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DEVOTED TO

PUBLIC HEALTH.

EDITED BY

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PRACTICAL HYGIENE.

CHAPTER I.

INTRODUCTORY*—HEREDITY—MORAL AND SOCIAL CAUSES
OF DISEASE.

SECTION I.

HEALTH AND DISEASE AND HOW DISEASES COME.

Health is that condition in which all actions or functions proper to the body are performed in the most perfect and harmonious manner. Such a condition necessitates a perfect and natural state of all the organs of the body. The perversion or partial cessation of one or more of the functions or processes of life constitutes disease. And anything which prevents, or interferes with, the perfect and harmonious performance of any of these functions, or which obstructs any of the vital processes, is a CAUSE of disease. The continued operation of any such cause will sooner or later give rise to ALTERED ORGANIC STRUCTURE, and we then have diseased organs as well as diseased functions. Health is an active and unimpeded renewal of the body and prompt rejection of all worn-out substances, giving rise to the highest development of life in every part and organ. Disease has been termed a partial death. Furthermore, health, besides meaning freedom from sickness, with soundness of body, means clearness, happiness and vigor of mind. Disease, besides meaning deranged function of organs and altered organic structure, means weakness, perplexity and distress of mind.

The human organization is of the highest complexity, and it is

* Much of the first two or three pages of this paper has been published in this Journal before, but as a large number of readers will receive this who have not received the Journal in the past, the repetition will we trust be pardoned.—ED. S. J.

therefore the more prone to derangement, and its functions to perversion, by the many and various causes of disease by which we are surrounded. Let us now very briefly notice the nature of some of these causes.

The necessary conditions of health and life are a supply of air to breathe, water to drink, and food to eat, and also exercise, rest and sleep, clothing, and bathing. These conditions or agencies of health and life are very liable to changes, and to become perverted or to be improperly used. The air around one becomes impure from the breath; water becomes foul from other waste matters; foods are often improperly prepared; or one may take too much or too little exercise. Now as all the functions of the body are directly dependent upon these agencies, when any one of them is deteriorated, or not good and appropriate, it acts at once as a cause of disease, and more or less functional derangement—disease, will assuredly speedily follow its continued use.

CAUSES OF DISEASE.—Nearly all causes of disease, and of premature death are intimately associated with the agencies or essentials of life; or, in other words, they are to be found in perverted conditions of these agencies, which of necessity all are continually making use of. Breathing foul air, drinking impure water, eating bad or too much food, insufficient rest and sleep, improper clothing, or want of suitable exercise and want of cleanliness, each and all interfere directly, more or less, with the natural or healthy actions of the organism, and cause disease.

Moreover, a very large proportion of the causes of disease arise from the imperfect manner in which the waste matters from our own bodies are disposed of; from these waste matters being conveyed back into our bodies again, and chiefly along with the air and water consumed. Many persons, in their bedrooms, breathe, over and over again, air laden with excrement given off by the lungs and skin, a highly injurious practice, and a very common cause of disease. Other excrete matters from the body are often thrown in proximity to wells of water, and hence find their way into the water, and with it get back into the system. These waste matters, if not absolutely poisonous when thrown off, soon undergo changes and become in many cases highly deleterious. All in the long list of contagious diseases—small-pox, cholera, scarlet-fever, typhoid, and the like—are often spread in this way. The contagion is in the excrete matters, and if these are not properly disposed of, as by free ventilation,

disinfection, etc., such diseases will readily spread to other persons. The contagion is conveyed to others usually with the air or water, sometimes with foods.

Besides the above causes of disease, there are what may be called climatic causes—sudden changes in the state of the atmosphere or weather, mental, emotional, or moral causes, and hereditary causes—those inherited from parents, over all of which we have less control. Nevertheless, by proper regard to general cleanliness and to the state of the skin, to the clothing, and other agencies, climatic causes may be rendered almost inoperative; and by careful attention to the laws of health generally, hereditary diseases would disappear in a few generations; and diseases arising from mental or moral causes would become rare.

VALUE OF HYGIENE.—By means of knowledge regarding the nature of these agencies or necessities of life, *in all their varying conditions*, and of their relations to, and effects upon, the organs and functions of the body, one is enabled to control the causes which disturb and pervert these organs and functions, and thus to prevent disease. Happily, it is much easier for every one—much less knowledge is required—to take care of and preserve the health than to regain it when lost; to keep the organs and functions in a perfect and healthy condition, than to get them into such condition again after they have become deranged or perverted. When the parts and their functions become altered from their natural state, the most extended knowledge and profound skill and experience may be required to set them right again, if indeed it be possible to set them right, as it may not be.

