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THERAPEUTICS AND DIVINITY.

II.

CHRIST'S ACTS OF HEALING—THEIR IMPORT—TRENCH QUOTED—THEY GIVE DIGNITY TO THE HEALING ART—DUTY OF SCIENTIFIC MEN, ESPECIALLY PHYSICIANS—ST. LUKE—THE RELIGIO MEDICI.

Naturally, as allied to my subject, the wonderful acts of healing accompanying the first introduction of Christianity here occur to the mind. How completely in accord were they with the practice of employing terms of hygiene in Christian teaching! The whole drift of these phenomena, so numerous, so publicly displayed, so widely attested, was in one direction, viz., the recovery of human beings from physical disablement, from paralytic affections, from mental derangement, from prostration under the power of evil in divers shapes. As Trench writes: "The miracles of Christ had every one of them a meaning and distinct ethical aim; were bridges by which Christ found access from men's bodies to their souls; manifestations of His glory, that man might be drawn to the Glory itself. * * * They were eminently miracles of the incarnation of the Son of God, who had taken our flesh, and, taking it, would heal it." How different were these from the pretended miracles of the after periods, invented and reported for the mere maintenance of a kind of rivalry in religious hero-worship, among ignorant populations. The fair deduction from Christ's works of healing is that they were so many symbols of what the effects of the working of the Christian system would be. Effects which, as matters of fact, have continued to manifest themselves in multitudes of instances in each successive generation in widely-severed portions of the globe.

The hygienic phraseology provided for use in Christian teaching suggests the same thought, that Christ's acts of healing did, viz., that we may learn from our experience in regard to the body's health something of the conditions which affect for good and evil the spirit's health. Healthfulness we seem to be assured is the state in which the human body ought to be. In that state its functions are most effectively discharged and life becomes to its possessor a source of usefulness and satisfaction. Defection from that state tends to loss of power, to suffering, to dissolution; and recovery from such defection, though always to be desired, is not always certain or easy; but every advance achieved beyond or above the merely normal condition is a gain in power, in happiness, in length of days. On these facts in the body's life, which are sufficiently familiar, an analogy is based by the aid of which we may in some measure apprehend things that happen in the progress of the spirit's life. We are led on to think that as the study of health and its enlightened cultivation conduct with certainty to the perfecting of man's body in the lower sphere so the study and enlightened cultivation of what is described as health in the higher sphere will be followed by parallel results; and that, as the neglect of the body's health tends with certainty to weakness, and ultimately to utter disorganization in the lower sphere, so it is probable that the neglect of the spirit's health will lead

to results which, in some sort, correspond in the higher sphere. We have it hinted to us also that as without health, in the ordinary sense, we really do not live the life we were intended to live, so without health in the higher sense we do not reach the true life of the spirit. We gather, too, that the more perfect the healthfulness established among men by means of observation and persevering care, the more fully is shadowed forth the life, the true life, attainable by the human spirit as it passes to higher planes in the career of its existence.

Without going any further in this place into high doctrines which may be pre-figured, and confining our attention to matters more palpable, the phraseology suggested for use in Christian teaching certainly indicates that man's earthly body is salvable; is recoverable from the many hurts which it has suffered through sins committed against it in most parts of the world; is improvable up to a very high point; even up to the point of its perfection in efficiency and beauty of outward form, within the limits that now bound humanity. A happy ideal of "the life that now is" seems to be opened out before us, which it will be possible more and more to realize as men grow more and more wise. Hygienic studies are thus invested with a vast interest and with bright hopefulness. The references made in the first section of this paper to the terms employed in the Hebrew, the Greek, the Latin, the old Saxon, in the discussion of the subject of which it treats will not, I trust, now be deemed superfluous or out of place. From such a comparison of terms we see what pains have been taken in the transfer of useful truth from one region of the earth to another to adapt the phrases employed to the persons addressed. Scholars vernacularized as they went on as precisely as they could; scientific men of the present day and of every day will see that it is incumbent on them to go and do likewise. Our composite English speech has taken up into itself a great variety of terms, especially in science, from the several tongues which have predominated in the world from time to time, as English now predominates; and these, to the popular mind required again and again to be interpreted. The remarks above made are intended to afford some trifling help in this way as regards the terminology commonly

used when handling the subject of Health.

A sacred halo has been shed over the medical profession by the fact that the Divine Founder of Christianity was pleased so often and so strikingly to show Himself as one who went about "healing (*therapeuon*). all manner of sickness and all manner of disease among the people;" and those of that profession in the ages all along, who have confessed the spell of the great Master over them, and left records of their fealty to Him, have not been few. One of the four Evangelists was a physician; and, besides being very grateful to him for his two written histories, how many have entertained for St. Luke a special kindliness of feeling on account of his devotedness to St. Paul, whom he seems voluntarily to have accompanied in many of his toils and journeyings, winning from him the epithet "the beloved," having ministered to his comfort doubtless in his many infirmities, as we know he did at the last during the final imprisonment.

Among English physicians who have been experts in Divinity as well as Therapeutics, the name of Sir Thomas Browne has come down to us from the times of James and the two Charleses, with special honour. Dr. Johnson said of him "There is scarcely a writer to be found whose profession was not Divinity that has so frequently testified his belief of the Sacred Writings, has appealed to them with such unlimited submission, or mentioned them with such unvaried reverence." His *Religio Medici* is a classic in English literature, a favorite one with some of the most thoughtful of Englishmen; a book full of wisdom and nobleness and beauty, though not free, here and there, from a trace of notions which, since the writer's time, have clean died out. With a sentence or two from this work, and its sequel, entitled "True Christian Morals," equally well deserving of study, I shall conclude this paper. I do not observe in the *Religio Medici* or in the "Morals" the analogy between the higher and the lower hygiene, delineated in so many words; but the spirit of the two works fully supports it. Thus we have the writer speaking of a certain duality in his own experience, in this strain: "Every man hath a double horoscope; one of his humanity, his birth; another of his Christianity, of his baptism; from this do

I compute or calculate my nativity, not reckoning those *horæ combustæ* and odd days, or esteeming myself anything before I was my Saviour's and enrolled in the register of Christ; who-soever enjoys not this life, I count him but an apparition, though he wear about him the sensible affections of flesh. In these moral acceptations, the way to be immortal is to die daily." And in the "Morals" he exhorts his reader thus: "Desert not thy title to a divine particle and union with invisibles. Let true knowledge and virtue tell the lower world thou art a part of the higher. Let thy thoughts be of things which have not entered into the hearts of beasts; think of things long past, and long to come; acquaint thyself with the choragium of the stars, and consider the vast expansion beyond them. Let intellectual tubes give thee a glance

of things which visive organs reach not. Have a glimpse of incomprehensibles and thoughts of things which thoughts but tenderly touch. Lodge immaterials in thy head; ascend unto invisibles; fill thy spirit with spirituals, with the mysteries of faith, the magnalities of religion, and thy life with the honour of God; without which, though giants in wealth and dignity, we are but dwarfs and pygmies in humanity, and may hold a pitiful rank in that triple division of mankind into heroes, men and beasts. For though human souls are said to be equal yet is there no small inequality in their operations; some maintain the allowable station of men; many are far below it; and some have been so divine as to approach the apogeeum of their natures, and to be in the confinium of spirits."

HENRY SCADDING.

WHAT SORT OF WOMEN GRADUATE FROM COLLEGES?

THE answer to this question will vary with the individual to whom it is presented. One class affirms that only the strong-minded so graduate. Another class affirms that such education spoils a woman. Another class as earnestly affirms that such mental training is the condition of the most perfect development. One class says that the health of girls is injured by such training; others claim this training as a physical tonic of extraordinary power. We are led to this train of thought from an article in the *Boston Medical Journal*, setting forth some recent facts collected from the women graduates of medical colleges. A committee of an association of college alumni sent out circulars to all the women college graduates. These circulars contained some forty questions, relating to childhood, to hereditary tendencies, to individual health, college life, post-graduate life, etc. Out of twelve hundred and ninety graduates, replies were received from seven hundred and five women, of whom nearly half were Vassar alumni. These replies were tabulated by the Massachusetts Bureau of Statistics of Labor.

It seems that from these data the physical health of these women is as good as that of the non-college graduate woman of similar social grades. There is no reason

to suppose that judicious mental work is more injurious than the labor of other woman. Of course there is much in such an investigation that is indefinite and unsatisfactory, because of the different understanding attached to the terms employed.

More than half of the women had been brought up in the country; less than a quarter were brought up in the city; the rest had lived in both city and country. The health of the city girls seems the best. The average age of first study was five and one-half years. The average age of entering college was a little over eighteen years. The age of beginning menstruation varied from nine to twenty years, the greatest number beginning at fourteen or fifteen. A considerable number abstained from physical exercise during menstruation, two only from mental work alone, while a considerable number abstained from both. All but one hundred and sixty-nine suffered more or less from uterine disturbance. Ninety-two per cent. of the girls refrained from entering society during college life.

Of the seven hundred and five women but twenty-seven per cent. were married, at an average of over six years after graduation. The report says that this small proportion of marriages is due to

the deliberate choice of the alumni. From their trained reflective powers they are prevented from falling victims to sudden impulse, but subject themselves in all acts to cool reflection. Thus they become exempt from considerations of interest and conventionality which are the usual inducements to marriage.

Farther, modern life calls for late marriages, so that there is still hope that many more will be married before they reach the age of sixty. Farther, the committee say that college women are not as prone to enter upon married life as the majority of women.

The *Journal* makes the following quotation from a keen philosopher: "The truth is that out of the many elements uniting in varied proportions to produce in man's breast that complex emotion we call love, the strongest are those produced by physical attractions; the next in strength are those produced by moral attractions; the weakest are those pro-

duced by intellectual attractions; and even these are less dependent upon acquired knowledge than on natural faculty, quickness, wit, insight. If any think the assertion a derogatory one, and inveigh against the masculine character for being thus swayed, we reply that they know little what they say when they thus call in question the divine ordinations."

The celibacy of college women will never be chosen by other than those who early determine to pursue professional callings. If such women do not marry after being educated, it is scarcely probable that they would have married had they not entered college at all. They are less of the marrying type than the average of women. The existence of such a type is apparent to every observer.

The facts thus presented do not give us any new views, but they throw a clearer light upon those previously held.—*American Lancet, Detroit.*

ART IN THE DECORATION OF HOUSES.

IT was distinctly the fault of the age that when at last a few advanced men saw with a kind of horror the artistic degradation that, ten years ago and less, had come upon the people of the civilized world, and therefore taunting civilization with its barbarity, demanded in the name of honor a wider reaching of art and a truer reading of its nature. So it was, indeed, and the record of the first five years subsequent to the Centennial Exposition, so far as matters of art were concerned, gave good ground for holding that then at least no consistent and national art was possible in the United States. The history of the so-called "art revival" of the past decade is, in its reasons and results, a subject of peculiar interest, fascinating also, but not the object of this projected series of papers. It is named here only in so far as it was the cause of a natural but insidious public delusion, which vitiated fundamentally all the work which followed—the idea that art was fashion or fashion was art, for the two were inextricably mixed—the idea that what was sanctioned by fashion (what fashion was never asked) was for the time being the only perfect thing, and that one fixed scheme of decoration—color,

form and arrangement—was equally suited to the house of a clergyman and a stock broker, a philosopher and a lawyer, a poet and a pork-packer.

So flagrant and preposterous an error was possible only in an era of total artistic depravity, such as then was. Coming at that time it was the only possible logical outgrowth of the giving of art ideas to a people mentally unfitted. The error has still remained in this direction, although more knowledge has come in the matter of the technical qualities of art decoration. There is good knowledge growing of intrinsic beauty in line, color and arrangement, but still is individuality lacking—in fact, the vital reason of art. The explanation is evident, if harsh and unhonorable. Given a true desire of art, and the error would never exist; given a knowledge of even the first principles of art, a consciousness of the theory of beauty and the truth of beauty, these things would never have been. It is solely because the people as a whole—east of the Atlantic as well as west, for the popular reception of revealed art has been in England to the full as clumsy and unreasoning as was the case in America—were fundamentally ignorant of the nature-

of beauty and of the laws which govern art as well as the nature of art itself. Hardly can this now be said, for although is still wanting knowledge of the intrinsic value of art, its technical qualities and the laws which govern them are swiftly becoming recognized and consistently followed.

