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—THE—  
**HEALTH JOURNAL,**

A Monthly Review and Record of  
**SANITARY PROGRESS**

—EDITED BY—

**EDWARD PLAYTER, M.D.**

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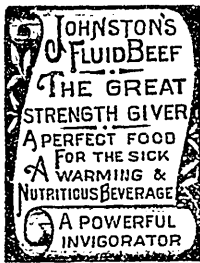
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# THE HEALTH JOURNAL.

A Record of Sanitary Progress.

VOL. XI.

JULY, 1889.

No. 7

## ON THE DANGERS OF LEADEN PIPES FOR CARRYING WATER SUPPLIES.

A. HAMON, of Paris, has been during the past few months writing a series of articles, published in the Sanitary Record, on the above named subject. In the last number of the Record he gives an enormous amount of evidence relating to the dangers in the use of such pipes, filling three double-column pages of authorities.

In the time of the Romans, he says, leaden pipes were in use, and Vitruvius condemned them; "Minime fistulis plumbeis aqua videtur si volumus eam habere salubrem." More than a century after, Galen also condemned the use of lead for the conveyance of water. Some German Emperors, at the end of the fifteenth century and at the beginning of the sixteenth, prohibited the use of lead. In the United States, upon a report of Dr. Franklin, an Act of legislation of the State of Massachusetts, passed in 1723, almost entirely prohibited the use of lead. In the nineteenth century the proofs of the danger arising from lead through the canalization of alimentary waters increased to such an extent that many physicians and chemists of all countries occupied themselves with that important question of public hygiene.

In England since 1795, when this question was taken up by The Medical Commentaries, it has justly occupied public opinion. Besides the learned Englishmen of this country whose names have been quoted in preceding chapters, we see Lambe, Taylor, T. Thomson, Robertson, R. D. Thomson, J. B. Harrison, Rees, Ransome, B. W. Richardson, H. Osborne, Baldwin, Latham, H. Haine, Lankester, A. Fergus, C. B. Fox, W. Thomson, J. Parry, A. Roberts, G. Wigner, Thorne Thorne, R. A. Gordon, Thomas Stevenson occupying themselves with the question. Most of these learned men have pronounced against the use of lead pipes.

Whenever water passes through leaden pipes there exists danger, according to the majority of the learned men above named. The London Board of Health in 1850, the Manchester and Salford Sanitary Association in 1861, have declared that leaden pipes should no longer be used.

Numerous German, French and other authorities are quoted by M. Hamon, and the wonder is, indeed, and remarkable it is, that lead pipes are in such common use as they are.

In the last British Medical Journal (June 22) we find the following remarks in an editorial on "Lead in Urban Water Supplies": In the selection and distribution of water for public and domestic purposes a highly important and often overlooked question is its behaviour towards the lead with which it is liable to come in contact in service pipes and cisterns. Public attention has so frequently of late been attracted to the serious consequences which have arisen through the distribution of water which acted powerfully on lead, that it is highly necessary that before a town is subjected to the dangers arising from lead poisoning a thorough investigation should be made of the proposed source of supply.

In the course of experiments which Professor Percy Frankland has been conducting for some time past on the corrosion of lead, he has found that there may be a marked difference in the behaviour of one and the same water towards new and old leaden service pipes.

It was also found that not soft waters alone act upon lead, but that in some cases waters possessing considerable proportions of temporary hardness also have this property.

In order to render the conditions of experiment as analogous as possible to those existing in actual practice, waters of dif-

ferent composition thus actively inclined were submitted to high pressure in leaden pipes, and it was found that in some cases the activity was thereby increased, whilst in others it was markedly diminished. These experiments are in accordance with the results of practical experience in the case of the water supply to Glasgow, where it was found that leaden pipes were much more rapidly corroded when the mains were intermittently charged than when kept under constant high pressure. As is well known, waters from one and the same source may be possessed of very different degrees of activity towards lead at different seasons, and Mr. Power's ingenious speculations, published in the last report of the Medical Officer to the Local Government Board, will not have been forgotten. Whatever acceptance his theory may ultimately obtain, it will be generally accepted that this difference is due, not only to variation in the quantity of organic matter present in the water, but also to variation in the nature and amount of the saline ingredients.

In the Seventeenth Annual Report (for 1888) of the Local Government Board (Eng.) Mr. Power says: The plumbo-solvent ability of water may be "influenced by

conditions of temperature, pressure, and perhaps by other physical and atmospheric circumstances. Phenomenon such as these, if observed in the biological laboratory in relation with the life processes of one or another microphyte, would not be difficult of comprehension. The suggestion of them, therefore, in this connection will have raised suspicion whether the seemingly inscrutable behaviour of soft moorland waters in regard of plumbo-solent ability may not be related to the agency, direct or indirect, of low forms of organic life. So that the question would seem to be arising whether chemistry, which by itself has failed to afford satisfactory explanation of the plumbo-solvency of moorland water, may not get advantage by association of biology in the problem. An answer as to whether the problem has or has not biological aspects would indeed appear to be called for, and no great difficulty need be encountered in putting the matter to the test of direct experiment, particularly from the vantage ground gained at Sheffield. Of the importance of the general question for study by fresh means of some kind I have already said enough.

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### INFECTIOUS DISEASES AND HOW TO ESCAPE THEM.

THE following suggestive extracts are from a lecture delivered before the Y. M. C. Association at new Haven, Conn., by C. A. Lindsley, M.D., Medical Officer of New Haven (for fourteen years) and Secretary of the Connecticut State Board of Health, and published in the Sanitary Volunteer :—

The question is often asked us, How do you doctors avoid diseases? And it has been asked me sometimes with so much earnestness as to imply in the questioner the belief that the doctors do possess some hidden means which they use successfully for their own protection but do not reveal to other people. But let me assure you the doctors possess no means of safety that you do not. They know of nothing to ward off deadly disease that they will

not gladly tell you of. Nothing will put a regular doctor in disgrace with his professional brethren so quickly as to announce that he possesses a secret remedy for the prevention or the alleviation of human suffering. That is one of the strong marks of distinction between the regular physician and the quack.

Every infectious disease has its own special infection. Every infectious disease is caused by the introduction into the human body of the special kind of infection which produces the disease. Each disease, I say, has its own infection. If we can avoid the infection we stand in no danger of the disease. Much progress has been made within a few years in the knowledge of these infections—what they are, how they exist, and

what will destroy them. At the present time almost every scientist who has studied the subject enough to be entitled to hold an opinion about it believes that these infections are living bodies; that they belong to the kingdom of nature which is endowed with life; that they are living germs which have a natural life history, which reproduce themselves, grow old and die like other vegetables or animals. These learned men give these little objects very long and learned names. They call them micro-organisms, microbes, bacteria, micrococci, etc. They are only visible by the aid of the microscope, as most of the names given them indicate.

If, then, the infection which causes each disease of this dangerous class is a living germ, it has a career—that is, it has a beginning, a period of existence, and a death; and it follows as an inevitable corollary to that fact that for every living thing there must be an environment suited to the needs of its life, and also other environments in which it cannot live.

If it were possible to know the conditions favorable to the propagation and perpetuation of all the different disease germs it might be also possible to know how to avoid these conditions. So, on the other hand, if we could know how to destroy the life of disease germs, or how to surround ourselves with an environment in which disease germs cannot exist, it would then be possibly practicable to protect and defend ourselves wholly from infectious diseases. So that the occurrence of a disease which can only be caused by a disease germ would always be of the nature of an accident, or of carelessness, or even the consequence of a criminal act—because every infectious disease is caused by the invasion and reproduction within the human body of a disease germ.

It is scarcely to be expected that complete immunity from such diseases will ever be realized; but the progress which has been made within the period of the present generation in studying the conditions under which these germs do live and thrive, and the converse, the condi-

tions under which they perish, excites very hopeful prospects for the future. Indeed, the application of the knowledge already acquired to the details of practical life have given the most encouraging results in demonstrating the practicability of excluding such diseases from communities and of limiting their spread when they do get a foothold. In the present state of knowledge the guiding principles of safety consist in avoiding or destroying the disease germs.

To illustrate: A child becomes ill with scarlet fever from a brief contact with a few scarlet fever germs, emanating from the body of another scarlet fever patient. The seed germs thus sown in the child's body lie awhile, several days, a week or more, dormant apparently, the period of incubation, the hatching period; then suddenly the child is ill, the whole system is disordered, and scarlet fever is established and runs its course. But the few germs which that child received found a fruitful soil, and they have sprung up and yielded such an abundant harvest that, wherever that child may be, that atmosphere about it and whatever touches it is fully charged with the same germs, all capable of communicating the same disease to other susceptible members of the human family.

These germs produce only scarlet fever, never any other disease. It is no more possible to acquire small-pox from a scarlet fever patient than it is for a farmer to raise a crop of peaches from a field in which he had planted only potatoes.

