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—THE—
HEALTH JOURNAL,

A Monthly Review and Record of
SANITARY PROGRESS

—EDITED BY—

EDWARD PLAYTER, M.D.

Public Health and National Strength and Wealth.

No. 8.

AUGUST, 1889.

VOL. XI.

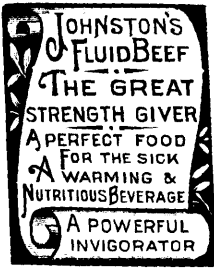
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THE HEALTH JOURNAL.

A Record of Sanitary Progress.

VOL. XI.

AUGUST, 1889.

No. 8

VARIOUS SMELLS AND MICRO-ORGANISMS: BY ALFRED CARPENTER. M.D., J.P. & C.

EXTRACTS FROM AN ADDRESS DELIVERED BEFORE THE CROYDON MICROSCOPICAL AND NATURAL HISTORY CLUB, CROYDON, ENG, APRIL 10TH, 1889.

THE peripatetic world is now and then convulsed by agitations against the smells which come from openings into sewers. "Shut them up," say the most energetic and demonstrative. Sometimes this is effected, sometimes it is not. In the heated discussions which spring up in consequence of some stinking outlet argument is useless. The loudest exclaimers often gain the day rather by the loudness of their declamation than by the correctness of their reasons.

I propose to consider the question in its bearing upon the public health in a scientific rather than in a partisan spirit.

The reasons for objecting to smells from sewers are sound enough. It has been proved *usque ad nauseam* that sewer smells do promote sickness. It is reasonable, therefore, that those who object to pay an unnecessary doctor's bill, and at the same time incur the risk of losing one of their beloved ones, should be loud in their antagonism to smells from ventilating gratings.

The first point to be determined is the actual nature of the smells, and (secondly) the causes which produce them. There are various kinds of smells, some pleasant, others objectionable, and some decidedly obnoxious, while there is a class which is utterly offensive. . . . Smells arise from chemical changes in structures of the bodies engaged, which give off minute particles of matter, usually of an ethereal or gaseous character; and being so, are endowed with the attributes which belong to gases, each atom having a repulsive action toward every one of its own kind. . .

Some individuals smell very disagreeably but the mere smell is not capable of reproducing its kind any more than those from flowers and chemical decompositions, and are not, therefore, disease-producing. They cannot set up disease in other people. The odors from recently-discharged excreta are allied to this class. They are gaseous, have a tendency to diffuse themselves into space, are rapidly oxidized, and are not in any way Phoenix-like—that is, do not grow another generation of a similar kind. It is true that there are individuals with peculiar idiosyncrasies (as they are called) who cannot bear the smell of musk, or other penetrating odors. . . . But these are not cases in point. Stinks of this character may seriously effect a person but there is *no reproductive power in the smell*.

It is this point upon which I wish particularly to dwell, so as to bring before you the true facts and the real nature of so-called sewer gas. The smell of a water closet which has been recently used is very objectionable, but there is no probability of mischief to the next user on that account. It is no more injurious than is rose-water or the kennel of a fox. Fortunately for humanity that it is so. The odors from recent excreta are like to musk: they are ethereal, and tend to diffuse themselves, and so to become oxidized, and are rapidly destroyed. The excreta from a cholera or fever patient at its immediate discharge is perfectly harmless, but it is highly charged with ova, or germs of organic living matter, which are not so harmless. They are not volatile or diffusible, like to the ethereal smells of musk or of the fox.

They require to be separated from the containing liquid, dried, lifted, and carried by currents of air. When so carried they may or may not fall into congenial soils.

Any one walking upon the chalk downs on a midsummer day may see the analogue of that which takes place in sewers. The air blowing over the Southdowns lifts up theseeds of the various thistles which grow there and carries them on to arable fields below or out to sea. In the one case they reach a congenial soil and grow, to the discomfort of the agriculturist; in the other they are destroyed. So it is with disease germs from sewers.

There is something more than smell or something less, as it has not been proved that disease microbes have any smell at all, and of course it is only those which cause diarrhoea, cholera, and typhoid, and the sewer must have a tidal state to enable these germs to find exit at the street openings. This brings me to another point in the case. There are benign microbes as well as malignant organisms. There are microbes which are friends to man, as well as those which are inimical. Take a cubic inch of mould from the Beddington Sewage Farm, and it swarms with millions of living creatures, which are hard at work on a warm day preparing the organic matter in the humus by turning its nitrogen into nitrites ready for use by the vegetable world, if it happens that no radicle belonging to a carnivorous plant is at the moment ready to save the necessity for the change. It has been shown by direct experiment that the formation of the nitrites is due to this cause, and that the development of ammonia which takes place under some other circumstances is also a reaction due to another organism of another kind, the result being acid in the one case, alkaline in another. In the one case putrescence is avoided, a nitrite or other acid being formed; in the other it is hastened, and ammonia results. Here we have another line.

How does this alternation come about? The answer is that it comes about very much in the earth or in sewers as it does

in the air; let oxygen abound, especially ozonized oxygen, and nitric acid tends to form. The organisms which cause this tendency grow as vigorously as does the yeast micrococcus in a solution of sugar. When the air is highly charged with electricity the rain which descends in a thunderstorm contains an appreciable portion of nitric acid. But let the presence of oxygen be diminishing, and compounds of nitrogen form which are alkaline, and putrefaction is then promoted. A set of microbes come into being which are sometimes inimical to humanity; but here again we see the overruling hand of a Divine Providence, for one of the products of putrefactive agency—viz., sulphuretted hydrogen, is completely destructive to those organisms that especially revel in the humors of animal life. This result is shown in the work of the doctor. It is our duty as students to do some dissecting in our student days, and we may be requested to do so at any time by the corner. It sometimes happens that the operator wounds himself. I have experienced this while making post-mortems upon those who only been dead for forty-eight hours more or less. This class of wound is always very serious, for disease germs may be transplanted, but a wound which is inflicted at the end of a dissection, when putrefaction is established, perhaps six or eight weeks after the death of the subject, has very little danger in it, for the disease-producing microbes, if they had been present, have all been destroyed in the process of the putrefactive action which has taken place. This result happens in sewers as well as in dissecting rooms.

There are two classes of microbes which have to do with destructive agencies—the moulds, which belong to the family of fungi, and the true microbe or schizomycetes order. If air be sparsely admitted the moulds predominate, and there is a tendency to acid formations, carbonic acid, butyric, nitrous acid, etc.; but if it is all but excluded the schizomycetes are most numerous, and it is on this fact that ventilation must be good or not at all. We now reach a point in our inquiry which is of

importance. Microbic life is connected with decomposition of organic matter containing nitrogen in its constitution. Decomposition is accelerated or checked by outside circumstances, such as the presence or absence of air; it is also influenced by temperature, by moisture, and the presence or absence of other agencies, as is proved by the action of antiseptics and germicides. We may even advance a step further and say that without decomposition there is no development of microbial life, this is an important factor in the consideration of sewer air.

Let us now inquire as to the nature of the decomposition which promotes the formation of these organisms. As experience is gained we become more and more convinced that there is no known means whereby any such organism arises without the

previous introduction of a parent germ of the same kind; that the spontaneous origin of such germs is not likely to happen, though no doubt in the case of some kinds of disease germs, such as that of typhus-fever, the dormant organism is an ever-present commodity, as much as that which gives rise to the blue mould in cheese. It is also established by experiment that a germ may be made more malignant by cultivation, or by cultivation may be deprived of its malignancy. It is upon this fact that vaccination is found to be prophylactic against small-pox, and Pasteur is able to prevent the spread of splenic-fever among cattle, and take out the sting of hydrophobia, by giving rise to a disease of a similar but of a milder type though in the last-mentioned this may be only a choice of two evils.

ADVANTAGES AND DANGERS OF ELECTRIC LIGHTING.

ABSTRACT OF A PAPER ON "ELECTRIC DISTRIBUTION," READ BEFORE THE INTERNATIONAL CONGRESS OF MEDICAL JURISPRUDENCE, NEW YORK, JUNE 7TH, 1889, BY HAROLD P. BROWN, ESQ., ELECTRIC ENGINEER.—FROM THE SANITARIAN.

THE air will no longer be polluted with smoke, for one immense station provided with triple or quadruple-expansion engines and furnaces, in which combustion is complete, will supply heat, light, power, and motion. The consequent addition to human health, comfort, and length of life by the banishment of dirt and noise will be enormous. Electrical disinfection and sewage purification are already in use, and since we can command immense volumes of electricity, it is not improbable that a better understanding of the laws of meteorology will enable us to at least partially control the weather, and thus avoid the evil effects of severe changes and extreme temperatures.