It will, therefore, in no wise be necessary to declaim violently against the old-time (yet was it so very old?) barbarities; they are dead. Only to suggest what seem now to be steps toward a truer state of affairs, to note what seem now to be possible laws touching the application of beauty. What the essential nature of beauty is we do not know, and it would be futile to ask. We do know, however, that it is something fixed; that there is accounting for tastes, distinctly. That one man's judgment touching what is beautiful is *not* as good as another's. This thing we have had to accept, although unwillingly: it was borne in upon us with a directness of power there was no gainsaying. We know now that Greek and thirteenth to sixteenth century Gothic art are good, and that Roman, Pompeian and Renaissance art are truly not art, but bad. Now, until we have sufficient knowledge to establish a permanent criterion

for the judgment of all that which lays claim to the name of art, until we know the secret of beauty and the intrinsic meaning of art, we must be content, accepting pure Greek and Gothic as the noblest art thus far, to bring all things to them, judging them so, calling that good which violates none of the inferred canons of the art of these two ages, and calling that distinctly bad which is related in any way to the corrupt art of Rome and the Renaissance. It is the custom to consider Greek and Gothic art as opposed violently to each other, but the inference is wholly superficial and false. The two arts hold precisely the same relation to each other as do Beethoven and Wagner. It is only the superficial who find an antagonism between them. The subject is of peculiar interest, but bears not at all on the question in hand, and, therefore, claiming now no attention.

In this way, then, must we judge of beauty itself. The first law governing the application of beauty to decoration has already been expressed; that the house must be the man, unequivocally; his personality entering into it and giving it life.—RALPH A. CRAM, in the *Decorator and Furnisher*.

SUGGESTIONS ON PUBLIC HEALTH NOMENCLATURE.

DR. Ezra M. Hunt, secretary of the State Board of Health of New Jersey, at the Meeting, in December last, at Washington, of the American Public Health Association, read an interesting paper on the above-named subject, of which the following is an abstract:

So much misconception comes from a loose or indefinite use of terms that we cannot be too careful to have classifications which shall have right foundations and be well understood. No two persons can discuss a subject of medical or sanitary science or art without they use technical terms in the same sense, or without the one knows in what sense the other uses them. The need of this exactness in a new science or a new art is especially manifest. The word hygiene has a variety of spelling justified by the dictionaries that could not have occurred had its derivation from the Greek "ἱγίαινω," "I am in good health," been kept in view.

This alone should determine the spelling hygiene in preference to the form hygieine and hygeine, both of which have been in common use. . . .

Hygiology is a good word, as used by Dr. Farr, to denote that science of which hygiene is the art. Hygiology (Farr's 5th. Rep't) is the science of hygiene.

Our next word, sanitary, also has a good derivation from the Latin Sanis. As to it, we find that in the first reports of the Registrar-General of England the word was uniformly spelled sanitory. Its changed spelling is probably made in order to conform to the usual terminology of such words in our language.

Besides the words hygiene, hygiology, sanitary, and sanitation, there was an early tendency to speak of sanitary medicine and of state medicine.

Although if we could use the term "medicine" in what Professor de Chaulmont claims to be its derivative sense—

namely, that of knowledge by measurement (Sanitary Legislation, Conference International Health Exhibition, 1881, p. 63), it has now come to apply so strictly to medical science and practice that it seems to us best, as far as possible to dissociate it from the nomenclature of hygiene. For the same reason we think the term State medicine should be supplanted by the term State hygiene, which thus includes all the care of health which should be provided for by governmental enactment, whether national, State, or municipal.

The two next words that meet us oftenest in confusion are contagion and infection. Many efforts have been made by authors to separate the two; to confine contagion to those diseases which are derived by *contact*, and to use the word infection in respect of those diseases which are not caught by direct contact, but through media. But it is to be noted that to infect (*in facio*) is to put into or to stain, and that strictly it would denote disease introduced by contact, and so was formerly applied to the plague, to itch, syphilis, etc. Its sense by use came to be to taint with disease, or to infuse, whether mediately or through intermediate agency. . . .

Wilson says that by infection is meant all diseases which are communicable from one person to another, whether by actual contact or through the agency of certain media, as air or water. . . .

After examining the views of various good authorities and the use of the terms as we find them, we are compelled to admit that there is no uniform distinction in their usage. Where either of these words are now used in the more general sense, the good English word *communicable* may be well substituted. We see no reason why the words infection, infective, and infectious might not wholly cease to be used as designating, in general, communicable diseases.

There is another suggestion as to these words which is well worthy of thought. It is that *infectious* be used only as the word for a class or order of disease, the same as we would use communicable or transmissible, and that groups or species be spoken of under it, such as contagious, miasmatic, contagio-miasmatic, miasmatico-contagious, inoculable, etc.

Contagious is thus used to designate such diseases as are only derived from the person, and so arise within the system, and have no other source of origin—for example, measles.

Miasmatic (Gr. *μιασμα*, defilement) is used to denote those diseases which affect man, but which never have their origin within the system, as intermittent fever. Dr. Farr, quoting from Liebig (4th. Rep.) says: "Miasm properly so-called causes disease without being itself reproduced."

It is a disease-producing cause, arising outside of the body, but not communicable from the body.

Contagio-miasmatic diseases are those in which something is separated, as secretion or excretion from the body, which, on exposure to outside defilement or other influence, becomes disease-breeding. Such is typhoid fever. Miasmatico-contagious diseases are those in which the miasm, being produced outside of the body, it is made operative by changes it undergoes in the body. This at present is a hypothetical division.

We would retain contagious, because it so relates to the person as the source of the disease, and miasmatic, because it stands for noxious exhalations or particles derived from outside sources.

Malaria, from being a classical term for bad air, has come by custom to be attached to that class of fevers and allied ailments which are derived from vegetable or earth effluvia, and have periodicity as a distinctive symptom.

The revised Anglo-American nomenclature confines malaria to remittent fever and ague. This is right. We would confine the word malaria very narrowly to that class of diseases believed to be dependent on marsh emanations which, when received into the human system, produce fevers or attacks having a marked periodicity, and would thus recognize it as a subdivision under the miasmatic class.

The term zymotic (from *ζυμος*, a ferment), as specifically applied by Farr and others, resulted from Liebig's two volumes on the chemistry of agriculture, in which the doctrine of fermentation was so set forth as to lead to its full acceptance as an explanation of many diseases. . . .

With the new light thrown by recent investigation on the communicable diseases we see no reason for the retention of the

word "zymotic." We would banish it from our revised nomenclature, and call the first class, communicable diseases, instead of specific febriles, or zymotics.

The words epidemic, endemic, and sporadic in their use also need to be settled down into a specific meaning. We have seen that Dr. Farr accepted zymotic as inclusive of epidemic, endemic, and contagious diseases. With the banishment of the word, and of talk about infection, we would come to ask whether the word epidemic is to be kept as loosely expressive of something prevailing among the people, endemic of something prevalent in a locality, and sporadic of some endemic here and there recurring. Dr. Farr speaks of endemics as diseases which prevail *only* in particular localities; of epidemics as those which extend, like cholera, over nations or are propagated by contagion, and of sporadic as those which arise in an isolated manner from ordinary causes and sources existing in the organization itself. Such a definition hardly accords with what is at present common use. As to endemics, authorities most frequently mean by this term "a disease continuously present in a locality, to however limited a degree," or one that has been shown as specially prone to recur in that section of country.

Dunglison defines sporadic as denoting "diseases which supervene in every season and situation from accidental causes, and independently of any epidemic or contagious influence; scattered, not epidemic." If the definition of Dunglison is to be accepted, we should never speak of sporadic cases of scarlet fever, diphtheria, etc., but either forsake the use of the term, or use it only as to colds, rheumatism, or some other non-communicable disease prevailing in a locality. So far as the terms are descriptive for use as to diseases, we only need the two terms epidemic and endemic. Whenever a communicable disease comes to prevail generally or extensively in a country, and is there found to be prevalent without any well-defined local cause, it is said to be epidemic, for it is a disease capable of prevailing in very many other places, or generally without our being able to trace its origin to any ascertained local condition peculiar to that place. If, on the other hand, a disease prevails in a locality where it shows itself to be dependent upon local conditions,

and not to be transmissible so as to prevail elsewhere without the same conditions are reproduced, we call it endemic.

The term portable is somewhat descriptive of those diseases which are communicable or transmissible by some form of conveyance of contagious particles from persons, while fomites (Latin, *fomes*, fuel) is used to denote any porous substance capable of absorbing, retaining, or transmitting the contagious particles. The fomite portability or transmissibility of many diseases is well established.

If the few terms we have named could be chosen out of our confusion of terms, and come to be well understood, as they thus would be, a great service would be done to the science of hygiology.

The word "quarantine" should give place to the term port and ship sanitation, as being more expressive and indicative of present practice. [And the word sequestration or isolation in relation to preventing the spread of communicable diseases in cities or communities, we would add. Ed. MAN].

STATISTICAL NOSOLOGY.—For the present it is best for us to avail ourselves of the nosology of the joint international committee, as used in the Registrar-General's report for England and Wales, but also to bear in mind the need of new distinctions, such as are furnished by a closer knowledge of the causes of disease, and by clearer lines between those which are communicable and those which are not. . .

It is best to use the term demography as including all that relates to the vital movements and social status of nations, while vital statistics embrace not only morbidity and mortality, but also of marriage, births and divorce, and such statistics as relate to disease, pauperism and crime, as conditions of population too often closely connected therewith. [We would suggest that the word natality be more used instead of the compound word birth-rate.—Ed. MAN.]

PARASITIC NOMENCLATURE.—Since we have come so fully to recognize that many diseases are of parasitic origin, either animal or vegetable, or that the differential diagnosis depends mostly or entirely upon microscopic appearances, we need to review and, as far as possible, settle upon the terms. We are able more readily to do this when we come to compare the appropriateness of the terms with their

real derivative meaning. We may enumerate some of them as follows:

Micro-organisms, little organized particles.
 Microbes or Microbia (Pasteur) little beings.
 Microzoa..... little animals.
 Microphytes..... little plants.
 Microzymes..... little ferments.

As general terms, micro-organism, microbes or microbia, microphyte, microdemes, and microzymes are frequently used. The first is the best to designate the entire order of microscopic life as studied in its relation to disease. Microbes or microbia is also a term inclusive of all minute being or life. Microzoa or microzoic is the best term to denote such of these organisms as are animal. Microphyte is the best general term for the vegetative organisms. Since the doctrine of ferments has been modified, microzyme is not needed at all. Microdeme should fall into disuse, because microzoa is more descriptive. Instead of germ diseases we much prefer the name of parasitic diseases.

With these terms the statement would be thus: Parasitic diseases are of two kinds, those depending on animal and those on vegetable life. These, when belonging to the minutest forms of life, are called micro-organisms or microbia; such as are animalculæ are called microzoa, and those which are vegetative, microphytes. We can thus speak of microzoic and microphytic diseases. As to the animal parasitic diseases, it is not necessary to quote the outline of Cobbold, which has long been, and is, the best classification.

Just as he speaks of the entozoa parasites as forming a peculiar or "specialized fauna destined to occupy a peculiar territory of widespread domain in the interior of the bodies of man and animals," so we are to regard vegetable parasites as forming a peculiar or specialized flora, destined to occupy an equally wide domain in the human system and that of other animals. We may add of these what he adds as to the fauna: "Each bearer or host may be viewed as a continent, and each part or viscus of his body may be regarded as a district. Each district has its special attractions for particular parasitic forms, yet at the same time neither the district nor the continent are suitable as perman-

ent resting-places for the invader. None of the internal parasites 'continue in one stay,' all have a tendency to roam; migration is the soul of their prosperity; change of residence the essential of their existence; while a blockade in the interior soon terminates in degeneration and death." Like the entozoa, "they strictly conform to a few well-known types of structure, but these types branch out into infinitely varied specific forms."