But there is another consideration—the vitality of these scarlet fever germs is very enduring. The maximum period of existence is not known. It is known, however, that if the clothing of a scarlet fever patient be taken off and packed in a trunk, that clothing will retain the infection in an active form for weeks, months, and possibly for years, so that persons in its presence when it is unpacked will take the disease.

Conversely, it is known that if the clothing of such a patient is exposed to the open air the disease germ speedily perishes and loses its infective power.

Exactly the same facts are true of small-pox and some of the other contagious diseases.

Some years ago I was summoned to see a sick baby but a few weeks old. The briefest examination showed that it was a case of small-pox, in the fully developed stage of the irruption.

Where did it acquire the disease? It had never in its brief life been outside the house. The mother, a quite feeble woman, had not been out doors since the babe was born. The father, the only other member of the family, worked in the neighborhood, and had not been away from home to any other place in a long time. They had no visitors except those who lived quite near them. There was no small-pox in New Haven, and had been none in many months.

Persistent enquiry finally elicited these facts: The family had, some months before, removed to New Haven from another city. A former husband of the mother had died of small-pox about two years before. Some trunks and boxes, possessions of her former housekeeping, had been brought with her to New Haven, and not been opened since the death of her former husband until after the birth of her baby. The origin of the disease in this case was no longer a mystery.

There is no limit to the recorded illustrations of the fact that disease germs, packed away from the free access of air in confined places, maintain their vitality for an indefinite time. The story of the grains of wheat found in the wrappings of an Egyptian mummy, where they had reposed some thousands of years, sprouting vigorously when planted in the soil is generally discredited by botanists; it is, however, conceded by them that the vitality of seeds of some forms of vegetable life does not perish for many years. The emanations from the graves of the dead, after hundreds of years of burial, have communicated to the living fatal maladies of which many have died. \* \* \*

Now, we have another class of infectious diseases, of which typhoid fever is a type. You may call upon and cheer up your typhoid fever friend if he is not too sick, or as soon as he may be able to see you, without risk of taking the fever or carrying it to others. That you could not do with your small-pox and scarlet fever friends.

Disgusting as it may appear to you and seemingly impossible, almost the only way one can take typhoid fever is by swallowing some of the excrement of a typhoid fever patient. It has been very satisfactorily shown that the infection from a typhoid fever case is only found in the discharges from the bowels. It is not

floating in the air, given off from the skin and exhaled in the breath, as are the infections of small-pox and scarlet fever. It is only in the stools, and to take the disease one must swallow some portion of them.

The involuntary thought of each one of you is, If that is so I am safe from typhoid fever, for I shall never swallow the minutest portion of another person's stools. Now, do not be quite so sure of that. You may even now be in the practice of swallowing a dilution of other person's stools every day. Some of you, I know, drink water daily from a well in the back yard of your house. In the same yard is a privy vault which receives the daily excrement of all the family. Your neighbors on each side of you have exactly the same accommodation—each a well and a privy vault.

If the excreta of a typhoid fever patient are thrown into a privy without disinfection the fever germs in due time may reach the ground water and be carried to the wells of the vicinity.

Even large reservoirs of water intended for the general supply of a town are not safe from the danger of such infection without constant vigilance. This fact was illustrated in Plymouth, Pa., quite recently, when, in a town of 8,000 people, 1,250 were stricken with the fever and 130 died. The infection of this water was from a single privy located on the banks of a brook running into the reservoir. \* \* \*

Protection from infectious diseases in a community cannot be secured by dependence upon individual voluntary action. There must be authority to compel obedience to necessary sanitary regulations. Individuals acting without order or skilled direction are in most cases a mob. The systematic control of infectious diseases depends upon a few cardinal principles, the chief of which are: First, immediate notification to the health authorities of the occurrence of such disease. It should be as prompt as a fire alarm. Next, the isolation, if necessary, of the sick, and providing for their proper care without exposing others; and, finally, the disinfection of whatever may proceed from such sick persons that might carry the infection to others.

The time will come when a death from typhoid fever will be considered as proper a subject for a coroner's investigation as a death by any other poison. It only requires the rigid application of laws already recognized to reduce to a very inconsiderable amount the sickness and deaths from most of the infectious diseases. By proper means they are preventable, and always some one is responsible for their occurrence.

Railroad corporations are compelled to pay damages to their unfortunate passengers for injuries received on their roads, and for loss of life a few thousand dollars to surviving relatives. Whenever our State Legislatures get so far enlightened as to make communities responsible for the suffering of their fellow citizens by infectious diseases and compel payment to every sufferer from the public treasury, then public hygiene will receive the attention which its importance demands. Individuals cannot alone control the spread or prevent the invasion of contagious diseases. It can only be done by the united and concerted action of communities, acting under authority. Hence communities are responsible morally for the presence and prevalence of contagious diseases, and ought to be held so pecuniarily.

No Act of the Legislature could so promptly and so surely put Connecticut in the fore front of all the States of the Union for its superior sanitary conditions as the enactment of a law like the following: Be it enacted, etc., that every legal resident in every town in Connecticut who shall, while residing in the town, have either of the following diseases, to wit, yellow fever, cholera, small-pox, typhus fever, scarlet fever or typhoid fever, shall be entitled to receive from the treasury of the town \$3 for each day he is confined to his house by such sickness, or by the order of the Board of Health of the town

for the public safety; and in case of the death of such person from such disease \$25 shall be paid from the town treasury to defray the expenses of the funeral. And every person so afflicted shall be subject to such regulations and restrictions during his sickness as the Board of Health of the town shall determine to be necessary for the safety of other persons. There is better reason for paying such victims of disease than there is for paying damages to people who slip on icy sidewalks and hurt themselves. The town treasuries would suffer for a time. But very soon town Boards of Health would become an important department of town government. The members of such boards would be more considerably appointed than at present. Sanitary engineering, in the way of sewers, aqueducts, drainage schemes, etc., would be going on all over the State to save the expense of paying for so much sickness, and the State of Connecticut would rival the railroad companies in the care and vigilance given to sanitary matters, and with corresponding good results.

The final consequence would be, and in a very few years, a great reduction of sickness, and, in confirmation of the old adage that public health is public wealth, we should enjoy a heightened degree of prosperity and greater happiness than ever before.

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### ON THE PREVENTION OF TUBERCULOSIS.

**A** REPORT on the prevention of tuberculosis, consumption being the usual form of the disease, has been made to the Board of Health of New York City by the pathologists to the Health Department, Drs. H. M. Biggs, T. Mitchell Prudden and H. P. Loomis. This is in several respects, as the British Medical Journal says, a remarkable document, because in it we find, perhaps for the first time, the official advisers of a local sanitary authority basing their recommendations on strictly logical deductions from facts ascertained by experimental pathology, therein following the lead given by the French Congress on Tuberculosis. The official character of the report, that journal says, gives it a special value, and it is altogether a remarkable proof of the rapid growth of opinion on this most important subject. It is one which is already at-

tracting public attention in several quarters. The report specifically states that "tuberculosis is a distinctly preventable disease." While admitting that the disease may be, and is, transmitted by the milk and flesh of the tubercular animals, it adopts the view held by Cohnheim, that the disease is ordinarily transmitted from man to man through the intermediary of the spatium, which, when dried on floors, walls or handkerchiefs, is easily pulverized and diffused through the air.

We read in the report, as published in the New York Medical Journal:—About one-fourth of all deaths occurring in the human being during adult life are caused by it, and nearly one-half of the entire population at some time in life acquire it. The disease is the same in nature in animals and in man, and has the same cause. It has been proved beyond a doubt that



a living germ, called the tubercle bacillus, is the cause, and the only cause, of tuberculosis. It does not seem necessary to state the facts upon which this assertion is based, for the observation first made by Robert Koch in 1882 has been confirmed so often and so completely that it now constitutes one of the most absolutely demonstrated facts in medicine.

Tuberculosis may affect any organ of the body, but most frequently first involves the lungs. When the living germs find their way into the body they multiply there, if favorable conditions for their growth exist, and produce small new growths or nodules (tubercles), which tend to soften. The discharges from these softened tubercles, containing the living germs, are thrown off from the body. In pulmonary tuberculosis these discharges constitute, in part, the expectoration. The germs thus thrown off do not grow outside the living human or animal body, except under artificial conditions, although they may retain their vitality and virulence for long periods of time, even when thoroughly dried. As tuberculosis can only result from the action of these germs, it follows, from what has just been said, that when the disease is acquired it must result from receiving into the body the living germs that have come from some other human being or animal affected with the disease.