But to off set these advantages earth and air are filled with wires, many of which may be charged with swift and invisible death, which may overtake the most cautious in a myriad of unseen ways. If, then, the near future is to see a thousand electrical horse power distributed where now we have but one, it is clearly the physician's

duty to point out the dangerous currents, and it remains for the lawyer to secure wise legislative action preventing the adoption of systems or apparatus which needlessly jeopardize human life or health. The list of deaths from electric lighting numbers, though incomplete, over two hundred in the past few years; yet it must be borne in mind that not one street in a hundred or one building in a thousand is as yet lighted by electricity, and not more than half the house lighting now done is the work of the continuous current used at a pressure that cannot possibly prove fatal. Dangerous electrical systems are being rapidly installed in all parts of the country and in the interests of human life and health prompt action is imperatively demanded.

The only safe and proper course is to have a thorough examination made by unpurchasable medico-legal experts, and laws in accordance with their recommendations submitted and urged for passage. But it may be said that the laws already in force

give the various boards of health full jurisdiction over any business, matter, or thing dangerous to life or detrimental to health. True; but while every other source of danger is manifest to one or more of the senses electricity is silent, impalpable, odorless, invisible. A man in the lawful pursuit of business or pleasure may be flashed out of life or have his nervous system hopelessly shattered by a contact between a metal railing and damp pavement simply because some electric lighting company chooses to use a dangerous current or neglects safeguards on account of their expense.

Special legislation, therefore, is needed to prevent these hidden dangers. Burying the wires is no protection unless you bury with them lights and motors. Chicago has never had overhead electric light wires, and yet at least six men have been killed in that city by electricity. The wires of the telephone, telegraph, messenger service fire or burglar alarm, etc., while harmless in themselves either above or below the surface, may be made death dealing by the presence of a dangerous system of electric light or power. If corporations are permitted as at present to enmesh our cities with wires carrying death-dealing currents—currents which can escape and produce death through any known insulation—it will not be long before the public clamor will cause the adoption of laws hampering, if not destroying, all electrical industries.

During the past years a long series of careful experiments was made by the writer to determine the comparative danger to life of the various forms of electrical currents, the results of which were considered at the December meeting of the Medico-Legal Society. This work proved beyond question that the continuous current, which flows steadily in one direction, was in itself perfectly safe, at least up to a pressure of 1400 to 1500 volts; that devices suggested by the writer would make its use reasonably safe in light and power systems up to 3000 volts; that an interrupted or pulsating current was dangerous, and that an alternating current, known by physicians as "Voltaic alternatives," whose impulses are rapidly reversed in direction, was deadly at a very low pressure.

These conclusions are verified by the death record, for out of eighty-five fatalities, the particulars of which I have been able to obtain, not one is due to the low tension continuous current, but eight to the high tension continuous, fifty-four to pulsating, and twenty-three to the alternating. The latter has but recently come into extensive use, and its plants are supplied with new insulated wire. As this institution deteriorates with age, and as the system is extended, its death list will be rapidly increased. The physiological effects of these currents upon nerves and muscles also bear out these conclusions—The Sanitarian.

SOME OF THE LIMITATIONS OF MEDICINE.

BY STEPHEN S. BURT, M. D., PROF OF CLIN. MED. NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL, READ BEFORE THE CLINICAL SOCIETY.—
FROM THE POPULAR SCIENCE MONTHLY.

IT is a trait peculiar to some minds to believe too much and to others to believe too little. Between these extremes, however, there are many who, though keenly alive to the limitations of medicine, are, at the same time, able to appreciate the great boon it is to mankind. . .

The questions have often presented themselves to me why, after so many years of familiarity with disease, is there such a wide difference of opinion regarding its management? Why is it possible that

there are two large schools of medicine opposed in theory if not in practice? Why the endless and surprising consumption of patent remedies? It would seem that more or less superstition still prevails in reference to disease, as well as much ignorance respecting its natural history. I am not well convinced that illness is a necessary concomitant of human existence: and to believe that it is unavoidable is to paralyze all legitimate efforts for its prevention. That it will, at any time, be wholly

eradicatèd is too much to hope, and as Utopian as to expect that a high order of knowledge will ever be universal ; nevertheless, great mental attainments and perfect physical health have been realized, and therefore must be accepted as a standard for approximation. Nor is such a realization fortuitous. Long years before our era a wise philosopher of Greece declared that *chance* was nothing more than *cause* unperceived by human reasoning. Now, the welfare of the human race suffers in proportion to the survival of a belief that chance and not some ascertainable cause underlies the evils that endanger it. We are prone to shift the responsibility for our misfortunes upon others, and slow to take the blame on ourselves, where it commonly belongs. Life is certainly a desirable thing under favorable circumstances, and oftentimes we are the makers, or, at least, the modifiers of our environment. As a rule, bad health is the foundation of the greater part of the unhappiness of man. And yet nothing is more positive than that the preservation of good health depends upon a strict observance of the laws of being, which include those of inheritance.

Nature is never cognizant of extenuating circumstances. Whatever a man's motive, he is equally a victim of a neglect to preserve his bodily well-being, whether his intentions be good or bad. We see death prematurely and with impartiality destroy the just and the unjust. We know that life bears many an old sinner to its utmost limit, and, contrariwise, that goodness is not incompatible with extreme old age.

Life has been defined as "the continuous adjustment of internal relations to external relations." Hence, a partial failure of the inner man to meet the successive changes that are going on about him, means incomplete life or disease, and a complete failure of a similar adjustment signifies death. The transmission and the development of characters known as inheritance are made clear by the hypothesis of *pangenesis*, which, therefore, with your permission, let me give : "Every unit or cell of the body throws off gemmules or undeveloped atoms, which are transmitted to the

offspring of both sexes, and are multiplied by self-division. They may remain undeveloped during the early years of life or during successive generations ; and their development into units or cells, like those from which they are derived, depends on their affinity for and union with other units or cells previously developed in the due order of growth." Here we find an explanation of the manner in which predispositions to disease are probably transmitted, and, what is more, the particular form of inheritance known as *atavism*, or the recurrence of certain features after one or two generations of immunity. I dwell upon this matter of inheritance in order to show how futile the attempt to construct a perfect being out of imperfect material. No amount of therapeutic skill will ever be able to atone for the fatal mistake of unwise parentage.

What affects the child, too, in some degree affects the parent. Indeed, the suffering of a parent over the misfortunes of the child is often greater than that of the child itself. It is important that man should understand the great power that inheritance exerts upon the race for good or for evil, so that he may make a wise departure in the right direction ; and that he should know that his daily life so regulates his habits of mind and body that each succeeding day is the sum total of the days that have gone before in its influence upon his future health and movements.

Confucius says : "When you know a thing, to hold that you know it : and when you do not know a thing, to allow that you do not know it—this is knowledge." The laity are of necessity more or less ignorant of the nature of disease. And it would seem that their ignorance is shared by no inconsiderable number of our profession. Every malady pursues a definite course, and ends in restoration, incomplete recovery, or in death. Now, I believe that those medical men who are familiar with the natural history of disease will admit that the milder forms of most acute affections will pass through their various stages and end in recovery without the assistance of a single drug. Moreover, I think they will be obliged to

acknowledge that, under the most favorable circumstances and most skilled treatment, many persons die overpowered by the virulence of a malady. The daily record of vital statistics would seem to prove as much. And the pathologists will bear testimony to the fact that where disease, either acute or chronic, has invaded a vital organ, just so much of the tissue as is destroyed remains destroyed and is never reproduced. Have we a broken-down lung? The best that can happen is that the process shall be stopped. Are portions of the kidneys degenerated? We can but save the remainder. Has the liver begun to retrograde in fibrous tissue? We can at best but check the retrogression.

The probable reason that treatment does keep pace with the rapid advance of pathology is that therapeutics has gone astray, since the only possible solution for some of these difficulties is to seek out the cause and obviate it. A great deal of time and talent have been wasted in a fruitless search for specific remedies for diseases, like unto the metaphysicians who have been asking unanswerable questions for hundreds of years about the unknowable.

While it is possible to imagine a community so intelligent as to exist free from the ravages of disease, it is too much for the most sanguine to hope for in the near future. But, notwithstanding this, the history of the recent past assures us that already great strides are being made in the proper direction. Devastating epidemics are less common, because stupidity and superstition are being overcome by intelligence and a more general recognition of the sequence of cause and effect.

We have many useful drugs, some that are indispensable, but they are mostly double-edged tools to be handled only by trained hands. The man unfamiliar with disease who ventures to administer these drugs because he happens to be acquainted with their names, is very much like the literary aspirant who resorted to opium in the vain hope of becoming a De Quincey.

