to rise from than the mat on the floor, and in large assemblies individuals by its use could be packed together in a smaller space. Let its advantages, however, be what they may, nature inexorably rebels against it, and will not long permit its use unresented. It is interesting to see the number of devices adopted to overcome the discomfort which this sitting posture causes. The most common is crossing one leg over the other. This is generally done in two ways. In one, the under part of the knee, in the other, the side of the foot or ankle, is raised and made to rest upon the knee of the other leg. The result of the first position upon the circulation is easily visible, for the compression of the popliteal artery causes the foot to jump at the reception of every fresh supply of blood from the heart. To obviate the discomfort of dangling legs, people press into their service everything within reach capable of bearing the weight of their feet. All attempts at elegance of posture are disregarded if relief can only be obtained. Footstools, leg-rests, chairs, tables, mantelpieces, any things, all things, are eagerly sought for and used. No matter at what cost of furniture or decency, the painful cutting into the thighs of the chair's edge, and the aching of the pendulous hyperemic limbs must be relieved. Nature will have her way, and if we would sit comfortably we must do so in the manner she commands. Ladies, thanks to their skirts, can curl up their legs in numerous ingenious methods and so overcome the dangling difficulty; but, on the whole, they suffer more from the chair than do men. Propriety demands from them a stricter adherence to conventional postural rules. They cannot assume attitudes which in the other sex would pass unnoticed. Their shorter limbs also cause them greater discomfort, as the height of chairs is made to suit the convenience of the male rather than of the female sex. It

is impossible to resist quoting the following passage from Cowper's "Sofa," which was found emphatically marked in a copy of that poet's works belonging to a lady:—

"But restless was the chair; the back erect
Distressed the weary loins that felt no ease,
The slippery seat betrayed the sliding part
That pressed it, and the feet hung dangling down,
Anxious in vain to find the distant floor."

To this unnatural, dependent position of the legs, which some women maintain for nearly two-thirds of their lives, are doubtless due the swollen feet, ulcerated legs, and varicose veins, so frequently met with. The evils thus produced are only capable of being prevented or remedied by the use of a seat sufficiently large to hold the legs and support them horizontally.

A second objection to the use of the chair is its back. In sitting, as in standing, it is necessary that the normal pelvic inclination should be preserved, and it is also requisite that the body should not be maintained motionless. The effect of leaning against the back of a chair is to produce flexion of the spine and an undue approximation of the plane of the pelvic inlet to the horizontal line, the result of which is, as has already been shown, to throw the weight of the abdominal viscera upon those of the pelvis. Another evil also results. The abdominal muscles which assist in keeping the body erect (their action in relation to the spine being as a string to a bow) are thrown out of use, and their retaining and supporting influence upon the abdominal contents is consequently lost. The whole mass is abandoned to gravitation, and it falls a dead weight, compressing the abdominal organs, and producing among other ills the inelegant deformity called "pendulous belly." Leaning forward over desk, embroidery, easel, piano, etc., by relaxing the abdominal muscles has very much the same effect. Our grandmothers, who are laughed at for sitting so upright in their seats, and who scorned to lean back or indulge in soft easy-chairs, were nearer right than we; and if we would be healthy and strong, we shall have to abandon some of our luxurious habits, and return somewhat to the good old simple, brave, and rigid ways. Muscular action being necessary when the body is upright to prevent retardation of the circulation and gravitation of the blood, the

sitting posture should not be made one of repose. It is a very bad habit to sleep in a chair. The languid circulation is at this time more under gravitatory influence, and pelvic congestion necessarily results. Nature also still further objects to the sitting posture as one of rest, and makes it manifest by the fatigue and uneasiness caused by the weight of the hanging arms. The wisdom of this is evident, for why should the respiratory muscles have to undergo the unnecessary exertion of lifting at every inspiration two long pendulous masses of flesh and bone? Surely, breathing is the last of our vital actions which should be encumbered. To overcome the discomfort produced by the weight of the arms our ingenuity is again taxed, and we see in consequence elbows on the table, arms crossed, hands clasped behind the neck, the elbow of one arm resting in the hand of the other, or both elbows supported on the arms with which upholsterers furnish our chairs. The weight of the head also becomes a source of uneasiness, and we therefore often find it upheld by the hand, the elbow being placed on the knee, or upon a table. Sitting upright when at rest is an unnatural posture, and the penalties attached to it cannot be escaped, for all the plans adopted for remedying its evils only increase them ten fold.

We endeavor to escape the action demanded from us when sitting erect by using soft seats. This is another luxury which produces ill effects by enabling a person to sit too long in one position. Nature enforces change of posture when the thing sat upon is unyielding. Watch an audience seated upon wooden benches, and you will soon observe the truth of this remark. However interested they may be, it will be noticed that the weight of the body is constantly being shifted from one point of pressure to another, an action which is performed almost automatically, so little impression does it make upon the consciousness of the individual who performs it. The rocking-chair is comfortable, inasmuch as it allows us easily to change our position, and thus conform in some degree to the necessity for action, which has been shown to exist. A woman can sit upright on a horse in motion for a long time without experiencing the weary aching which might be produced

by riding for the same length of time in a railway carriage with soft arms for her elbows, and a stuffed cushion for her back. The simple reason of this is that in the saddle, without support of any kind to lean against, she has her muscles kept constantly in action. The two principal requirements which nature demands of her when sitting are satisfied. The circulation is accelerated by muscular contractions, and the normal pelvic inclination is, or ought to be, maintained.

What, then, is a natural and healthy sitting posture? You may see it any day in the nursery. A child sitting on the floor playing with its toys presents us with all the natural sitting attitudes in a very short time. The feet are in a line with the buttocks, and all the muscles in full play. A savage who is not acquainted with, or cannot indulge in the destructive luxuries of civilization, will show you the proper position in which to sit. You will see no dangling legs; on the contrary, you will perhaps find him holding the work on the ground before him steady with his feet, whilst he manipulates it with his hands.

Probably the most natural mode of sitting is that adopted by the Turks, and the most rational piece of furniture to sit upon is the divan. Lady Mary Wortley Montagu thus describes a Turkish lady's apartment:—"The rooms are all spread with Persian carpets, and raised at one end of them about two feet. This is the sofa, which is laid with a richer sort of carpet, and all round it is a sort of couch, raised half a foot, covered with rich silk, according to the fancy or magnificence of the owner. Round about this are placed against the walls two rows of cushions; the first very large, and the rest little ones. *These seats are so convenient and easy that I believe I shall never endure chairs again as long as I live.*" On a divan you may easily change your position, and assume any attitude; if you tire of sitting, you may recline; if you tire of reclining, you may lie down. There is nothing except its softness to induce you to maintain a posture longer than is good, and the legs are supported horizontally, as they should always be when at rest.

An effort has of late been made by upholsterers to overcome the inconveniences of the chair by making it low and long in the seat;

but the attempt, although it decreases the dangling difficulty, increases some others of greater importance. As, however, these are more especially connected with the reclining posture, they do not come within the limits of this article.—*Dr. Aveling.*

POPULAR ERRORS RELATING TO DIET.

PROBABLY there is no subject of importance relating to individual hygiene concerning which there are more erroneous notions entertained than respecting the matter of diet. How these errors have arisen, it is not in all cases possible to discover; but in many cases it is too evident that the medical profession are responsible in a very great degree. Many times physicians do not take sufficient care to post themselves on the subject of diet so as to be able to advise their patients wisely. The subject receives far too little attention in our colleges; and what little instruction is given in school physiologies and popular magazines is so mixed with error as to be practically useless. We will call attention to a few of these popular errors in as concise a manner as possible.

1. *It is an error to suppose that the appetite is always a correct criterion of the quality and quantity of food.*

This is a widely prevalent error, and some very distinguished physicians have given it countenance and indorsement by saying to patients, when asked for a diet prescription, "Eat whatever and whenever you have a mind to." No advice could be more mischievous. It virtually assumes either that there is no relation between diet and health, that it makes no difference what a person eats, or that the appetite is an infallible guide, both of which suppositions are palpably false. If all appetites were natural appetites, if there were no such thing as depraved taste, then might the appetite be relied upon; but in the present state of things among civilized human beings scarcely one person in a hundred has a perfectly normal taste and appetite, if the number be not even smaller. The appetite is to some degree a guide, but it must be controlled and governed by common sense, by a knowledge of the laws of digestion and the relation of

alimentary substances to the stomach and the system.

Either extreme on this point is bad. The appetite must not be ignored, and it must not be blindly followed unless it is known to be normal in its inclinations. It would be just as proper to advise a person to speak anything that comes to his mind, to do everything for which he has an inclination, and to thus follow implicitly all the promptings of his various organs, as to tell him to eat everything which he feels disposed to.

2. *It is an error to suppose that sick persons whose appetites are poor should be tempted to eat by means of tidbits and dainties.*

Nothing is more common than for sick persons to be besieged with such unwholesome substances as preserves, rich jellies and sauces, pies, cakes, confectionery, etc. About as soon as a person is taken sick, in some communities, the neighbors begin to show their sympathy by contributions of all sorts of unwholesome and indigestible viands, and the invalid, whose stomach may be unable to digest any but the very simplest food, becomes a victim to the kindness of friends. Many times have the best efforts of the intelligent physician been baffled in this manner. "Killed by kindness" of this sort might be written on many a tombstone. The general belief that these things are essential for the sick when confessedly bad for the well is forcibly illustrated by the story concerning the old gentleman who arrived home late at night and not finding any pie in the cupboard awoke his wife with the exclamation, "What would you do if some one should be sick in the night!" Every physician ought to look carefully after this matter whenever he has a patient in charge, and the absurdity of the custom should be thoroughly exposed. The want of appetite in sick people, especially fever patients, is usually an indication that the stomach is not in a condition to digest food if it is received, and only the most digestible should be given, and that in small quantities.

3. *It is an error to suppose that children especially need large quantities of fat and sugar.*

The opinion has been gaining ground, of late, that fat and sugar are preventives of

consumption when fed to children so as to increase their fat. From some considerable observation on the subject we are decidedly of the opinion that the practice is a bad one and the theory upon which it is based wholly erroneous. These substances are themselves difficult of digestion (this is especially true of fat), and hinder the digestion of food, thus producing dyspepsia, which causes decay of the teeth and doubtless an equally marked deterioration in other parts of the system. The notion that the appetite for sugar is a natural one is shown to be false by the fact stated by Dr. Anthony Carlisle, the Arctic traveler. According to Mr. Carlisle, the little folks in the vicinity of the North Pole are not fond of sweets. He says that when sugar was placed in their mouths they made wry faces and sputtered it out with disgust. There is no evidence whatever that it "preserves the teeth," "aids digestion," "promotes growth," or "prevents consumption," as many persons believe.

4. *It is an error to suppose that many varieties of food are essential to good digestion or nutrition.*

The common sense of most people who suffer with weak digestion has taught them that one or two kinds of food at a meal are much more easily digested than a larger variety, notwithstanding the erroneous teaching of some popular authors on this subject. It is true that the appetite sometimes refuses food when its use is long continued without change; but the variety should be obtained by employing different foods or dishes at different meals rather than at the same meal. There is no doubt that dyspepsia is not infrequently the result of the indiscriminate gormandizing in which people indulge whose chief aim in eating is to gratify the palate.