It has been abundantly established that the disease may be transmitted by meat or milk from tuberculous animals. The milk glands in milch cows often become affected with the disease when their lungs are involved, and the milk from such animals may contain the living germs, and is capable of producing the disease. Among stall-fed dairy cows 20 or 30 per cent. are sometimes found to be affected. Tuberculous animals are also frequently killed for food, their flesh sometimes contains the germs, and if not thoroughly cooked is capable of transmitting the disease. Boiling the milk or thoroughly cooking the meat destroys the germs. Although the meat and milk from tuberculous animals constitute actual and important

sources of danger, the disease is acquired, as a rule, through its communication from man to man.

Observations show that, where there are cases of pulmonary tuberculosis under ordinary conditions, the dust surrounding them] often contains the tubercle bacilli, and persons inhaling the air in which this dust is suspended may be taking in the living germs. It should, however, be distinctly understood that the breath of tuberculous patients and the moist sputum, received in proper cups, are not elements of danger, but only the dried and pulverized sputum. The breath and moist sputum are free from danger, because the germs are not dislodged from moist surfaces by currents of air. If all discharges were destroyed at the time of exit from the body the greatest danger of communication from man to man would be removed.

It is a well known fact that some persons, and especially the members of certain families, are particularly liable to tuberculosis, and this liability can be transmitted from parents to children. So marked and so frequent is this liability, and so frequent is the development of the disease in particular families, that the affection has long been considered hereditary. We know that tuberculosis can only be caused by the entrance of the germ into the body, and that this transmitted liability simply renders the individual an easier prey to the living germs when once they have gained entrance.

The frequent occurrence of several cases of pulmonary tuberculosis is, then, to be explained, not on the supposition that the disease itself has been inherited, but that it has been produced after birth by transmission directly from some affected individual. Where the parents are affected with tuberculosis the children from the earliest moments of life are exposed to the disease under the most favorable conditions for its transmission, for not only is the dust of the house likely to contain the bacilli, but the relationship also between parents and children, especially between the mother and the child, are of that close

and intimate nature especially favorable for the transmission by direct contact."

Besides, as we have repeatedly stated in this JOURNAL, such children inherit a want of stamina and powers of resisting the disease; they provide a suitable soil. And that is about all there is in heredity.

"If, th. n, tuberculosis is not inherited, the question of prevention resolves itself principally into the avoidance of tuberculous meat and milk and the destruction of the discharges, especially the sputum, of tuberculous individuals. As to the first means of communication, those measures of prevention alone answer the requirements which embrace the governmental inspection of dairy cows and of animals slaughtered for food, and the rigid exclusion and destruction of all those found to be tubercular. Destruction of the sputum is, of course, a greater practical difficulty, because neither the patients nor the public as yet understand its importance, but the report ingeniously suggests that the self-interest of the former may be enlisted; consumption, it contends, is 'a distinctly curable disease.' 'An individual well on the road to recovery may, if he does not with the greatest care destroy his sputum, diminish greatly his chances of recovery by self-inoculation.' The necessity for thorough ventilation of churches, theatres

and other places of public assembly is touched upon, and a very decided opinion is expressed that 'steamship companies should be obliged to furnish separate apartments for consumptive persons, so that no person in the exigencies of travel need be forced to share his room with one who might be a source of active danger to him.'

In rooms the expectoration should be received in pasteboard or wooden cups, and the cups and contents burned every day. In the streets the only practicable means for its collection seems to be in handkerchiefs, which, when soiled, should at the earliest possible moment be soaked in a five per cent. solution of carbolic acid, and then boiled and washed. Handkerchiefs thus soiled are exceedingly dangerous factors in distributing tubercle bacilli, for when the sputum becomes dry it is easily separated in flakes from the cloth, and then soon becomes pulverised and suspended as dust.

It becomes evident, from what has been said, that the means which will most certainly prevent the spread of this disease from one individual to another are those of scrupulous cleanliness regarding the sputum. These means lie largely within the power of the affected individual.

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#### THE BRITISH MEDICAL JOURNAL ON TUBERCULOUS MEAT AND MILK.

WHATEVER may be the result of the Glasgow diseased meat trial, the inquiry involved will have served a most beneficial purpose if it draws attention to the extremely lax supervision of dead meat markets that obtains in most, if not all, our large cities. As the decision of the judge, Sheriff Berry, has not yet been given, and as counsel is still to be heard on June 17th, it will be well to refrain from making any special reference to the Glasgow case, but the general subject is too important to allow of its being passed over, at the present juncture, without a strong protest being entered against the existing most unsatisfactory state of affairs.

It may be taken for granted that the record of Koch's observations on the causation of tuberculosis and on the life history of the tubercle bacillus has proved a basis on which a new and certainly much more intelligent and intelligible pathology of

tuberculosis may be founded. Such a pathology opens up questions which, in their bearing on public health, are of prime importance—questions that can only be settled after long and laborious investigation and most minute and accurate observation. \* \* \*

In such a matter as the possibility of transmission of tuberculosis to man from cattle by alimentation, it is better to err on the side of too great credulity. There is a great question of public health involved, and, whatever may be the ultimate action of legislators, there can be no doubt that sufficient evidence has already been adduced to justify the drawing up of most careful regulations as to the sale of meat or milk from cattle affected with tuberculosis. At present numerous avoidable factors are at work interfering with the thorough putting into practice of scientific advice on the subject. In the first place, there is no adequate inspection of

the carcasses either in the slaughter houses or in the meat markets. When we hear of the inspection of several thousands of cattle in two or three hours or even less we are compelled to the belief that such an inspection is an extremely perfunctory performance throughout. On the other hand, when some attempt is made to carry out a thorough inspection the end aimed at is not attained, usually because of what may be termed divided authority. What happens where this divided authority exists may be summed up as follows: In many cases the inspection is incomplete because those who inspect have not the authority to condemn, and those who have the authority to condemn so shelter themselves behind the inspectors that these latter become somewhat chary of giving too definite an opinion.

Even after inspection the disposal of the condemned meat is too frequently left to men who can have no very definite opinions of any kind on the subject of tuberculosis, and it consequently results that portions of carcasses that have been utterly condemned find their way to that haven for bad meat, the sausage factory. • • •

In dealing with all this it cannot be too strongly insisted on that half measures are worse than useless, and every opportunity should be taken of bringing the matter in this light before those in authority. Again, it may be assumed that not one out of every ten inspectors, be he medical or veterinary, has made up his mind on the tuberculous question. Some of them have undoubtedly made a special study of tuberculosis and have read all that has been written on the subject, but very few indeed have any acquaintance with it practically.

How, then, is it to be expected that butchers—men who have all their lives been killing tuberculous cattle, who have no knowledge of recent advances in the science of infective disease, and who are unable to see any direct relation between the “grapes” of cattle and phthisis in the human subject—should see the great importance of destroying the meat from tuberculous cattle? It will not do to expect too much from these men. They look at the matter from a “common sense” point of view. They say in effect: “Tuberculosis is a subject of such slight importance that the Government authori-

ties do not consider that it should come under the heading of contagious diseases; they make no provision for compensation in cases of seizure, and they make no special recommendation in regard to such seizure. That being the case, why should we give effect to what these ‘faddists’ tell us? If the meat is bad in itself let it be condemned; but if the meat is healthy in appearance, firm and sound, let us cheat the inspector if we can, for no harm will be done.”

That these men are thoroughly honest in this opinion cannot be doubted, for there are cases mentioned in which men, to show that they had the courage of their convictions, have devoured a quantity of meat with some of the adherent tubercular membranes. A healthy man with a good digestion might, of course, do this with impunity, but it would fare badly with a weakly individual with feeble digestive powers, especially if the diet were continued for any length of time. It is high time, then, that the subject should be taken up most thoroughly, as enough has already been proved to show the necessity for a more searching enquiry being made, and that, in the meantime, every possible precaution should be taken to safeguard consumers of flesh against even possible dangers to health.

Since the recent French congress on tuberculosis—at which the subject was so fully brought before the public and the Government that, after the opinion “that the disease can be transmitted to man from the lower animals and from man to the lower animals by one or other of the methods which we have already discussed, and especially by the ingestion of tubercular diseased meat and milk,” was given by the congress, it was, by the French Government, made illegal to expose for sale the meat that had been cut from an animal suffering from even a localized form of the disease—we in this country also have had our commission, at which some of the most eminent practical authorities declared that the meat and milk of tuberculous cattle were dangerous to health, and a rider was added that it would be well that tuberculous stock should not be used for breeding purposes.