Every one has, then, in his or her own hands, to a great extent, the power to prevent disease and to prolong life, which disease might greatly shorten.

CAUSES OFTEN SLOW IN PRODUCING EFFECTS.—It must be borne in mind that the injurious effects on the organism of any of these causes of disease are not always, or even usually, immediately perceivable, but are frequently slow and cumulative, and not noticeable until much mischief has been done. The breathing of air contaminated by the products of respiration, as in unventilated rooms, is believed to be a most common cause of that most fatal of all diseases, consumption; yet, frequently, this disease arises and increases so imperceptibly, that it is not manifested until too late to be remedied. So, intemperance, in both drinking and eating, is a very

common cause of disease ; yet the diseases arising therefrom do not commonly attract attention until the intemperate habits have been indulged in for a long time, perhaps not until serious organic disease has been produced.

Pain, in some form or degree, whether severe or only amounting to slight uneasiness, is the most common symptom of disease, and not unfrequently acts as a kindly monitor to warn us that something is going wrong in our body, or that we have committed some error : but we are not always thus warned. Causes of disease may continue to act, and produce effects of a more or less serious or permanent character, without causing pain or giving any warning whatever.

One thing is certain, causes always produce effects ; and this ought never to be forgotten. If we breathe foul air, or use bad water or improper food, if we over-work ourselves or are indolent and take no exercise, or if we neglect to bathe and wash the waste, dead matters off the skin, some ill effects are certain to follow ; though they may not be appreciable to our senses, or possibly not of a permanent character.

SECTION II.

HYGIENE, INDIVIDUAL AND PUBLIC, HOW PROMOTED.

DEFINITION AND HISTORY OF HYGIENE.—Hygiene is that art by which the health is preserved, and the most perfect action of body and mind obtained during the longest possible period of time consistent with the laws of life. It must not only prevent disease and preserve health, but it must include the Macrobiotic art, that of prolonging life. For it must be observed that the means sometimes employed to preserve and, especially, to regain, health may tend, as it were, to accelerate life, and, consequently, to shorten its duration. Again, it not unfrequently happens that a disease prolongs life by counteracting the life-destroying effects of some previous disease. Hygiene “aims at rendering growth more perfect, decay less rapid, life more vigorous, death more remote.”

This art has been practised from the earliest times of which we have any record. There were treatises on hygiene before the time of Hippocrates. The effects of diet and of exercise were carefully noticed at a very early period, and were considered the basis of hygiene. Herodicus, one of the preceptors of Hippocrates, was the first to introduce a system of gymnastics for the improvement of

health and cure of disease ; though such exercises had been practised long before, in training for war. It is related of Herodicus, by Plutarch, that laboring under a disease which he knew could not be perfectly cured, he was the first who practised the gymnastic art in such a manner as prolonged to old age his own life, and also the lives of others who were afflicted in a similar way. Plato, it is said, censured him for keeping alive persons with crazy constitutions.

Hippocrates summed up on six articles in his time the knowledge of hygiene. These articles, whose regulation was considered indispensably necessary to human life, were as follows :—air, aliment, exercise and rest, wakefulness and sleep, repletion and evacuation, the passions and affections of the mind. Hygiene at that time was based on rules drawn from observation, and which we would now call empirical ; but it is rapidly becoming an art based on the science of physiology.

“Taking the word hygiene in the largest sense, it signifies rules for perfect culture of mind and body. It is impossible to dissociate the two. The body is affected by every mental and moral action ; the mind is profoundly influenced by bodily conditions. For a perfect system of hygiene we must combine the knowledge of the physician, the schoolmaster, and the priest, and must train the body, the intellect, and the moral soul in a perfect and balanced order. Then, if our knowledge were exact, and our means of application adequate, we should see the human being in his perfect beauty, as Providence, perhaps, intended him to be ; in the harmonious proportions and complete balance of all parts, in which he came out of his Maker’s hands, in whose divine image, we are told, he was in the beginning made.