5. *It is a very great error to suppose that brain-workers, students, clergymen, lawyers, and other persons whose vocation is largely sedentary, require but little food.*

The very opposite is true. A brain-worker uses up as much blood in three hours of intense labor as the muscle-worker in ten hours of ordinary toil. Brain-workers should be well fed, but they must not be overfed. Many of the cases of apoplexy in professional men, set down to overwork, are

really attributable to overeating. A brain-worker needs as much food and as nutritious food as a muscle-worker; but he is compelled to be more careful in its selection, and cannot exceed with impunity the limits of his actual needs. This point is often neglected with reference to school-children, especially girls, who are not infrequently allowed to make the attempt to live and study hard on a slice or two of white bread and a cup of coffee for breakfast, bread and butter and pickles for dinner, and a morsel chiefly made up of "dessert" at night, when dinner is taken at six, as in many of the large cities. In many female boarding-schools the dietary is neglected, an insufficient amount of nourishing elements being furnished to support the vigorous mental effort required of students. Under such a regimen it is no wonder that many young women break down just when they ought to be enjoying the highest degree of health and strength. We are thoroughly convinced that a much larger share of the breakdowns among students, male as well as female, is due to poor feeding than to overstudy.

6. *It is an error to suppose that fish or any other single article of diet is brain food, muscle food, or food for any particular part of the system.*

A few years ago a celebrated scientist made the casual suggestion that perhaps fish food might be especially nourishing to the brain, as there was considerable phosphorus in the brain and also in the fish. The notion spread like a heresy, and soon fish of all sorts big and little, scaly fish, shell-fish, and fish with neither scales nor shells, were devoured in unprecedented quantities by microcephalous people, and people whose brains were not obviously too small, for the purpose of obtaining the supposed specific effects of a fish diet. A gentleman eager to cultivate his brain and induce an increased growth, addressed a letter to a noted wag, asking for advice respecting the quantity of fish which he must eat per day. The answer he received was a fitting criticism on the theory, and undoubtedly discouraged the aspirations of the young man, being to the effect that a small whale would probably be about the right quantity for a meal.

The falsity of the theory has been repeatedly shown by the citation of the fact that the lowest of all human races are those that live almost exclusively on fish. In civilized countries, also, as in the vicinity of large fisheries, whole communities often make fish their almost exclusive diet; and yet there is no evidence that their mental capacity is increased thereby. In fact, the low mental and moral status of these people would furnish an argument on the opposite side of the question if it were necessary to offer such argument.

7. *It is an error to suppose that people suffering with nervous debility, neurasthenia, or other forms of nervous weakness, need large quantities of flesh-food.*

It is a very common custom when it is decided that a person has any form of nervous disorder accompanied with weakness or impaired nutrition of the nervous system, to place him at once on a diet consisting largely of flesh, as beefsteak, mutton-chop, etc. Sometimes the drinking of blood is recommended. That this indiscriminate practice is a bad one we have often had occasion to notice. It not infrequently happens that the excessive use of flesh food is a cause of nervousness, as has been repeatedly pointed out, and we believe that whether its use is advised or not, should depend on the condition of the stomach rather than of the nerves. A person whose stomach is very feeble may be unable to digest sufficient vegetable food to replenish his blood and fully nourish the tissues; for such persons a flesh diet or a mixed diet will be found to be very advantageous.

8. *It is a most erroneous notion that "rich food" is strengthening.*

The strengthening quality of food depends first upon its digestibility, and second upon the proportion of albuminous elements which it contains. Sugar, fat, spices, and the other ingredients which are added to food in making it "rich," are of only secondary importance as nutritive elements, and in the case of condiments, of exceedingly doubtful value, if not wholly worthless. In the manner in which these substances are combined in "rich food" they are worse than worthless. Really rich food is that which contains a large proportion of the essential elements of

food in a condition in which they may be easily assimilated. Graham bread, oatmeal mush, pea soup, baked beans, and kindred foods, are really rich, and in the highest degree strengthening.

9. *It is an error to suppose that persons engaged in laborious occupations require a large amount of flesh food.*

Persons who labor hard, either physically or mentally, need a liberal supply of food rich in albuminous elements. These elements are furnished by such food as peas and beans in even larger quantities than in the best beefsteak. A pound of peas contains four ounces of albuminous elements, while a pound of beefsteak contains but three ounces. Oatmeal and wheat meal are also very rich in albuminous elements. The Scotch laborers who subsist very largely upon oatmeal porridge are said to be among the finest developed and hardiest men in the world. Numerous similar evidences in favor of a liberal supply of vegetable food might be given.

10. *It is an error to suppose that the system is better supported by meals at very frequent intervals than by food taken in accordance with the known time required for digestion.*

It has long been the custom to supply laborers undergoing severe exertion, as during harvest time among farmers, with two or three extra meals during the day, thus often bringing meals within two or three hours of each other. We believe that the practice is a bad one, and that three meals at most are better than more. The custom of eating five meals a day, common in some foreign countries, is certainly most unphysiological, and must be injurious. Children are often injured by too frequent feeding; not only while infants, but after having grown up so as to be large enough to attend school, being very often supplied, by fond mothers, with luncheon for recess, and apples to eat at all hours. It is a most unwise thing to allow children to form the habit of nibbling at food between meals. The fact that they are growing, and need a large supply of nourishment, is no apology for the practice, but rather makes it the more necessary that they should be regular in their habits in order to secure good digestion. The stomach needs rest as well as the arms and limbs and other

organs of the body. More food will be well digested with three meals than with a larger number, and hence a larger amount of good blood will be produced, and more healthy tissue formed.

11. *It is an error to suppose that the best preparation and support for extraordinary exertion is increasing the amount of food proportionately.*

It is generally supposed that if a man has an unusually large day's work to perform he must eat an unusually large breakfast and a proportionately large dinner. This is certainly an error. Large demands upon either the muscular or the nervous system for the time being detract from the power to digest. The stomach requires nervous energy to enable it to perform its function. If the nervous forces are otherwise engaged or used, they cannot be utilized in digestion. Hence it follows, theoretically, at least, that instead of giving the digestive organs an extra task in preparation for an extra effort, they should be required to perform less than the ordinary amount of labor. Experience as well as theory supports this view. Sir Isaac Newton, when employed in his most arduous labors, lived upon bread and water, and fasted for long intervals. General Elliot, the famous defender of Gibraltar, is said to have subsisted for a number of days on a little boiled rice. The wonderful "L'Homme Serpente" of Paris; always fasted for twelve hours before attempting to perform his marvelous feats of agility. This plan not only secures a higher degree of efficiency in the effort made, but prevents, in great degree, the injury liable to result from excessive exertion. When required to overwork for a succession of days, we have found that we were not only able to perform much more work, but to do it with less effort at the time, and less exhaustion afterward, when taking a greatly reduced quantity of food, than when attempting to do the same work and still taking the usual quantity of food. We have no doubt that a neglect of this precaution is a not infrequent cause of many of the sudden deaths of which we so often receive accounts, especially among politicians and public men. Overloading the stomach and overworking the brain at the same time

is exceedingly dangerous. The man who overworks mentally must be temperate; he must exercise the greatest moderation in his eating, and must totally discard all stimulants and narcotics. A great share of the cases of apoplexy which occur happen when the stomach is full. The increased clearness of intellect which results from abstemiousness well repays one for all the self-denial practiced.—ED.

—●— CHESTNUTS AS FOOD.

It is well known that the chestnut was much used by the ancient Greeks and Romans as an article of food. Indeed, at one time the Arcadians subsisted almost wholly upon this farinaceous nut. The same may be said of the peasants of some parts of Italy at the present time at certain seasons of the year. The following interesting article on the chestnut, and chestnut flour, is an abstract of a report to the State Department by Hon. J. Schuyler Crosby, U. S. Consul at Florence:—

The common chestnut-tree is said to have been brought from Asia Minor to Sardinia, and from there it has spread over the whole of Southern Europe. It existed for centuries in Tuscany, where, at one time, nearly every hill and mountain side was covered with its verdure. The number of trees in Tuscany and Lucca is estimated at several millions, and the nut and wood have done more to maintain the population of some of these districts than any other production. Indeed, in some places wheat flour and corn meal are entirely superseded by the chestnut flour, which is very nourishing and much cheaper as an article of food.

The result of a careful study of the subject has convinced me that this species of chestnut, when grafted upon the variety indigenous to our own country, and in many parts abundant, may become a source of much wealth and profit, especially in certain mountainous districts, where it is almost impossible to raise cereals, owing to the nature of the soil and the steepness of the mountain-sides, and where transportation is so difficult and labor so high and scarce. Outside of this question of using the chestnut for food in the districts where

it could be cultivated and grown to advantage in the United States, the present price of the imported Spanish chestnut, which is used for various purposes throughout our country, would, I am sure, amply repay any outlay farmers might have to make in importing rings or shoots of this magnificent variety from Italy for grafting on our own chestnut-tree.

This tree grows to the height of 60 or 70 feet, and attains full maturity at the age of 60 years. Its vitality and productiveness, however, last for more than a hundred years. In many parts of Tuscany it is cultivated largely, and is always raised from the seed or nut. The large variety of Spanish chestnut is cultivated from grafting on the young trees. The chestnut flourishes in a light, fertile, deep soil, but thrives on the sides of mountains facing the south and west. The varieties cultivated are the following:—

1. *Castagno Marone*. This is the most sought after for the largeness and exquisite taste of the nut. It thrives in fresh, damp soils and mild temperature, and for that reason is cultivated with difficulty in the higher mountains.

2. *Castagno Carpinese*, or *Carrara*. Produces high-flavored nuts in great quantities, and prospers even in cold places. The flour made from this variety is the sweetest of all, but requires great care to keep it from spoiling.

3. *Castagno Pastinese*. Thrives in cold situations. The fruit is smaller and darker, but gives a more healthy and durable flour than that of the Carrara.

4. *Castagno Rossolo*. The nuts of this variety are smaller than those of the *Marone*, which they resemble in appearance or taste. The tree thrives in cold places, and grows luxuriously on the Apennines.

5. *Castagno Romagnuolo*. The nuts are inclosed in burs, difficult to open. They are small, but high flavored, and especially good for flour. This tree is also very hardy.

6. *Castagno Brandighiano*. This produces more fruit than any of those above mentioned, but the outside of the nut, being naturally marked with white spots, never ap-

pears to be perfectly ripe, though in reality it is.

The chestnut is raised from the fruit, which should be planted in earth made soft by repeated working over. The plantation should be situated near a stream if possible, and the ground shaded by hedges or trees placed sufficiently near to answer that purpose. The square set aside for the cultivation of the chestnut is divided into furrows, six or seven feet wide, and in each of them holes are dug about three inches deep, and at a distance from each other of about six inches. In these holes are deposited the nuts with the germs downward. The use of manure renders the plant more vigorous and healthy for the time, but is dangerous on account of transplanting, as the young tree, finding itself on soil less rich than it has been accustomed to, easily languishes and dies.

After two years the plants are transplanted to another part of the plantation, where they remain four years, after which they may be placed where they are destined to remain permanently. The season best adapted for transplanting is that after the falling of the leaves, although it may be done even as late as February or March.