In all fairness to the classes above mentioned, it would be well were clauses in-

roduced into all public health and local government bills to the effect that meat or milk from tuberculosed cattle should on no account be offered for sale, and for the following reasons:—Although it may be urged that there is as yet no proof that all persons who partake of such foods, even in an uncooked state, suffer in consequence, it must be borne in mind that various forms of tuberculosis have been so common and so little understood, both in our own country and abroad, that it is simply impossible to say that tuberculosis has not been induced by the use of infective food material, and that both inoculation and feeding experiments all attended with positive results have been made. Moreover, the action of the bacillus tuberculosis, when inoculated into or ingested by animals, has been so fully determined that sanitarians and pathologists are compelled to accept the fact that, until there is adduced most direct proof that the meat and milk from cows in which there is merely a localised tubercular lesion do not produce tuberculosis when inoculated or ingested, cows so affected must be entirely condemned as food material. It may be contended that the mere fact that the lesion is localised precludes the possibility of the presence of the bacilli in other parts of the carcass. This is, no doubt, true in a number of cases, but it must be remembered that in certain cases acute miliary, or very widely diffused, tuberculosis may break out extremely suddenly in animals in which there has been a strictly localised lesion for a certain period; and it is therefore perfectly conceivable that the blood or lymph may be loaded with bacilli at a period immediately preceding the visible manifestation of a general tuberculosis. The meat from such an animal, it will be generally agreed, should not be exposed for sale. A certain number of carcasses might be condemned unnecessarily, but a number would be intercepted that now pass as fit for human food, the consumption of which would be dangerous to certain individuals.

One of the most important consequences of such a method of procedure would be that confiscation would be put on a definite basis, and very much of the friction that arises under the present system would be done away with. In the first place, the duty of the inspector would be accurately defined, and a skilled inspector would be relieved from very much of the very great responsibility that at present rests solely on his shoulders. The carcass is tuberculous, and there the matter ends as

far as he is concerned, and it is not left for him to incur the ill-will of the butchers and dealers by having to pronounce it so bad that it must be condemned. In the case of a too lenient inspector the power of passing tuberculous meat would be taken away, and he would stand on the same footing as his more thorough colleague. The butchers and dealers would understand exactly what was required of them, and the present grumbling would be unheard, or at any rate would be unreasonable.

The dairy farmer and cattle breeder would also be gainers by the passing of more stringent regulations. If it were understood that a tuberculous cow could be condemned as far as meat and milk supply was concerned, it would soon be recognized that it would be worth while to consider the questions: (1) Of the kind of stock from which to breed; (2) the hygienic conditions under which stock exist as regards ventilation, drainage and exercise. As regards the first question, it is thoroughly recognized that some of the so-called best bred stock is tuberculous in an extreme degree. In certain well known herds animal after animal may be found with enlarged glands and other evidences of tubercle in some part or other of the body. Such cattle are extremely well cared for or they would die off wholesale. These herds would disappear in a very short time were it the general practice to condemn all tuberculous carcasses, and, though it would be difficult to convince stockowners of this in the first instance, they would ultimately be converted by the economical results of the change. In the same way dairy farmers would soon come to understand that the conditions unfavorable to the propagation of tuberculosis are unfavorable to other conditions of disease. They would not depend on inoculation solely for the prevention of pleuro-pneumonia, but they would find it worth their while to obtain the best advice on the subjects of food, ventilation and drainage, in order that their stock might be maintained at the highest possible standard of health.

The question of compensation is one which must eventually be fairly faced, but one in which most difficult and wide-reaching questions are involved. Without entering into too great detail, the following might be given as a basis on which the scale and manner of compensation might be founded. Compensation at the same rate as in pleuro-pneumonia should be granted in all cases where the attention

of the inspecting veterinary surgeon is drawn to the condition of the animal as soon as the disease is suspected by the owner, but on no account should compensation be granted when the animal is in an advanced stage of the disease. It might be granted in cases where, on slaughter, the animal is found to be so slightly affected that in the opinion of the veterinary inspector the disease could not be diagnosed by anyone but an expert,

but if there had evidently been distinct signs of the disease during life compensation should on no account be granted. The whole subject has a most important bearing on public health. It is one that must be taken in hand by sanitary legislators, and the sooner it is tackled thoroughly and on the broadest possible basis the sooner shall we obtain a cleaner bill of health under the heading tuberculosis.

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## MUSCLE AND MIND—VALUE OF MUSCLE CULTURE.

**I**NVESTIGATIONS and experiments during recent years have clearly demonstrated that there is not only a close association between the muscles and the brain, but that these special organs of motion play an important part in the development of the mind. It has been heretofore too generally believed that the main object in the cultivation of the muscles was to produce gymnasts and athletes, neither of which are required in this age of the world; while belief in the value of promoting flexibility and softness in the muscles of the laborer has not been general. Indeed it has not been generally recognized that, if "Hodge" be taken from the plow in the field and his muscular structure softened and developed by the bath, massage and a suitable diet, without any special cultivation of the brain or mind, he will, in a few months, become a much more intellectual creature. When the fact as above indicated becomes generally known and practiced in our public schools, there will probably be less trouble about the "school-book question."

In a valuable article in the last *Popular Science Monthly*—July, 1889—by Frances Emily White, M.D., on Muscle and Mind, the writer propounds six theses, as follows:

1. Exercise of muscles necessarily involves exercise of their associated regions in the central system, and voluntary movements at least require the activity of certain areas of the brain.

2. The systematic use of the voluntary muscles of the body must have an important influence on the development of the brain, hence also of the mind, of which the brain is the organ.

3. The muscles play a role in the development of mind, similar to that which belongs to the other special sense-organs—the eye, the ear, etc.

4. Ideas have no special separate centres in the brain, but result from the excitation of those areas which have taken part in the original acquisition of ideas, viz.: the sensory and motor centres.

5. The germs of volition are to be found in movements; volition, so far from providing an original stimulus to the muscular activities, has itself grown out of these activities—the voluntary movements developing secondarily from reflex ones.

6. Movements are the primary source of pleasure and pain which, in the experience school of psychology, are recognised as the basis of the entire mental life.

As the writer says: "At least two cases have been recorded of otherwise normal individuals in whom a congenital absence of the left hand and a part of the arm was accompanied by a rudimentary condition of the corresponding convolution on the right side of the brain, showing that the building up of these motor areas in the brain is largely dependent on muscular exercise during the period of growth. That the maintenance of their nutrition in the adult is also to some extent dependent on muscular exercise is made probable by the fact that wasting of the corresponding convolution has been found in a few instances after amputation of a limb."

And again: "The dependence of intellect upon sensation was recognized by Aristotle in his famous dictum, 'Nothing in the intellect not first in the senses'; and whatever the differences of view which

divide the schools of psychology or individual psychologists as to the origin of our ideas of matter, time and space, and whatever the real nature of the so-called 'muscle-sense,' all agree that the special sense-organs are the chief avenues of approach to the brain, and that the sensation excited through these organs constitute the raw material of the mental life—touch, hearing and sight being recognized as *par excellence* intellectual senses. Now, it is a most significant fact, from the point of view of my third thesis, that the activities of these three senses in particular involve muscular co-operation as an essential accessory."

Pleasure, she says, originating in physical activity and reaching a far higher phase in the doing of intellectual work, culminates in the supreme consciousness of power which attends the moral actions. As pointed out by Mr. Stanton Coit: "The conscious fulfilment of duty is attended by a feeling of happiness, which sometimes takes the form of deep inward peace, and sometimes of gladness and exultation, like that of a victor." Thus the ancient heathen poet and the modern moralist, although separated by the vast ocean of sympathy which lies between the opposite poles of egotism and altruism, meet nevertheless on the common soil of a common human nature. Activity, then, carries with it its own reward; it is in itself an end; and education once almost exclusively directed to the immediate cultivation of the mind, is gradually extending to all the activities of the complex human being—the physical and moral as well as the intellectual."

She then gives the following as experimental proof of the truth of her theses: At the meeting of the British Association in 1879, Dr. Séguin read a paper entitled "The Training of an Idiotic Hand," in which are given the details of his developmental method of teaching in the case of an idiot boy. The training described was applied mainly to the hands, over which the feeble will of the child had almost no control. He was unable to put either his fingers or hands in any given required attitude, although movements of great rapidity and considerable force were involuntarily executed, mainly from the wrist. The sense of touch was also almost wholly wanting. After a year's training

(the detailed account of which is most instructive) he is described as having learned to help and amuse himself, and to refrain from biting himself, and from striking his friends, although the hands are still subject, at times, to involuntary movements. The sense of touch has developed to the degree of recognizing about one hundred objects by their shape and texture alone, without the aid of sight. He has also acquired consciousness of the ordinary variations of temperature of water, food, etc. He has been taught to recognize the typical geometrical forms, and to cut them out of paper. He has visited the florists daily, and learned to know and name about sixty different kinds of flowers, all fragrant, thus appealing to the brain through still another sense. This development of the special senses and of volition was accompanied by a marked decline, not only of uncontrolled movements but of outbursts of temper, which had been conspicuous.

At the end of a year's training, concentrated mainly on the hands, the special training of the eyes was begun, the history of which is given in a second paper.