“But is such a system possible? Is there, or will there ever be, such an art, or is the belief that there will be, one of those dreams which breathe a blind hope into us, a hope born only of our longings, and destined to die of our experience? And, indeed, when we look around us and consider the condition of the world—the abundance of life, its appalling waste ; the wonderful contrivances of the animal kingdom, the apparent indifference with which they are trampled under foot ; the divine gift of mind, its awful perversion and alienations ; and when, especially, we note the condition of the human race, and consider what it apparently might be, and what it is ; its marvellous endowments and lofty powers ; its terrible sufferings and abasement ; its capacity for happiness, and its cup of sor-

row ; the heavenly boon of glowing health, and the thousand diseases and painful deaths,—he must indeed be gifted with sublime endurance or undying faith, who can still believe that out of this chaos order can come, or out of this suffering happiness and health.

“ In the scheme of Providence it may not be meant that man shall be healthy. Diseases of mind and of body may be the cross he has to bear ; or it may be the evil against which he has to struggle, and whose shackles he is finally to unloose. The last disease will disappear, we may believe, only when man is perfect ; and as in the presence of the Saviour all disease was healed, so, before perfect virtue, sorrow and suffering shall fade away. Whether the world is ever to see such a consummation, no man can say ; but as ages roll on, hope does in some measure grow. In the midst of all our weaknesses, and all our many errors, we are certainly gaining knowledge, and that knowledge tells us, in no doubtful terms, that the fate of man is in his own hands.

“ It is undoubtedly true that we can, even now, literally choose between health or disease ; not, perhaps, always individually, for the sins of our fathers may be visited upon us, or the customs of our life and the chains of our civilization and social customs may gall us, or even our fellow-men may deny us health, or the knowledge which leads to health. But as a race, man holds his own destiny, and can choose between good and evil ; and as time unrolls the scheme of the world, it is not too much to hope that the choice will be for good.”—(*Parke.*)

If the rules of hygiene, even as now understood, were rigidly carried out, the condition of man would undoubtedly be altered thereby in a wonderful degree.

FALSE IDEAS REGARDING DISEASE have in times past proved unfavorable to hygienic effort, and operated against the employment of means to prevent disease. In early ages diseases were believed to be due to evil spirits which in some mysterious manner found their way into the system. Many now regard them as things having an independent existence, to be removed or thrust out of the system by medicines, as things that come arbitrarily, or are “ sent ” by Divine Providence as punishments for sins committed. Many books now in the libraries for the young, at least convey these erroneous ideas. True, diseases come only because of our transgressions ; though not of the moral laws exactly, but rather of the simple physical laws of health. We bring them upon ourselves, for the most part, by our

own acts or neglects. Since more enlightened views have somewhat prevailed, there have been numerous proofs of the great benefits to health and vitality from giving practical attention to the laws of health, to the condition of the essentials or agencies of life,—air, water, food, etc.

PUBLIC HYGIENE—STATE MEDICINE.—But frequently the laws of health cannot be complied with by individuals, however much they may desire to do so. However constant an individual may be in attending to hygienic laws, he is, as a member of the community, dependent to a very great extent upon his neighbors for the conditions in which he lives. Without their co-operation he cannot even have pure air and pure water. His neighbor may in some way contaminate these first great essentials of life and health. Other neighbors may sell him contaminated foods—as milk containing contagiums of typhoid fever or diphtheria ; and others, with small-pox or scarlet fever may walk into his house and communicate the disease through the air to his family. Other things quite as simple suggest themselves, which show that the health of the individual is bound up with that of the public. Hence arises what is called “Public Hygiene” or “Public Health” and “State Medicine.”

PUBLIC HEALTH is that branch of sanitary science (another name for the science of health) which relates to the health of communities, or of the public, as distinct from that of individuals. Public health applies to the prevention of all diseases of all kinds, and the promotion of true relations among men. It should be understood by every one, high and low, that to maintain the public health is the duty alike of every individual. But there are some things necessary to the public health which individuals cannot of themselves do, and it becomes necessary that what is thus every one's business must be made the business of some particular ones ; and hence the necessity for sanitary authorities, health officers, etc. It has long been recognized that it is the duty of the State to watch over the public health ; to see that those things are provided which are necessary for the public health, but which individuals cannot provide for themselves ; to enact laws by which the many or the whole may be protected against the effects of the errors of a few or a part. It is unquestionable that “the whole nation is interested in the proper treatment of every one of its members, and in its own interest has a right to see that the relations between individuals are not such as in any way to injure the well-being of the community at large.” One thing which

th individuals and the State should constantly keep in view is that, we, of the present generation, are largely responsible for the condition of those who come after us.