Whenever the germs of disease gain admission to the body, nature makes strenu-

ous efforts to throw them off, and, although it takes its own time, it is often successful. For example, fever, by destroying the morbid products that produce it, serve a most useful *role* in the restoration of the patient to health. And, as part of nature, the skilful physician stands by in readiness to do his share in furthering the process already initiated. By an intimate acquaintance with the phenomena of disease and the means by which they are manifested, he is enabled to do the right thing at the proper moment, and thus frequently turn the scale toward recovery, when without his intelligent interference the balance might fall in the wrong direction. But the meddling interposition of the ill-informed is often productive of great harm. A burning desire to do some impossible thing leads the unwary practitioner into many fatal extravagances. To have the knowledge when not to act, and the moral courage to forbear and give Nature a reasonable chance, are indeed combinations of gifts as desirable as they are rare. From this it follows that the man who recognizes the limitations of medicine is by far the safest adviser.

There are no real specifics for disease: and to believe that somewhere in the animal, vegetable, or mineral kingdoms, hidden from the eye of man, there are to be found by diligent search a cure, at least, for each of the many ills that flesh brings upon itself, seems much less rational than to consider all these troubles as induced by violations of laws, known or discoverable, which must be obeyed and cannot be evaded.

In the scheme of Nature it would have been much simpler to eliminate all pain and disease than to provide occult remedial agents for each, were either alternative within the scope of creation. . . .

What can we do? Let us now glance at what we can do. To begin with, we are able to give much instruction regarding the avoidance of disease. We can relieve functional troubles first by the simpler means of rest, food, or exercise, as the conditions demand. We can quell undue pain. But we cannot continue to supply

medicines that will take the place of proper living.

The man who neglects his own health, and expects the medical profession to make up for his negligence, is somewhat like a person careless of fire in his own house because there happens to be an efficient fire department in town. The flames sometimes get extinguished if the alarm is sounded in time.

We can assist nature in her endeavor to cast out morbid products by various therapeutical expedients. We can remove some of the exciting causes of disease, or else take the patient beyond their reach. We can place him under the most favorable circumstances for Nature to do her work, and at critical moments stimulate the flagging powers and thus bridge over a yawning gulf. We can palliate many of the distressing symptoms of disease, but

we cannot atone for all the outrageous infringements of Nature's inexorable laws by dosing with drugs, and, moreover, it is not likely that we shall ever be able to do so.

It is possible that we are upon the threshold of a new era in treatment of infections and miasmatic diseases, in which new reasons will be found for the survival of old remedies, and many useful additions will be made to our pharmacopoeia. The wonderful discoveries of Pasteur in France and of Kock in Germany, and the splendid achievements of the former in his applications of them, seem very fruitful of promise. But, notwithstanding all this, it is much safer to be cautious about mad dogs than to run any undue risks because Pasteur has evolved a means of lessening the terrors of rabies.

DOMESTIC AND PUBLIC HYGIENNE.

AN UNIQUE ORGANIZATION—A NOBLE MISSION—WHAT COLLEGE BRED WOMAN ARE DOING.

THE woman physicians of all schools of practice in the city of Chicago have formed a Woman's Medical Union for the advancement of Domestic and Public Hygiene. In New York, the Ladies' Health Protective Association, which has done good work in the matter of street cleaning and the abatement of public nuisances, is now investigating matters relating to the management of the public schools that are of sufficient interest and moment to rouse the seven sleepers or any other inert body of indifferent citizens.

The most unique organization for inducing municipal authorities to enforce sanitary laws is a little colony of college-bred women about to be established in Rivington street. In that unsavory locality, graduates from the leading literary colleges for women, together with a woman physician, are about to take up their abode, and to adopt all the inconveniences of such a life, in the earnest endeavor to convert some of the great unwashed into the washed by means of baths at five cents each; to interest young girls in the sub-

ject of cleaner living; to improve the gutters for those who play in them and to diminish as far as possible, by a personal statement to the proper representatives of municipal government, the avoidable horrors that they expect to share with the natives of this region, for smells are no respecters of persons, neither is the sight of decaying animal and vegetable matter.

This little band of young and pretty women have been told again and again that they need not expect to teach the people anything, but consoled in the same breath by the assurance that they themselves will learn a great deal. The movement is not a so-called religious or intellectual venture. It is a simple scheme of ethical culture, beginning at the foundation of things, without cut-and-dried rules, prejudices, or opinions. Books are wanted for the girls. It is hoped that, if a girl can be induced by personal influence to read one book, she may rise equal to a desire for another. Not even the most sanguine of the Rivington Street colony expect to

teach the mature women anything, though they have plans for making the poor souls happy now and then. In a little speech on the subject, a bright and charming Smith College graduate said: "The mothers are always left out. The men have pleasure; they get drunk and fight. The little children can play in the gutter till eleven o'clock at night. Boys and girls have their dance halls. But the laborer's wife signs her death warrant, so far as all pleasure is concerned, the instant she marries. The plush gown that constitutes the wedding garment is her last splurge." The colonists' idea of giving these mothers pleasure is to present them with something good to eat; and our colleague graduates trust that some listless, weary woman may rouse herself and wish to learn of them how to make it.

Hygiene as the basis of morals is one of the governing principles of modern philanthropy. Every year a disposition to

raise the fallen and befriend the friendless by affording them increased material and physical prosperity widens its dominion. Two or three, here and there in little groups, have worked out social problems in this way all over the country. In England, it is said, the strenuous efforts of one woman—she found herself in prison once on account of those efforts—have revolutionized the entire sanitary code. It would seem that there is not a shadow of a chance now for the Circumlocution Office in our large cities. The farmer has decided to cut his corn himself, so the larks must be up and about their business. The nineteenth century is the woman's century, as Goethe has it, and the unprejudiced critic must observe that the nineteenth-century college graduate does her full duty to the times in the matter of domestic and public hygiene.—New York Med Jour.

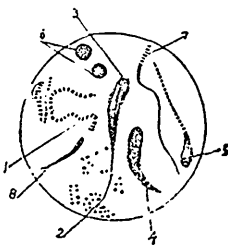
ACTINOMYCOSIS.

THIS disease, which has been but recently brought into notice, although probably rare in this country, is prevalent among bovines in all parts of Great Britain where the land is wet, but especially in the fen districts and in Scotland. We briefly drew attention to it in the July number of this JOURNAL, and proposed to give a brief his-

thing more relating to the nature of the disease in both man and animals.

MORPHOLOGY OF THE PARASITE.

To an exhaustive paper relating to the form, nature &c., of the micro-organism of this disease, by Prof McFadyean (of Royal Vet. Col. Edin.), we are indebted for the following description of this parasite, a sort of star-shaped or "ray fungus." In the great majority of cases occurring in cattle, the parasite presents itself under the form of minute granular masses (little grains), the larger of which are distinctly visible to the naked eye. It is the presence of these granules that gives to the purulent matter occasionally formed at the seat of disease its peculiar characters: and even with the unaided eye, but still better with a lens, the larger granules can be seen as opaque specks in the gelatinous and translucent lumps formed in the tongue and other situations. Many of the colonies particularly those of medium size show, even with slight magnification, an irregularly radiate pattern, the striae extending from the centre towards the circumference, to which they give a notched



This figure represents special elements selected for illustration from various colonies. 1. Short chains of cocci; 2. Irregular group of cocci, from which proceeds a filament ending in—3, a club showing an axial deeply-stained thread in direct continuity with a filament; 4. A club with deeply stained axial particles (cocci?); 5. A club in direct continuity with a segment filament; 6. Two spherical elements staining like clubs; 7. Cocci developed by close segmentation of a filament; 8. Formation of cocci within unstained continuation of a filament.

tory of some cases of what, it appears, was actinomycosis in a herd belonging to Mr. W. J. Delmage, of Camden East, a number of which died, together with some-

or serrated character. With a higher magnifying power, the rim of the colony shows radiately-disposed, ovoid or club-shaped, or pear shaped bodies, while the centre when brought into exact focus appears granular, like the heart of a daisy. In actinomycosis of cattle the most constant, and in many cases the only distinct elements of the fungus colonies are the so-called clubs. Naturally, therefore, in discussing the actual nature of the organisms, and in attempting to settle its proper botanical position, attention has been turned chiefly to these bodies. Nevertheless, they are of far less importance from that point of view than the less frequently encountered structural elements that without doubt in the growth of every colony precede them.

Doubtless then, as Prof. McFadyean says, the mulberry masses or clubs which are found in every actinomycoma of cattle represent only a single phase of the growth and development of the actinomycetes. This type of structure is, in fact, the last stage of the progress of the parasite within the tissues, there is some reason to believe that in the great majority of such colonies not a single element has retained the power of vegetation.