The micro-organisms, or *microphytes* of the vegetative type, as found in the body or related to disease, are classed with or between the algæ and fungi, and were first termed schizomycetes, because they were thought to multiply only by fission, or division. Schizophyte was another early name. Microphyte is a good substitute. There are four well-marked groups—namely: Bacteria, small oval or slightly elongated bodies; Bacilli, rod-shaped bodies; Micrococci, little grains, or round bodies; Spirochætæ, spiral bodies.

These are the divisions adopted by Cheyne, and founded upon the classifications of botanists, and for the present serve to embrace all microphytes. The most usual forms of growth are by fission, in which the microphyte elongates and divides. Growth also occurs by spores, which appear in the elongation of threads as bright, refracting, round, or oval bodies, and which are set free by the disappearance of the threads. These spores are more permanent in their vital properties than the microphytes from which they are derived. Multiplication also takes place by budding.

Where the microphyte is of a fungous kind, and involves only the skin as its host, it is said to belong to the mycoses. Examples of these are found in ring-worm and in the actinomycosis of cattle.

It is not our design to trace a perfect classification, as this is, for obvious reasons, impossible.

We present this merely as the nucleus for a more exact nomenclature, in order that unnecessary names may be retired from use and that those employed and retained may have no doubtful significance.

M. R.

Over 10,000 persons are said to have died last summer from cholera in Europe.

The annual product of coca in South America is estimated at 40,000,000 pounds.

ACQUIRED DISEASES FROM MUSCULAR OVER-WORK.

MUSCULAR exercise, carried out systematically and reasonably, is an essential part of a healthy life. The muscles left inactive are exceedingly apt to undergo degenerative change, and to produce, in comparatively early life, a feebleness of body which is fatal to the full enjoyment of the term of life that is naturally allotted to us. But, useful as it is, muscular exercise may be carried to the extent of producing disease and of materially shortening the period of existence. When muscular exertion is carried beyond what is reasonable, two unnatural conditions, one local, the other general, follow. The local unnatural change instituted belongs to the muscle or muscles subjected to excessive work. We see this in the enlargement of particular muscles, as in the enlargement of the muscles of the arm of the blacksmith and in the leg of the dancer. We say that the muscles in this state are hypertrophied, and although they may be more competent for a time to perform the particular act for which they are employed, they are, in fact, out of harmony with the rest of the body, and are, therefore, in the strict sense of the word, diseased. Later on the local condition in the muscle or muscles thus overworked may change from a state of undue strength to one of deficiency of power. The muscular power may undergo degeneration, and be charged with new elements which have not the contractile property; or, it may undergo wasting of structure and loss of working capacity from that cause.

The general mischief which arises from over muscular exertion is the most serious when it affects or influences the involuntary muscular organs on which life depends; the muscles and parts engaged in the circulation of the blood; the muscles of respiration; and the organs of digestion. When once one of these fails, the failure of the body altogether is inevitable.

Sometimes the effect of muscular over-work tells primarily on the body through the stomach. A person who is altogether in fair health becomes conscious of the fact after he has performed a certain amount of muscular labor, which he may consider as not greatly in excess of his capacity, that he has a pain-

ful sinking and failure in the stomach which nothing but complete rest can rectify. Afterwards he is dyspeptic, and for some days loses his natural aptitude for taking and digesting food.

In another person the failure commences in the respiration. There is experience after fatigue from muscular exertion, some want of breathing power, a sense of weariness in breathing, a cough and not uncommonly an ache, extending from the breast-bone through the chest, with a slight spasm. Nothing relieves this condition but rest, rest which, perhaps, may be required for several days.

In a third class of persons, and by far the largest class, the first signs of general failure are indicated through the circulation. The heart, it will be remembered, is in itself a muscle. It is the central mover of the bodily life, and the physical life altogether rests upon it, if I may so express myself, as upon an inverted cone. Its work, ever going on, involuntarily, night and day, cannot be disorganized without communicating some derangement to the whole organism. The effect of this is, that the heart soon begins to undergo modification of structure under prolonged over-exertion. At first its nutrition is increased; then it becomes over-active and over-powerful, and in time holds a relationship to the body at large which is out of proportion in respect of balance of power with the rest of the body.

Presuming that the excessive exercise to which the heart is subjected is carried out early in life, while there is yet elasticity of the vital organs, the body may adapt itself to the increased pressure and motion, and so, in the early period of completed life the balance may be restored, and a healthy balance secured. If it be asked why should not this healthy balance remain? the answer is plain. It will not remain because the elasticity is not persistent. As the body becomes developed and its structures firm, the resistance to the stroke of the heart increases, and the heart begins to bear a load which oppresses it beyond the work that is put upon it; moreover as its own nutrition becomes less active, its own elasticity is impaired. Thus it, in turn, gives way before the resistance. It becomes rela-

tively feeble, and with its feebleness all the rest of the organism naturally sympathized.

In one of my studies I calculated up what may be considered the complete numerical value of the strokes of the heart of a person who has lived four-score years. The numerical value of the beats or strokes may be fairly taken at about three billions, which will have been delivered at the rate of rather more than a hundred thousand per day. The heart which accomplished the three billions of beats in the eighty years is estimated, in this calculation, as performing a fairly mature life, and we will suppose that, according to the construction of the organism to which it belonged, it carried but its fully-allotted task. It worked eighty years and made its three billion of strokes, which was its limit of work done in the time named. If it had been the heart of a postman, its work would have been increased a good fourth during the period of increased activity, and we may deduct from the time when its increased activity commenced a fourth of the value of the life. It, then, over-work commenced at twenty years of age, a fourth part of the remaining years due might fairly be deducted, bringing the duration of the life that should have been eighty years to sixty-five years.

I do not give this as more than an approximate calculation but it is not far from the truth, and the day will come when calculations will be made sufficiently absolute to supply correct valuations for estimating the value of life in persons following all laborious muscular occupations.

In the cases where excessive muscular fatigue induces constitutional failure, leading to premature death through the circula-

tion, the heart becomes enlarged in the first stage; the blood-vessels become unduly taxed in the second stage; the elasticity of the blood-vessels declines and resistance increases in the third stage; the heart becomes enfeebled in the fourth stage, degenerated in the fifth, and incompetent for its functions in the sixth. In a seventh, and final, stage, one of premature old age and decay, some of the other vital organs, lungs, liver, kidney, or brain, follow their leader in failure of function, and death closes the scene.

In certain instances it happens that the heart itself is the muscular organ first affected by the exercise. Under the exertion the organ may suddenly fail altogether, losing its nervous power and becoming intermittent or irregular in its action. I have known this action to occur in the most varied ages of life, in youth, in full age, in mature, and in advanced age. Or the heart may undergo from the first an enlargement, may work with a force that is out of proportion to everything required of it, and may become a centre of disturbance to all the other systems of the body. This is by no means an uncommon result of excessive muscular effort and strain; and, indeed I may state that amongst the many persons who have come before me suffering from over-physical endurance in its early stages there have been very few in whom the heart was not too large and too powerful. In later stages the enlarged and over-taxed heart is apt to undergo degeneration, to lose its contractile elements, and to become a centre of derangement to the body generally from failure rather than from excess of duty.

B. W. RICHARDSON, M.D., LL.D.,
F.R.S., &c., in *The Field of Disease*.

HERODOTUS, 484 B. C. (*American Lancet*), said that in Egypt there was a particular physician for each disease. "The art of medicine is thus divided amongst them; each physician applies himself to one disease only, and not more. All places abound in physicians; some physicians are for the eyes, others for the head, others for the teeth, others for the parts about the belly, and others for internal diseases."

OF smoking, Lieutenant Greely says: of his nineteen men who perished during his Arctic expedition, all but one were addicted to this habit, and that one was the last to die. The seven survivors were non-smokers. Notwithstanding this, and a great deal of evidence of a similar kind, many medical journals, including the *London Lancet*, encourage smoking, in "moderation."

EXPERIMENTAL TRUTH IN RELATION TO DISINFECTANTS.

The following article presented in the September number of the "*Revista Argentina de Ciencias Medicas*," of Buenos Ayres, was translated by Dr. Workman, of Toronto, and published in the *Canada Lancet*, Feb. 1st, 1886. As Dr. Workman writes, probably some, if not many, of the statements of the author will appear rather marvelous to Canadian medical readers at the present time, considering the great practical value which has been attached to disinfectant processes during the course of the small-pox epidemic, which has proved so destructive in the city of Montreal and the adjacent villages. If, as seems to be generally believed, these processes are efficient in the prevention of infection, and the statements of the Spanish experimenter, Dr. Jose de Letamendi, are perfectly reliable, the conclusion seems inevitable, that microbes have no part in the causation of infectious diseases, or that, if they really are the conveying agents, the accredited destroying means of disinfection must accomplish the desired purpose by virtue of some other sanitive process, distinct from that of killing the microbes, for this result would seem to be unattainable even by the most powerful chemical agents hitherto employed.

The following is the article: The conflict with a determinate species of the microbes may be, as relates to the family, individual or collective. In taking the field in single combat we must have recourse to the therapeutic agents which kill the aggressive horde in the collective combat (epidemia from contagion); as soon as the microbes have assailed a population, recourse must be had to a prophylactic means, which, by killing the germs emanating from every diseased person in his *excreta*, and adhering to retentive objects (*contagium vicium*), cuts short the epidemic process. By virtue of these indications, and by calling disinfectants the means which, in individuals and things, kill the infecting microbe, the following two problems are naturally presented:—

1st. Is curative disinfection, or that of individuals, possible? 2nd. Is preventive disinfection, or that of things, possible?

Let us see. At our very outset sound sense imposes on each of these problems a

certain limitation. Here is the limitation of the 1st problem:—It is indispensable that the agent destroying the microbe shall not overpass, in the diseased person, the limits assigned to therapeutic disturbances. Without this limitation it would be possible, in killing the cause of the disease, to kill our patient also. The limitation of the 2nd problem is this:—It is requisite that the agent killing the microbe shall not attack retentive objects unless within certain prudential economic limits. Goods, articles of utility, capital, wealth, are products of industry which are esteemed by the people as the equivalent of their means of life. . .

I proceed to present the results of my own experiments, some of which were made in 1865, when the *religion of carbolic acid* was introduced into Spain, and others during the present year, recommending to the reader, before hand, the utility of testing them by himself, or in association with some person expert in the matter. The microbes subjected by me to experimentation, have been the *bacterium*, the *diplococcus cadavericus*, the *bacteridium carbunculorum* (in attenuated culture), the *diplococcus* of roseola and of hogs, the *bacillus phymatogenus* or that of *phthisis*, the *bacterium of urea*, and others of less importance.

The agents and the results of reactions were as follows: 1st. Phenyl, or carbolic acid pure, crystallized; watery solution of 2 per cent. Result.—All the microphytes continuously in life.

2nd, 1dem, incomplete cold solutions or emulsions, from 5 to 10 per cent. Result.—Between the layers of microphytes imprisoned in the coagulum of the albuminous substances of the putrilage and the liquid of the culture, numerous free cocci, living, and swimming about in a sea of microscopic drops of emulsified phenyl, moving with the impulses and in the style of microbes, to the seventh day.

3rd. Considering the trivial solubility of pure phenyl, the same solutions as the previous were aided and completed by means of some drops of alcohol. Consequent disappearance in them of free phenyl was noted. Result.—An immediate augmentation of the activity of the microbes. The alcohol, by debilitating extraordinarily the action of the phenyl or pure

carbolic acid, caused practically the obtainment of a carbolised water of over 3 per cent. This fact, which I had observed in 1865, has been verified by Koch in relation to divers species of *bacilli*.