THE PUBLIC MUST BE EDUCATED.—There are causes of disease, however, which legal enactments cannot reach. People cannot be forced into virtuous habits nor be made personally clean by police regulations. Hence it is that most Sanitarians of the present time base much of their hopes of sanitary progress on the education of the masses of the people in sanitary science. As Lord Derby has said, “no sanitary improvement worth the name will be effective, whatever acts you pass, or whatever powers you confer upon public officers, unless you can create an intelligent interest in the matter among the people at large. The State may issue directions, municipal authorities may execute to the best of their power, inspectors may travel about, medical authorities may draw up reports, but you cannot make a population cleanly or healthy against their will, or without their intelligent co-operation. . . . This is why, of the two, sanitary instruction is even more important than sanitary legislation.” The people must be taught the science, the laws, of health; taught that temperance in all things and perfect cleanliness are indispensable to the preservation of health; they must be interested in the work of prevention, and shown that nothing is so costly in every way as disease, as, over and over again, it has been proved to be; and that no other investment, whether by individuals or communities, is so remunerative as the outlay towards contributing to health. There cannot, indeed, be public health unless each person is conscious of the duty of doing his or her part toward it.

ARRANGEMENT OF RULES OF HEALTH.—Rules of health should commence with the regulation of the health of the mother of the unborn child, in order that the growth of the new being shall be as perfect as possible. After birth, the rules should apply to the three periods of life: to the period of growth; to the period of maturity; and to the period of decay. Those applying to the first period, that of growth, are of most importance. They must be different for each sex at certain times, and must embrace those relating to education.

In these several periods, the human being may be considered—first, in relation to its environments, to the essentials of life, air, water, foods, work, rest, clothing, etc.; second, as an independent creature, with thoughts, feelings, desires, habits, which require self-control and regulation; third, in its social relation, as a member of

a community with customs and fashions, and as subject to social influences, sexual relations, etc.

THE WHOLE SUBJECT OF HEALTH MAY BE CLASSIFIED and considered under the three following heads:—

First, as relates to hereditary influences and diseases, or to the predispositions or tendencies to disease, inherited from parents or grand-parents.

Second, as relates to moral and social influences or causes of disease,—as intemperance, immorality, unsuitable marriages, grief, anger, fear, etc.

Third, as relates to material causes of disease,—to impure air, impure water, unwholesome food, damp soil, general uncleanness, etc.

SECTION III.

HEREDITARY INFLUENCES OR CAUSES OF DISEASE.

MAN'S SURE INHERITANCE.—Man is made up chiefly, physically and morally, of the characteristics and peculiarities of his recent ancestors; more largely of those of his parents than of those of his grand-parents, and less largely still of those of his more remote ancestors. Form, feature, mental capacity, moral sense, are, by the laws of life, man's sure inheritance; subject, to be sure, to the influences of the conditions and circumstances by which he is surrounded. Is it then surprising that constitutional or organic defects may be, as they frequently are, transmitted from parent to offspring? It is well known that many chronic diseases—scrofula, consumption, gout, syphilis, and insanity, or a strong tendency to these, are thus transmissible. Small-pox, syphilis, and tubercles of consumption, and perhaps scarlet fever are the chief diseases which have been found to be directly transmissible, to exist in infants when born. But though benignant nature is thus sparing in the direct transmission of actual disease from parents to offspring, she is not equally sparing in transmitting disease tendencies or predispositions. That children inherit hidden weaknesses and defects of certain organs, by which such organs are prone to take on diseased action, is as well known as that they inherit outward bodily configuration and manifest peculiarities. Acquired accidental defects or the resulting symptoms may be transmitted. And experiments have shown that animals in which artificial epilepsy had been produced (as by cutting certain nerves) frequently gave birth to young that showed symptoms of epilepsy.

Hence it is easy to believe that the effects of dissipation, or other transgressions of the laws of health, on an ordinarily good constitution, will descend, as they undoubtedly do, to the offspring.

There are but few individuals, comparatively, looking at the masses of the people, who are physically well proportioned—in whom every organ bears a proper or relative proportion, in size and in strength, to every other organ. One has a narrow contracted chest with perhaps a large head; and another a small head or a small heart with full well developed digestive organs. These are largely the results of heredity, of causes operating through successive generations.