There was a lack of control over the movements of the eyes quite comparable to that which had existed in the case of the hands. The boy was unable voluntarily either to hold his eyes still or to direct them toward any particular object—rapid oscillations alternating with periods of fixation upward and to one side. In the training of these refractory organs the improved hands were made to give most effective assistance. "What words can not do," says Dr. Séguin, "the hand can; viz., it can present objects to the eye at the proper distance, at the proper opportunity, and with the proper degree of insistence and pertinacity, even following the eye in its wanderings till it has captured and captivated the regard, . . . keeping the eye at bay, or leading it away from its empty fixedness."

At the end of the second year of training, 'the vibrations of the eye have diminished, his voluntary look has become more steady, and his automatic one less riveted,' From the study of objects and movements this no longer idiotic boy was led on to the acquirement of language. At the beginning of training he could repeat only the

last word that was said to him ; at the end of the second year he had acquired an accurate though limited vocabulary. Five portraits of the child are given in the Popular Science Monthly, at ages from 6 months to 9 years, and the gradual disappearance of the idiotic expression of the child's face, as shown in these, is most marked.

Corroborative testimony of equal or even greater importance may be found in a recent report of the New York State Reformatory at Elmira, to whose resident physician, Dr. Hamilton D. Wey, belongs the distinction of having proposed and carried out the details of an experiment for testing the effects of physical culture on the mental and moral capacities of an inferior order of adult criminals. Dr. Wey selected for this experiment twelve men ranging from nineteen to twenty-nine years of age, five of whom had been convicted of burglary, four of grand larceny, and three of crimes against the person.

Three of them had been total-abstinence men ; eight had indulged in alcoholic drinks occasionally, and one habitually. Several of them confessed to intemperate parents: one had an insane and one an epileptic mother. Many of these men had faces indicative of criminal tendencies; the heads of two were suggestive of idiocy; and among the entire number there was not a face which did not express either mental hebetude or moral obliquity, or both combined.

During the previous two years these men had made no appreciable progress in school-work, seeming incapable of prolonged mental efforts. One of them could neither read nor write ; another found great difficulty in doing either : and, although four of them understood the steps necessary for working out a problem in long division, they could never obtain a correct answer, while the remaining eight were "stranded upon the shoals of rudimentary arithmetic from notation to simple division." The proposed test of the value of physical culture was of the severest possible kind.

The physical discipline to which they were subjected consisted in (1) hot baths—three weekly, the Turkish and common baths alternating ; (2) massage—kneading of the muscles, passive motions of the joints, and friction of the entire surface ; (3) physical exercise—manual drill, free gymnastics and exercise with dumb-bells ranging progressively from three to eight pounds in weight ; (4) the substitution of a special dietary for the regular prison fare. The experiment was continued during five months—long enough to demonstrate the value of the method, but not to determine the full measure of success

probably attainable by these means. At the end of this period, nine of the eleven men then living had risen from the third or refractory to the intermediate grade, the remaining two having merely maintained their original standing in this grade.

During the six months immediately preceding the experiment, the average marking for shop-work, school-work, and conduct had been forty-six per cent. During the experiment, the average for school-work, previously lowest of all, rose to seventy-four per cent., the conduct improving at about an equal rate. Shop-work was discontinued, as the special training was thought to secure enough muscular exercise. During the six months following the term of the experiment, the average marking of the men in the three departments of shop-work, school-work, and conduct rose to seventy-one per cent., as compared with forty-six per cent. for the six months preceding the experiment. At the end of this period Dr. Wey reported that "although the men had been remanded to the former routine of prison life, mental development was still going on ; six of the number had reached the first grade in school-work, and two of the remaining five had every prospect of soon doing so."

Physical improvement was marked ; their skins had acquired the softness and smoothness of childhood (several having had some form of skin disease), and their biceps muscles had become worthy of the traditional blacksmith. Their former stooping attitude, slow movements and shuffling gait had given place to an appearance of alertness and vigor ; their faces also had developed an expression of comparative brightness and intelligence. In manual labor the advance was not so pronounced as in other directions, though improvement in this department was marked ; but the stride in mental and moral development was almost beyond belief.

Inquiries extending over a period of forty years, made of about three hundred members of the Cambridge and Oxford University crews, instituted by Dr. Maclaren, director of the University Gymnasium at Oxford, have elicited facts which may be accepted as experimental evidence of the value of physical training in a class of cases in which the conditions of life are most favorable, hence affording a test from which practically every element except the purely muscular one is eliminated. The benefits experienced by the members of these crews are stated to be an increase of stamina, of energy, enterprise and executive power, and of fortitude in endurance of trials, privations and disappointments—"a goodly list of benefits

bearing on the mental and moral as conspicuously as on the physical side of the question," says Dr. MacLaren, "for, in the struggle for existence, failure is more likely to result from inability to endure trials and disappointments than from merely physical weakness—the statistics of suicide bearing out this statement."

The testimony obtained from this source shows that the advantages of physical training are not limited to the idiotic, the ignorant and the criminal classes, the conditions of whose lives have been especially unfavorable to a normal symmetrical development, but that they belong alike to all. This experimental evidence, having been drawn from observations on the ex-

trêmes of human capacity and character (the young idiot, the adult criminal, and the university student), may be accepted as virtually covering the entire ground of human nature in its various phases, and therefore as conclusive of the *universal application of systematic physical culture in education*. It shows that in the processes of mental and moral development the muscles as well as the purely sensory mechanisms, play a conspicuous part; and, while the period of growth is undoubtedly most favorable to this work, Dr. Wey's experiment shows that *even the adult brain and mind may be improved by the various procedures included under the head of physical culture*.

#### MISCELLANEOUS.

##### PARENTS' AGES AND VIGOR OF CHILDREN.

—In a meeting of the Hungarian Academy of Sciences, Joseph Korosi read a paper on "The Influence of Parent's Ages on the Vitality of Children." Mr. Korosi has collected about 30,000 data, and has come to the following conclusions: Mothers under twenty years of age and fathers under twenty-four have children more weakly than parents of riper age. Their children are more subject to pulmonary diseases. The healthiest children are those whose fathers are from twenty-five to forty years of age, and whose mothers are from twenty to thirty years old. M. Korosi says that the best marriages are those in which the husband is senior to the wife, but a woman from thirty to thirty-five years old will have healthier children if her husband be somewhat younger than herself. A man from thirty to forty years old ought to take a wife from twenty to thirty. If the mother be five years older than the father, the vitality of the children becomes impaired.

**WHOLESALE ICE-CREAM POISONING.**—NEW HAVEN, Conn., May 17, (Sanitary Era).—About one hundred residents of North and South Glastonbury were made sick by eating ice-cream at a festival of St. Luke's parish last night. The victims were first attacked with vomiting, followed by gripping pains in the stomach. Over thirty persons who partook of the cream are now seriously ill, and but slight hopes of their recovery are entertained by the physicians.

**HEREAFTER** no student can enter the University of the Pacific, at San Jose, Cal., who uses tobacco in any form.

**THE INCREASE OF CANCER** in England and Wales in the ten years 1871-'80, as compared with the decade 1851-'60, was equal to sixty-two per cent. among males and forty-three per cent. among females.

**SUMMER DIARRHOEA IN INFANTS.**—L. E. Holt emphasizes the following points: 1. Children should not be overfed at any time, but especially not in summer. 2. At this season, also, every dyspeptic catarrh should be attended to; many of these are promptly curable by merely clearing out the intestine and then cutting down the quantity of food.

**NECESSITY OF MEAT AND MILK INSPECTION.**—Dr. George C. Strawbridge addressed the College of Physicians last month on the subject of "Tuberculosis in Cattle," aiming to show the wide prevalence of the disease, its infectious nature, and the great danger which exists of the disease being transmitted to man in meat eaten and milk drunk. Dr. Strawbridge concluded that 31½ per cent. at least of all cattle killed in Philadelphia had tubercular disease. He said that in Philadelphia, with the exception of an insufficient inspection of milk, the whole matter is utterly disregarded. In conclusion, a resolution was offered as coming from the College of Physicians, recommending legislation to secure healthy beef and milk. To this end the methods suggested were to examine cattle for slaughter, both while alive and in the process of slaughter, and to examine milk cows as well as the milk itself prior to sale.



**VALUE OF ISOLATION.**—In referring to outbreaks of diphtheria in Michigan the Secretary of the State Board of Health, Dr. Baker, said that careful compilation of numerous reports from all quarters of the State showed that in those outbreaks of diphtheria in which either isolation of the sick or disinfection of infected places and things had been neglected, the disease had spread so that there were about five times as many cases and five times as many deaths as there were in those outbreaks in which both isolation of the sick and infected and disinfection of all infected places and things had been accomplished. In the 116 outbreaks in which all this was done there was apparently a saving of about 300 lives and 1,500 cases of sickness from diphtheria.