For producing the fruit the tree must be grafted, which is done at the age of five or six years. There are two ways of grafting. One is the ordinary method of inserting the bud in the end of a branch, with a slit in it, where it is retained by wax or other substances. The other, which is the latest and has proved the most successful in its results, consists in cutting large rings of bark from the branches of the large or Spanish chestnut, and placing them on twigs of the ordinary kind. As this is rather a delicate operation, requiring some care, a detailed description may be useful. The bark of the Spanish chestnut is cut into circles on the twigs where marks of buds appear, care being taken to have one or more buds on each circle or cylinder. This bark is then slightly beaten, to loosen it from its position, and gently twisted by hand until a hollow cylinder of bark is obtained, which is then drawn up the stem that has been previously denuded of its bark in like manner. The cylinder of bark is then carried to the stem of the tree, which is grafted. This stem,

having been previously denuded of its bark and cut off down to the place where the ring is to be put on, is then covered with the ring, which unites with the growing bark and sends out shoots of the large chestnut from the grafted branches. Care must be taken to cut off all shoots of the common chestnut that may appear near the grafted part, as they interfere with the full development of the part grafted. This operation of grafting by rings is practiced in Tuscany from the tenth of April to the first of May; that is, when the sap is running most freely, and just before the leaves and buds come out.

A method of preserving the grafting buds, so that they may be good even after a year, is to place them in tin tubes filled with honey, and hermetically sealed immediately on their removal from the tree. This method would seem especially adapted for transporting the Spanish chestnut to countries where it does not exist. Another manner of transporting the grafting buds is by putting them into hermetically sealed tubes filled with water. This method can only be used for transporting the buds for distances accomplished under forty days.

The chestnut produces flowers, which, after the usual process of the male pollen being deposited on the ovaries of the female flower, become chestnuts, or the seed of the tree. This change of the flower into the nut takes place about the end of July, and it is easy to foretell the crop of the year by the state of the nut germs. For although the flowers may have been abundant, fecundation may not have taken place largely, and it is only by watching the tree carefully after it has flowered, that a judgment can be formed as to whether the production will be good. This appearance of young germs is called in Italian *animato*, that is living, active, animated. The ovaries that are not fecundated by the flowers, change into useless shells, but those fecundated become inclosed in burrs, containing one, two, and even three chestnuts. The nuts arrive at maturity in two months after flowering, that is to say, in October, and then fall to the ground. They are also beaten from the trees by peasants armed with long

poles, but this should never be done, as it seriously injures future fruit-buds, and affects the yield of the tree for another year.

The chestnut should be pruned and trimmed every three years or at the most every four, and this, while helping the tree to bear more abundantly, produces wood for fuel and other purposes; the smaller twigs and branches, when dried, are used later as fuel in drying the nuts in the manner hereafter described. The leaves are also gathered when green and young, and pressed flat in large bundles, and are then used for putting under pots of butter, and in making a kind of cake called *necci*. The Spanish chestnut has been cultivated with more than usual care and success in the province of Lucca, owing to the laws to protect it from destruction made by the Lucchesan Republic in the eleventh century.

The only disease to which the chestnut is liable is internal decay of the trunk. Instances are known where the whole life of the tree has been carried on through the external bark, while the interior was completely destroyed. Though no cure exists for this disease, it may be arrested by burning out, by a slow fire, the whole interior of the tree, with leaves, grass, and light substances. This treatment has proved efficacious in most instances.

The chestnut is composed of starch, a glutinous substance analogous to that of the cereals and sugar. Dr. Guerazzi, in experiments narrated by him, was able to extract the sugar without altering the farinaceous or nutritious part of the nut.

After gathering,—which should be done by picking up those that have fallen, and not beating the tree,—the nuts are deposited in huts, in the upper part of which deep trays are constructed, on which the chestnuts are placed to the depth of six inches. In these huts slow fires are kept up, with the use of green wood, until the nuts become hard and dry. In this condition they may be kept for years. They are, however, more generally carried to the mill, where they are ground into flour, in the same manner as corn or wheat.

From this chestnut flour various preparations are made, such as *polenta* (a kind of pud-

ding, like our so-called hasty-pudding of Indian meal) and various kinds of cakes, fritters, and even a heavy kind of bread. These various ways of cooking the chestnut flour are known under the popular names of *necci*, *puttoni*, *castagnacci*, *cialdi*, *fritelli*, etc., and the food so made is sweet and agreeable to the taste, and healthy. The country people cook the chestnuts in water, and make use of this water as a drink for chest troubles, colds, and dry coughs, and in most cases it has proved very beneficial. The food made of the chestnut which is most in favor is the *polenta*, made by simply boiling the chestnut flour in water for ten or fifteen minutes, with a little salt to flavor it, taking care to keep up a constant movement of the paste, and clearing the edges of the cooking utensil, so that no part becomes burnt. It is eaten with cream, butter, ham, etc., and is most healthy and nutritious.

The food called *necci* is composed of flour formed into a cake, and is made by first mixing the flour with cold water, and then making cakes piled one upon another, and separated by chestnut leaves, pressed for the purpose and moistened by water; the whole mass is then cooked over a hot fire, and the cakes are taken off one by one, when the leaves are almost burnt. These cakes are eaten with buttermilk, cheese, Bologna sausages, and meat.

The chestnut flour can be preserved sweet and in good condition for two years, in the same manner as wheat flour—but a round chest of chestnut wood is preferable, which should be kept in a fresh, dry place. The flour should be pressed into the receptacles as firmly as possible, and then covered with chestnut shells. It may then be preserved for two years, and is exceedingly agreeable to the taste, and though less nutritious, is much cheaper than wheat flour. It is certainly a fact, that in those regions where the inhabitants live almost entirely on the chestnut, they are of better appearance, more healthy, and not less strong, than those people who live on what in America is considered more wholesome and nutritious food.

ALPHABETICAL HINTS ON YOUR HEALTH.

As soon as you are up, shake blankets and sheet;
 Better be without shoes, than sit with wet feet;
 Children, if healthy, are active, not still;
 Damp beds and damp clothes will both make you ill;
 Eat slowly, and always chew your food well;
 Freshen the air in the house where you dwell;
 Garments must never be made to be tight;
 Homes will be healthy if airy and light.
 If you wish to be well, as you do, I've no doubt,
 Just open the windows before you go out;
 Keep your rooms always tidy and clean,
 Let dust on the furniture never be seen;
 Much illness is caused by the want of pure air;
 Now to open your windows be ever your care.
 Old rags and old rubbish should never be kept;
 People should see that their floors are well swept.
 Quick movements in children are healthy and right,
 Remember the young cannot thrive without light.
 See that the cistern is clean to the brim;
 Take care that your dress is all tidy and trim;
 Use your nose to find out if there be a bad drain,
 Very sad are the fevers that come in its train.
 Walk as much as you can without feeling fatigue,
 Xerxes could walk for full many a league.
 Your health is your wealth, which your wisdom
 must keep.
 Zeal will help a good cause, and the good you will
 reap.

An Indian Turkish Bath.—If cleanliness is next to godliness, the filthiness of the Indians is their greatest sin. A peculiar and disagreeable odor pervades everything that belongs to them, although much of it is due to other causes than personal filth. The tanning, drying of beef or buffalo, cooking, etc., simultaneously in progress in and about the lodge, produce a variety of unpleasant scents, which permeate their clothing and impregnate the atmosphere. The infrequent change of the former is also a fruitful source of physical impurity. The Turco-Russian bath is, however, of very common application among them. It is their panacea.

The manner of its preparation is necessarily primitive. Willow wands are sharpened and thrust into the ground, and their smaller ends are interlaced so as to form a bower little more than a yard in height, and eight or ten in circumference. Over this is stretched and secured a piece of canvas or skin, under which, after several large stones have been brought to a red heat and rolled to its center, a dozen or more Arrapahoes crowd

and crouch. Water is slowly poured upon the stones, from which arise hot air and vapor. After profuse perspiration, the inmates leap into an adjoining stream, or wallow naked in the snow. This bath establishment is called a "wicky-up," and they dot the banks of water-courses in all Indian countries.—*Lieut. H. R. Lemby, U. S. A., in Harper's.*

Appeal To Mothers.—If you are ever to accomplish something in life, it is because you are accomplishing something now. So many women say, "After my house and grounds are in perfect order, after we have become rich, after I have secured perfect health, then I intend to give more time to my husband and children, to society and philanthropy," and life rounds itself into an inglorious aftermath. It is as suicidal to postpone happiness and usefulness as it is for a mother to leave her children to a nurse all their early years and expect to win their deepest love afterward. The present days, the present hours, are rich with glorious opportunity for women to render royal service to the home, the state, and nation. There is "blessed work to be done, blessed work, with blessed wages," and it is pitiful to see women of education, of experience, women who believe in immortality, bending all their energies to shopping excursions and the matching of ribbons, and saying to all the vast interests that vitally affect the happiness of millions, "Bide your time, wait! I know children are starving and the hearts of women are breaking, fathers and mothers wail in agony over dishonored sons and daughters, red-handed crime and slander endanger alike the innocent and guilty. The world needs help; number me among the helpers. I will go to work soon, but then, you know, I have not decided upon the shade and shape of my new bonnet."—*Inter-Ocean.*

Disease in the Well.—An intelligent clergyman writes to an exchange as follows, about his personal experience with bad wells, which is not different from what might be told by hundreds:—

"In two parsonages in which the writer of this has lived, there were wells of water in constant use that became most offensively

foul by a communication formed between them and filthy privies. The wells were located a few rods above. In one case the offal dropped into an excavation two and one-half feet deep; this was filled with rain and snow water, which soaked into the soil and thus passed into the wells. In the summer when the water was low and it was boiled, the foul gases filled the room, and still the former occupant did not ascertain the cause of the mischief, but continued to use the water, putting in lots of charcoal to abate the evil. Now, persons should not be like an ignorant Scotch girl, who, when asked by her minister if she would not like to have Satan's kingdom destroyed, replied, 'Oh, no; I never like to see anything wasted.' A great many practice just as she talked. They are careful to perpetuate the origin of evil in a great variety of forms, when the disease breeders are abundant in not a few human dwellings and their surroundings. The wonder is not why there is so much sickness and death, but why people have so much health and live so long. There is very little robust health and hearty enjoyment compared with what there should and would be if persons understood and put away the causes of disease and obeyed the divine law of health."

The Hair.—The hair is, of all parts of the human body, the most abused in its relations to healthfulness and growth. Pulled, twisted, torn, burned into a friz, and besmeared by all sorts of unguents and lotions, it is a wonder that baldness is not really the rule instead of the exception among those who most prize its beauty,—the female sex. And it is equally neglected, if not indeed abused, by most physicians, many of whom, while heartily condemning the thousand and one preparations well known to be not only injurious to the hair, but dangerous to the general health, show their total neglect of this part of their cure by relinquishing it to barbers and quacks.—*The Sanitarian.*

No flocks that range the valley free,
To slaughter I condemn;
Taught by the Power that pities me,
I learn to pity them.
But from the mountain's grassy side,
A guiltless feast I bring;
A scrip with herbs and fruits supplied,
And water from the spring.—*Goldsmith.*

LITERARY MISCELLANY.

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

LITTLE BY LITTLE.

"LITTLE by little," the torrent said,
As it swept along its narrow bed,
Chafing in wrath and pride.
"Little by little," and "day by day,"
And with every wave it bore away
A grain of sand from the banks which lay
Like granite walls on either side.

It came again, and the rushing tide
Covered the valley far and wide,
For the mighty banks were gone.
A grain at a time they were swept away;
And now the fields and meadows lay
Under the waves, for the work was done.

"Little by little," the tempter said,
As a dark and cunning snare he spread
For the young, unwary feet:

"Little by little," and "day by day,"
I'll tempt the careless soul astray,
Into the broad and flowery way,
Until the ruin is made complete.

"Little by little," sure and slow,
We fashion our future of bliss or woe
As the present passes away.
Our feet are climbing the stairway bright,
Up to the region of endless light,
Or gliding downward into the night,
"Little by little," and "day by day."—*Sel.*

A MUTUAL BENEFIT:

OR, THE INDEPENDENT AMERICAN GIRL.