With the view of studying the earlier development of the colonies, Prof. McFadyean obtained a tumour, "rounded in form and about the size of the fist," from a cross-bred three year old ox which was exposed for sale in one of the Edinburgh marts. In this he found colonies which differed notably from the common form in that only a few clubs could be discovered at the margins. In these he found elements of three different forms: minute granules (cocci), threadlike forms, and clubs. The granules, or *cocci*, were by far the most numerous elements in the larger colonies. In many instances they formed chains, "many beautiful, comprising sometimes 10 or 15 elements" [granules or "links"] "and frequently slightly curved or wavy." The thread-like forms were, too, constantly present along with the *cocci* in all the larger colonies, "frequently shooting out in a tendril-like manner beyond the coccus

heap." In many of the more luxuriantly-growing colonies the clubs were absent.

In human actinomycosis great importance has been attached to the presence or absence of the club-like forms. Prof. McFadyean says: With reference to their occurrence here, in the tumour from the ox, in many of the larger colonies they were entirely absent. Fortunately, however, in a considerable number they were numerously present, though never in such numbers as to conceal the other elements of the colony. "I say fortunately for had they been entirely absent the form exhibited by the parasite would have lost its value as a connecting link between some of the cases encountered in the human subject and those commonly met with in cattle." In order to show the close correspondence of the elements present in this bovine actinomycoma, he continues, I may here refer shortly to Israël's description of the parasite as found in man. Israël enumerates three morphological elements in the colonies: "Long undivided mycelial threads, almost always wavy, curved or corkscow-like; minute granules; and pear or club-shaped bodies in great variety and size." It thus appears that in the actinomycetes colonies, whether occurring in the tissues of man or of cattle, three morphological elements may be found. As to the botanical life history of this parasite, Hartz, who examined specimens submitted to him by Bollinger, named it the actinomycetes, and assigned it a place among the mould fungi. Prof. McFadyean apparently regards it as identical with actinomycosis hominis, as it appears in man. My own observations, he says, agree in the main with Boström's views. I have not been able to find in the colonies of any age evidence that the so-called clubs are at all concerned in the reproduction of the organism. The coccus and filamentous forms are the active vegetative elements of the parasite; and as regards the part played by each in the growth of a colony, they appear to be of nearly equal value. I believe it probable that the cocci are the more important as regards the formation of new centres. There are

to be found commencing colonies without any other elements than cocci, and many others showing a great preponderance of these.

A colony has its starting point in one or more cocci transported by the plasma [nutrient blood or lymph] currents or by the agency of a carrier cell. The cocci multiply by elongation and subsequent fission when undisturbed by the surrounding leucocytes [special blood cells which destroy—eat or digest—many forms of parasitic micro-organisms]. By elongations some of the cocci give rise directly to short bacillary forms and through these to long filaments. The further extension of the colony is affected by the growth and multiplication of both threads and cocci. The former multiply by segmentation into bacillary elements, which may again elongate. The formation of clubs and such forms is evidence of diminished vegetative power of the filaments (possibly also cocci) in connection with which they originate. The growth of a colony may be arrested at any stage by the agency of the animal cells (leucocytes), or by failure in the supply of the necessary pabulum. In that event the majority of the threads tend to develop clubs.

SITE AND NATURE OF THE DISEASE IN MAN AND ANIMALS.

The commonest site for the disease in bovine animals is the tongue, and it is believed to gain a footing in slight abrasions produced by certain kinds of fodder, especially by barley. Jensen, indeed, goes so far as to assert that the fungus grows on grain husks and straw of different cereals, but most abundantly on barley, which is also most likely to wound the mucous membrane. The most probable hypothesis is that the disease infects human beings the same way; this, as Prof. Crookshank points out, receives some confirmation from an observation of Soltmann's, as follows:

A boy aged 11, accidentally swallowed an awn of barley, an abscess formed in the throat, and when opened the awn was found in the evacuated pus; the abscess, however did not close, and the characteristic ray fungus was eventually discovered.

The British Medical Journal says: "There appears to be no question that Prof. Crookshank has succeeded in cultivating the ray fungus, thus confirming and extending the researches of Boström."

In the discussion which followed the reading of a paper on a Case of Actinomycosis Hominis, before the Royal Medical and Chirurgical Society, London, Eng., on Feb. 12th last, great stress appears to have been laid on the presence or absence of the club shaped bodies as indicating the identity or non-identity of the actinomyces found in man and in cattle. Prof. McFadyean in his paper says: The case I have just described proves beyond any doubt that these points ought to have little or no weight, for here, in the same tumour, many colonies show not a single club while in others they are numerous.

It is not, it appears, in bovines so serious or fatal a disease as tuberculosis, with which according to Prof. Brown, in a report to the Privy Council, it is particularly liable to be confounded, especially in the early stages. The British Medical Journal says: "There can be no doubt that bovine actinomycosis has been, up to quite a recent period, universally regarded as tuberculosis or scrofula, and that many veterinarians still fail to draw a distinction." It has, it appears, hardly been recognized in Canada, veterinarians here know hardly anything about it.

The case of the disease in a boy (brought before the Royal Med. and Surg. Society, in Feb. last, referred to above), presented the following history, as reported in the British Medical Journal of 16 Feb. The boy aged 9 was admitted into the Brompton Hospital for an insidious illness of four months duration, attended with hectic symptoms, slight cough, and painful swellings on the right side of the chest. He was of somewhat tubercular family history, and the son of a dairyman. The symptoms present were irregular fever, emaciation, slight cough, attended with pain in the right chest. There was enlargement of right side with local swellings, elastic and painful, and displacement of heart, with slight enlargement of the glands of the right axilla and neck. Incision into a swelling, which had become

fluctuating, resulted in the removal of some semi-solid matter mingled with blood which, on examination, proved to be a degenerated tissue teeming with the ray fungus. A list of about 140 cases of the disease in man, which had been observed by different physicians, was presented at the meeting, and details of several others mentioned by those present. It was said that probably we should find, on close examination, that actinomycosis was much commoner both in men and cattle than it was at present supposed.

In the *Annals of Surgery* for July (89) four cases of this disease are noted. One that of a cab-driver in whom the disease developed about the mouth and face, soon after he had had a tooth extracted. The second case was that of the betrothed of the first patient. The disease was believed to have been communicated to her by kissing, as she herself first suggested. The third case was that of a woman, too, and the disease commenced with abscess in the inner side of the cheek. These three cases ended in recovery. In the fourth case the disease spread from the mouth to the eye ball and temporal region and eventually appears to have involved the brain, and so proved fatal. In all the cases microscopic examination revealed the actinomycosis fungus.

Dr. Klein, of the College of State Medicine, London, wrote to the *Glasgow Herald* in May last a letter referring to diseased meat and infectious diseases. From this we take the following extract: Though tuberculosis, owing to its wide distribution among cattle, ranks first, there is another disease amongst cattle which presents not less important features of interest; I mean the disease now known as actinomycosis. The more this disease is recognized in its characters, particularly in the presence of the actinomyces or ray fungus, the more it becomes evident that it has a wide distribution. Cases which formerly would have been put down as tuberculosis are now recognized as being really actinomycosis, since in the nodular deposits or purulent matter the actinomyces fungus can be demonstrated, whereas the tubercle bacilli

are of course absent. The actinomyces fungus in this disorder causes nodular new growths, which, as is well known, gradually enlarge, and in many localities have a tendency to suppurate and to break down; their occurrence is common in the tongue, by which this organ becomes greatly enlarged and firm, on the gums and other parts of the mucous membrane of the mouth and throat, and in the lungs.

Now this disease also affects human beings, and here it is a most serious disorder on account of its prolonged and painful character, and because it generally terminates fatally. The more this dire malady is recognized in the human subject—chiefly by microscopic examination—the more it is seen that its distribution is considerable. While a few years ago a few cases only were recorded by Continental observers (Israel and Ponfick), there is now hardly a medical journal in this country or abroad in which in the course of a year we do not find recorded a case of actinomycosis in a human being. I happen to know at the present of two patients affected with actinomycosis of the intestines associated with severe suppurations from the bowels; there is little hope of their recovery, and, judging from other cases, the disease will also here be found to have invaded the organs in the vicinity of the intestines—viz, the liver and the lymphatic glands of the abdominal cavity. Actinomycosis in man is identical with that in cattle in its pathology and in the actinomyces fungus, and there is no reason to doubt that they are intercommunicable. Do not the cases of actinomycosis of the intestines in man strongly point to the probability that it is contracted by consumption of materials derived from animals affected with actinomycosis?