**HEALTH AND MORALS.**—That health has an important bearing upon morals is undoubted. Count Tolstoi, through the lips of one of his dramatic impersonations, says, "I must have some physical exercise or my character will entirely spoil"; and it is probable that not even the finest examples of human development have attained a height so great, either intellectual or moral, as to be beyond betterment by these means. Descartes testified to the importance of attention to the physical nature in saying, "If it be possible to perfect the human race, it is in medicine that we must seek the means"—employing the term "medicine" in its broad sense as a science devoted to the care of the body. The curative value of physical exercise has long been recognized. Boerhaave said that most of our fashionable diseases might be cured mechanically instead of chemically, by climbing a bitser-wood tree or by chopping it down, rather than by swallowing a disgusting concoction of its leaves and bark. Asclepiades was accustomed prescribing a course of gymnastics for nearly every form of bodily ailment. Tolstoi also proposed to enrich medicine with a new term, "labor-cure," as a sovereign specific for nervous affections.—Frances Emily White, M.D., in *Popular Science Monthly*.

The Missouri Legislature has passed a bill making it a felony for a physician to prescribe liquor, except in cases of actual sickness.

**CRIMINAL NEGLIGENCE** that man is guilty of who does not look carefully after the sanitary condition of his household. A man has no right to be the means of bringing misery to others or leave posterity the legacy of ill-health or constitutional weakness. It is the duty of all to so observe the laws of hygiene that they may contribute the full measure of their individual well being to the public good. Indifference or neglect of health laws and the observance of the sanitation of the home is not only a crime against the householder himself, but the infliction of a wrong on the public and a burden on posterity.

IN THIS AGE, with its plan of society and intercourse, no family is isolated, as stated in the last report of the Kansas State Board of Health. Whatever conditions may produce disease in one family are often responsible for sickness in others. Cases are recorded where disease has had its origin traced to very remote causes, both as to time and place, and these causes have been found to be the result of neglect in the proper care of the home. The fact that such cases are not always found in the homes of the destitute and ignorant is evidence that in families of the well-to-do and cultivated there is a want of the observance of the simplest sanitary precautions, which, we are constrained to believe, results more from neglect and indifference than from ignorance of the means to be employed.

**TEA AND BEER.**—Good Health says: To any one who maintains the innocence of tea as a beverage we would propose the following experiment: Find some one who is convinced of the harmlessness of beer drinking. Agree to drink a cup of strong tea for every glass of beer that he will swallow, and see who will remain on his feet the longer. We venture the assertion that the tea drinker will be profoundly intoxicated long before the beer drinker begins to feel any serious effect from his potations. Tea is, in fact, a much more powerful intoxicant than beer. Theine, the active principle of tea and coffee, is a much more powerful poison than alcohol, producing death in a quantity less than one hundredth part the deadly dose of alcohol. [Moral—Use all things only in discreet moderation. ED. HEAL & JR.]

"WHO is your family physician, Freddy?" asked Mrs. Hendricks of the Brown boy. "We ain't got none," said the boy. "Pa's a homeopath, ma's an allopath, sister Jane's a Christian Scientist, grandma and grandpa buy all the quack medicine going, Uncle James believes in massage, and brother Bill is a horse doctor."

## EDITORIAL NOTES.

**AIR DRAFTS.**—This "catching cold" process is one of the least understood points in medicine, and many are the efforts which have been made and the theories advanced in explanation of it. It is a sort of superstition which research in relation to mycology, or to the fungi, is probably destined soon to dispel. Dr. Kuh, of Chicago, says: "It is as impossible to so contract an acute bronchitis through temperature influences alone as it is so to contract tuberculosis;" and probably it is as impossible to so contract a common catarrh or coryza. Why a draft of even warm air should so commonly give a "cold" to even vigorous persons has never been satisfactorily explained. It appears possible that it may be because a draft would probably carry in its course a much larger number of bacteria to be inhaled or drawn into the air passages than could be drawn in from the air when not thus in motion, the excess of bacteria overcoming the resisting power of the mucus membrane of the air passages.

**SUMMER "COLDS"** are said to be more difficult to throw off and get rid of than any others. In summer the air contains vastly more bacteria, as a rule, than in winter, which, on the theory of the bacterial origin of colds, would account both for the prevalence of coryza in warm, moist weather, as well as for the difficulty in getting free from the trouble. Moral—Avoid anything like a strong draft if you can possibly get fairly pure air to breathe in any other way. Sometimes in a street car or close room one might sooner face a draft than breathe the foul air within.

**PREVENTION OF SUMMER DIARRHŒA.**—Wm. A. Northridge, M.D., of Brooklyn, physician for diseases of children to the outpatient department of the Long Island College Hospital, gives the following valuable rules in the N. Y. Medical Journal of the 6th inst: Three factors enter prominently into the etiology of this disease, viz., heat, moisture and improper food. Heat and moisture acting upon the food supply cause fermentation and rapid increase in bacterial development. Ingestion of this altered food is in many instances followed by dyspepsia and diarrhœa. A hot summer is always accompanied by a high mortality among

infants living in large cities. It is pleasing to find the leading medical journals giving so much more attention than formerly to the prevention. The Canada Lancet for the current month gives a valuable editorial on this same subject.

**THE HEAT** it is very important to combat. Babies should be taken to the hill country or sea shore as soon as the "heated term" commences. But, alas! few can leave their treadmill. It behooves us to do the very best we can for them in town. Parents should be instructed to avoid and combat heat. During the hot part of the day the baby should be kept in the coolest part of the house; the clothing should be lessened and water given regularly. In the early morning and late evening the streets are cooler than the house. The child should then be kept out in the open air. Children may be taken to public squares, parks, along the water front, in open cars, and on ferry boats. Strict regard must be paid to the food supply. Breast-fed children are by no means so likely to get the disease, and when they do are much more readily cured. But many are artificially fed. A perfect substitute for mother's milk has not yet been found. It is now very generally conceded that cows' milk, modified by the addition of certain substances, is the best substitute, approaching most nearly to the natural supply. The wise physician is he who avoids prescribing the manufactured foods save in rare instances. With a little care children do very well upon a milk diet until the hot weather. A day or two of this and the trouble begins. The milk rapidly absorbs atmospheric impurities. It is very apt to become sour and undergo fermentation during a night. Many children are given milk which has become altered since the mother went to bed. The mother has no fresh supply, and the infant gets a dangerous food. Many diarrhœas start in this way. If we hinder fermentation and prevent impurities getting into milk we shall prevent much disease. To avoid contamination by surrounding air impurities milk at the dairy should be placed in tightly-sealed vessels, instead of being kept in cans as it commonly is. The bottled-milk idea is a step in the right direction. If the nursing could be put directly to the udder an aseptic, unchanged supply would be insured, but this is impracticable.

THE MOTHER, in practice, is directed to obtain two small soda water bottles. They are strong and can be tightly corked. The rest of the apparatus will be found in every household. A saucepan is to be filled with water sufficient to reach to the neck of the bottle. The bottles are to be thoroughly washed, filled with milk, and placed in the saucepan, which is laid on the range. A cover excludes the air. In about twenty minutes, or as soon as the milk froths up, the bottles are to be tightly corked and laid in a cool place. When the child is to be fed one of the bottles is opened and the amount required poured out. The bottle is to be corked and returned to a cool place. The second bottle is not to be opened until the contents of the first are exhausted. The infant's sanitary surroundings should be carefully enquired into. Mothers should be instructed to keep the child perfectly clean. Soiled linen should be immediately removed. The child should be frequently bathed, and an abundance of fresh air and light afforded.

EXPERIMENT.—On the morning of June 26, 1888, Dr. Northridge says, I obtained a quart of milk from a reliable source and performed the following experiments: Six new two-ounce bottles were very thoroughly washed in hot water. Three bottles were filled with milk and placed in a water bath. In twenty minutes they were removed, quickly corked, and when cool placed in an ice-box. Twenty-four hours afterward one bottle was opened. The milk was found to be perfectly sweet. On the evening of the same day, thirty-three hours after, another bottle was opened. Taste and smell could discover nothing amiss. On June 30th (fourth day) the third bottle was opened. The milk was tested by several persons and declared to be perfectly sweet and good.

THE REMAINING THREE BOTTLES were used as follows: One was filled with milk, placed in a water bath for twenty minutes, removed, and put on ice uncorked. After twenty-four hours the milk was slightly sour to the taste. This represents the common method of boiling milk to prevent souring. It is good as far as it goes, but is inefficient, because milk exposed to air absorbs new impurities and changes start up again. Another bottle was filled, corked, and put on ice without being exposed to the heat of the water bath. Twenty-four hours after the milk was found sour to the taste. In this experiment the changes due to contained fer-

mentative elements went on although the milk was protected from the atmosphere. The sixth bottle was filled with milk and placed on ice uncorked. Twenty-four hours after the milk was decidedly sour. In this the milk was neither sterilized nor protected. The result, the common one, was the worst possible. This plan for preventing milk changes I carried out among a considerable number of sick babies last summer. The sick with diarrhoea received great benefit by this method.