A YOUNG girl, "thrown on the world!" her own living to make, and no recognized qualifications for such a duty! What was to be done?

Ella Vincent sat asking herself, "What shall I do?" It is a question which so many girls in and just beyond their teens have been obliged to ask themselves during the last seven lean years,— "What shall I do for a living?"

"Bess, I've made up my mind," Ella Vincent said one morning to her married sister. "I'm not going to wait here for any lover, possible or impossible, to propose to me. I have a growing conviction that for a woman to

marry for the mere purpose of getting a home, is doing wrong. She is sinning against God and her own soul, doing herself the greatest wrong that can possibly be done to her. Then there are so many who have married 'just for a home,' who have no home after all except what they themselves earn. A dear price most of them pay for their homes! No, I do not propose to sell myself so long as I have a sound body, a fair mind, two hands, two feet, and five senses."

"Well, what do you propose doing?" asked her sister.

"I am going out to service."

Her sister looked up incredulously.

"You surely do not mean it, Ella."

"I do mean it, Bess."

"To service, O Ella, not that."

"Yes, just that and nothing else! Why not that, pray? Shall I set up as a seamstress at fifty cents a day, idle half the time at that, and a board bill coming in every unengaged day like a malicious fate? Besides, I could not sit still all day, day after day. It would kill me. I've counted the seamstresses and dress-makers in this village of fifteen hundred souls. There are twenty-three dress-makers and twenty-six seamstresses of whom I know. Then the teachers, if both sexes are included, are more numerous still. There are from two to five of them in every third or fourth family. I am not qualified for a teacher, and I don't think it worth while, as I have no passion for the work, to go through the struggle of the studies first and the competition afterward."

"You might start a select primary school," suggested her sister.

"Ten scholars on an average at five dollars apiece. That would be a hundred dollars a year—not enough to pay for my board. If I did sponge on my friends during vacations, where would my clothing come from? Then I should have my own clothes to wash and iron, and, as mother used to say, it is as easy

washing, ironing, and cooking for three or four as it is for one."

"Another milliner's store is needed here," pursued Mrs. Bess with a troubled brow. "If you only had the funds you might do well at that."

"If! Yes. Well, I have n't the funds and I cannot whistle them here. If I had three to five hundred at my disposal, I doubt if I should care to run the risks of a new establishment. There would be rents, credit, etc., and I should be as worn and worried as you are in two or three years—and then the board bill, too! That is such a giant in the way of poor girls. If I boarded myself I should have hypo and dyspepsia both in a little while. Now, in some one's kitchen,—yes, Bess, in the kitchen, I have not the assurance to believe I'd make a heavy living as a parlor servant,—I would get from \$1.50 to \$2.50 a week and my board, and 'home' week in and week out; no cankering cares; considerable time to myself, and work at which I would feel at home."

"But think how it will sound, Ella.

"I cannot help the sound. I cannot afford to struggle for years through some foreign element for the sake of a sound. What will anybody care whether I am 'respectable' or not? So long as they have n't the thing to do, it won't hurt their feelings a particle. They will rather enjoy my having to do it; so then, Sis, both myself and everybody else will be suited by my going out to service."

"I shall not be suited at all by it," said Mrs. Bess.

"Which is better? to have a good, healthy, happy sister at service and independent of all the world, except one family, and that family dependent a good deal upon her, for I mean to make my mark in my line, Bess, or to have that sister a miserable, half-famished, discontented, round-shouldered seamstress or factory girl, or lace-worker, who would have to depend on you or your husband for shelter half the time, and whose board bill you would have to 'take out in work' whether you could afford to or not?"

The result of this sensible decision of Ella Vincent's was an advertisement in the local paper that week.

"An American girl desires a position as

kitchen servant. Is a good cook, and understands all kinds of housework. Apply, by letter, to the editor of this paper."

To this, in less than a week, Ella received fifteen applications. She accepted the first offer, as it was from an entire stranger.

"I have lived here all my life," she said to her sister, "and to go among those who have always known me, will be more vexing than to be with perfect strangers. Some of my old friends would snub me, some would pity; others would be exceedingly condescending, and my employers would fancy that I would expect privileges which they might not feel willing to accord. I am going to be an ordinary servant in one sense, and a Bible one too; diligent in business, not an eye-servant; and in serving my employers well I will serve myself and the Lord too, I believe. At any rate, I shall have an easier conscience and a lighter heart than if I depended on you or married for money or a home."

Minnie Gray, aged thirteen, reading the paper, came to the notice inserted by Ella Vincent. Minnie always read every line in the papers, advertisements and all, therefore she alighted upon what one or two others had missed.

"Mother, has n't this the true ring in it?" she asked; and as her mother listened she read the first article among the "Wants."

"Oh, dear! I don't know," said Mrs. Grey, in a discouraged tone. "She may not know how to cook, after all, and her ironing may be like the last Bridget's—not fit to be seen. Somehow these ignorant people seem to think they can do the very things they know the least about."

"But perhaps this one is not ignorant," suggested Gracie, the elder daughter.

"It is likely she is; for American girls who can teach or do other things are not very apt to go out to service. Even if she can read and write well, she is probably gifted with superabundant curiosity, and will make herself mistress of the contents of our letters, notes, and bills. Or she may be such a lover of trashy literature as to neglect her duties for the dime novel or the four-dollar-a-year *Weekly Cancer*. And dis-

couraged Mrs. Grey leaned wearily back in her chair and closed her eyes.

"Well, mamma, she could not possibly be worse than those scooping Latins, as the last Bridget called herself," returned Minnie with energy. "Did n't I see Molly tearing leaves from my Bible and from the Sunday-school books? And didn't a crack in the door disclose Nora unlocking your private desk? And would n't Annie whisk our *Witnesses* out of sight and use them for shavings before we had a chance to read them, she hated the paper so?"

"Yes, and good-natured Gretchen was untidy; and the English woman drank," added Gracie. "Mamma, you had better try this American girl; and then if she will not do, you will have to import a specially trained *Servant* or adopt a little John Chinaman."

"Well, perhaps it will do no harm to try," sighed Mrs. Grey, as though from a new girl she expected only new trials. "I cannot make a drudge of myself. To take care of your own room and mine is as much as I can expect of you school-girls at present. I believe I will write to this American girl."

Minnie ran for pen, ink, and portfolio for her mother.

"Suppose she is only an American by accident of birth, and a Romanist after all!" said Mrs. Grey.

"A Latinist, ma'am!" corrected Minnie with a flourish and a strong Irish accent.

"Oh, in that case she would call herself 'Frinch,' laughed Grace; "just as did that elegant thing you once had who used to smuggle your best dresses out of the closet, mother, and wear them to the evening parties at her cousin's."

"She may be too fine for a common servant girl," said the doubting mother, "she may expect to help entertain our company, play on the piano, take her meals with us, and be a sort of chief adviser in family matters."

"Oh, if she attempts such airs you can very readily dismiss her," said Grace. "At any rate you must have somebody before next Friday, papa says, or you will be ill with fretting and working so hard."

"She says 'kitchen servant,'" remarked Minnie, glancing at the paper.

"Ah yes," reflected Mrs. Grey, taking the newspaper from her daughter and reading the notice carefully.

"It is not to assist in the housework, or in any place not menial. Yes, I rather like the sound of it. I'll engage her by the week at present; offer two dollars and give her to understand that she is to use her head as well as her hands."

So Mrs. Grey was the first to write, and Ella Vincent, expecting no better offer and well satisfied with that, accepted it at once.

It was soon evident to the family that their new help was neither ignorant nor silly. She was quiet, unobtrusive, neat, tasteful, always interested in her work, and always good-natured and polite. She called the young ladies "Miss Grace," and "Miss Minnie" quite as respectfully as any inferior servant would have done, until, at the request of the two and with the ready permission of their mother, the prefix was dropped. But even then when speaking of them to others she preferred to seem less familiar.

"I have never yet seen Ella make her finger into a hook and stick it inside the sugar bowl when she passes it," said Gracie, one day, about a month after Ella's advent among them. "Her nails are always as clean as a lady's, and she is quite dainty in her ways; I like her."

"And she does not smuggle tea, coffee, butter, fruit and other luxuries by the pound out of the house to her relations," said Mr. Grey. "The grocery bill is less this month than it has been in an age; less than it was during the four weeks Bridget and I were here alone."

"Is such the fact?" inquired surprised Mrs. Grey. "It is a great relief to me to have some one who cares how things are done, and who takes a pride at seeing that everything is attended to in the right time too. Yes, it is a positive luxury to have a girl like her around. We ought to show our appreciation of her intelligent services by increasing her wages. She saves two or three dollars' worth of worry every week, and I believe she is perfectly trustworthy."

"I'll try her," exclaimed Minnie. "I'll try her on my portfolio or one or two of my

letters. I'll leave them in the kitchen or on the walk with a piece of thread or a tiny straw inside."

"Do'n't you feel a little ashamed to propose such a trick, Minnie," asked her father, "after her kindness to you in helping you in your fractions and preparing, of her own accord, that surprise for you on your birthday?"

"No, papa, I do not feel ashamed, because I do not think she would read my notes any sooner than she would take my pocket-book. It is only proving her, you see, just as I prove my sums. She said the other day it was good to prove all things, then we would have no doubts."

"And as the Lord proves us," meditated Mrs. Grey questioningly.

"You may not be far from being just, Minnie," added her father. "It is well to know whom we can trust in these times."

"What a relief it is, though, to be able to say what one wants to about the Bible in the schools, and such things!" said Minnie, who loved to "speak her mind." "I declare I used to be afraid Nora would send some one to kidnap me!"

So Ella was proved by this little girl, who, by having seen so much deceit, had been rendered suspicious and distrustful; and she was found honorable as well as honest and capable.

She has been with the Greys nearly five years; is happy and contented; has earned more than her wages—one-half of which she has laid up—she has earned the respect and esteem of the Greys and of all their friends and her own, and proved herself a self-respecting, independent, honorable girl.—*N. Y. Weekly Witness.*

SINS AGAINST CHILDHOOD.

It is related that when a conquered city was sacked and a brutal soldier was striking down all before him, a child cried out: "Please, sir, don't kill me. I am so little." He must be a brute that would not respect the feebleness of a child. It is one of the fiendish features of alcoholic drink that it often maddens a parent to maim and to murder his own offspring. There is a poor crippled lad in this neighborhood whose spine is maimed for life by the drunken father

who hurled him down-stairs, in a debauch. Let us be thankful for the organization of "societies for the prevention of cruelty to children." They might adopt for their motto Reuben's counsel to his brethren: "Do not sin against the child."

There are many other sins against childhood besides brutal blows or the slow starvation which drunkenness occasions. Nor do they spring from wanton cruelty. Many of them grow out of carelessness, or ignorance, or utterly false views of parental duty. Fully one-half of all the parents in the land need to have the solemn caution whispered in their ears: "Beware how you sin against your child! Parentage involves a tremendous trust. God puts into our hands the most susceptible and receptive creature on the globe when he entrusts to our care a human soul. No photographic plate takes impressions so readily or retains them so surely. In geological museums you may see stone slabs which show the prints of birds' feet or of leaves, which were made in the stone when it was liquid pumice, centuries ago. In like manner we detect the finger-marks and foot-prints of parental influence upon the character of their adult children. Very ugly are some of these foot-prints, too.

(1.) You may sin against your child by seeding his mind with false teachings. It lies open before you like a garden or a field in May, waiting for either the precious seed or the poisonous weeds. A bad principle dropped in will sprout.