4th. Liquid carbolic acid (by natural deliquescence, with alteration of its chemical constitution). Enormous doses: 10 grains of pure reactive to 2 grains of putrid urine or the putrilage of flesh, that is to say, 100 to 20. Result.—Large islands or clusters of bacteria imprisoned in the coagulated albuminoid substance; intermediate lakes peopled with free bacteria in their greatest activity. Observed two days. On the 8th day the liquid appeared turbid, and when again subjected to microscopic examination, it gave a notable increase of free bacteria.

5th. Thymol, or thymic acid, pure, amorphous. Experiments and results similar to those by phenyl. 8th. lime. Action nil; all living. . . .

13th. Sulphate of iron, 30 per cent; solution slightly acid. Result.—All microbes living.

14th. Sulphate of copper; saturated cold solution. Result after 24 hours:—All living, but with one singular circumstance; many of the bacteria show a sharp twisting, over half their length; but on returning to observe them on the fifteenth day, they all continued in life and in notable motion.

15th. Essence of turpentine, pure. On the fourth day all continued in life; and on the eighth day the same.

16th. Chloride of mercury (corrosive sublimate). Result.—All living. Observation followed till the third day; all the microbes living free from the coagulum and very active.

17th. Boracic acid. Saturated aqueous solution, cold ($\frac{1}{2}$ per cent). Result.—All alive. Observation continued until fifteenth day. . . .

23rd. Permanganate of potass; aqueous solution at five per cent. Result.—All alive and in addition the Permanganate decomposed from being robbed by the microbes of one equivalent of oxygen.

24th. Arsenious acid; aqueous solution, cold, at 1 per 1000, that is to say, almost saturated. Result.—At 24 hours (when writing these lines), all alive as if nothing had happened.

25th. Iodide of bromine. Application useless in practice, because the alkaline salts of common or natural waters form with the iodides or bromides combinations inoffensive to the microbes.

26th. Sulphuric, nitric, and hydrochloric acids; aqueous, 1 per cent. solutions. Results.—All indefinitely alive.

27th. Aqua regina, pure (nitro-muriatic acid), equal parts. Result.—All alive on the fifteenth day (!!!). Such is the effect of aqua regia, a liquid that dissolves every thing, from gold and platinum down to liver and brain.

28th. Nitrate of silver; saturated solution, cold, with excess of crystals and exposure to light for a whole day. Result.—The silver, reduced by the light, has combined with the substance of the cuticle of the microphytes, but it has not penetrated them; since, though as black as charcoal, they continue alive, swimming with marvelous agility, in spite of so much metallic silver which each of them carries. Only those entangled in the meshes of the coagulum are motionless. . . . In a specimen of *bacteridia curvunculosa*, treated by this process for the purpose of better photographing it, I saw on the twentieth day after sealing the preparation, a multitude of bacteria still in motion, with remarkable activity, in spite of their coat of metallic silver (!!!). [We have omitted description of many of the experiments—Ed. MAN.]

And now I ask, in view of these facts, in face of the quality of the substances employed, and the enormity of the doses, what have the storm waters left behind them? Will any physician be so simple as to believe that, among the substances prized as disinfectants, there is one capable of killing the *contagium vivum*, either inside or outside, either in individuals, by cutting short the process of an infectious disease, or in a retentive article, by hindering the development of an epidemic. Will there be any association, council, minister or governor, who will rest tranquil after having assented to proceedings of disinfection, which experimental facts, carried to the extremes shown in those herein related, declared to be absolutely useless, besides being offensive, expensive, and injurious? If the strong doses (some horribly mortal to individuals) which I have signalized, have proved useless, in what doses shall we employ them with

success? And even supposing—and it is no little to suppose—that such doses were really disinfectant, what utility could they offer in practice, either *internally* or *externally*? If, for example, we should administer carbolic acid in the impossible solution of 10 per cent., on reaching the current of the blood in the quantity of a few drops, or when scattered by an atomiser on the bottom of an ulcer, or on retentive wares, from which it rapidly evaporates, it will not represent then even $\frac{1}{2}$ per 1,000. Let it be tried, and it will be seen that this deduction is inevitable.

Finally, we have to renounce curative or individual disinfection by means of the death of the *contagium vivum*, and as respects preventive or public disinfection by the death of the *contagium vivum* in retentive objects, we have to abandon, as absolutely impotent, chemical means; the entire abortive police of an infectious epidemic is reduced to these two elements WATER and FIRE; supreme cleanness, and intelligent and methodical cremation up to complete calcination of articles impregnated with the excreta of the sick. I say “intelligent and methodical,” because after a provisional drying by means of sawdust, the carbon, vegetable or mineral, in powder, and the boracic acid, as well as the hermetical enclosing of the articles; all this, with the charge of particulars, ought to be proceeded with by the public administration—the only authority which can realize it—by the formal cremation of these articles at two distinct times; one of drying by a slow fire, and the other of definitive calcination; all to be so executed that the fumes peculiar to ordinary combustion may not carry off, and scatter in the atmosphere, enormous quantities, of unburned or incompletely burned microbes. I have been convinced by my experiments that, as a general rule nothing short of complete “calcination” is a sufficient guarantee for the death of the microbes.

I cannot close this article without mentioning one very important experimental fact, the omission of which might suggest doubts, or even reflections, with some foundation. A good number of the substances used by me, when they are employed in the enormous doses mentioned, although they do not kill the microphytes, yet diminish, or altogether suspend, their reproductive energy. For

this purpose the only substance which, among those experimented with by me, offers practical conditions, is boracic acid. Borax, which is colorless, inodorous, and slightly acid, inoffensive to persons and things, giving an aqueous saturation at 4 per cent. in ordinary temperature, may be administered internally as “boracic lemonade” without any risk; it is inassimilable or anhistogenous, and, though like the other reagents, it does not kill the microbes, on the other hand, in supersaturated solution it restrains their reproduction better than the others. In order to demonstrate this, it suffices to hold under observance two equal quantities of the same culture; one of them immediately supersaturated with boracic acid, and the other left without it; let each of the vessels be closed with glass stoppers which will not altogether impede evaporation. On the fifth day afterwards the difference is amazing; in the liquid supersaturated with boracic acid and having the surface covered with crystals of the same, the *bacilli* have changed for free *cocci* or bundles of *cocci*, very lively and agile, but in quantity equal to the primitive or a little greater, whilst in the other vessel, for every free *coccus*, or bundle of *cocci* of the former, hundreds of *bacilli* are moving about, with 4, 8, 16, and more nuclei.

This remarkable influence, however, whilst being of inestimable value for other conceptions, has no useful application in the problem of disinfections, either curative or preventive. In the first place, boracic acid produces such effects only in practical doses and conditions (economic, clinical and hygienic), by reason of its natural advantages above indicated. In the second place, every microphyte in passing from a favorable to an unfavorable medium, degenerates, and its fecundity is suspended or diminished, but in its turn it recovers its natural fecundity as soon as it passes from an adverse to a propitious medium.

Let us present a particular example of this sort of cycle of the *contagium vivum*: A person attends a cholera or a small-pox patient, out of his own house, etc: impregnates his hands with the *excreta* of the patient (the vomit, sweat, pus, crusts, etc). He afterwards washes his hands with boracic saturated water, and in so doing he inadvertently splashes the sleeve

of his coat. On his sleeve there are microphytes, not only motionless from dryness but also from the influence of the boracic acid (if any of it has reached them). This person returns to his own house; his servant next day brushes the coat; the microbes are mixed with the air of the house, and some of them get on the soap or into the water which his daughter makes use of; they are emancipated from the boracic acid, recover their forces on obtaining propitious liquids, in such favorable climates . . . and in a little

time the daughter of this man falls sick, with cholera or smallpox.

It is a fact that things profit much by their names. Let killing mean putting out of life; the problem of disinfections is the problem of the death of the *contagium vivum*, and not of its mere attenuation, and for this reason the attenuating virtue of this or that substance will never solve the problem of either curative or preventive disinfection.

JOSE DE LETAMENDI.

DISINFECTANTS—RECOMMENDED BY THE A. P. H. A. COMMITTEE.

AT the Annual Meeting of the American Public Health Association in 1884, a Committee was appointed to consider and report upon the subject of disinfectants. The Committee consisted of Drs. George M. Sternberg, U. S. A., Joseph H. Raymond, Brooklyn, Charles Smart, U. S. A., Victor C. Vaughn, Michigan, A. R. Leeds, New Jersey, W. H. Watkins, New Orleans, and George H. Rohe, Baltimore. At the last Meeting of the Association, in December last, the Committee reported, and the following are the conclusions drawn from their reports. Notwithstanding the experiments of Dr. Jose de Letamendi, described elsewhere, doubtless such disinfectants will continue to be used, for some time to come at least, and we therefore give these conclusions to our readers.

The most useful agents for the destruction of spore-containing infectious materials are: 1. Fire. Complete destruction by burning. 2. Steam under pressure. 110° C. (230° F.) for ten minutes. 3. Boiling in water for one hour.* 4. Chloride of lime.† A four per cent. solution. 5. Mercuric chloride. A solution of 1 to 500.

For the destruction of infectious material which owes its infecting power to the presence of micro-organisms not containing spores, the Committee recommended: 1. Fire. Complete destruction by burning. 2. Boiling in water half an hour. 3. Dry heat. 110° C. (230° F.) for two hours. 4. Chloride of lime.‡ One to four per cent. solution. 5. Solution of chlorinated soda.§ Five to twenty per cent. solution. 6. Mercuric chloride. A solution of 1 to 1000 to 1 to 4000. 7. Sulphur dioxide. Exposure for twelve hours to an atmosphere containing at least four volumes per cent. of this gas, preferably in presence of moisture.|| 8. Carbolic acid. Two to five per cent. solution. 9. Sulphate of copper. Two to five per cent. solution. 10. Chloride of zinc. Four to ten per cent. solution.

The Committee would make the following recommendations with reference to the practical application of these agents for disinfecting purposes:

FOR EXCRETA.—(α) In the sick-room: For spore-containing material: 1. Chloride of lime in solution, four per cent. 2. Mercuric chloride in solution, 1 to 500.¶ In the absence of spores: 3.

* This temperature does not destroy the spores of *B. subtilis* in the time mentioned, but is effective for the destruction of the spores of the anthrax bacillus and of all known pathogenic organisms.

† Should contain at least twenty-five per cent. of available chlorine.

‡ Should contain at least three per cent. of available chlorine.

§ This will require the combustion of between three and four pounds of sulphur for every thousand cubic feet of air-space.

|| The addition of an equal quantity of potassium permanganate as a deodorant, and to give color to the solution, is to be recommended (*Standard Solution No. 2*).

¶ A concentrated solution containing four ounces of mercuric chloride and one pound of cupric sulphate to the gallon of water is recommended as *Standard Solution No. 3*. Eight ounces of this solution to the gallon of water give a dilute solution for the disinfection of excreta, containing about 1 to 500 of mercuric chloride, and 1 to 125 of cupric sulphate.

Carbolic acid in solution, five per cent.
4. Sulphate of copper in solution, five per cent. 5. Chloride of zinc in solution, ten per cent.

(b) In privy-vaults: Mercuric chloride in solution, 1 to 500.* (c) For the disinfection and deodorization of the surface of masses of organic material in privy vaults, etc.: Chloride of lime in powder.

FOR CLOTHING, BEDDING, ETC.—(a) Soiled underclothing, bed linen, etc. 1. Destruction by fire, if of little value. 2. Boiling for at least half an hour. 3. Immersion in a solution of mercuric chloride of the strength of 1 to 2000 for four hours. § 4. Immersion in a two per cent. solution of carbolic acid for four hours.

(b) Outer garments of wool or silk, and similar articles, which would be injured by immersion in boiling water or in a disinfecting solution: 1. Exposure to dry heat at a temperature of 110° C. (230° F.) for two hours. 2. Fumigation with sulphurous acid gas for at least twelve hours, the clothing being freely exposed, and the gas present in the disinfection-chamber in the proportion of four volumes per cent.