We regret not being able to give in this number of the *Journal* the history of the cases of supposed actinomycoses in a herd of cattle belonging to Mr. Delmage, of Camden East, which we have been investigating, as intimated in the last number. We have no doubt, however, that before the issue of the next number sufficient will be known of the cases, their history etc, to enable us to give the facts.

LEPROSY—INTERESTING HISTORICAL SKETCH—HEREDITARY OR INFECTIOUS—ITS DANGERS.

THE recent death of Father Damien and the action of the Prince of Wales has turned public attention to leprosy. The following brief extracts are chiefly from a reliable address given before the New York Academy of Medicine, June 6, 1889, in connection with the exhibition of fifty lantern slides of typical forms of leprosy, by Prince A. Morrow, A. M., M. D., from personal observations in Mexico and the Sandwich Islands, as published in the New York Medical Journal of July 27th.

By the great majority of the profession, Dr. Morrow said, leprosy is looked upon as possessing at the present day only a historical interest. It is classed in the same category as the pestilences and plagues which formerly swept away entire populations and devastated countries, but which are now practically extinct. Unfortunately, leprosy cannot be relegated to the past: it is still a living, actual reality, and to-day prevails over more than one fourth of the habitable surface of the globe. While it affects principally maritime populations, inland countries are by no means exempt; it prevails in both marshy and mountainous regions, in the lowlands of Louisiana as well as in the elevated tablelands of Mexico.

It would not be possible to give an accurate compilation of the number of lepers upon the face of the earth at the present day. In India it has been estimated that there are over two hundred and fifty thousand; In China, Japan, Africa and Egypt there are large numbers. In Europe the most important centre of the disease in the present century is in Norway and Sweden.

The spread of leprosy throughout a great portion of Europe early in our present era may be traced along the routes of the Roman armies, and its general diffusion throughout Christendom in the eleventh, twelfth, and thirteenth centuries was materially influenced by the return of the Crusaders. In the western hemisphere leprosy was first introduced into Central and South America by Portuguese traders, in Mexico probably by the Spanish, and in Canada by the French *émigrés*. It per-

sists in New Brunswick at the present day the most important centre being at Tracadie.

In our own country the introduction of leprosy may be traced to at least four separate and distinct sources. In Louisiana it was carried by the Arcadians, in the north-western states of Iowa, Illinois, Wisconsin and Minnesota by the Scandinavian colonists, along the Pacific coast in California and Oregon by the Chinese, and along the southern Atlantic coast it was brought from the West Indies. In Salt Lake City the disease was imported by a colony of Kanaka women brought by the Mormons from the Sandwich Islands. My own observation of leprosy during the past winter began at New Orleans, where, it will be remembered, Dr. Blanc has recently reported the existence of forty-two cases.

Leprosy is a parasitic disease; the bacillus of leprosy has a definite form, a slow rate of development, and is endowed with an extraordinary vital resistance, presenting many analogies with the bacillus of tuberculosis. Like all specific microbes, it has an elective affinity or predilection for certain tissues and fluids of the organism. The bacilli occur in all forms and stages of leprosy; they are found in the skin and mucous membranes, in the connective tissue of the peripheral nerves, in the cornea, cartilages, liver and spleen, lymphatic glands and spaces. They are absent from the blood and the physiological secretions, such as the tears, saliva, milk, urine, &c. It is worthy of note, however, that when the nasal, pharyngeal and intestinal mucous membranes are the seat of leprosy lesions the secretions from these surfaces swarm with bacilli.

Leprosy has an exclusive origin; it is invariably derived from the lesions or secretions of a person similarly diseased; it never originates spontaneously, nor does its virulent principle attach to the soil, the water, or the food. Its origin and spread can always be traced to human contact. It is not inoculable to the lower animals, as is abundantly proved by the negative results of numerous experiments. The question of its inoculability to man has

until now always been decided in the negative, as the inoculation experiments made by Campana and others have invariably failed. In September, 1884, Dr. Arning inoculated a Hawaiian convict, Keanu, previously free from all leprosy taint. This man had been condemned to penal servitude for life, and special care was taken that he should not be exposed to contagion by contact with other lepers. For a long time this experiment was regarded as a failure, but a few months ago (about four years after inoculation), Keanu developed unmistakable signs of tubercular leprosy and was sent to the leper settlement at Molokai. Upon the occasion of my recent visit I excised a small subcutaneous tubercle and a portion of the overlying skin. Numerous sections of this specimen were made by my associate, Dr. Fordyce, and in all, the presence of bacilli was demonstrated.

We know, further, that leprosy has a prolonged but somewhat indefinite period of incubation, a slow and irregular course of development, a characteristic and well-defined symptomatology rendering its diagnosis easy, and that its prognostic significance is most grave: it progresses almost invariably to a fatal termination. The period of incubation of leprosy is generally placed at from three to five years. Examples have been recorded in which this period has been materially lessened or prolonged to seven, ten, and even fifteen years or longer, depending largely upon individual capacity of resistance.

A belief in the contagiousness of leprosy has been universally held from the earliest ages until with recent times. All the prophylactic measures contained in the Levitical regulations, as well as those enforced in mediæval times, for the suppression of the disease, were based upon the recognition of the fact that every leper was a possible source of danger to all with whom he came in contact.

About thirty years ago the contagiousness of leprosy began to be questioned, and in 1867 the Royal College of Physicians of London formulated the dogma that leprosy was not a contagious disease. This opinion was generally accepted by the profession in Europe, although it may be said that the dermatologists of this country have never

subscribed to this doctrine. In 1885, when the famous discussion upon the contagiousness of leprosy took place before the French Academy of Medicine, it transpired that only three physicians in France upheld the doctrine of contagion. In 1888, when this discussion was again reopened, the partisans of contagion were much more numerous.

It is probable that in the immense majority of cases the disease is propagated through sexual intercourse, and also, that the virulent principle of leprosy may find entrance to a healthy organism through cracks, fissures, or abrasions of the integument or mucous membranes. It may possibly be inoculated by means of the bites of insects, such as flies or mosquitoes, or by animal parasites, such as the *Acarus scabiei*. Inhalation is an assumed mode of contagion, but it rests upon presumptive rather than positive proof. Vaccination is believed by the natives as well as by many intelligent physicians to be a potent agency in the rapid diffusion of leprosy through the islands. It must be remembered that until recently vaccination was performed by unskilled persons, human virus was used, and no distinction was made between a healthy person and a leper as the vaccinifer. The fact is incontestable that, after the general vaccination of natives, numerous leprosy centres developed in various parts of the islands where the disease had previously been unknown. Arning demonstrated the plentiful presence of bacilli in the lymph and crusts of vaccine pustules in lepers.

The belief in the hereditary transmission of leprosy has rarely been questioned. It has generally been regarded as the principal mode of the propagation and perpetuation of the disease. In all ages and in all countries marriage has been prohibited between lepers. The history of the development of leprosy in the Hawaiian Islands would seem to show that here at least heredity has played an insignificant if not an inappreciable role in the propagation of the disease.

My observations would seem to justify the conclusion that the influence of heredity in the transmission of leprosy must be

regarded as an open question. It is probable that, as in tuberculosis, with which leprosy presents certain analogies, a predisposition to the disease rather than the actual germ is transmitted from parent to offspring. . . .

Do these facts portend the spread of leprosy in this country? The seeds of the disease are sufficiently abundant: the only question is whether the conditions of soil are suitable for their germination. Either we must admit that this danger exists, or we must assume that, owing to the better physical stamina of our people and the improved hygienic conditions under which we live, the soil is sterile and the seed will fail to propagate. We are not justified in the assumption that susceptibility to leprosy is extinguished by civilization, or that its potentiality for mischief is enfeebled or destroyed by improved modes of living. It is to be remembered that the spread of leprosy in the Sandwich Islands has been coincident with an advanced civilization of the natives. The average Hawaiian of to-day is more cleanly in his person, better fed, and better housed than the majority of the tenement house population in our large cities.

After all, the danger of the spread of leprosy in the United States resolves itself into a question of the contagiousness of the disease. If leprosy is a communicable disease, then it follows that every leper must be regarded as a possible source of danger to every one with whom he may come into intimate contact. The question to be decided is not the fact, but the degree of danger—whether it rises to the magnitude of a serious menace to the public health and demands State legislation for its suppression. My own personal belief is that its extensive spread in this country must be regarded as a possibility rather than a strong probability. Still in dealing with a disease with which medical science has shown its utter inability to cope, except by prophylactic measures, it becomes the manifest duty of the medical profession, in their capacity as guardians of the public health, to enlighten our legislative authorities as to this possible dan-

ger, and urge them to adopt measures for the isolation of every leper in our midst, and especially to prevent the immigration from foreign countries of those who bear in their systems the seed of this frightful malady.