(2.) Nothing breeds so rapidly as *example*. We all know how tendencies to character, either good or evil, spring from natural descent, and the chief element in moral heredity is the force of example. There is a monotonous uniformity in the history of the Jewish kings. Each one "walked in the ways of his father who caused Israel to sin." Observe that word "ways." The father made the path, and the son trod in it. This is as true now as in ancient days. The most difficult cases which are brought to our inebriate asylums are those of hereditary drunkenness.

Parents, do you always make an especial study of the peculiarities of each child? Some children are picked at and scolded, until they become sullen. Others are ridiculed for their deficiencies or deformities,

till they grow desperate. Harshness always hardens, and then parental phariseism prays that God would soften the boy's hard heart! To train up a family wisely and for the Lord requires more sagacity than to write a book, and more grace than to preach a sermon. It is the highest trusteeship in the world. The family underlies both church and commonwealth. Wherefore, O father and mother, for thy own sake, for God's sake, for the sake of the soul committed to thee, *do not sin against the child.*—*T. L. Cuyler.*

LITERATURE FOR GIRLS.

IF there were to be any difference between a girl's education and a boy's, I should say that of the two the girl should be earlier led as her intellect ripens faster, into deep and serious subjects; and that her range of literature should be, not more, but less frivolous, calculated to add the qualities of patience and seriousness to her natural poignancy of thought and quickness of wit; and also to keep her in a lofty and pure element of thought. I enter not now into any questions of choice of books; only be sure that her books are not heaped up in her lap as they fall out of the package of the circulating library, wet with the last and lightest spray of the fountain of folly.

Or even of the fountain of wit; for with respect to the sore temptation of novel-reading, it is not the badness of a novel that we should dread, but its overwrought interest. The weakest romance is not so stupefying as the lower forms of religious exciting literature; and the worst romance is not so corrupting as false history, false philosophy, or false political essays. But the best romance becomes dangerous, if, by its excitement, it renders the ordinary course of life uninteresting, and increases the morbid thirst for useless acquaintance with scenes in which we shall never be called upon to act.

The sense, to a healthy mind, of being strengthened or enervated by reading, is just as definite and unmistakable as the sense, to a healthy body, of being in fresh or foul air; and no more arrogance is involved in forbidding the reading of an unwholesome book than in a physician's ordering the windows to

be opened in a sick-room. There is no question whatever concerning these matters, with any one who honestly desires to be informed about them,—the real arrogance is only in expressing judgments, either of books or anything else respecting which we have taken no trouble to be informed. Life being very short, and the quiet hours of it few, we ought to waste none of them in reading valueless books; and valuable books should, in a civilized country, be within the reach of every one, printed in excellent form, for a just price; but not in any vile, vulgar, or by reason of smallness of type, physically injurious form, for a vile price. For we none of us need many books, and those which we need ought to be clearly printed, on the best paper, and strongly bound. I would urge upon every young woman to obtain, as soon as she can, by the severest economy, a restricted, serviceable, and steadily—however slowly—increasing series of books for use through life; making her little library, of all the furniture in her room, the most studied and decorative piece; every volume in its assigned place, like a little statue in its niche.—*Ruskin.*

THE SARGASSO SEA.

WHEN Columbus, on his first voyage, had got some distance to the westward of the Canary Islands, he was amazed one morning to find his ships in an undulating meadow. As far as he could see, the water was covered with a greenish-yellow plant, which appropriated the surface of the sea as thoroughly and effectually as water-lilies cover a pond. The wind was light but steady; there were not any birds to indicate the proximity of land, neither was there any apparent cause for such a collection of weed. The sailors, already scared by the persistence of the wind from one quarter,—they had got into the trade-winds,—looked upon the weed before them, behind them, and on either side of them, as infallible proof of their imminent destruction. The Almighty, they said, was angry at their impious attempts to pry into His secrets in the west, and had given them over to the devil, who was causing a wind to blow that would forever prevent their return to Spain, and now had brought them into a snare such as sailors most dread,—shallows

extending too far beyond the land to allow of ships or men being saved. The commander could not explain the sight he saw, and might have thought with his men that the weed was the cast-off clothing of some dangerous rocks which lay a short distance down, ready to tear and rend them. The deep sea lead-line was hove, but no bottom was found. The ships kept on their westerly course, still sounding and still getting no bottom, till, in a few days, they drew clear of weed and came where the broad ocean was all around them again, unencumbered by aught but the ships of the explorers.

Ever since the day Columbus saw the weed, and probably for thousands of years before he saw it, the Sargasso Sea—such is the name of the weedy sea—has existed. Its boundaries may be indicated by tracing a triangle, of which the three corners are represented by the Azores, the Canaries, and Cape de Verde. Within those limits the sea is still bottomless, and is clothed on its surface with a garment of vegetable material, so thick as to retard the progress of vessels sailing through it. Steamers avoid it when they can do so, because of the fouling of their screws and paddles by the weed; but sailing-vessels bound to the West Indies, South America, the Cape, etc., must needs pass through it. Sometimes a great storm, proceeding from some point outside the charmed triangle, causes its effects to be felt within the triangle, and scatters the weed, more or less out of bounds. But usually there is a placid condition of things in the Sargasso Sea; the wind is light, the sky is clear, the water never rages, and, unless such a storm as has been mentioned should disturb the wonted calmness of the sea, the surface, over several degrees of latitude and longitude, is covered, as when Columbus saw it, with the weed Sargassum, which springs from an apparently inexhaustible source.—*Sel.*

WOMEN OF COREA.

THE women of Corea have to remain in the apartments especially set apart for their use, and those of the higher classes are even more isolated here than in China. A little more liberty is allowed them in the country, where a portion of the labor in the fields falls to their

share; but although they can move about there somewhat more at their ease, they are still much more restricted than the female country population in China. In cities and small townships it is, however, considered a great offense against modesty and custom whenever a woman is met on the public streets in the daytime, and they quit their apartments hardly ever during the day. To indemnify them for this strictly kept-up seclusion the following remarkable arrangement has been made: At 9 o'clock in the evening during the summer, and at an earlier hour during the winter, the city gates of Saoul and other towns are closed at a given signal. As soon as this has taken place all men are bound to leave the streets, and these are abandoned to the women for the purpose of recreation and promenading. Any male finding himself by accident belated and behind the appointed time in the streets is sure to hurry to his house as fast as possible, without looking up or regarding anything about him; and severe punishment would fall upon any person daring, in the face of the stringent prohibition, to molest women in the least. Good breeding demands from any man (and this is always done) to cover his face with a fan as soon as he sees a woman.—*Alliance.*

AN ACCOUNT KEPT SOMEWHERE.

It is related of the celebrated Dr. Jewett, that in the course of his travels he once entered a country tavern and sat down by the bar-room fire to warm his fingers. His keenly-roving eye soon discovered prominent over rows of bottles with highly colored contents, in large letters, the inscription, "No credit given here." And then turning to the landlord, to whom he was personally unknown, he said,

"Ah, I see you bring your people square up to the mark here!"

"Yes, sir," replied the landlord, "it's no use to trust rum customers nowadays. We must get it as we go along, or never get it."

Jewett did n't answer directly; he warmed his fingers awhile, and then turned to the landlord, and said,

"I think that I could add a line or two to your inscription that would make it very nice."

"What would you add?" inquired the landlord.

"Give me a pen and a piece of paper, and I will show you."

"Walk into the bar; there's a pen and ink—help yourself."

The doctor walked into the bar, and taking up the pen, wrote as follows:—

"No credit given here ;
And yet I've cause to fear
That there's a day-book kept in Heaven,
Where charge is made and credit given."

Laying down the pen and leaving the lines, he walked to and fro, and again sat down, expecting an explosion. The landlord went behind the counter and read what he had written. A pause of some minutes ensued, when the doctor, glancing around, was, to his great pleasure, and somewhat to his surprise,—from the intonations of dampness about the eyes of the landlord,—convinced that he had driven a nail in a sure place. "A word fitly spoken, how good it is."—*Prohibition Advocate.*

Foolish Talk.—John Locke, the English philosopher, was a favorite with many of the great noblemen of his age. They liked his robust sense and ready wit, and enjoyed even the sharp reproofs in which he occasionally indulged. On one occasion he had been invited to meet a select party at Lord Ashley's. When he came they were playing at cards, and continued absorbed in the game for two or three hours. For some time Locke looked on, and then he began to write diligently in a blank book taken from his pocket. At length they asked him what he was writing. He answered, "My lords, I am improving myself the best I can in your company; for having impatiently waited this honor of being present at such a meeting of the wise men and great wits of the age, I thought I could not do better than write down your conversation, and here I have in substance all that has passed this hour or two." The noble lords were so ashamed at the written record of their frivolous talk that they at once stopped card-playing, and began the discussion of an important subject. Thomas Carlyle has uttered even a more pungent reproof of idle talk: "If we can permit God Almighty," he says, "to write down our conversation, think-

ing it good enough for him, any poor Boswell need not scruple to work his will of it."—*Youth's Companion.*

Mental Occupation.—It is of the highest importance to have the mind constantly employed on something useful. The soul, by its very nature, is active. If, therefore, the mind be not exercised about serious affairs, it will necessarily be engaged about trifles. Were this fact properly realized and practiced upon, it would save us from many evils into which we are otherwise often led. Our temptations to sin frequently grow upon us, and increase in strength, solely in consequence of our failure to furnish the mind with proper employment. In the case of children, there is reason to believe that many of them who become vicious and nuisances to society, become such solely in consequence of the neglect of their parents to furnish them with something of a profitable nature upon which to occupy their minds. Many parents leave their children to shift for themselves with respect to their mental occupation. The consequence is, in many such cases, children grow up vicious and vile. Oh that parents were truly wise with respect to this matter!—*Christian Counsellor.*

What Shall We Do with our Daughters ?—Give them a good school education. Teach them to cook healthful food. Teach them to wash, to iron, to mend stockings, to sew on buttons, to make their own clothes, and a well-fitting shirt. Teach them to bake; to know that good cooking saves medicine. Teach them that a dollar is worth one hundred cents; that only those are saving who spend less than they receive, and whatsoever more is spent tends to impoverish. Teach them that they are much better dressed in strong cotton garments than in silk, if they are in debt. Teach them that one round, full face is worth more than fifty beautiful ones. Teach them to wear strong shoes. Teach them to make good purchases, and to see to the reckoning of their accounts. Teach them that they spoil God's image when they lace tightly. Teach them good common-sense, self-defense, and industry. Teach them to do garden work and enjoy nature. Teach them

likewise, if they have money enough, music, painting, and all arts, remembering always that these things are secondary. Teach them that walking is much better than riding, and that wild-flowers are very beautiful to those who observe them. Teach them to despise all make-believes; that one should say yes or no when one really means it.—*Sel.*

POPULAR SCIENCE.

Use of Gold in Dentistry.—It is stated by good authority that the amount of gold annually used by the 12,000 dentists in this country equals in value not less than five hundred thousand dollars. As there is but about one hundred and fifty million dollars in gold coin in circulation, it is evident that at this rate, all the gold in the country would be packed into decayed teeth and buried in grave-yards in less than three hundred years.