It would be impossible to estimate the evil—large though it evidently is—the loss of stamina, of physical and intellectual vigor, the sickness, the suffering, the number of deaths, caused by hereditary influences. Dr. Bowditch, of Massachusetts, has endeavored to make an approximate estimate of the number of deaths so caused, and has arrived at the conclusion that there are 200,000 human beings annually slaughtered by hereditary diseases.

Besides the chronic diseases above named, scrofula, consumption, gout, syphilis, and insanity, which are regarded as hereditary, various others, such as asthma, heart disease, blindness and deafness, a tendency to hæmorrhages (bleedings), and apoplexy, are often transmitted, especially in predisposition, and hence these also are hereditary diseases.

LAWS OF HEREDITY.—The following may be cited as in accordance with the best received opinions of leading biologists in reference to the influences and laws of heredity:—

1. The influence of both parents on the physical constitution of the offspring is manifested in general personal resemblance, as in stature, feature, gesture, and color of eyes and hair. Some of the children bear a greater resemblance to the father, others to the mother. It is rare to meet with instances in which distinctive characteristics of both parents cannot be traced.

2. The influence of other near progenitors—grand-parents, uncles—on the physical constitution of progeny is manifested by the resemblances which make up what is known as atavism, and which may be explained as follows: A man inherits certain characteristics from either his father or his mother, but only a portion of these characteristics are developed or manifested in him, while others remain latent, but are perhaps developed in a brother or a sister. His son,

in turn, inherits the same characteristics as the father, but those which were undeveloped in the father become developed in the son, who thus comes to bear a stronger resemblance to an uncle or an aunt or a grand-parent than to his father or his mother.

3. Deviations from the regular type, or from averages, though transmissible, cannot go beyond certain limits. Hence in the offspring of individuals representing these deviations there is manifested a constant tendency to return to the regular type.

4. All forms of disease being perverted life processes, are therefore deviations from the natural type. And they, too, are subject to like limitation in their transmission, and there is the same tendency manifested to return to the regular type, or, in other words, to health, under improved and favorable conditions. These inherited diseases or perverted process may, like the peculiar characteristics, remain latent for a generation or two and then become developed in another. And hence, not unfrequently, individuals appear to inherit certain diseases from a grand-parent or an uncle or an aunt.

5. Characteristics when common to both parents are very liable to become intensified in the offspring; this has been especially noticed when the characteristics are of the nature of deteriorations or predispositions to disease.

6. Mental qualities are subject to the same law of heredity as the physical characteristics: though, it is said, with this important difference, that any vicious tendency in the parents, as a rule, becomes intensified in the offspring. This however may be more apparent than real, and the greater viciousness may arise from the early environments of the offspring.

ON PREVENTION IN HEREDITY. — Can any useful lesson be deduced from our knowledge of heredity as relates to disease? What can sanitary science suggest in reference to the removal of hereditary predispositions or the prevention of hereditary diseases? Perverted processes, deviations from health, either acquired or inherited, have doubtless a tendency to revert to natural healthy action when under proper hygienic conditions. There is in the body a tendency toward perfection; a tendency to set matters right when they have gone wrong; in disease, a natural inclination to health. We have illustrations of such a tendency when injuries are repaired and lost parts are restored. In early times this tendency, or power, as it has been called, was almost materialized, and received the appellation of a *VIS MEDICATRIX NATURA*. Van Helmont personified it as the archæus,

or grand regulator, whose throne was the stomach. A high remedial value therefore attaches to hygienic measures, and in all diseases their practical application is of the first importance. On the near approach or actual occurrence of disease even, the prompt removal or avoidance of all causes, as well those giving rise to the disease as all others, will very materially assist in restoring health.

All descendants of those who labor under any hereditary disease, or all who have any inherited tendency or predisposition to any disease (sometimes manifested in a weakness or imperfect development of certain organs) should be protected as far as possible from everything which may prove to be an exciting cause of the disease—from everything which may develop the latent tendency. And they should be surrounded with the most favorable hygienic conditions, in accordance with the rules, etc., laid down further on in this book, relating to the material causes of disease. Besides this, the different predispositions require somewhat different or special hygienic management.