THE ONE GREAT SECRET OF HEALTH is in cleanliness—absolute, everywhere. An old physician, being once appealed to for some general, comprehensive rule for the preservation of health, replied "Keep clean." Cleanliness, from a medical point of view, an exchange says, generally means the absence of noxious germs. The laity generally comprehend in the term freedom from foreign substances, while the psychologist and moralist have reference to the purity of mind and soul. All these combined would form the first principle of good health. Freedom from all filth with reference to the body and its surroundings and freedom from contamination of mind and soul, would make the individual not only free from material pollutions, but would inspire him with a sense of cleanliness and glorify the consciousness of living. There is a meaning in the word "clean" that penetrates beyond things seen and touches the mental and spiritual nature of humanity. "Keep clean" is an admonition carrying with it an inspiration which not only invigorates life but makes it enjoyable and beautiful.

THE CLEANLINESS must include the whole internal structure—the blood and other fluids and all the organs, as well as the bodily surface and its environment. The diet must be regulated, in order that the blood will not be fouled by accumulations of excess. And the skin must be kept in order by means of bathing, exercise and proper clothing, in order that it may throw off the waste of wear and tear. So all the essentials of health tend to promote cleanliness, which should indeed be regarded as a part of godliness.

DOGS AND RABIES.—It is monstrous that mankind are so much exposed as they are to that perhaps most dreaded of all diseases, hydrophobia, contracted only, in practice it

appears, from rabid dogs. Dogs, dogs, useless, suffering brutes, are everywhere, yelping out at horses' heels, as well as, often, human calves, or lying stretched across a sidewalk the terror of women and children; everywhere, except in a few well-governed and well-regulated cities, in which class this, the Dominion capital, cannot fairly be placed, especially in regard to dogs. There are probably more useless, ugly dogs in Ottawa than in almost any other city this side of Constantinople.

THE RISK of even one death—it might be the death of any one of the readers of this JOURNAL or a friend of the same—from this dreadful malady is enough to condemn every dog in Canada, good and bad, if need be, to death. The present "dog law" is very unjust to any sufferer from a bite of one. Under existing legislation, if a person be severely injured by a ferocious dog, the person has to produce proof of the dog having been noted for its ferocity. Whether it be the first bite or not, the injured person ought to be able to recover damages from the owner of the dog. Just damages can be recovered for injury to fences and crops by a straying animal, but not for injury to human flesh. What we want, what the British Medical Journal of June 15, in an article urging reform of the dog laws, demands for England, is a bill which shall provide for: (1) the extinction of rabies by universal muzzling for a suitable time; (2) measures against the importation of the disease; and finally (3) amendment and consolidation of the dog laws. All these have been comprehensively dealt with by a committee of the Society for the Prevention of Hydrophobia, the committee being composed mainly of dog owners and breeders.

AN EPIDEMIC of rabies, and probably of hydrophobia among human beings, will follow this indifference in regard to dogs, and until then it is to be feared little will be done. In Bavaria from 1863 to 1876 from fourteen to thirty-one persons died each year from the bites of mad dogs. During the last seven years only three deaths from hydrophobia have occurred, in a population of five and a half millions. This result is attributed to the strict enforcement of the regulation that every dog is at once killed who is found without a collar with a mark signifying that the tax on the animal for the current year has been paid. Grip refers to some

one so benighted as to have no faith in the potency of the "tag" to protect the citizen from being bitten. Indeed, all dogs should be muzzled when outside their masters' yards. What the British Medical Journal demands for England—a general muzzling order—we want in Canada.

THE BILL just introduced by Sir Henry Roscoe to amend the English Dogs Act of 1871 proposes to put in force a series of stringent regulations on the subject. The owner of any dog (not specially exempted, that is, "permitted or suffered to be at large,") in any part of the United Kingdom without wearing a muzzle "of a form to be approved by the Privy Council," shall be liable to a penalty of twenty shillings. The owner shall also be liable for all "injury done to the person" by the dog, without any proof being required of "previous mischievous propensity" on the part of the dog or of negligence on the part of the owner.

ANOTHER DANGER FROM CATTLE is manifesting itself in this country, although it is not yet, we think, common. It is an infectious disease called actinomycetes or actinomycosis. In England and Wales Prof. McFadyean, of the Royal Veterinary College, Edinburgh, in a paper in the British Medical Journal of June 15, says, this disease "is very common in cattle." The micro-organism of the disease, which is probably the infection, is not, it appears, a bacillus, but a cocci, which forms chains, with also thread-like and club-like forms. Hartz, who examined the organism in specimens submitted to him by Bollinger, named it the actinomycetes, and assigned it a place among the mould fungi. Prof. McFadyean, from his remarks in the paper referred to, apparently regards it as identical with actinomycosis hominis, as it appears in man.

IN THE NEXT NUMBER of this JOURNAL we propose to give a brief history of some cases of what, it appears pretty clear, was actinomycosis in a herd belonging to Mr. W. J. Delmage, of Camden East, a number of which died, together with something more relating to the nature of the disease. We obtained specimens from one of these animals and had it examined microscopically.

THE LONDON ASYLUM NUISANCE has at last been abated, it appears. The sewage of this institution was carried by a drain to an open

creek, which eventually found its way to the Thames, but within half a mile of the asylum, indeed right at the edge of the grounds, and when the wind blew from the east in summer the stench was great. The Montreal Witness says the Ontario Government has not been free from blame in this connection. After much urging and a good deal of delay it has adopted a system whereby the sewage will be filtered. The system was designed by Col. Waring, of Newport, R.I., U.S. The sewage is collected in a large iron underground tank, capable of holding 150,000 gallons, and forced by means of a pump into a neighboring field, where the liquid portion (and the action of the pump reduces it nearly all to liquid) is distributed in trenches, from which it filters through the sandy loam to underground drains, leaving the organic matter in the soil, while the liquid in a purified state runs into a neighboring creek. The cost of the system at London will be about \$17,000.

THE BRITISH MEDICAL JOURNAL (June 8, '89), which, it may be noted, claims a circulation largely in excess of any other medical journal in Great Britain, says: Dr Edward Playter, of Ottawa, recently read a valuable paper on the intercommunicability of tuberculosis between animals and man before the Medico-Chirurgical Society of that city. It illustrates the value of the rapid diffusion or interchange of medical observation between the English-speaking peoples. In addition to very important extracts from British and American reports on the subject, Dr Playter states. . . . that the insidious nature of the disease causes it to be often overlooked, and makes it difficult to arouse the public to its occurrence and danger."

**PUBLIC HEALTH IN CHILI—AHEAD OF CANADA.**—By decree, dated January 19th, 1889, the Supreme Government of Chili created a ' Superior Council of Public Hygiene,' consisting of seven members, so we are informed by the British Medical Journal of June 29. The duty of this body is to advise the Chilian Government in everything that relates to public health throughout the republic. It exercises a general sanitary supervision over dwellings, factories, schools and all public buildings; it organizes measures for the prevention or stamping out of epidemics; advises municipal and local authorities as to the sanitary condition of markets, slaughter-houses, baths, etc., and as to all questions of water supply and drainage; suggests measures for keeping towns in a healthy state, and for the prevention of injury to workmen employed, and to the public

health from noxious trades and industries; and superintends the quality of all foods and drinks, informing the authorities of cases of adulteration or fraud. The Council is entrusted, too, with the duties of collecting and arranging data for the compilation of health statistics throughout the republic, of keeping up a library and museum of public hygiene, and of publishing a monthly review for the diffusion of hygienic knowledge. The Council has a laboratory for chemical analysis under its direct control.

**SUBORDINATE** to the Superior Health Council of Chili there are provincial Councils for the various administrative divisions of the republic. The duty of these provincial bodies is to see that all sanitary regulations are enforced, and that the measures recommended by the Superior Council and sanctioned by the Government are duly carried out; to send a weekly report to the Superior Council of all cases of infectious diseases and epidemic or epizootic outbreak occurring in the province, with full particulars as to the nature, extension, treatment, etc., of the evil, and to present an annual report to the Superior Council on the sanitary condition, vital statistics, etc., of the province. Readers of this JOURNAL who have noted its constant advocacy for a Federal Health Department will recognize how nearly this Superior Council of Health in Chili corresponds with what we have advocated for Canada, even to, especially, the publication of a journal for the diffusion of health knowledge and the regular and repeated reports from all parts of the Dominion as to the condition of the public health.