Composition and Uses of Celluloid.—Celluloid, which has come into extensive use in the arts, is a species of solidified collodion, produced by dissolving gun-cotton in camphor with the aid of heat and pressure. From a description of its composition and mode of manufacture by Dr. W. H. Wahl, we gather the following: The process of preparing gun-cotton is well known; by it the properties of the vegetable fiber are so changed that it becomes soluble in alcohol and ether, as in making collodion, camphor, and other substances. In the process invented by the brothers Hyatt, gun-cotton is ground in water to a fine pulp; the pulp is then subjected to powerful pressure in a perforated vessel, to extract the bulk of the moisture, but still leaving it slightly moist for the next operation, which consists in thoroughly incorporating finely comminuted gum-camphor with the moist gun-cotton pulp. The proportions employed are said to be one part by weight of the camphor to two parts by weight of the pulp. Any pigments, coloring matter, or other materials that may be adapted to the requirements of the articles into which the product is to be manufactured, may be incorporated at this stage.

The mass is next subjected to a powerful pressure, to expel from it the remaining moisture, and incidentally to effect, also, the more immediate contact of the camphor with the pulp. The dried and compressed mass is next placed in a mold open at the top, into which fits a solid plunger, when a heavy pressure applied to the plunger is brought to bear upon the mixture. While thus under pressure, the mixture is heated to a temperature of about 300°, at which temperature the camphor fuses, and, its volatilization being impossible, the melted camphor dissolves, or “converts,” the gun-cotton pulp. The process of transformation is rapidly effected when the right temperature is reached; and the product is celluloid. After the mass is taken from the press it hardens and becomes tough and elastic. A noteworthy circumstance is, that a large portion of the camphor appears to be permanently held in the mixture, so that its property of volatilization, when exposed to the air, is arrested. Celluloid is so extensively used as a substitute for ivory that it is said to have seriously affected the business of ivory importers and workers. It has all the strength and elasticity of this substance, and does not warp or discolor with age. It is used in place of tortoise-shell, malachite, amber, pink coral, and other costly and elegant materials, which it is made to imitate very closely. Its latest use is in combination with linen, cotton, or paper, for shirt bosoms, cuffs, and collars.—*Pop. Sci. Monthly.*

A SINGULAR occurrence is reported to have taken place lately at Leek, in the grand duchy of Nassau. During a severe storm in the night the electric discharge fell into a fish-pond stocked with several species. On the next morning the fish were all found at the top of the water, dead. Their appearance was like that of boiled fish, and their meat fell to pieces when it was handled, just like the meat of cooked fish. No hurt, either internal or external, could be perceived; the scales were not bruised, and the swimming-bladder was preserved still full of air. The water was disturbed and muddy at the time, as if it had just been stirred up.—*Sel.*

GOOD HEALTH.

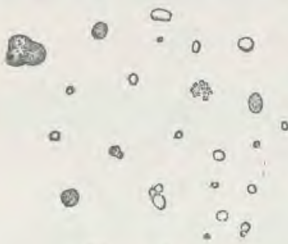
BATTLE CREEK, MICH., SEPTEMBER, 1880.

J. H. KELLOGG, M. D., EDITOR.

TERMS, \$1.00 A YEAR.

DISEASE GERMS.

MODERN science has demonstrated through the aid of that wonderful little instrument, the microscope, that the most powerful of all the enemies to human life are those which are most insignificant in size. Through the researches of Pasteur, Tyndall, and other eminent workers in this field, it has been shown beyond a chance for question that the air which we breathe always contains in greater or lesser numbers minute living bodies known as germs. In the accompanying engraving



Disease Germs.

may be seen some of these minute organisms greatly magnified. As seen in the cut, they are simply roundish bodies, mixed with other bodies of various shapes, which are particles of dust as seen when greatly magnified. Wherever decay of either animal or vegetable matter has taken place, germs are developed and given off in great numbers. Mold from moldy bread, when placed under the microscope, may be seen to throw off into the air an immense number of minute particles termed spores, which are not only capable of giving rise to growths of mold, but are thought by scientists to be active in producing some forms of disease. Some so-called germs are animalcules, while others are germs of vegetable life. It is the presence of certain varieties of these little germs which occasions the fermentation of beer, the "rising" of bread, the "working" of cider, and the "spoiling" of canned fruit and other

preserved products, the "souring" of milk, and all kinds of decay and decomposition. The conditions required for the growth and development of these minute organisms are warmth and moisture. In the vicinity of cesspools, vaults, barnyards, and other places where decomposition is going on, the air is laden with these disease-producing agencies.

Their office in the economy of nature seems to be to destroy bodies possessing higher forms of life, or, at any rate, to assist higher forms of organization to return to the inorganic or unorganized state. When the body is kept in a healthy condition, all its tissues possessing a high degree of vitality, it is unaffected by these agents of decay and death; but as soon as the standard of vitality is lowered in any degree, or when the system is attacked by germs in great numbers, possessing unusually active properties, we become a prey to their ravages, and subject to a variety of maladies of the most fatal character. There seems to be at present little room for doubt that typhus and diphtheria, cerebrospinal meningitis, malarial fevers, all of the contagious diseases, and perhaps a large number of others, the causes of which have not been so carefully studied, are produced by these agents. The presence of germs in the air cannot be very readily detected by any test which relates directly to them, but it may be safely considered that whenever and wherever foul odors are present, germs are also to be found, since these two sources of disease are almost invariably associated together, having the same origin.

It should be remembered, however, that germs may be present when foul odors are not, since they may be formed and given off before a sufficient degree of decomposition has taken place to give rise to offensive gases.

This fact should lead to the prompt removal of anything which is known to be a source of germs, since these minute and invisible bodies are far more serious in their effects upon the human system than any foul gas with which the air is ordinarily contaminated. The mold upon the wall should be regarded with the gravest suspicion, and measures should be promptly taken for a removal of its cause. A musty odor is evidence of the presence in the air of spores thrown off by mold, which may become the cause of serious disease.

ADULTERATION OF SUGAR.

NOTWITHSTANDING much has been said during the last six or eight years concerning the adulteration of sugars and syrups with glucose manufactured from corn, the refuse of starch factories, etc., the evil has not only continued, but has increased enormously, particularly within the last three or four years. For some time, adulteration was almost wholly confined to syrups, which can be sophisticated much more easily than sugars. We have examined specimens of syrup which contained scarcely a trace of cane-sugar, being almost wholly made up of the artificial sugar made by boiling starch with sulphuric acid. The difficulty in the way of the adulteration of sugar with glucose has been very great, it being almost impossible to make the artificial sugar resemble the genuine sufficiently to prevent its easy detection. Recently, however, manufacturers of sugar have succeeded in inventing the means by which even the whitest and fairest looking coffee sugars, heretofore supposed to be pure, can be adulterated almost at pleasure without being easily detected. This fact we discovered some little time since in a purely accidental manner.

We were spending an hour instructing several gentlemen in the methods of detecting adulterated syrups, and finding that all the specimens which had been obtained for use on the occasion were grossly adulterated we resorted to the use of a solution of extra fine coffee sugar for the purpose of showing them the contrast between the adulterated and the genuine. Upon applying the test we were astonished to find that the sugar from which

the solution was made, although to all appearance a very fine white coffee sugar, was largely composed of glucose made by the chemical process referred to.

Continuing the investigation of the subject, we obtained samples of sugar from one of the principal dealers of the article in the city, and submitted each to careful examination. Of the six samples obtained, one of each kind sold by the dealer, all but one gave unmistakable evidence of the presence of glucose. Several barrels of sugar like one of the samples had recently been purchased for use at the Sanitarium. We fortunately discovered the adulteration in time to prevent its use, it being of course returned.

The dealer at once reported the result of our examination to the manufacturers in New York City. Shortly afterward, we received from a law firm in whose hands the matter had been placed, a threatening letter affirming that the sugar was not adulterated, and inquiring if we were prepared to stand by our former assertion to the contrary. We promptly responded, to the effect that we had examined a number of sugars, one of which was probably the sugar referred to in their letter, and had found in the sugars an abundance of glucose. We did not pretend to say what was the source of the glucose, but would leave it to the manufacturers to say whether it had been placed there by themselves or other parties. We have heard nothing more from the manufacturers referred to, whose feelings were so rudely injured by our chemical analysis of their sugars, and presume we shall not. We have no doubt whatever that intimidation is a favorite method employed by unscrupulous manufacturers of adulterated articles of food whenever any attempt is made to expose their villainous practices. It certainly seems astonishing in an age like this, when enlightenment upon all subjects is reaching a stage never before attained in the history of the world, that a state of things should be reached in which adulteration has become so common and the perpetrators of this kind of fraud so bold and confident that a man must be threatened with a lawsuit because he refuses to swallow without question the vile compounds which are concocted by knavish and unscrupulous men and palmed

off upon the unsuspecting public as wholesome and nutritious food.

Upon re-examining the specimen of sugar which was claimed by the manufacturers to be unadulterated, and submitting it to a careful quantitative analysis, we found it to contain more than forty per cent of glucose. We have recently examined many other specimens of sugar and have thus far found but two which were wholly free from glucose. We are satisfied from the investigations we have made that the adulteration of sugars is now greater than ever before, notwithstanding all that has been said about it. So long as people will purchase and use whatever is offered them without questioning as to the purity of the articles purchased, adulteration must increase rather than diminish. The profit of the business is immense, as a bushel of corn or potatoes can be converted into an almost equal quantity of glucose sugar at a small expense. We have recently learned that a factory with a capital of over \$2,000,000 has been started in the city of Chicago, and it is said that the new factory will be capable of converting many car-loads of corn into glucose daily. Unless some efficient legislation is secured soon, it will ere long be almost impossible to obtain a specimen of pure sugar. It is even now almost impossible to obtain pure syrup, on account of the wholesale adulteration of this article. A groceryman of our acquaintance whose syrup we recently examined and found to be adulterated, wrote to the wholesale dealer in a large city from which he obtained the syrup, informing him of the fact and requesting him to send a barrel which he could warrant to be genuine cane-syrup. He received from the dealer in reply the statement that he had no such syrup in stock, but would obtain a barrel for him and forward it in a week or two. In due time the syrup arrived, and we found it to be a really genuine syrup, the only pure syrup, with one or two exceptions, we have met with for two or three years. The facts in this case show very plainly that the dealer referred to was well aware that his syrups were adulterated and that he dealt wholly in an adulterated article.

It is hardly necessary to suggest that one of two things must be done if the injury re-

sulting from the use of these adulterated sugars and syrups would be avoided; namely, to abstain wholly from the use of sugars or syrups, or to submit to careful tests every sample of these articles purchased for use. The latter plan we have adopted, and have followed for some time with supplies obtained for the Sanitarium.

SUNLIGHT AND SUN-BATHING.

THE value of sunlight in the maintenance and restoration of health, although well recognized, is seldom made of practical utility in the treatment of disease. The important relation of sunlight to health is shown in the effect produced upon plants as well as animals by depriving them of its influence. In caves, mines, and other places excluded from the light, plants do not grow, or, at most, they attain only a sickly development. The same is true of animals. In the deep valleys among the Alps of Switzerland, the sun shines only a few hours each day. In consequence the inhabitants suffer terribly from scrofula and other diseases indicative of poor nutrition. The women, almost without exception, are deformed by huge goiters, which hang pendant from their necks unless suspended by a sling. A considerable portion of the males are idiots. Higher up on the sides of the mountains, the inhabitants are remarkably hardy, and are well developed, physically and mentally. The only difference in their modes of life is the greater amount of sunshine higher up the mountain side. When the poor unfortunates below are carried up the mountain, they rapidly improve.

The value of sunlight for the sick has been amply demonstrated by hospital experience, which shows a much larger percentage of recoveries in rooms abundantly exposed to the sun than in those excluded from its rays. That the sun has a powerful influence upon the skin is shown by the great increase of pigment, referred to ordinarily as "tan," which is produced by free exposure to the sun and air. This results from an increased activity of the cutaneous tissue.