(c) Mattresses and blankets soiled by the discharges of the sick: 1. Destruction by fire. 2. Exposure to superheated steam—twenty-five pounds pressure—for one hour. (Mattresses to have the cover removed or freely opened.) 3. Immersion in boiling water for one hour. 4. Immersion in the blue solution (mercuric chloride and sulphate of copper), two fluid ounces to the gallon of water. †

FOR FURNITURE AND ARTICLES OF WOOD, LEATHER, AND PORCELAIN.—Washing, several times repeated, with,—1. Solution of mercuric chloride, 1 to 1000. The blue solution, four ounces to the gallon of water, may be used. 2. Solution of chloride of lime, one per cent. 3. Solution of carbolic acid, two per cent.**

FOR THE PERSON.—The hands and general surface of the body of attendants, of the sick, and of convalescents at

the time of their discharge from hospital: 1. Solution of chlorinated soda diluted with nine parts of water (1 to 10.) 2. Carbolic acid, two per cent. solution. 3. Mercuric chloride, 1 to 1000; recommended only for the hands, or for washing away infectious material from a limited area, not as a bath for the entire surface of the body.

FOR THE DEAD.—Envelop the body in a sheet thoroughly saturated with,—1. Chloride of lime in solution, four per cent. 2. Mercuric chloride in solution, 1 to 500. 3. Carbolic acid in solution, five per cent.

FOR THE SICK-ROOM AND HOSPITAL WARNS.—(a) While occupied, wash all surfaces with,—1. Mercuric chloride in solution, 1 to 1000 (the blue solution containing sulphate of copper may be used.) 2. Chloride of lime in solution, one per cent. 3. Carbolic acid in solution, two per cent.

(b) When vacated: Fumigate with sulphur dioxide for twelve hours, burning three pounds of sulphur for every thousand cubic feet of air-space in the room; then wash all surfaces with one of the above-mentioned disinfecting solutions, and afterwards with soap and hot water; finally throw open doors and windows and ventilate freely.

FOR MERCHANDISE AND THE MAILS. § —The disinfection of merchandise and of the mails will only be required under exceptional circumstances; free aeration will usually be sufficient. If disinfection seems necessary, fumigation with sulphur dioxide, as recommended for woollen clothing, etc., will be the only practicable method of accomplishing it.

FOR RAGS.—(a) Rags which have been used for wiping away infectious discharges should at once be burned.

(b) Rags collected for paper-makers during the prevalence of an epidemic should be disinfected before they are compressed in bales, by: 1. Exposure to superheated steam (twenty-five pounds pressure) for ten minutes. 2. Immersion in boiling water for half an hour.

* For this purpose the chloride of lime may be diluted with plaster of Paris, or with clean, well-dried sand, in the proportion of one part to nine.

† The blue solution containing sulphate of copper, diluted by adding two ounces of the concentrated solution to a gallon of water may be used for this purpose.

** For articles of metal use Solution No. 3.

§ In order to secure penetration of the envelope by the sulphur dioxide, all mail matter should be perforated by a cutting-stamp before fumigating.

(c) Rags in bales can only be disinfected by injecting superheated steam (fifty pounds pressure) into the interior of the bale. The apparatus used must insure the penetration of the steam to every portion of the bale.

FOR SHIPS.—(a) Infected ships at sea should be washed in every accessible place, and especially the localities occupied by the sick, with,—1. Solution of mercuric chloride, 1 to 100, (the blue solution heretofore recommended may be used.) 2. Solution of chloride of lime, one per cent. 3. Solution of carbolic acid, two per cent.

The bilge should be disinfected by the liberal use of a strong solution of mercuric chloride (the concentrated solution—"blue solution" of this salt with cupric sulphate may be used).

(c) Upon arrival at a quarantine station an infected ship should at once be fumigated with sulphurous acid gas, using three pounds of sulphur to every thousand cubic feet of air space; the cargo should then be discharged on lighters; a liberal supply of the concentrated solution of mercuric chloride (four ounces to the gallon) should be thrown into the bilge, and at the end of twenty-four hours the bilge-water should be pumped out and replaced with pure sea-water; this should be repeated. A second fumigation after the removal of the cargo is to be recommended; all accessible surfaces should be washed with one of the disinfecting solutions heretofore recommended, and subsequently with soap and hot water.

OUR CANNED FOODS—ANALYSES BY THE PUBLIC ANALYSTS.

WHAT the effects are upon the human organization of regularly consuming with foods minute quantities of tin is not yet known; but as tin is not a natural constituent of the human body the effects of such consumption can hardly be other than injurious. The use of canned foods is so universal that there are but few persons who do not habitually eat them. From the last published report of the commission of Inland Revenue, a large proportion of the canned fruits and vegetables sold in Canada contains tin, with, sometimes, copper, iron and lead. The last-named is well known to be poisonous to the human structure.

In Toronto, the public analyst reports that canned blueberries, examined by him, contained one grain of tin to the pound, and canned strawberries, on analysis, gave "over one grain" to the pound. Peaches and plums contained one-fifth of a grain; tomatoes one-seventh of a grain; and corn, peas and apples contained only traces of tin. Other peas contained one-third of a grain of tin and the same amount of copper, per pound.

In Montreal, Public Analyst Dr. Edwards reports most of the canned goods examined by him as free from metallic impurities. In the syrup of some canned pine-apple were traces of tin, and in that of peaches a little iron.

In Quebec, Dr. Fiset examined what

was said to be ripe cherries, in cans, but which were "not cherries, but raspberries, badly prepared, unfit for consumption rotten." Strawberries analysed were mixed with gelatine, rancid; absolutely unfit for consumption.

In Halifax, the analyst reported canned green corn, "impregnated with lead from a large quantity of solder in the can, adulterated." Most of these foods examined in that city, however, were of good quality.

In St. John, canned peaches from three different vendors contained traces of tin and lead in solution. Other peaches from two other dealers were "dangerous, large percentage of dissolved tin and lead; contents of can stale and unfit for food." Strawberries with lead and tin, unfit for food. Pine-apples with traces of lead and tin. In St. John many of these foods were in a bad condition.

The public analyst in London examined so called "currant jelly," which was a "fictitious compound of apple jelly, acid and sugar, with strong traces of iron and tin;" also raspberry jelly, a "fictitious compound of apple jelly and sugar, colored, containing traces of iron and tin." Plums, raspberries, apples, and peaches contained strong traces of tin; peas and beans, traces of lead; and peaches and strawberries, traces of iron, tin and lead.

Notwithstanding all this, a large proportion of the canned fruits and vegetables

examined by all the different analysts was of good quality and in a good state of preservation; unadulterated. Tin was the most constant impurity. A larger proportion were of inferior quality in St. John than in any other city.

In but very few of the cases it appears had any wilful adulteration been practiced. Peas had been colored with salts of copper, a poisonous substance, and currant jelly and raspberry jelly had been made from apple jelly. It is to be regretted that the name of the manufacturer or canner of the foods, instead of the vendor, is not given, in order that the public might know what special "brands" to avoid. I would respectfully suggest that, as

far as possible, this be done. The dealer or vendor in these cases may be blameless. The name of the canner or bottler is usually on the can, and by the aid of the Department the public would soon learn who copped the peas and made fictitious jellies. But some means ought to be adopted to enforce greater care in regard to putting up and soldering canned foods.

In this connection I would add, why cannot glass be used much more than it is, instead of tin, for preserving foods in this way? It is so much cleaner and better in many respects, and any acids the foods may contain have no effect upon it, and hence, no contamination in this way.

THE EDITOR.

ORILLIA HEALTH OFFICER'S REPORT—USEFUL LESSONS.

THE report of the medical health officer of Orillia is always practical and useful. Probably but few health officers take so deep and active an interest in the health of their respective municipalities as Dr. Elliot takes in his. Below is a synopsis of his report of last year:

The most serious disease he had to contend with had been typhoid fever, of which there had been eighteen well marked cases, and out of that number four had been fatal. These cases had all occurred in the south and south-western portions of the town. All the fatal cases had been in the south part of the West Ward, and in every instance well water had been in use. There had not been a single case of typhoid fever in any house where the town water had been used. In his previous report he pointed out the unsanitary condition of portions of the town, especially the south part of the West Ward, and offered some suggestions as to the best means of improving it, viz., drainage and an improved water supply. Till these improvements were carried out they must expect to have the usual amount of fever in that part of the town. The unusual amount of malarial fever was clearly due to the condition of the swamp south of the town, it being full of stagnant water all through the summer. From a sanitary point of view, to say nothing of any other, a thorough and complete system of drainage would pay. During the summer months a pretty thorough house-to-

house inspection had been made by the sanitary inspector: He had had a large amount of work done in the way of cleaning up yards, cellars, privies, &c., and removing manure heaps and refuse of all kinds....When opening up the ditches for the water pipes on Front Street, the soil was found to be so polluted by soakage from the surface that the effluvia was most obnoxious, so much so that some of the workmen became quite ill and had to leave off work.

A resolution had been passed by the Board of Health, during the summer, requesting the Council to pass a by-law making it compulsory on the owners of property on Mississaga Street to introduce dry earth closets on their premises and have the old privy vaults filled up. He was sorry to say that the request had not yet been complied with.

Dr. Elliot said it was a cause of no little satisfaction to him that the Council, early in the season, took active steps to increase and extend the water system, so that the water supply over a large portion of the town was as abundant as it was excellent. He could only wish that the whole town enjoyed the great blessing; he trusted that from year to year the system would be so extended that all might be supplied. He was quite confident that with good water and proper drainage they would never have a case of typhoid fever in the town. It was a well-established fact that no disease was so preventible.

Dr. Elliot complained that the Council had ignored the resolutions of the Board and also his suggestions, while both the board and himself were acting in the public interests, and had no interests of their own, apart from the general welfare of the public.

In conclusion Dr. Elliot said, "I venture to hope that with increased knowledge on sanitary matters, the people, as well as the Council, will see that it is to their interests and well-being that no pains or expense should be spared to improve the sanitary condition of the town. They may rest assured that by so doing no interests will suffer, save the pecuniary prospects of the doctor. There is already evidence of increased interest in sanitary matters. I am happy to say that at my suggestion the Mayor subscribed for several copies of the DOMINION SANITARY JOURNAL for the use of the Council, and quite a number of private citizens have subscribed for the same excellent periodical, which is the means of spreading a large amount of useful information on these matters. It is now issued in a

much enlarged and improved form under the title MAN, and I trust it will find a place in many a household in our midst."

Councillor Corbould then moved a grant of money to Dr. Elliot, as a slight recompense for his services as Medical Health Officer of the town during the last two years, which, though by no means an adequate remuneration for the valuable work done by him, the mover trusted he would accept. The reeve, Mr. Quinn, remarked that Dr. Elliot had done a good work, and deserved the thanks of both Council and people. The Mayor added his testimony as to the value of the work done by the Medical Health Officer. Councillor Sanderson said that his duties as Chairman of the Relief Committee had frequently brought him in contact with the Medical Health Officer, and he ever found that gentleman most attentive and zealous in promoting public health. He had no hesitation in saying the Doctor's services had far exceeded his expectations of what a health officer would undertake or accomplish.

THE PUBLIC HEALTH—THE LIVING AND THE DEAD.

The total number of deaths returned by the twenty cities and towns of the Dominion to the Department of Agriculture for the month of January was 1,279, or 57 less than for December: a mortality of 26.5 per 1,000 of estimated population per annum. From zymotic diseases there were 207 deaths recorded in January, or 4.5 per 1,000 of population per annum. The rate of mortality from zymotic diseases, rather than from all causes, in a locality, is regarded as an index of its sanitary condition. The mortality from zymotics was high, taking the 20 cities and towns together. In 28 cities in England last year the average from zymotics was 2.7 per 1,000, although during the ten years previous, 1875-1884, the average had been over 3 per 1,000. But the mortality from zymotics in January in the 20 cities and towns in Canada was much lower than during the previous few months when small-pox was much more prevalent. During the six preceding months, the latter half of 1885, it averaged as high as 18 per 1,000 per annum. Eliminating the deaths from small-pox the average from

all other zymotics was 6.6 per 1,000. This last high rate was mainly owing to diarrhoeal affections amongst infants during the summer months. The high rate of January was chiefly due to epidemics of measles, scarlet fever and diphtheria, in certain of the cities.