**GRIP**, which sometimes gives pencil sketches of foul smells and like sanitary evils, and which, by the way, commences its 34th volume in an improved appearance, in referring to the Toronto "fresh air fund" and commending the laudable efforts of the charitable who provide excursions for the poor little ones whose parents cannot afford to give their children a day on the water, says: Isn't it queer that in this broad and beautiful land, with its sparse population, pure air should be regarded as a luxury which must be purchased by the mouthful for thousands of our fellow creatures as an act of charity on the part of the more fortunate?

THE Scottish Veterinary Association, at a recent meeting in Edinburgh (Brit. Med. Jour., July 6, 1889), considered a motion submitted by Prof. W. O. Williams, "That the society, thoroughly believing that tuberculosis is a contagious disease, urge upon the Government—first, to stop the sale of milk from animals suspected of being infected; secondly, to suppress the consumption of meat from tubercular ani-

mals ; and, thirdly, to give compensation for a limited number of years." In the discussion of this motion it was apparent that, though there were differences of opinion as to how much of an affected animal ought to be condemned as unfit for food, all the speakers were in favor of visibly diseased parts being destroyed, and were of opinion that the milk from diseased animals was especially dangerous. They were also unanimously in favor of legislation to stamp out the disease, to secure proper inspection at abattoirs, and moderate compensation to owners.

INFANTS' FOODS, it must be remembered, at this time of the year especially, require more care and attention than any other foods. It will be remembered that two or three years ago we published the results of analyses, made by the Chief Dominion Analyst, of most of the so-called "infants' foods" in the market, and warned our readers against them because they were not suitable foods. Several like foods have since been put upon the market which were not then analyzed. The Boston Health Journal has had an analysis made of "Carnrick's soluble food," and strongly condemns it. Nestle's, we believe, stands highest in estimation, and we would recommend it in preference to any of the others.

A REMARKABLE and unusually severe meat poisoning case is reported in the British Medical Journal of July 6 inst. A number of young men were supplied with sandwiches at a hotel at St. Bees, on the Cumberland coast. Within twenty-four hours after ten were seized with symptoms of "English cholera"—excessive vomiting and purging, accompanied by headache, severe pain in the stomach and bowels, intense thirst, and collapse, followed in three cases by high temperature and delirium. The cow from which the meat was taken was killed on June 13th, and the piece (14 lbs. of sirloin) roasted in an oven on June 21st. It was underdone, as blood flowed when the sandwiches were being cut on Sunday, 23rd. Several of the inmates of the hotel, too, ate the meat, and all were seized, some being dangerously ill, with one fatal case, that of a woman.

AN EPIDEMIC OF PNEUMONIA in Prince Edward Island is reported in the Maritime Medical News for May. During the months of February and March no less than 546 cases occurred in the practice of 26 practitioners, and at the date of the report the disease was still very prevalent. As there are over fifty practitioners in the Island, it is computed that the total number of cases is fully upwards of 1,000, in the 150,000 of the Island. In the majority of

cases the pneumonia was attended by acute bronchial catarrh, more frequent in children and the aged, which in some cases also involved the larynx and middle ear. In the 546 cases there were only 40 deaths. The past winter was characterized by an abnormally high temperature throughout, with much rain.

OF TWELVE LADS who competed in this city last April for appointment to a cadetship at the Naval Academy at Annapolis, not one was found to answer the qualifications as regards physique required. Three were rejected for defective eyesight and four for malformation of the chest or heart troubles, while one was under the minimum stature.

THE P.-ST.-MORTIEM WARTS, Prof. Wm. Osler, late of Montreal, now of the Johns Hopkins University, Baltimore, says, are now pretty generally regarded as local tubercle deposits, the result of inoculation. The presence of bacilli in them has been demonstrated in several instances.

A SANITARY CONVENTION will be held in Brockville in the latter part of August, under the auspices, it appears, of the Ontario Association of Health Officers, which body will at the same time hold their annual meeting. We have no doubt that under the management of the energetic president of this association, Dr. Burrows, Medical Officer of Lindsay, the convention will be made unusually attractive and a success.

CHILDREN born deaf and dumb, it is now shown (N. Y. Med. Times), can be taught to speak. M. Pinel has constructed an electric screen, by which the sound is propagated by the action of the voice on the walls of the upper palate and larynx and communicated to the convolutions of the brain, which, by dint of education, may be comprehended. With the improvement recently made in the phonograph, deaf and dumb children may be taught intonation of letters, words and sentences.

NIGHT TERRORS in children, Dr. G. L. Ullman treats of, in the Albany Medical Annals for June. The causes are various. Chief among them are some form of vivid impression, violent play and great hilarity in the evening or the latter part of the day. He condemns all severity of treatment or harshness of voice on the part of the parents. Soothing measures are the best. "The charming advice of good nature coupled with time" always meets his expectations admirably. Endeavor to abate or remove the cause.

NOTES ON CURRENT LITERATURE.

THE CENTURY for July contains, besides what we predicted last month, a timely contribution by Mr. Charles Barnard, profusely illustrated, on "Inland Navigation of the United States," with a brief accompanying paper by Mrs. van Rensselaer on the "Advance in Steamboat Decoration." "Women in Early Ireland" is the illustrated paper in Mr. de Kay's Irish series. Bishop Hurst, in his article, "The Temperance Question in India," gives results of a recent visit to that country and discusses a subject recently brought to the attention of the British Parliament. Rev. Dr. J. M. Buckley gives many curious instances and much good advice in his article on "Presentments, Visions and Apparitions." The "Topics of the Time" are "The Day of Independence," "The Summer Exodus and What it Testifies" and "Outdoor Sports." The "Open Letter" are on "Industrial Education for the Negro," "Imperial Federation," "One Reason of the Inefficiency of Women's Work," and others.

IN THE JULY ST. NICHOLAS the opening story deals with revolutionary times, and particularly with a devoted old Whig who had vowed to wear the same coat until the war was decided. His chagrined grand-daughters try a shrewd device to make their grandfather ashamed of his worn-out garment, but he is enabled to outwit them and keep his vow. The story is stirring, elevated in style and sentiment, and by a new writer. Following this is "Louis the Resolute," which is, virtually, the true story of a boy who walked from his home in Massachusetts to Washington and secured for himself, by personal application to President Lincoln, an appointment to Annapolis. There is a bright little sketch by Eliza Scidmore of the Prince Imperial of Japan, with a portrait, and a stirring description of his hand-to-hand conflict with a small American boy whose hat His Imperial Highness had knocked off; with a great variety of exceedingly pretty things: "The Bunny Stories," "Mermaids and their Pets," "Soap Bubbles," and "Tiger."

THE ILLUSTRATED LONDON NEWS (American Ed., Potter Building, N.Y.) has during the past four weeks presented its readers with the usual amount of excellencies, in both illustration and reading matter. Rider Haggard's story, "Cleopatra," is completed in the July 13th number, and one by Wilkie Collins, "Blind Love," is to be commenced in the next number. In "My Notebook," by James Payn, among many other things, we find, July 13, a blow at Pasteur. Mr. Payn says: "His opponents even affirm that 'there have been more cases of

death from hydrophobia in Paris since he began his researches than before,' and that 'M. Pasteur is very angry with the Australians for rejecting his loathsome plan of destroying their rabbits by inoculating them with an infectious disease.'" Payn usually cuts deeply.

THE SPIRIT OF MANUAL TRAINING will be set forth by Prof. C. H. Henderson, of Philadelphia, in an article which is to open the August Popular Science Monthly. Prof. Henderson says that the ideal school will aim to develop men, not to produce fine articles of wood or iron, or to cram heads with information, and that the name "manual-training school" does not rightly describe an institution designed to train the "whole boy." A suggestive article on the wastes of modern civilization, by Felix M. Oswald, M.D., will appear in the August Popular Science Monthly. Dr. Oswald points out a number of ways in which the resources of the modern world are used up with no care for their replenishment or in producing useless or harmful results. Mr. Malloch on Optimism is the title of a critical article which Mr. W. D. LeSueur will contribute to the August Popular Science Monthly.

THIS JOURNAL will in future be published in the present less expensive form at ONE DOLLAR a year, in advance, in order that it may thus reach a larger number of readers.

THE JOURNAL will be mailed regularly to large number of the local papers, dailies and weeklies, two or three in each county.

PAPERS desiring to spread the gospel of health by giving their readers extracts from the HEALTH JOURNAL would confer a favor by sending a marked copy of any such paper to the JOURNAL.

THE EDITOR of the JOURNAL is often amused by finding local papers—papers even in this city, where the JOURNAL is published—giving their readers items and extracts as something new, credited sometimes to foreign journals, often not credited to any, which had been published in this JOURNAL months before, and which must sometimes then have gone through the hands of the editors of the papers, and which had been used by these foreign journals without giving this JOURNAL credit.

IT IS A COMMON THING, too, to find items relating to sanitary progress given in our exchanges as "news" months after the same had been published in this JOURNAL. These are given simply as facts which we desire our readers to know, and not in a spirit of boasting,