The descendants of consumptives, especially, should, live in high, and dry, but protected, localities. They should be most of their time in the open air and sun-shine, and carefully expand and develop the chest and lungs; and with a plain but nutritious diet, use a full proportion of fatty and oily foods. It will often be advisable for individuals in whom the predisposition to the disease is strong, to select as a place of residence some locality or country with an equable climate, specially suited to such cases.

The descendants of the apoplectic and gouty should observe the most rigid temperance, especially in the use of alcoholic drinks and animal foods. With a vegetable diet, and milk, a well marked apoplectic or gouty habit may be overcome in a little time. Those with an inherited predisposition to insanity, should be especially guarded from everything tending to worry or irritate the mind.

The marriage of persons with similar predispositions, as with tendencies to consumption or insanity, should be avoided or prevented as far as possible. (Law v. Heredity) statutes can hardly be so framed as to be of much service in this way; but the inculcation of a knowledge of the evil consequences of such marriages may lessen their frequency.

The time will probably come, and it is to be hoped it will not be very long deferred, when much more attention will be given to the prevention of the development into actual disease of hereditary pre-

dispositions; when in cases in which individuals cannot of themselves employ or provide suitable preventive measures, these will be provided by communities or the State. Were such the case, not only would the development of actual hereditary disease be thereby prevented in individual cases, but all hereditary predispositions and tendencies, as well as hereditary diseases, would soon be entirely eradicated. And furthermore, the type itself, the race, would be gradually improved. Who can judge of the limit to which man's physical and mental organization may be developed under proper culture, yet partly to be learned? The influence, for good or for evil, of one generation over the next which is to follow, and the next, and all future ones, is not considered as it should be. We of our day hold in our hands the well-being of the young around us, who will soon be the men and women of their day. And it rests largely with those of the present generation whether those of the future shall be effeminate, diseased, deformed, manifesting want of intellect, and filling lunatic asylums, or, be physically and mentally vigorous, healthy, well developed and progressive.

SECTION IV.

MORAL AND SOCIAL CAUSES OF DISEASE.

The chief causes of disease which may be classed under this heading are intemperance—excesses of every sort—in drinking, in eating, in relation to the sexes—immorality—unsuitable marriages, worry and anxiety, fear, idleness and over-work. All of them tend more or less to impair the constitution of the individual and of the offspring, and to lower the standard of public health generally. As two or more of these causes usually operate together, and but rarely singly, it is difficult to estimate the effects of any one of them separately. For example, the man who is badly fed and badly housed, or who is worried or out of employment, is very liable to be, or soon to become, addicted to the use of alcoholic spirits.

Preventive measures in reference to these causes of disease must be sought for not in statutes of compulsion, but chiefly in the education of the masses of the people in reference to the consequences of such causes and how they may be avoided or prevented.

INTEMPERANCE in anything is injurious to health. It is very well known that intemperance in eating as well as in drinking is a com-

mon cause of disease ; though from the peculiar effects of alcohol on the nervous organization the consequences of excesses in the use of alcoholic liquors are more glaring and manifest than those of over-eating. It is not my purpose here to discuss the question relating to the injurious effects upon the health of a very moderate use of alcoholic drinks ; concerning which there is a wide difference in opinion, even amongst our most eminent authorities. As regards the intemperate use of such drinks, however, there are not two different opinions, and the gravity of the effects is indisputed.

In reference to the nature of these effects, I cannot do better than quote the following remarks of Dr. George Wilson ("Handbook of Hygiene") : "Digestion is interfered with, the physical strength is undermined, and the nervous system becomes seriously impaired. The result of this nervous exhaustion is manifested by the tremulousness of the hands, the twitchings of muscles, and, above all, by the enfeebled will, which, in many cases, becomes powerless, to resist the craving for drink which is ultimately induced. Moreover, the perversion of the nutritive processes leads to fatty degeneration of the heart and blood-vessels, of the kidneys, liver, and other parts ; and side by side with this diseased condition of body there is gradual loss of self-control, with perversion of the moral sense, so that, in many instances, the habitual drunkard becomes eventually a veritable dipsomaniac, whose only chance of cure is restraint in an asylum.