The small-pox mortality in Montreal dropped from 152 in December to 47 in January. No deaths reported from it in Charlottetown in January, though there were 24 in December. It would appear that the epidemic was promptly crushed out in that city. The manner in which this was accomplished MAN will probably soon be enabled to explain to its readers. In Sorel there were 5 deaths from this disease in January, the same number as in December. In St. Hyacinthe there were 6, as against 13 in December. In Toronto one death from small-pox was reported in each of the two months; and in Ottawa 3 each month. In Quebec there was one in December, but not one in January. None reported from any of the other cities or towns. The total number of deaths reported from small-pox in Jan-

uary was 62, as against 199 in December.

From measles there were 45 deaths in Quebec, 14 in Sherbrooke; 2 in Toronto, and one each in Montreal, Ottawa, and Three Rivers. This makes a total mortality from measles of 64, a larger number than from small-pox. In December there were 81 deaths from this disease, 80 of which were in Quebec and one in Sherbrooke; none reported from any other place.

From scarlet fever there were 15 deaths, 4 in Montreal, 4 in Toronto, 6 in Kingston and 1 in Sherbrooke. In December 17 were reported; 9 in Kingston and 8 in Toronto.

Diphtheria caused 92 deaths in January as against 82 in December. The mortality from this disease increased in Montreal from 25 in December to 39 in January, and in Toronto from 15 in December to 20 in January. In Quebec there was a decrease from 13 in December to 6 in January. In Hamilton there was an increase of from 5 to 7; in Halifax there was the same number, 3, in each month; in Winnipeg, an increase of from 2 to 4; in Ottawa, a decrease of from 3 to 1; and in St. John, a decrease of from 11 to 5. In Guelph there were 3 deaths in each month from this disease.

MISCELLANEOUS ITEMS.

IS TUBERCULAR CONSUMPTION HEREDITARY?—At a recent meeting in New York of the New York State Medical Association, Dr. Didama, of Syracuse, read a paper on this subject, in which he quoted the opinions of different authors, and the results of post-mortem examinations by various pathologists, and said that in the examinations of the bodies of hundreds and thousands of fetuses none had been found to have tubercle, which weighed very heavily against the heredity theory. He also quoted the statistics furnished by insurance companies, by which it appeared that the majority of cases of phthisis occurred in persons whose parents had not suffered from the disease. The following were the conclusions which the author reached: 1. That tuberculous disease was not inherited. 2. That, if a special tendency to the disease was transmitted, the term liability better expressed the idea than the term tendency. 3. That many conditions, such as poor and insufficient food, damp and impure air, stunted sunlight, and certain occupations, favored the development of the disease. 4. That two conditions were almost indispensable; abundance of bacilli and an inviting asylum for their development, whether the susceptibility was inherited or acquired.

AMATEUR DOCTORS.—The *London Globe* has the following very good thing on this subject: It is curious, when one comes to think of it, that people should be so exceedingly ready to set about the remedy of anything amiss in the system of either themselves or those about them.

If a man's kitchen clock wheezes and whirrs a little, and presently begins to betray a difficulty in getting along, he will admit at once that he does not know what is the matter with the thing, and he will have the clock-man ordered in to attend to it. If his watch gets a little slow, and does not seem amenable to the regulator, he will not even run the risk of touching it here and there with a little sweet oil; or if his piano gets out of tune in only a note or two, he does not dream of investing three and sixpence in a tuning hammer and putting it in order himself. He does not understand the business, he will tell you, and might do more harm than good. But if his own internal mechanism begins to wheeze a little and to show symptoms of running down, if he himself feels somehow a little out of tune, it is very likely indeed that he will be quite confident that he knows all about it, and will forthwith resort to the family medicine chest or the nearest druggist. It may be argued that he probably knows more about his own interior than he does of the inside of a clock or a watch. On the other hand, he may have been studying his own constitution for thirty, forty or fifty years. Every man, it has been said, is a fool or a physician at forty, and there is just enough truth in the saying to make it plausible. But then the remarkable thing is that the amateur doctor is just as ready to prescribe for other people's constitutions as he is for his own. He knows, of course, that your mechanism is ten thousand times more intricate and delicate than that of any clock or watch, and it might occur to him, one

would think, that in so intricate a machine similar symptoms might possibly arise from very different causes. Nothing of the sort occurs, however. "Pains in your chest, eh? Ah, indigestion, my dear fellow. I used to have that sort of thing terribly. Try a box of Quackle's pills. The finest thing in the world for indigestion."

PRACTICAL HINTS ON TAKING A HOUSE is the name of a little book a recently published. The author treats of "the extraordinary precipitancy with which most people select a house in which, may be, they propose to spend the greater part of their lives; and, considering the case of those who take a house only to find that it is in an unsanitary condition, refers to the decisions that have so far settled the relative positions of landlord and tenant in this respect." The essentials of a healthful home are, broadly-speaking pure air, pure water, and a pure soil; Wherever it is found that a house has settled considerably, owing to poor foundations and exhibits walls full of cracks; wherever the brickwork is laid with the poorest kind of mortar; wherever the outer walls appear wet or splashed, owing to window-sills that do not project beyond the wall, &c., &c., &c.; wherever, finally, the whole plumbing-job appears to be "scamped"—there we may, with a tolerable degree of certainty, assume that sanitary considerations have been neglected, and sanitary work but imperfectly done, even if the building and health regulations have, to all superficial appearance, been complied with.

SMALL-POX AND RAGS.—To show how easily the poison of small-pox is taken up by cotton and woollen materials, it is worth while to relate that, in the early days of the process of inoculation, cloth was used as the means for conveying the poison. In a remarkable paper communicated to the Royal Society, in the year 1734, by Dr. Nettleton, of Halifax, in Yorkshire, that physician described how he communicated the disease from the sick to the healthy by inoculation. He opened the ripe pustules of an affected person, and having wiped the lancet he had employed on a piece of cotton-stuff, he used the impregnated cotton as the communicating substance. When he wished to inoculate, he made a small wound on the leg or other part of the

body, and putting over the wound a portion of the infected stuff, fixed it there for a few hours with a piece of plaster. In this way he introduced the disease, and such, he says, was the effect of the infected pledget of cotton, he often found it merely necessary to wipe the newly-made wound with the cotton, in order to insure perfect inoculation.—**DR. B. W. RICHARDSON**, in "*Our Homes*."

NEW YORK.—**DR. JOHN T. NAGLE**, Registrar of Vital Statistics, reports the total and comparative mortality, and that from the principal causes of death, in the city of New York, for the years 1884 and 1885. The number of deaths in 1885, although 648 greater than the number that occurred during the preceding year, show a decreased death-rate according to the estimated population. Deaths from zymotic or communicable diseases in 1885 were 163 less than in 1884.

IN OHIO a bill has been prepared under the auspices of the Ohio Sanitary Association, for the creation of a State Board of Health. It provides for a board of 7 members, one of whom shall be a master plumber, one an architect, one a veterinary surgeon, and 4 physicians—all men of good standing, experienced in their respective professions, and active sanitarians. The secretary, elected by the Board, shall be the executive officer, and he alone shall receive a salary, with necessary expenses. Each member of the Board to receive compensation at the rate of \$10 per diem for the first two days of each regular session of the Board, and \$5 per diem for all special sessions, not exceeding 2 days each, or 4 special sessions per annum, together with necessary expenses. The duties and powers of the Board are to be similar to those of other State Boards. Five thousand dollars only are asked for to defray the expenses of the Board.

SMALL-POX.—The Secretary of the United States National Board of Health reports that during the four weeks ending February 6th the number of deaths reported from small-pox in Montreal and adjoining municipalities was 82. Two deaths from the same disease were reported in Toronto during the two weeks ending January 13th. The disease continues to prevail extensively in Italy.

EDITOR'S SPECIAL CORNER.

"Our mother earth," is an expression frequently used without a thought of its real significance or suggestiveness. All the bodily sustenance and nourishment of all mankind, the fruits and flowers of the garden, the corn and cattle of the field—excepting the air and the water, she supplies from man's first conception to his physical death; and, if properly cared for, she purifies from day to day, for man's use, even the air and the water. On her bosom all rest, from birth unto death. Yet how badly she is cared for by her millions of children—neglected, ill-treated. Indeed, for the most part, they pay her no attention or regard whatever. Without considering her wants and needs in any way, they make her indiscriminately the dumping-ground for all their waste matters—filth of all sorts. In cities, she is often smothered with thousands of cart-loads of foul refuse, and in back yards she is deluged with household slops; and this without provision for thorough under-draining (washing) and the growth upon her surface of purifying vegetation. Can we wonder that, instead of purifying the air by her vegetation, she emits deadly malaria? Of the soil in our cities and towns, and even villages and around farm houses, it may be said, literally in the words of Mrs. Browning:

The world we're come to late is swollen hard
With perished generations and their sins;
The civilizer's spade grinds horribly
On dead men's bones and cannot turn up soil
That's otherwise than fetid.

A pure, dry soil to live upon is indispensable to good health, and with anyone about to build a dwelling it should be the first consideration. Every one should see to it that the house he lives in is on and surrounded by pure dry soil.

THERE are quacks in preventive medicine as well as in other branches of the profession of medicine; and amateurs, too, who tender advice which, however well meant, is not always safe to act upon. We are led to make these remarks from observing in a very excellent Exchange, the *Scientific American*, the following, which appears to be an extract, in substance, from the *Sanitary World*:—"Warm baths will often prevent the most virulent diseases. A person who may be in fear of having received infection of any kind should take a warm bath, suffer

perspiration to ensue, and then rub dry. Dress warmly to guard against taking cold. If the system has imbibed any infectious matter it will be removed by resorting to this process, if done before the infection has time to spread over the system; and even if some time has elapsed, the drenching perspiration that may be induced by hot water will be very certain to remove it." We have never seen a copy of the *Sanitary World*. But the advice, as above, is little short of rubbish. In the first place, the "warm" bath is referred to without a word as to the degree of temperature; and in the second place it will be new to the profession and to scientists generally to be told that any imbibed infectious matter will be removed by the warm bath, and that this will often prevent the most virulent diseases. Evidently the water bath and not the vapor bath, is intended. The body in warm water, absorbs water, and there is no evidence that any impurities from within the body pass out into the water, or that there is anything like a drenching perspiration induced by even the "hot" water bath, which indeed is a dangerous remedy in ignorant or inexperienced hands. It is the warm or hot vapor, as employed in the Turkish bath, that induces the copious perspirations, and, properly administered, would doubtless be useful in the cases indicated; while the warm water bath, properly administered, is an admirable hygienic remedy of great value, which we have repeatedly written upon, and intend to again.

OF so called "sanitary" papers there are a number published amongst our neighbors south of us, which have not a qualified physician on their editorial staff, and consequently, though containing much that is good, they sometimes give advice that is very misleading. They are virtually plumbers organs, and as such are very useful. The "*Sanitary Plumber*" of New York is the best of them, so far as we have seen. All our readers will know we have no reference here to the old and reliable "*Sanitarian*," edited by Dr. Bell. One of the kind to which we refer is disposed to belittle the medical profession and their efforts to prevent sickness, and apparently presumes to be able to expound more knowledge bearing upon the science of health than the combined wisdom of the profession. The word

sanitary, which, as most of our readers know, is from the Latin word *Sanitas*, simply signifies, pertaining to health. It has however, largely through the plumbers and their organs, become associated in the public mind on this continent almost entirely with drains, soil and lead pipes and traps. It is chiefly for this reason that the name of the late SANITARY JOURNAL was changed to that by which this JOURNAL is now known.