The Canada Medical Record, Montreal, of last month, says: Although Father Damien died of leprosy we cannot understand how he acquired the disease. Canada has her leper lazaretto at Tracadie, New Brunswick, where we think there are some nineteen inmates who are looked after by several sisters from the Hotel Dieu, of Montreal, who volunteered to pass the remainder of their lives there. There is also a physician in attendance who is appointed by the Department of Emigration, under whose immediate supervision the establishment is placed. We have never heard of any one contracting the disease there, though we are personally acquainted with some of the physicians. Neither have any of the sisters who are residing there ever contracted the disease. We have always understood that the disease was altogether an hereditary one, and that the sole object of the quarantine was to prevent these lepers from cohabiting and leaving a leprous progeny.

MAD DOGS.—The Saturday Review raises the question—"How about Mad Dogs? Are they to be 'allowed their first bite,' or are muzzles to be much worn this summer?"

TOBACCO SMOKING. Dr. A. G. Auld, of Glasgow thinks (Lancet, April 20th, 1889), is responsible for a variety of functional derangements which there is no reason to aver cannot terminate in organic disease. He is convinced that the slightest trace of albumen in the urine is pathological, and that it is frequently induced by preventable causes, and one of these is chronic poisoning by nicotine. He thinks he has certainly traced the disorder in a few cases entirely, and in others partially, to the habit in question. Another derangement consists in localized fibrillary twitchings, something similar to what is observed in progressive muscular atrophy distinct from tremor. The twitchings are often excessive, and occur most frequently about the trunk and upper arms.

MISCELLANEOUS NOTES AND EXTRACTS.

"DRAIN SORF THROAT."—At a meeting, April 5, 1889, of the Montreal Medico-Chirurgical Society (Mont. Med. Jr. for July), Dr. J. C. Cameron read a short paper on this subject, in which he showed that when a number of cases of sore throat broke out in the same family; and when it was of a marked adynamic character and accompanied with a rash somewhat resembling scarlet fever, there was usually good grounds for suspecting the drainage of the house. He gave the details of ten cases of, sore throat which occurred in one family. Suspecting the drainage, it was examined and a defect in the ventilation of the soil-pipe was discovered. In six of these cases both severe tonsillitis and ulceration almost diphtheritic in character were present. Dr. Blackader said that in his practice about the same time he had twelve cases of tonsillitis followed by an erythematous rash in families residing in the same district. The sore throat in the adults was diphtheritic in character, in the children it was severe and scarlatiniform. The only possible cause common to all the cases was the milk supply. This, however, on investigation, showed nothing to indicate infection. He could not trace the cases to bad drainage, but he did not have the drains inspected by a sanitary engineer, as he certainly would do should he have a similar experience. Prof. Mills had no doubt but that sore throat is frequently caused by open drains. Dr. Spendlove said he was able to trace six cases of tonsillitis with rash to a broken soil-pipe. A separation of two inches was found at one of the joints. Mr. Fleming, Sanitary Engineer, was introduced by the President, and said he had numerous experiences of cases of sore throat clearly traceable to defective drainage. In one family no fewer than eleven were ill. Here he found sewage gas blowing into all the rooms, and the worst case was the one most exposed to the gas. wherever the ventilating shaft of the drain passes through the house, any opening will cause a draught from the pipe into the rooms. He found upwards of 75 per cent., of the best houses in Montreal had defective house drains.

PERSONAL DISINFECTION.—Dr. L. M. Maus, of U. S. Army, publishes the following rules as a preventive measure in scarlet fever, and states that his practice has been founded on personal experience, and

so far has been entirely satisfactory. He believes that we can through the employment of his method of treatment ignore isolation, in cases of mild scarlet fever, and ordinarily permit patients to join the family circle in ten days to two weeks (1) Sponge the patient thoroughly morning and evening with a tepid solution of corrosive sublimate, 4 to 1000, as soon as the eruption makes its appearance (2) Wash the hair once daily with a solution of the corrosive sublimate, of the same strength, and also a solution of borax, 1 to 250. (3) Disinfect the urine, fæces, and expectoration, also the discharge from the ears and nose, if there be any. A solution of the bichloride, 1 to 1,000, is best for this purpose. (4) As soon as the patient is permitted to leave the bed have the body washed with warm water and soap, then sponged with the 1 to 4000 bichloride solution, wiped dry, and anointed with the following ointment: Sodii biboratis and zincioxidi, of each, 4 drams; Ol. gaultheriæ. $\frac{1}{2}$ dram; Vaseline, 4 oz. The hair should be thoroughly washed with the bichloride and borax solution. (5) The patient is then to be enveloped in fresh and clean clothes throughout, and allowed to leave the sick-room if his condition otherwise admits of it. (6) The bed linen, soiled clothes, towels, etc., should be placed in a suitable sublimate solution and boiled, and the room well disinfected with sulphur. The disinfection should be repeated the second day, as the germs are very tenacious of life. (7) Require the nurse or attendant to keep the hair, face and hands well disinfected during attendance, and to likewise make a complete change in his or her garments on date of the disinfection of the sick-room. (8) Continue the provisions of the third and fourth rules once daily until desquamation is complete.

DANGERS IN THE NEIGHBORHOOD OF INFECTIOUS HOSPITALS—REMARKABLE FACTS.

—An official report of the small-pox epidemic at Sheffield, Eng., in 1887-8 has recently been issued. The British Medical Journal says of it: The facts which Dr. Barry has so laboriously collected and recorded in his report, respecting the part played by the Winter Street Hospital in Sheffield, are remarkable and important. The progress of the epidemic is admirably illustrated by a series of maps which ac-

company the report. In these maps the "special area" around the small-pox hospital is divided into zones by circles having radii of 1,000, 2,000, 3,000 and 4,000 feet respectively; and the cases, fortnight by fortnight, are marked by red dots. During the early periods of the epidemic only a few red spots indicate the scattered cases as they occur. Gradually, however, the dots become more numerous around the limits of the "special area" into the districts where previously only scattered cases had occurred. Towards the close of February, 1888, the patients were taken from Winter Street Hospital to a new hospital four miles away from the centre of the borough; and the excessive incidence of small-pox upon the Winter Street neighborhood thenceforth disappeared. Throughout the nine months following June, 1887, the houses within a 4,000 feet circle around the hospital had been invaded to twice the extent, and the houses within the area of a 2,000 feet circle, had been invaded to three times the extent, of houses situated elsewhere in the borough. To quote Dr. Buchanan's words in his prefatory report: "Looking at the occurrences of this period by the light of subsequent events, it would seem probable that from the beginning of June, 1887, the hospital in Winter Street was playing the part of small-pox distributor; but as to its agency after the first weeks in July there can be no doubt. Something of its operation was, indeed, soon recognized by local observers; and the completed record of this period shows the houses in a circle of 4,000 feet round the hospital to have become attacked almost suddenly to a degree amounting to a dozenfold the rate of the rest of the borough. Here, then, the Journal concludes, we have once more a lamentable confirmation of the report of the Hospitals Commission of 1881-82, and the repeated lesson should not be neglected by local authorities. London has decided to grapple with its next small-pox outbreak by the prompt removal of the cases as they occur to the hospital ships in the Thames or to the camp at Barenth outside the metropolitan limits, rather than by concentrating the cases in the intra-urban hospitals; and there are few towns that could not act in a similar manner."

STINKING SEWERS Should not be allowed to exist, but to my mind it is better to have the open grids in the streets than to convey the mischief, which is possible into, positions preventing our getting the know-

ledge that the sewers require to be scoured. Every line of sewer should be well scoured in the crown of its arch as well as the bottom, and after the scouring thoroughly flushed by a body of water that fills its calibre completely. The flushing which I see going on in our town from a two or three-inch tube is all but useless for the purpose required, except where there is a stoppage, which produces a head of water and fills up the sewer.—Dr. Carpenter, in his address at Croydon.

HOW THE DISEASE GERMS GET A FOOTING.—It is just as Dr. W. S. Flitt, of Melbourne, says: The vital constitution of the victim selected as their prey materially affects their power for mischief. An apple which is sound and whole you can store, and it will keep. But what happens if it is bruised? You all know it will give way and become rotten. When whole and intact it is able to resist the germs. They have no effect upon it. The moment, however, there is a bruise, though subject to the very same influences, that part affords a soil suitable for the growth of the organism falling on it, and putrefaction at once sets in. Precisely similar is it with the human body. If kept up to a proper health standard the poisonous particles, should they light on it, have no more influence than the organic particles in the air had on the sound apple. But let the health be impaired the constitution weakened, and the vitality lowered, then these disease germs gain an entrance, and find an opportunity to do their deadly work. Were I to represent the average vitality of the human race by a line, all above it would practically enjoy immunity from the effects of the poison, while all below it would be a prey to it.