The sun-bath, or insolation, consists in exposing either the whole or a part of the body to the direct rays of the sun, or pro-

tected by a single covering of thin white muslin. In taking the bath the head should be protected from the rays of the sun, as the effects upon the head are ordinarily so powerful as to excite unpleasant sensations. In warm weather the bath may be taken in any inclosed space the top of which is open, admitting the sun in such a manner as to allow it to fall upon a person lying upon a bed or couch within it. Such an arrangement may be easily made of sheets of muslin in the back yard or upon the roof of flat-roofed houses. Ordinarily, however, it is best to have a room constructed in the attic for the purpose, a window being placed in a roof having a south slope in such a way as to make the sunlight available for three or four hours during the middle of the day. Means should be provided for ventilation, as otherwise the heat within such a room may become too great for comfort, and so excessive as to interfere with the efficiency of the treatment. All the benefits to be derived from the use of the sun-bath can be obtained from ordinary glass. During the "blue-glass mania," a few years ago, we made a number of experiments with the blue glass, by which we were thoroughly convinced that the only difference in the effects of different-colored glass, aside from the mental effect upon sensitive patients, is in the modification of the intensity of the rays of light produced by the different kinds of glass.

The length of time the patient should remain in the bath depends on the condition of the patient and the effect desired. Highly sensitive patients, especially when first beginning to use the bath, should remain exposed to the rays of the sun but a short time, ten to twenty minutes usually being long enough. Less sensitive patients, and those who are accustomed to the effects of sunlight, may remain in the bath for from half an hour to an hour. The bath should be concluded by a tepid sponge bath or wet-hand rub, as the activity of the skin is greatly increased by exposure to the sun, the patient often perspiring very freely. The effect of the bath is usually to produce a feeling of languor and lassitude. Many patients fall asleep while in it. Unpleasant effects are rarely produced. In cases where they occur, the usual

cause is too long continuance of the bath or too great intensity of the sun's rays. To guard against unpleasant effects from the latter cause, it is well to cover the patient at the first of the bath with a sheet, or to draw over the sash through which the light is admitted, a screen of very thin material, as gauze or musquito netting. It should be recollected that the solar rays sometimes produce very powerful effects, as seen in sun-stroke, and hence patients should receive careful attention while in the bath, especially if they are known to be very sensitive, or easily affected by the sun. Cold water should also be kept at hand for wetting the head in case headache is produced, and also for ready use to guard against sun-stroke. By the use of different-colored screens, the intensity of the sun's rays may be modified at pleasure. The sun-bath is an excellent means of treatment in all cases of defective nutrition in convalescence from various acute diseases, in nervous affections and skin diseases, and especially in consumption and dyspepsia. For the last two diseases we have used it very extensively, and with very excellent success. Under the stimulating influence of the sun's rays, consumptives gain flesh, improve in appetite, are relieved of their exhausting night-sweats, gain color, and, in fact, improve in every respect. The dry, inactive, almost lifeless skin of the dyspeptic becomes moist and supple, and shows marked increase of activity. Rheumatic patients also are benefited by this bath. In fact, nearly all classes of invalids may employ it with advantage. It has been found also that wounds heal much more rapidly when exposed to the sun's rays two or three times a day than when kept continually covered.

PHRENOLOGY.

PROBABLY no psychological theory originated in modern times has had so great an influence upon the minds of the civilized people of the globe as has the doctrine elaborated by Gall and Spurzheim, known as phrenology. Taken together with physiognomy, this theory attempts to determine a man's character by the external configuration of his skull and face. With the exception of a very few points which may be considered

as quite well established by physiological and pathological observations, the theory must be considered as strictly empirical in character. As such, it must be subject to great changes. Since it cannot be said to have an anatomical basis, as all settled theories relating to the brain and nervous system must have, phrenology is certainly liable to great and very considerable changes as the structure and functions of the brain are more thoroughly worked out by scientific research.

While there is much that is good in phrenology as taught by its ablest exponents, it is capable of being made an agent for great injury; and we have sometimes questioned whether almost as much harm as good was not done by it as it is generally used. Attracted by its novelty, thousands have studied it sufficiently to get a very slight smattering of the names and locations of the "bumps," and then, supposing they possessed all the requisites to make them competent to delineate the characters of their fellows, point out deficiencies and merits, etc., they have set themselves up as phrenologists, head-examiners, bump-feelers,—blunderers would be a much more proper term to attach to them,—when in fact they hardly possessed intelligence and mother-wit enough to become first-class barbers. The amount of trash which has been retailed about the country, especially in the rural districts, under the name of phrenology, is appalling. The harm that these charlatans do is incalculable. They fumble the heads of those who visit them, assume a wonderfully wise look, and then proceed to deal out to them a character according as their fancy dictates, or as will the best serve their purpose. Even when a man has sufficient information and experience to enable him to form a nearly correct estimate of a person's character, he may still be utterly unqualified to give the proper advice to individuals respecting the best course to pursue to remedy their defects. The business of giving advice to people concerning the work of reforming depraved characters, or correcting natural deformities of mind, mental and moral, is certainly second to no other in which a human being could be engaged, and ought to be attempted only

by one who is in the most eminent degree qualified for the work. The problems which come before a physician who deals with the sick and disordered body are the simplest possible compared with those which present themselves for solution to those who profess to be the physicians of the mind. Bad advice given by such an individual may do an incalculable amount of harm, as we have had occasion to observe in more than one instance. We have known cases in which persons who had lived happily for some time in the relation of husband and wife, have suddenly discovered that they were wholly uncongenial and incapable of being happy together after going to a phrenologist and being told that they were not adapted to each other. Not long since, a young man rushed into our office in most precipitate haste, having hurried much, as he knew we were about leaving to make a professional visit. He carried on his face a look of the most profound anxiety. There was evidently a real trouble on his mind. As we were about going out he begged us to stop just one moment. We inquired if he was sick. "Oh, no," he said, "but I must see you just one moment." "Is some one suddenly taken ill?" we asked, really feeling some little alarm, as he appeared so solemn and anxious. "No one is sick," he replied, "but I want to see you a moment to find out what I am good for." We were puzzled and asked for an explanation, which he promptly made by saying that he had just made a visit to a phrenologist who informed him that he had made a mistake in choosing the life-work for which he was fitting himself, the gospel ministry, and that he should prepare himself for a physician instead. The young man was much agitated in reflecting that so much time had been lost, and wanted to begin at once in his proper sphere if he could do so. We quieted his fears when we learned the cause, advised him to pay no attention to the counsels of his unwise adviser, and to pursue the even tenor of his way as before. He was manifestly unfitted for the work of a physician, though he had a great love for books, delighted in the study of language, was highly conscientious, and very desirous of doing good to his fellow-men. His lack of power to adapt

himself to circumstances, and especially his want of ingenuity either mechanical or otherwise, clearly indicated that almost any other calling would be better fitted to him than that suggested by his adviser, who charged him half a dollar for counsel which would have made his life a failure had he followed it. Upon inquiry we learned that the self-styled phrenologist had condemned the young man's plan to fit himself for the ministry on account of his not possessing the phrenological sign of large language, although in fact he had a most excellent memory of words, having already acquired good command of three modern languages. The work of such men is damaging to the world, and far more so than they have any idea themselves.

We believe that phrenology in the hands of those who make it a specialty has been carried to an extreme; that claims are made by its advocates of powers which they do not and cannot possess. It is this, in fact, which has made the art—it can hardly be called a science as yet—obnoxious in the eyes of the great mass of scientists. Seeing that some claims are preposterous, they have neglected to investigate or give credit to any part of what is claimed. The many investigators who are now at work upon the cerebrum, examining its structure with the closest scrutiny of the microscope, and its functions by means of experiments upon living animals the nearest like man in their anatomical structure, will undoubtedly develop in time some facts bearing on this subject which will place what is true of the present phrenological doctrines upon a strictly scientific basis, and will add to them such elements as they lack of the completeness and definiteness which is required for a thoroughly symmetrical system of psychological science.

SEA-BATHING.

BATHING in the sea is much practiced at this season of the year by fashionable people who make annual visits to the sea-coast for this purpose. It is no doubt useful, though many who participate in it would doubtless receive quite as much benefit if they took as many baths at home during the whole year as they take at the fashionable watering-places in a single week. It is a fine thing

to be well washed once a year, however, if not more often.

As generally conducted, sea-bathing is not much more beneficial than harmful. The dissipation accompanying it often more than counterbalances what good might be gained. It is rather absurd to attribute any specific virtues to sea-water, as many do. Quite a large business is carried on in the evaporation of sea-water and the sale of the residue, which is again dissolved in water and used in bathing by those who live too far inland to enjoy the benefits of bathing in the sea, or who prefer to take their sea-bath in their own private bath-room. Everything must have a counterfeit, and so this sea-salt is imitated by base swindlers who prepare a mixture of chemicals just as powerful, but not quite so complicated, though certainly equally good. All of this trouble and swindling might be saved if people would only consider for a moment the fact that the chief benefits they receive from sea-bathing are derived from the exercise, the temperature, and the pure water, and not from any impurities which the water may chance to contain. At any rate, the same effects may be obtained by adding a liberal quantity of salt to ordinary water employed in bathing. This we frequently do, especially in cases of night-sweats, or of great inactivity of the skin.

Sea-bathing is usually overdone. More benefit will be gained by one or two daily baths than by a half-dozen. Fifty baths in a single week are not equivalent to a single bath each in fifty weeks.

A Common Source of Disease.—One of the most common sources of disease is the pollution of drinking-water. In many places the water of streams is used for drinking and cooking purposes. In all places where streams exist, the water is drunk by cattle and other domestic animals. It has been clearly shown that typhoid fever and several other serious diseases may be communicated to both man and lower animals by means of polluted water. With these facts in view, the reader will appreciate the really horrible condition of things found by an English health officer in an investigation which he

was led to make in consequence of an outbreak of typhoid fever: "A visit was paid to the source of the milk supply, which was found satisfactory with one exception. The water used at the dairy, which the cows drank as well as human beings, came from a mill-stream which the medical officer followed for about two miles. He found several closets draining into it, and at one place discovered part of the entrails of a bullock, and a little higher up, the hind-quarters of a calf which had died of the "quarter-evil," a most contagious disease, probably identical with splenic fever in older cattle, and malignant carbuncle in man. The remains of the animal were macerating in the stream, and distributing the bacteria (the germs of the disease) throughout the whole of its lower length. We know not how many farms depend for their water-supply on this stream, but it is impossible to conceive of a more direct way of conveying the disease to cattle. The person who threw the quarters of the calf into the stream has not only done incalculable injury to his neighbors, but is without doubt responsible for the outbreak of typhoid in Bristol."

Summer Diarrheas of Children.—Reference to the mortality reports of cities show that the notable increase in the number of deaths among young children during the warm season of the year is chiefly due to bowel disorders. The most frequent of these is intestinal catarrh. There are numerous predisposing and exciting causes of this affection, but by far the most frequent and potent of all is improper food and feeding. Among the various dangers connected with diet the most to be feared is decomposition. When fed too frequently, the digestive organs of small children become disturbed, the digestion becomes slow, and the milk sours instead of digesting. The hard curds formed, and the irritating acid resulting from decomposition, produce congestion of the mucous membrane, and a catarrh of the digestive tract is set up. If milk which has stood too long, or has begun to sour, even very slightly, is used, the evil is aggravated. Thousands of children die annually in consequence of the use of the long rubber tubes employed with

nursing-bottles. In consequence of the difficulty of cleaning perfectly every part of the interior of these tubes, they are certain to become sour, and if the milk is perfectly wholesome when put into the bottle, by the time it reaches the child's mouth it is laden with the germs of fermentation. The greatest care should be taken to keep the nursing-bottle absolutely clean by washing and scalding every time it is used. Long tubes should never be used. If the short nipples cannot be obtained, the child should be fed with a spoon.