CRUELTY to animals is a subject which has received a fair share of attention for many years; and cruelty to animals ought not to be tolerated. Is it not somewhat strange, though, that in all the discussions, agitations, and legislation on this subject, the *genus homo*, the first and highest of all genera, is never included? True, there has been some special legislation bearing directly upon the physical well-being of mankind, and a Factory Act has been urged upon Parliament, yet not adopted; and what we had just above written may seem rather "far-fetched"; but there are many people who evidently give more thought and concern themselves more about the comfort and health of domestic animals, and probably too of criminals, than of the women, men and children about them. Children, often cruelly clad and perhaps cruelly fed, and pinched, and these probably of the well-to-do, pass to and fro before them, who breathe for hours together the poisonous air of a foul, unventilated school-room, and in pain and anguish often, puzzle their tender brains with problems puzzling to brains mature, and sit for a time in back closets fouler than any stable, or, unguarded perhaps, come in contact with some loathsome infection; women and men spend long and painful hours breathing the foul, dusty air of shops and factories, and work, oft with tender fingers, for a pittance so small that the health cannot be preserved and early death prevents further cruelty. All these—these women, men and children and these abuses—are unheeded by the tender-hearted pronounced friends of the dumb animals. Man, the superior of all animals, the most susceptible to pain of all, should be the first consideration with all men.

This naturally brings up a question relating to the nature and seat of pain, the kind monitor which warns us of danger. A writer in the *Scientific American* claims that "pain

is mental," and that "the degree of pain which exists throughout the domain of animal life is relatively so much less than what our sensations induce us to believe that, if we were able to eliminate the mental element in our experience, the pains we so often bear would lose, not their existence certainly, but most surely all their severity." There can hardly be a doubt that the degree of pain experienced by any animal is in proportion to its degree of development or organization. The old statement that when a worm is crushed as great a pang is felt by it as is felt by the giant "when a giant dies" may serve a purpose, but we believe it is contrary to scientific fact. Many instances might be given of the insusceptibility to pain of invertebrate animals, and even of fishes, and the writer above referred to relates the following touching the higher animals:—One day a young deer was brought into camp whose fore leg had been broken by a shot. In the hope of saving it for a children's pet, we decided to amputate the leg near the shoulder. No chloroform was at hand, and the amputation was made without any anæsthetic. This very subject of pain in animals we had in careful consideration at the time, and we watched for its manifestation. But scarcely the slightest sign of it was apparent. The eye of a deer is singularly expressive; and if any faith can be placed in such tokens, the actual pain which that fawn experienced during the operation was certainly very slight." It is well-known that the savage pays but little attention to an injury which would cause a human being in highly civilized life the most intense agony. It is said that in Damaraland the natives sit so near to their camp fires that their skin is burned before they become conscious of it, and heavy blisters result which they almost entirely disregard. Again, in endeavoring to prevent cruelty to animals let us include, indeed first of all, those most susceptible to pain—the *genus homo*.

TEA and coffee are luxuries which are not at all indispensable, and if it is now necessary for the Dominion Government to raise additional revenue, excepting ardent spirits and tobacco, there are but few articles upon which it would be more reasonable or wise to reimpose additional duty. Those people who are not in a position to pay a little extra for them, and they are very few in number, will not suffer by doing without them. But let ardent spirits (not wine and beer) and tobacco be heavily taxed first, especially tobacco, the vilest and most useless luxury (?) of all.

OBSERVATIONS AND ANNOTATIONS.

A *London Times* correspondent has been giving to that paper interesting accounts of the recent epidemic in Spain. A comparison of the accounts given of Barcelona and Valencia is very suggestive. In Barcelona the sewers are fairly well arranged and are exceptionally well ventilated. In Valencia the sewers are huge square roughly-built culverts practically without ventilation other than through the untrapped soil-pipes and closets of the doomed city. In Barcelona, with a population of about 350,000, there were 980 cases of cholera in August last, and 616 deaths. In Valencia, with a population of about 150,000, the number of cases of cholera in July last amounted to 4,101, and the number of deaths to 2,814. The *Times* correspondent thus concludes: Where the drains were disinfected every day, where the people left their small bedrooms to sleep in the larger and well-aired drawing and sitting rooms, where the windows were constantly kept open, the floors carefully and frequently washed, no dirt of any sort allowed to accumulate, the person kept scrupulously clean, and the drinking water boiled, there no cholera occurred, though the dead bodies were handed out every day from the neighboring houses as the cart came round to collect the victims of the epidemic. To use the words of Dr. Jelly, the English resident physician, when describing his active practice among the poor and the rich of Valencia during the whole course of the recent appalling visitation, cholera can be cut up like slices of bread and butter.

THE ventilation of churches receives very little attention, and want of such ventilation often gives rise to causes of sickness. It is usual to find arrangements made for warming the buildings—but it is unusual to find any provision for their ventilation. The first thing to do is to devise a simple system of extraction for the foul air. The roof of a church is rarely open up to the apex; there is generally a portion boarded over in one form or another, forming a horizontal trunk, the whole length of the church, and of approximately triangular shape. If the apertures are made into the lower sides of this trunk, and the space is connected with a vertical shaft in the tower, you have an extracting shaft more or less efficient according to the varying conditions. The vertical shaft

should be warmed; this may be readily accomplished by a gas, oil, or coal heater. If there is no tower to the church a ventilator on the roof would be necessary.

THE advantage of good drainage is well illustrated by a writer in the *Sanitary Record*, on the sewerage of some continental cities. He says: The mortality returns from the various towns show that there is generally a marked improvement after the execution of the drainage works, although it would probably be unfair to claim that this is entirely due to these works, because probably much is due to new supplies of water having been provided at the same time. This is especially noticeable in Dantzic, as will be seen from the following tables by Dr. Liévin. He then gives a table which shows that, before the execution of sewerage and water works the average total mortality for 9 years—1863 to 1871—had been 36·51 per 1,000 of population, per annum, and the mortality from typhoid fever 9·97 per 1,000; while after construction of sewerage, and water works, from 1872 to 1883—12 years—the total mortality had averaged 28·66 per 1,000, and that from typhoid fever only 2·9 per 1,000, less than one third.

DR. RANSOME, in an address delivered in the Section of Sanitary Science and Preventive Medicine, at the Congress of the Sanitary Institute of Great Britain, at Leicester, Sept. 23, 1885, said what is very true and most important, but often overlooked, that the work of diffusing amongst the community the knowledge that has been gained is especially necessary in the case of sanitary science. He further remarked "It is a true saying that men often fail to realize the blessings of health until they have lost them, but the converse of this proposition is equally true of the popular appreciation of the value of preventive medicine, for, in an improved condition of public health, people easily forget the evil times through which their forefathers have passed, and hence they seldom fully realise their own present happiness."

THE proper ventilation of railway carriages seems to present great difficulties, and travellers are continually subjected to breathing foul air. A Mr. Boyle, of a firm of well-known ventilating engineers of London and Glasgow, has recently developed a system of ventilating railway carriages, of

which the *Sanitary Record* gives illustrations. In this system the air is continually changed, and the windows may with comfort be kept closed in summer or winter, without disagreeable draughts. The principle can be adapted in many different forms to suit circumstances.

DR. DOGGETT, in the *Boston Med. and Surg. Jour.* mentions seven cases of poisoning from preserved tomatoes. According to the facts he has collected, poisoning from eating tinned foods is much more frequent in England and America than in France and Germany. Three of the cases which came under his personal observation were due to the formation in the can of a salt of tin, probably a tin chloride, and the four others to a salt of lead.

THE dangers of cooking by gas is referred to by a writer in the *Sanitary Record*. It is from the absolute want of ventilation afforded. Large quantities of gas are daily consumed in our houses, and the vapors allowed to escape freely and mix with the air we breathe; for how few houses can we enter where gas cooking is in process without being assailed with the smell of the material being cooked, coupled with the usual odors of burnt gas.

MUCH of the American honey in the market it has long been known is not the produce of the bee, but manufactured by a secret process from a glucose made from maize. A German chemist has been experimenting in this direction, and finds that by treating wheat or maize starch with oxalic, or other powerful organic acid, a syrup is produced, which in a certain concentration, and after standing two or three weeks, exactly resembles old honey in taste and appearance.

DR. MALINS says, *N. Y. Med. Times*, that the brain requires twelve hours of sleep at four years old, gradually diminishing by hours and half hours to ten hours at fourteen and thence to eight hours when the body is full grown and formed. Goethe, in his most active productive period, needed nine hours, and took them; Kant—the most laborious of students—was strict in never taking less than seven. Nor does it appear that those who have systematically tried to cheat nature of this chief right have been in any sense gainers of time for their work. It may be a paradox, but is not the less a truth, that what is given to sleep is gained to labor.

IN London, Eng., the police are, as a rule, nearly as tall as the laborers of Callway—the tallest Britons—and twelve pounds heavier. The criminal classes average forty-five pounds lighter than the police. The fellows of the royal society are among the tallest of the race. The best men of Great Britain gravitate to London.

At a meeting of the New York State Board of Health in November it was reported that a determined effort had been made to remedy the defects of the law under which registration of births, marriages and deaths had been instituted. An entirely new law had been framed, which preserved all the salient features of the old law and introduced several new features; the chief being the placing of the obligation to return to the local registrar certificates of registration, in the case of births, on the parents or guardians; in the case of marriages, on the grooms; and in the case of deaths, on the undertakers or persons having charge of the bodies.

A new study in heredity has been started. The December (1885) number of *Mind in Nature* contains an article on "Heredity of Memory," and cites a few cases where it would seem that children had knowledge of events which occurred a few months before their birth.

THE ventilation of food is a subject that has not heretofore received much scientific attention. It is well-known that many kinds of food quickly lose their freshness by being kept in closed vessels, and the question has for some time past occupied the attention of a Mr. Keen, who has taken out a patent in England for ventilating all vessels in which food is kept. The ventilating principle is carried out in every utensil that has a cover, whatever it may be intended to hold in the form of food, by means of a circular opening, of a certain size, according to the proportions of the vessel, and protected by a "guard plate." An opportunity was accorded a writer in the *Sanitary Record* of tasting some dishes preserved in the ventilated vessels, which left no doubt upon his mind of the advantages claimed for them. After opening a tin of preserved food, if the contents are not all used at the one meal, ventilated coverettes are placed over it, and food so treated remains fresh double the usual time; and milk will keep sweet twelve hours longer than without such cover.

DR. ATKINSON (in *Brit. Med. Jour.*) reports a case of a woman who married at sixteen and died at sixty-four, and who had thirty-nine children, all by the same husband, whom she survived. They were all single births, except two twins, and all lived to reach their majority.

THE London Sanitary Protection Association has been in existence now five years, and consists of over one thousand members. Amongst the number are many of the most eminent surgeons and physicians in Great Britain, and by no means a small sprinkling of well-known engineers and architects, many of the latter in the first instance leaving the drainage arrangements of any new building they may be engaged upon entirely under direction and supervision of the association. Each member has the sanitary arrangements of his house carefully examined and tested by one of the association's engineers at frequent intervals.

THE *Minnesota Bulletin* for November, on small-pox, states that, "The sanitary organization of the State, due to the legislation of 1885, is now sufficient to prevent so widespread outbreaks again, if we can maintain our present average of vaccination, and our present rate of Local Health Board organization. It is proper to state, as respects vaccination, that the larger outbreaks could not have been so well controlled if we had not resorted to humanized virus as soon as it could be obtained. The 'bovine' repeatedly proved unreliable, violent and irregular in operation."

It is feared, according to the *American Lancet*, that cholera morbus is sometimes a cloak for poisoning. Quoting from a contemporary it states that Dr Janney, late Coroner of Philadelphia, Pa., affirms that no healthy adult ever dies in this climate from cholera morbus. All such who are without organic disease and of average strength and vitality, Dr. Janney says, die from poisoning. These statements, he affirms, are substantiated by the records of the coroner for Philadelphia. Illustrations are given. He adds that in his belief hundreds of persons are thus murdered in Philadelphia where the attending physician is deceived into the belief that the person died from cholera morbus.