A SAFE CORDIAL.—The Rhode Island State Board of Health Bulletin says: No one who, fatigued by over-exertion of body and mind, has ever experienced the reviving influence of a tumbler of milk, heated as warm as it can be sipped, and with or without a teaspoonful of sugar, will willingly forego a resort to it. The promptness with which its cordial influence is felt is indeed surprising. Some portion of it seems to be digested and appropriated almost immediately, and many who now fancy they need alcoholic stimulants when exhausted by fatigue will find in this simple draught an equivalent that will be abundantly satisfying, and far more enduring in its effects.

DR. ALFRED CARPENTER says: The greatest danger from drains is not in the public sewer, but in the house connections and in the private drains laid by speculative builders. They are only occasionally used, they become all but dry at frequent intervals, and if they are not as clean as a back kitchen sink ought to be, they will in spite of all precaution, occasionally produce sewer air. They must be ventilated even more perfectly than the public sewers, and so cut off from all direct communication with the house that it shall be absolutely impossible for any of the products of decomposition if they arise to find their way inside the dwelling and carry living, growing germs with them. If these arrangements are carried into effect, those living in such houses may defy disease germs and live in perfect safety from their attacks and in the words of the Psalmist, we may say— (1) Thou shalt not be afraid of any terror by night, nor for the arrow that flieth by day; for the pestilence that walketh in darkness, nor for the sickness which destroyeth in the noonday. (2) A thousand shall fall beside thee, and ten thousand at thy right hand, but it shall not come nigh thee.

HOW TO "MAKE COFFEE."—Dr. W. Junker, the African traveller, says: "Any European who believed that the decoction of coffee-beans which had been tasted at home deserved the name of 'coffee,' is soon convinced of his error after sojourning for a while in Turkey, Egypt, or Arabia. He will, indeed, at first be somewhat surprised always to find some sediment in his cup, which he is apt to overlook until he has swallowed some. But he will soon learn to sip the aromatic liquid carefully from off the sediment. . . . The proper way to prepare coffee is as follows: The beans, which should, of course, if possible, be of the very best quality (genuine Mokka), are carefully examined, and all damaged ones picked out (contaminating then what is known as *el-bunn e-sstifi*). Immediately before use, the requisite quantity is freshly roasted and powdered, which latter is preferably done in a wooden mortar. The powder should be quite fine like flour. Water having been brought to a boil in a suitable kettle or vessel, a certain quantity of the powder—a small spoonful for very small cupful of coffee to be drawn from the vessel—is added, the whole stirred, and vessel replaced on the fire until the liquid boils and foams up. It is then removed, and the coffee served."

THE "MENS SANA"—A NEW RENDERING.— We have been accustomed, in thinking of the health of the mind, to look upon it as subordinate or secondary to the health of the body. There is a well-known saying which is on every one's lips, *Mens sana in corpore sano*—a sound mind in a sound body—which saying has become interpreted, by common consent, into meaning, that if the body be sound, the mind must be sound. The proverb does not actually convey that idea; it simply suggests that a sound mind in a sound body is a good combination; it gives no precedence to the body—nay, it puts the mind first, as if it supposed a sound mind as the precursor of the sound body. *Mens sana*. And this is a perfect reading of it. There have been some philosophers, some indeed of the best, who, holding the opposite view to that which is now commonly held, have traced to the mind all the evils which appear in the body. Thus the prince of philosophers, Plato himself, teaches that all evils of the body proceed from the mind; and Democritus is quoted by industrious and quaint old Burton, in his "Anatomy of Melancholy," as teaching that if the body should bring an action against the mind, surely the soul would be cast and convicted; that by her supine negligence she had caused such inconvenience, she having authority over the body, and using it for an instrument, as Cyprian says, as a smith doth his hammer.—Dr. B. W. Richardson, in Presidential Address before the Health Congress at Hastings; Eng., April 29th, 1889.

EMBALMING.—The best process of embalming (Med. Bulletin) is called the "Brunelli Process." The circulatory system is cleansed by washing with cold water till it issues quite clear from the body. This may occupy from two to five hours. Alcohol is injected so as to take out as much water as possible. This occupies about a quarter of an hour. Ether is then injected to abstract the fatty matter. This occupies from two to ten hours. A strong solution of tannin is then injected. This occupies for imbibition from two to ten hours. The body is then dried in a current of warm air passed over heated chloride of calcium. This may occupy from two to five hours. The body is then perfectly preserved and resists decay.

EDITORIAL NOTES.

THE "PROPAGANDA OF HEALTH," in England, somewhat analogous, excepting in the end in view, to the *Congregatio de propaganda fide*, or society for propagating the faith, founded in Rome in 1622, has done more practical good, probably, than all the compulsory legislation in England. Last month it held a "public function" under the presidency of Sir Spencer Wells. The Duchess of Westminster presented prizes and certificates to some hundreds of persons, chiefly ladies, who had distinguished themselves in a numerous series of examinations in subjects appertaining to "the health of the home," the principles of domestic economy and hygiene, elementary physiology, and "first aid." Classes have been formed, and examinations held all over England, in fashionable and aristocratic drawing-rooms, as well as in the poorest parishes of the East End; mothers' meetings and minors' classes being equally within the sphere of the Society's operation.

TESTIMONY to the good work of the Society was borne by the Chairman (whose daughters have passed through the classes), Mr. S. Pope, Q. C., Dr. Thorne Thorne, Mrs. Garrett Anderson, and Mr. Owen Lankester. Mr. Pope observed that nothing lied like a proverb; and the proverb that a little knowledge is a dangerous thing only applied to those who did not know how little their knowledge was. In summing up the proceedings as Chairman of the Council, Mr. Ernest Hart, editor of the *British Medical Journal*, referred to the great value of the cheap sanitary pamphlets and flysheets which the Society publishes and distributes; its readiness to give teaching and advice in all the poorest districts throughout England; and the great devotion and ability of Miss F. Lankester, the Secretary of the Society—"one of the most successful of public officials." Dr. Thorne dwelt on preventable infant mortality, in a speech which should be reprinted *verbatim*. The Society provides lectures, circulates diagrams and cheap sanitary literature; opens classes, conducts examinations, supervises and gives lectures on first aid, on home nursing, and domestic economy and physiology, and generally undertakes and aids the propaganda of health wherever its aid is needed and invoked.

IN CANADA such a society would do an immense amount of good. Of course here there are not the men of leisure and wealth such as there are in England; but there are, nevertheless, a large number of philanthropic individuals in the cities of Canada who give liberally to various charitable objects, and who, it seems to the writer, should only require to have their attention drawn out in the right direction in order to

induce them to assist liberally with their time and means in propagating the gospel of health. Several ineffectual attempts have been made in at least three of the principal cities of the Dominion, to organize a society with this object—that of educating the people in health subjects. It is to be hoped the matter will not be allowed to rest until an efficient society of this kind becomes established in this country.

THE DOG QUESTION, to which we have repeatedly drawn attention in its relation to hydrophobia, is of the utmost gravity. From the way in which thousands of useless dogs are allowed to run at large, no one is safe from a bite. As the law stands now, all dogs, it appears, are allowed their first bite. Any dog, especially at this season, may suddenly become rabid. A great many cases have been reported in different countries recently in our exchanges. Canada, *so far* has been fortunate in this regard. But no one knows but he may be the next victim. In the city of Odessa, there has been an epidemic of the disease. In one day alone twenty-one cases of bites from rabid dogs were received at the station; and during the last twenty days no fewer than thirty-eight cases, occurring within the city, were treated by Pasteur's system of inoculation.

MR. DURY, Minister of Agriculture for Ontario, if we are not mistaken some time ago made some strong remarks on the uselessness of dogs, and proposed legislation. In view of one possible case of hydrophobia—of the disease in a human being, nine-tenths of the dogs are ten thousand times worse than useless. We trust the minister will take some vigorous action in accordance with his views.

THE EXECUTIVE Committee of the Middlesex (Eng.) County Council, have unanimously adopted the following resolution:—"That this authority, considering the terrible character of hydrophobia and the increase which has occurred in the present year, both in that disease and in canine rabies, and the danger of still greater increase of those diseases, desires to urge most strongly upon the Privy Council the necessity for such prompt action as will ensure the proper muzzling of dogs and their proper control throughout the United Kingdom, and the prevention of importation of dogs from other countries unless under strict quarantine regulations.