A Tobacco-Chewer Silenced.—The *Cincinnati Gazette* states that on board a railroad train in Ohio, the other day, a man with a quid of tobacco in his cheek became very indignant because a lady gave her pet dog a drink from the tin cup attached to the water-cooler. In reply to his remonstrance, the lady asserted that the "dog's lips were cleaner than those of any tobacco-chewer," the truth of which the devotee of the filthy weed was unable to deny. It is the evident duty of railroad authorities to place upon car water-coolers a placard prohibiting the use of the common drinking-cup by tobacco-users, dogs, and other animals. Until this much needed action is taken by the railway officials, we would advise the traveling public to protect themselves by each carrying his own cup, which we have for years been in the habit of doing.

LITERARY NOTICES.

VITAL STATISTICS OF MICHIGAN.—The eighth annual report relating to the registry and return of births, marriages, and deaths in Michigan, for 1874, just from the press of the State printers, has been received from the Secretary of State, and forms a valuable and interesting addition to the literature of the subject,—statistics which are of vital interest to all classes of people, because they supply the foundation for those most important efforts for the prevention of deaths. All facts and work which elucidate the causes of sickness and of deaths are of great importance to the people of the State, because such facts and studies tend to lengthen their lives and make them more pleasant and profitable.

The number of births in 1874 as returned was 31,151; the number of deaths as returned, 12,500; the excess of births over deaths, 18,651. On account of an imperfection in the law, causing a delay in collecting the statistics, it is estimated that a large proportion of the births and deaths are not returned. For many purposes this does not injure the value of the statistics, because those returned are probably a true sample of the whole; but in order to learn the num-

ber which actually occurred, it becomes necessary to establish the proportion omitted in the collection, and to correct the numbers returned, because of such omissions. As thus corrected, the births in 1874 are given as 55,841, and the deaths as 20,090; excess of births over deaths, 35,751. The number of marriages returned was 11,041.

CAUSES OF DEATH.

The table on page 258, showing the fifteen principal conditions and causes of deaths, is very interesting and valuable, because it supplies a knowledge of the relative importance of public and private effort for the prevention or avoidance of the several diseases. Small-pox is a much dreaded disease, demanding special efforts to prevent or modify it; but it does not appear in the list of fifteen principal causes of death. Whooping-cough is generally believed to be a comparatively mild disease, and yet these statistics show that in a long series of years twice as many deaths occur from whooping-cough as from small-pox. In the table just mentioned, consumption heads the list with 1,392 deaths; then pneumonia 800, typhoid fever 610, still-born 464, scarlet fever 440, old age 428, diarrhea 380, heart disease 320, dysentery 304, cholera infantum 278, inflammation of brain 261, dropsy 226, diphtheria 213, inflammation of bowels 208, lung disease 205. These make a total of 6,529,—above half the whole number as returned, 12,500. And it is to be observed that most of the 6,529 deaths are due to what are believed to be preventable causes. The deaths from diarrhea and dysentery were greatest in number in August, from diphtheria in September, from scarlet fever in April, from typhoid fever in October, and from whooping-cough in August.

The relations between meteorological conditions and deaths from different diseases are very carefully and thoroughly studied. The meteorological conditions as observed by Prof. Kedzie at the State Agricultural College are most used, because a record of observations for a long series of years is there available, and particularly because, being in the center of the thickly-settled part of the State, it is believed the conditions there approximate the average conditions in the State.

By the study of the sickness and deaths from pneumonia (inflammation of the lungs), in connection with the prevailing meteorological conditions, we learn, as it seems by this report, that with a dry, cold air, a sharp wind, and an abundance of ozone, we had better be careful, or we may fall a victim of that disease; that persons are more susceptible to this danger in childhood and in advanced age; that the danger is greatest in February, March, April, and in December (see pages 302-4). The inference seems plain that, if we will be careful to act upon this information gained, we may ward off many such deaths; and in proportion as such intelligent care is exercised, the study of vital statistics becomes valuable to us.

The volume before us shows careful editorial work and much painstaking in its preparation. The study of vital statistics as conducted in Michigan, and as supplemented and aided by the investigations into the causes of sickness by the State Board of Health, must eventually result in great good to the people of the State, and the sooner they generally recognize the importance of the work, and the good which may be derived therefrom, and the sooner they perfect the laws for the collection of these statistics, the sooner will those who work out these problems be able to give us still more important and reliable facts to act upon. Statistics which inform us why we die,

and how not to die, ought not to be "dry reading;" and to those who take the time to understand them, they are not dry reading. It is greatly to the credit of the medical profession that its members have done much to help along sanitary work; but unaided and alone they should not be expected to ascertain the causes of diseases and the best methods for their prevention. If this work is to be done, it must be done by the people for themselves; and such reports as the one before us show that considerable progress is being made in this State in learning the conditions tending to death from the most important diseases.—
J. K. A., in *Lansing Republican*.

APPLETONS' JOURNAL for September gives the first half of a paper by the Hon. F. H. Morgan (our Minister to Mexico), describing the organization of "The International Tribunals of Egypt," and showing the peculiar working of judicial institutions in that country. The paper is an exceedingly interesting one, revealing some of the customs in Egypt, and showing how that land has been plundered and wronged by the civilized world. Under the title of "Two American Divines" there is a review of the recently published biographies of Dr. Bushnell and Dr. Muhlenberg; and Dr. Coan has a review of Stoddard's collected Poems. There is the completion of the novellette, "Edge-Tools;" a paper on "The Influence of Art in Daily Life," by J. Beavington Atkinson; Leslie Stephen's essay on Sterne; an essay by Matthew Browne, entitled "From Faust to Mr. Pickwick;" a proposal for the "Aerial Exploration of the Arctic Regions;" and several other papers. The number is valuable and eminently readable.

THE MANAGEMENT OF CHILDREN IN SICKNESS AND IN HEALTH. By Annie M. Hale, M. D. Philadelphia: Presley Blakiston. Price 50 cents.

This is a book for mothers, and contains a large amount of valuable information which every mother, especially every young and inexperienced mother, ought to peruse.

There can be no doubt that the larger share of the great mortality among young children must be attributed, more than to any other cause, to the ignorance on the part of the mother, of the requirements of an infant and the correct knowledge of what is necessary to prevent and treat disease. Every mother needs all the positive knowledge she can obtain, superadded to her own judgment of what is proper, to safely pilot a young life through the period of its helplessness and dependence. As an aid in obtaining such knowledge Dr. Hale's book is of great value, and its wise advice if followed will be the means of saving many a human life.

POPULAR SCIENCE MONTHLY. New York: D. Appleton & Co.

The number for September well sustains its character as a mine of valuable reading. The table of contents presents an unusually varied and interesting list of topics, among which may be mentioned an illustrated article entitled "How Animals Digest," by Dr. Fairchild; "The Solar System and its Neighbors," by P. B. Warring Ph. D.; and a translation from the German on "Psychogenesis in the Human Infant," by Prof. W. Preyer, of Jena; together with a large number of other instructive papers in the various departments. This is a leading journal.

Publishers' Page.

Canvassers who are soliciting subscriptions to *GOOD HEALTH* are doing well. One agent sends in a list of twelve names, obtained with very little effort. Agents engaged in canvassing for other books can carry a sample of *GOOD HEALTH* and secure subscriptions whenever they find persons interested, even if they do not devote their time to canvassing for it exclusively. Quite a number of agents engaged in canvassing for the *Home Hand-Book* adopt this plan for paying expenses, and like it very much.

Agents are still wanted for the "*Home Hand-Book*." The book sells well everywhere, and will afford an opportunity for work for five hundred good agents for the next five years. A Texas agent has taken seventy-four orders the last ten days. Outfits cost \$2.50. Agents on Pacific coast should address, W. C. White, Oakland, Cal.; in Iowa, L. T. Nicola, Des Moines; in Illinois, Prof. W. N. Ferris, Pittsfield; in Massachusetts, S. N. Haskell, South Lancaster. Agents wishing to work in other States should address the author at Battle Creek.

This is a good season of the year for sanitarians to do missionary work. The season has come when typhoid fever most frequently makes its appearance, in consequence of the rapidity with which decomposition takes place, affording favorable conditions for the development and spread of the germs which occasion this disease. Every person who has been enlightened on sanitary subjects should let his light shine for the benefit of his neighbors. People take great care to protect themselves from lightning by the most approved forms of lightning-rods, although the chances of injury from this source are very small indeed, while they pay no attention whatever to protection from disease germs, which, on account of the more frequent and certain exposure to their influence, are almost infinitely more dangerous.

Ignorance is the greatest of all causes of disease. The people must be educated on sanitary subjects. One of the most encouraging features of the times is the increased interest in hygienic subjects. All cannot teach intelligently, but all can do something in this work by aiding in the circulation of hygienic literature. Boards of health are doing important work in preparing literature for the people; but they can do little without co-operation. Every one who appreciates the value of life and health ought to interest himself in the enlightenment of his friends and neighbors.

Every temperance society ought to have a good supply of the new temperance tracts. A sample copy of each will be sent, post-paid, on receipt of two three-cent stamps.

The new temperance song book is very well received. Every one who has examined it is pleased with it. It contains an unusual amount of really good music.

We have received several copies of the *Elkhart Review*, a daily paper published at Elkhart, Ind., which contains a series of articles entitled "*Elkhart Water-Supply*," by Dr. W. A. Neal of that city. We have perused the articles with great pleasure, and are glad to note the care taken by the writer to put into popular language with ample illustration so much useful sanitary knowledge. The newspaper is the educator of the common people; and it ought to be used as a means of educating the common people on subjects of such vital importance as that of the public health. We hope that Dr. Neal will continue his efforts in this direction, and trust that the time will come when every city and town in the country will have the advantage of work similar to that which the Doctor is doing for Elkhart.

THE SANITARY DETECTIVE.—For several years we have devoted considerable time to familiarizing ourselves with the various tests for adulterations, etc., and proving those most authoritatively recommended. For the accommodation of those interested in the subject we have prepared a case containing the principal of these tests. Each case is accompanied with full and simple directions for the use of the various tests in detecting all the most common adulterations of food, etc. The only way to put a stop to the wholesale adulteration of articles of food is to render the people so intelligent upon the subject that they will not purchase food which they are not sure is pure. At the present time the only way to be sure of the purity of any article of food is to test it. This the Sanitary Detective will enable any one to do, and it will be found worth a hundred times its cost in any family.

Agents are wanted to sell the detective everywhere. A more complete description is given in the advertising columns.

The International Sanitary Congress at Turin.

EDITOR OF *GOOD HEALTH*:

SIR,—I am requested by Prof. Hyacinthe Pacchiotti to have the correct date of the coming International Congress of Hygiene at Turin announced in the American papers. The Congress will open on September 6, and close September 12; not in August, as has been wrongly announced. The King, the Ministers, the Maire, the Prefect, and all the officials will take part; the Minister of Foreign Affairs invites all foreign governments to send delegates; a reduction of 30 per cent on the railway fares is also announced.

Very respectfully,

JOHN K. ALLEN.

Lansing, Michigan, July 26, 1880.