Is burning kitchen refuse, and as a rule all kitchen refuse should be burned in the kitchen stove, a great assistance to such a disposition of these waste matters, as the *Cincinnati Enquirer* suggests, is a perforated pan or a small sized colander kept in the sink, into which peelings of all kinds, even of melons and turnips, with egg shells and tea and coffee grounds, may be emptied and there drain until the proper time, which should be once a day, comes for their cremation.

PROF. BARRHOLLOW thinks (*N. Y. Medical Times*) that few American stomachs are equal to the digestion of oatmeal. It is true that the Scotch manage to eat much of it, but there is no nation so subject to indigestion as they.

COFFEE made of distilled water is said to possess delicacy of taste, improved aroma, and, in short, is more acceptable and agreeable in every way, possibly because distilled water does not take up any of the tannin of the berries, which is ordinarily soluble by the earthy carbonates.

CAIRO, we learn from the *Egyptian Gazette* of 20th January last, is suffering fearfully from a bad water supply. Dr. Grant Bey states that it is derived from a stagnant canal which is sometimes as green as grass and smells abominably, as its banks afford a convenient water-closet for the natives who are not provided with any thing more civilized. For some time past, the Water Company, which has a monopoly for eight years to come, is reported to have been using the sand of an old cemetery for the filter beds. The average death-rate is 44 per 1,000 of population per annum. Last summer for some weeks it was 80 per 1,000.

AN exchange calls attention to the peril of sleeping in a damp bed. As a matter of fact, this peril is great, and it is almost ever-present. "The experienced traveller rarely hazards the risk of sleeping between sheets, which are nearly sure to be damp, until they have been aired under his personal supervision at a fire in his bed-room. If this be impracticable, he wraps his rug around him, or pulls out the sheets and sleeps between the blankets—a disagreeable but often prudent expedient." Great mischief may result from the contact of an imperfectly heated body with sheets which retain moisture.

PROF. DONALD, of Bishop's college, Montreal, recently delivered an interesting lecture before the Young People's Association of Taylor Presbyterian church, on "The Chemistry of Bread and Bread-making." He referred to the various grains employed in bread-making in early historical times and to the various substances known as bread in various countries, and pointed out the constituents of flour and principles of making bread. It would be well if such lectures were more common.

A SANITARY CONVENTION will be held in the city of Howell, Michigan, under the auspices of the State Board of Health, on March the 3rd and 4th which promises to be a successful gathering together of many who take an interest in the public health. The Michigan board have succeeded in creating much public interest in health proceedings and these conventions, of which there have been many, are well attended.

MR. ERNEST HART shows that the average life of the Jew in England and France is forty-nine years, while the average life of the Englishman and Frenchman is but thirty-seven years.

KNOWLEDGE carries with it influence over the minds of others, and its influence is power.—JOHN A. DIX.

THE fuel of the near future will doubtless be gas. It has become so cheap that already it is supplanting other fuels. A single jet fairly heats a small room in cold weather. A New York artist (*Scientific American*), has produced a simple design for heating entirely by gas at a mere nominal expense. He filled a brazier with pieces of colored glass, and placed several jets beneath. The glass soon became heated sufficiently to thoroughly warm a room 10x30 feet in size. "This design does away with the necessity for chimneys, since there is no smoke; the ventilation may be had at the window. The heat may be raised or lowered by simply regulating the flow of gas. The colored glass gives all the appearance of fire; there are black pieces to represent coal, red chunks for flames, yellowish white glass for white heat, blue glass for blue flames, and hues for all the remaining colors of spectrum."

THE mortality in lying-in hospitals, according to Dr. Coom in the *Scotsman*, since the introduction of antiseptics and absolute care

with regard to cleanliness, has diminished to almost that of out-door practice.

THE official report of the Health Department of New York shows that in the ten years ending 1893 there were reported 34,967 cases of diphtheria, of which 15,697 proved fatal, or nearly one-half.

ALL nursing bottles are forbidden at the Hospital Maternité, Paris. The children are fed either with a spoon or a glass.

A CHILD is reported as having recently died at Rye, England, from shock to the nervous system, caused by fright at seeing a boy wearing a mask.

DR. LOOMIS, of New York, says a man is young or old just in proportion as his arteries are healthy or diseased.

IN Austria, during 1883, there were twenty thousand three hundred and twenty-three twin births, three hundred and fifteen triplets, and one quadruple birth.

The deaths from patent medicines are estimated by a writer in the *British Medical Journal*, to be about one hundred and fifty thousand annually.

EDUCATION begins the gentleman, but reading, good company, and reflection must finish him—LOCKE.

THE article on disinfection by heat in the January number of *MAN* was inadvertently not credited to the *Sanitary Record* from which it was copied.

COMPLAINTS, quite a large number, reach us from our subscribers that *MAN* is not received regularly, numbers being sometimes missing. On many occasions we have drawn the attention of the Post Office authorities to this trouble, and we are convinced that the fault lies with the local post offices. Great care is exercised here in the mailing, and a copy is *invariably* mailed to *every* subscriber. Notwithstanding this, any number not reaching its destination we can usually, and shall be pleased to, supply if we receive *early* notification, as by post card, that the number is missing.

IN the next number of *MAN* there will be articles on "charms as a means of cure," "monotheism, mind, faith cures," "drainage and sewerage," "food adulteration;" "the mortality last year in Canadian cities," and many other interesting topics.

CURRENT LITERATURE.

LIFE.

Thoughts surge on thoughts, and man forever thinks;
Yet, better hope to read the silent Sphinx
Than life. For who can lift dark nature's veil
Or know the spring where one Omniscience drinks!

Scarce more than this the musing sage will say,
Man's life's a tent pitched only for a day,
Trembling beneath the blast of every wind,
Frail as a flower that blooms in gentle May.

Man follows man, and age comes after age
Favored by calm or lost in tempests rage,
Each lives but once, and, when that life is o'er,
Has writ a tale on Time's eternal page.

J. F. D.

BOOKS RECEIVED.

CLIMATOLOGY AND MINERAL WATERS OF THE UNITED STATES, By A. N. Bell, A.M., M.D., editor of the *Sanitarian*, Member of American Medical Association, American Public Health Association, and corresponding member of the London Epidemiological Society. This is the October volume of "Wood's library of Standard Medical Authors." New York: Wm. Wood & Co. So greatly do local and commercial interests conceal and distort the truth that reliable information respecting the subjects of which this volume treats has been exceedingly difficult to obtain. Moreover, the subjects are intricate and imperfectly understood. The talented author of this volume has contributed a reliable much needed work, valuable both to the Medical profession and the intelligent public. He holds with Parkes that unsanitary conditions rather than climate are most to be dreaded. In his own observations and studies on the Gulf Coast of Mexico and Central America, in the West Indies, and on the Coast of Africa, "the sickly places were every where marked by unsanitary local conditions." In his preface he states, "It is an almost practice which the author of this work follows, to measure the influence of climate by the relation which different regions and localities hold to pulmonary consumption—a disease which, probably more than any other, depends upon preventible conditions intimately associated with foul soil, or density of population." Studying from a life assurance stand-point, the author shows that in the Atlantic States from Maine

to Florida and from Florida to Mexico there are annually twenty-one deaths from consumption to ten thousand living. In the Western States there are eighteen and one-half deaths per ten thousand. In the North western and Pacific States, seventeen consumptives die annually to ten thousand living. The deaths under fifteen years of age are not included. From facts gathered the author concludes that the greatest differences in the healthfulness of countries are due to the hygienic conditions of the inhabitants. "A life in abundance of pure air, sunshine and out-door exercise is the most healthful, wherever lived. Mountain or sea air is healthful, mainly because it is freer from impurities. The same is true of the climate of sea islands. The pine forest regions are especially noted for their freedom from consumptives. Temperature operates principally because it either shuts people up in foul air or permits them to live out of doors."

EPILEPSY AND OTHER CHRONIC CONVULSIVE DISEASES: THEIR CAUSES, SYMPTOMS AND TREATMENT, By W. R. Gowers, M.D., F.R.C.S., etc., Physician to the National Hospital for the Paralyzed and Epileptic, London. New York: Wm. Wood & Co. This is the September volume of "Wood's Library." It is a valuable contribution to Medical literature, by one who, from his position, has had abundant and unusual opportunities for extended knowledge on the subjects of which the volume treats. The foundation of the work appears to have been laid in 1880, when in the Gulstonian lectures

before the Royal College of Physicians the Author described some of the cases related in this work, which is founded upon a good deal of practical knowledge and investigation. It will doubtless prove a "standard" work for the Medical library.

THE FIELD OF DISEASE: a Book of Preventive Medicine, by Benjamin Ward Richardson, M.D., LL.D., F.R.S., etc., etc. Philadelphia: Henry C. Lea's Son & Co. A few months ago we briefly noticed this admirable book, but not to the extent it deserves. We

had been under the impression that Dr. Richardson was a man of very extreme and somewhat biased views, but we see no traces whatever in the book of such characteristics. We have perused it throughout with a great deal of pleasure and profit. It is replete with original thought and practical advice, useful both to the physician and to those who take an interest in hygiene. Indeed it is at once the most interesting and useful book we have had the pleasure of reading for many years.

MAGAZINES AND PAMPHLETS.

THE FEBRUARY *Century* is an unusually valuable number, and not the least so because it contains a large number of letters on the International Copyright question. The publishers call attention to the fact that in the contents of the "mid-winter" *Century* may be found a remarkable variety of subjects of public moment; and an equally remarkable list of names associated with the history, literature, and art of America. If this issue of the magazine, they say, has an "inhospitable look to foreign contributors, who happen to be wholly and by accident excluded, they may find recompense of courtesy, in the plain speech from forty-five American writers, on "International Copyright," spoken in the "Open Letters" department, and which is one of the most striking features of the number." Lowell opens the argument against literary theft with a quatrain in the biting vein of Biglow's humor, as follows:

In vain we call old notions fudge,
And bend our conscience to our dealing;
The ten commandments will not budge,
And stealing *will* continue stealing.

Epigrams of satire, reason, justice, and exhortation from writers prominent in every branch of letters follow; and Whittier at the end speaks a few words of Quaker scorn of the American attitude to the subject, and concludes in these words: "The measure commends itself to every man who is honest enough to keep his hands out of his neighbor's pockets." The leading article in "Topics of the Time" expresses the editorial view of "The Demand of American Authors." "Anecdotes of McClellan's Bravery," by one of his officers who was a companion in arms as far back as the Mexi-

can war, lends additional interest to the war time portrait of McClellan, which is the frontispiece of this number. George W. Cable contributes a paper on "The Dance in Place Congo," which is illustrated with several arrangements of Creole music, and with striking sketches by E. W. Kemble. "City Dwellings," attractively illustrated, is the subject of Mrs. Van Rensselaer's fifth paper on "Recent American Architecture." In fiction there are the opening chapters of Mr. Howell's new story, "The Minister's Charge," the Minister being the Rev. Mr. Sewell, whose acquaintance was made in "The Rise of Silas Lapham," and the heroic country youth who goes to Boston in search of a literary career, and is undeceived in many things. The short stories are, the first part of a humorous novelette, "The Borrowed Month," by Frank R. Stockton; and a dialect sketch of Georgian life, "An 'On-fortunit Creetur,'" by Mat Crim.

MEDICAL EDUCATION AND MEDICAL COLLEGES in the United States and Canada, 1765-1885. pp. 137. Illinois State Board of Health. The most complete summary of the status of medical education in the North American Continent hitherto published. We read that there is a more marked uniformity in the requirements of Colleges. There are still 128 institutions for medical instruction in the United States and Canada, the same aggregate as at the date of the last report. But there were 760 less students in attendance upon and 273 less graduates from the sessions of 1884-85 than of 1883-84. In the United States there were 953 less students and 278 less graduates. In Canada there were 176 more students and 5 more graduates.