MEDICAL CLASSICS often gives some practical advice. Some of the latest is on diet, and in this wise: What shall be eat? This question confronts us daily. Upon its wide solution depends, to a great extent, the health and happi-

ness of the human race. A judicious dietary is an evidence of a high state of civilization; for brain and brawn are in a general sense the outcome of the kind of food eaten, its method of preparation, and the style in which it is served and introduced into the human economy. Americans are a little astray in the matter of diet. The average table is a strange mixture of English, Dutch, French and everything else beside. There seems to be a strong tendency in human nature towards the consumption of food that is too concentrated. The old Indian chief complained that the pale faces, especially the women, were dying of too much house. The modern civilized world is dying of too much eat.

SOME PEOPLE are afraid to eat fruit, thinking that fruit and diarrhoea are always associated, when, if they understand the true cause of diarrhoea they would know that it was caused by eating meat. In hot weather meat putrefies very quickly, and during this process alkaloids are formed which are very poisonous, acting as emetics and purgatives. It is true that fruit eaten green or between meals will interfere with digestion and cause bowel troubles; but use fruit that is perfectly ripe at meal-time, and only beneficial results will follow. Acids prevent calcareous degenerations, keeping the bones elastic, as well as preventing the accumulation of earthy matters. Fruit is a perfect food when fully ripe, and if it were in daily use from youth to age there would be less gout, gall-stones and stone in the bladder.

MEAT PROVIDES us with a means of obtaining albuminoid material, which is indispensable in its most easily assimilable form. It affords us in this material not only an important constituent of tissue growth, but a potent excitant of the whole process of nutrition. It has a definite and ordinary place in the ordinary diet of man, and the wholesomeness of fruit, combined with farinaceous food as an alternative dietary, is not so much an argument in favor of the vegetarian principle, as proof that seasonable changes in food supply are helpful to the digestive process and nutritive changes in the tissues generally. With proper eating and drinking, there would be fewer broken-down nervous wrecks, and far more vigorous intellects. There is far too much meat eaten. Me three times a day is more than average town-dwelling human nature can endure.

IT IS NOT A LITTLE STRANGE, says the British Medical Journal, that in the course of the modern education of women, the most essential of all knowledge should be withheld—that, namely, of the elementary facts of physiology and the laws of health, as to which correct elementary ideas are essential, not only to their own well-being but to that of the families of which they are ultimately to be the mistress.

THE RUSSIAN foundling hospitals at St. Petersburg and Moscow have received, according to official statements, about one million newly born children during the last hundred years, most of them illegitimate. Of this large number nearly eight hundred thousand have died in the first months or first years of their existence! The well-known authority on statistics, Alexander von Oettingen, who in his "Moral Statistics" has treated of the state of things in these Russian hospitals satirically call it "chronischer Kindermord auf Staatskosten," ("chronic infanticide at the cost of the State"). It is now asserted that the Russian Government intends to carry out a radical re-organization of both hospitals.

FOR "BLACK EYE," according to the N. Y. Medical Times, there is nothing to compare with the tincture or a strong infusion of capsicum annuum mixed with an equal bulk of mucilage of gum arabic and with the addition of a few drops of glycerin. (This should be painted all over the bruised surface with a camel's hair pencil and allowed to dry on, a second or third coating being applied as soon as the first is dry. If done as soon as the injury is inflicted, this treatment will invariably prevent the blackening of the bruised tissue. The same remedy has no equal in rheumatic, sore or stiff neck.

A RESIDENT at Green Cove Springs, Fla., offered a premium of \$1,000 for the city or town in Florida which presented the most cleanly condition in public and private premises. The Sanitary Era says: One citizen of that spirit in every town would soon reduce the deaths in the United States by about 200,000 a year. But why should not every State offer a prize of \$100 per 1000 of population to the best cleaned place every year?

IN A RECENT VOLUME on vital statistics, Dr. Newsholme, of London, according to the New York Medical Journal, the results of careful investigation of census returns and public registers shows that there is a steady decline not only in Great Britain but throughout Europe in the proportion of births to population, amounting to almost three per thousand in seven years. The marriage rate is also on the decline, while the age at marriage shows a tendency to increase. The average number of births to a marriage is for England and Wales about four and a half, for Italy five, and for France, about three and half.

A PHYSICIAN in New York reports that during an epidemic of diphtheria in that city there were five times as many cases on the shady side of the street as on the sunny side.

LITERARY NOTES.

THE CUSTOM of wearing trousers buttoned tightly at the top and sustained by the hips, produced so much disease among the soldiers of the Russian army, that an order has been issued making the wearing of suspenders compulsory.

IT IS SAID that Milwaukee, which was one of the first cities to dispose of garbage by cremation, is about to abandon that custom in favor of desiccation. The garbage is passed through a series of drying chambers for ten hours. The oily matter is pressed out, and the resulting dry brown powder is said to possess value as manure.

TOBACCO is to be shut out at the Chambersburg (Penn) Academy. No boy will be admitted who uses it in any way. Boarding and day pupils will be treated alike. The ground taken is that tobacco produces baneful effects on the mind and health of students.

TORONTO GREAT EXHIBITION promises to be this year, Sept 9th to 21st, as usual, better than the previous year or ever before. The indefatigable secretary has been to New York seeking and getting new attractions. The sum of \$20,000 is to be spent on increased accommodations. It will afford an excellent place and occasion for a vacation or a holiday for medical practitioners, and any other hard workers, and their families.

LIFE INSURANCE is what everybody with any one depending upon them should never under any circumstances neglect. The Independent Order of Foresters offer a most excellent and safe insurance to the extent of \$3,000, with special endowment benefit, if desired. For those few who prefer not to join a society, the Canadian Mutual Aid Association of Toronto, established now many years, we consider quite as safe as any stock company, and at less than half the cost, as the "managing" process in the stock companies consumes such a large proportion of the insurer's money.

THE abatement of ordinary nuisances was in times past regarded as the chief duty of the health officer. Now this is but a comparatively small part of his duty. But the abatement of nuisances may have very little to do with the prevention of diphtheria or scarlet fever, while it is certain that isolation and disinfection of infected persons and things will save lives.

FROM the experience of the health officers in Michigan during the years 1886 and 1887, it has been demonstrated that at least 86 per cent. of the cases of sickness and 78 per cent. of the deaths from diphtheria are prevented by those who secure, after the first case has occurred, complete and thorough isolation and disinfection, such as an efficient health officer can secure when his people co-operate with him for that purpose.

THE ILLUSTRATED LONDON NEWS (Potter Building, N. Y.) within the last month has given the following: A double page portrait of the Rt. Hon. W. E. Gladstone, and also of the Earl of Fife and Princess Louise of Wales; Double page illustrations of "Hawarden Castle, the seat of the Rt. Hon. W. E. Gladstone; Portraits of some of the "Remarkable Persons concerned in the French Revolution of 1789;" "A Good Catch," picture by F. Dvorak; "The Feast of Roses at the Royal Botanic Societies Gardens, Regents Park" "Cherry picking for the London Market; and a Water Tournament in the Fifteenth Century," all full page Sketches of Bear Shooting in Kashmir. "Afternoon, in Hyde Park, waiting for the Princess."

"BLIND LOVE," by WILKIE COLLINS, now being published in the Illustrated London News, promises to be a highly interesting story. It appears somewhat as if the Mrs. Vimpany of the story is going to develop into a second "Count Fosco," of the feminine gender.

THE CENTURY for August is a genuine mid-summer number with its opening article on "The Stream of Pleasure—the River Thames," by the Pennells,—husband and wife—who have written about and minutely pictured that gay and thronged resort of boats and boaters. Little and big, there are twenty pictures in this article alone. Mrs. Foote's "Afternoon at a Ranch" has also a midsummer air. Cable gives the true and extraordinary history of "The Haunted House" in Royal Street, New Orleans. The frontispiece of this number of the Magazine is a portrait of Alfred Tennyson.

A GOOD STORY to read, when the thermometer is high, is "Midsummer Pirates," by H Davis, with fine pictures by Drake, a breezy story of sharp yacht-racing, in St. Nicholas for August. Another with a more distinctly marine flavor is "A Mutiny on a Gold-Ship," with strong illustrations by John Steeple Davis. Those who care for good dialect stories will greatly enjoy "The Shag Back Panther."

THE POPULAR SCIENCE MONTHLY for August possesses as usual many attractions, from which we propose giving extracts in our next issue, too, as we do in this one.

WOMAN (to tramp)—"I kin give ye some cold buckwheat cakes an' a piece o' mince-pie."
TRAMP (frightened)—"Wha-what's that?"
W.—"Cold buckwheat cakes an' mince pie!"
T. (heroically)—"Throw in a small bottle of pepsin, madam, and I'll take the chances."