"But these effects, grave though they be, do not end with the individual, for the law of heredity brands the offspring as victims of a diseased organization, manifesting itself especially in a vitiated nervous system. For example, the craving for drink may itself be inherited, or the thieving and cunning propensities developed in the parent to obtain stimulants at all hazards, may become so intensified in the offspring as to render him a born thief and vagabond. Or, again, the parent's loss of mental power and moral discrimination may become displayed in the child as hopeless idiocy or some other form of insanity. Obviously, it is not easy to collect accurate statistics in support of these statements, but the following will suffice for illustration :—Out of 300 idiots in the State of Massachusetts, whose histories were carefully investigated by Dr. Stowe, as many as 145 were the offspring of intemperate parents. Further, speaking in general terms, M. Morel, than whom no higher authority can be quoted, says, 'I constantly find the sad victims of the alcoholic intoxication of their parents in their favorite resorts,—the asylums for the

insane, prisons, and houses of correction. I as constantly observe amongst them deviations from the normal type of humanity, manifesting themselves not only by arrests of development and anomalies of constitution, but also by those vicious dispositions of the intellectual order which seem to be deeply rooted in the organization of these unfortunates, and which are the unmistakable indices of their double fecundation in respect of both physical and moral evil.'

"Not to dwell longer on this topic, I would briefly state that my own experience amongst convicts has fully convinced me that four-fifths of the prison-population are directly or indirectly the victims of intemperance;—directly, as regards the occasional, and indirectly, to a large extent, as regards the habitual, criminals. In other words, the great majority of the former lapse into crime through acquired drunken habits, while the great majority of the latter are congenitally criminal on account of the intemperance of their progenitors."

PREVENTION OF INTEMPERANCE.—In many and various ways philanthropists have endeavored to promote temperance and lessen the evil effects of over-indulgence in the use of spirituous liquors, and doubtless each of all the ways tried has been more or less useful in bringing about the end in view.

As intemperance in nearly all cases arises from a want of sufficient self-control, the only true and lasting remedy for its evil effects will be found to be in so educating the people, physically and morally, as to enable them to control their appetites and desires. This can be done only by developing and strengthening the physical man by general hygienic environments,—pure air and pure water, good wholesome food, judicious and timely exercise, rest and recreation, and universal cleanliness—together with the inculcation of moral and religious precepts and a sense of the evils of intemperance in anything. But this is a remedy the chief object of which is the improvement of future generations, and it cannot be expected to improve in any marked degree the present one. Other means must be tried for mitigating the evils as far as possible among the men and women of to-day.

By example men are greatly influenced, and by means of temperance societies the stronger among the intemperate are encouraged to become total abstainers, and the weaker ones will join in and endeavor to do likewise, and they are not unfrequently successful in their endeavors. Hence temperance societies have done much to promote the cause of temperance. By providing less injurious nerve

stimulants, as tea and coffee, by means of "coffee taverns," the consumption of alcoholic drinks may be greatly lessened. The coffee tavern movement in Great Britain appears to have been a decided success in this way.

Much may doubtless be done by judicious legislation to diminish the consumption of alcoholic drinks, and thus lessen their injurious effects. By the imposing of heavy duties and licences on their manufacture and sale, it becomes more difficult to obtain them, and the quantity used is necessarily reduced. And the imposing of heavy fines and penalties on the habitual or even occasional drunkard, will no doubt check in many the tendency to excesses.

THE EFFECTS OF INTEMPERANCE IN EATING will be noticed in the chapter on foods.

IMMORALITY, WORRY, ANXIETY, FEAR, IDLENESS AND OVER-WORK are causes of deterioration and disease which, like those already referred to, cannot be appreciably prevented or removed by statutes or police regulations. The chief reliance for the mitigation of the effects of these depressing causes of disease must be placed on the education of the physical and moral man, so that he may be able to control his appetites, emotions, and passions.

UNSUITABLE AND INJUDICIOUS MARRIAGES.—Unsuitable marriages as a cause of disease refers to the marriage of persons who from their age or some constitutional defects are liable to procreate diseased offspring. The subject of injudicious marriages refers to the unions of those, usually of the lower orders, who from unthriftiness, idleness, ignorance, etc., are not capable of earning for the large families which usually follow such unions, the means of healthy subsistence. At the present time, especially in this country, there is not a large amount of suffering from this cause, but the time may come when it will be necessary for philanthropists and the State to give practical attention to this subject:

As regards unsuitable marriages, it is well known that marriages between the very young or the very aged are frequently sterile; or if not, the offspring is usually of lowered vitality. The following are the deductions of M. Quetelet, on this point, from a large number of statistics (*Physique Sociale*).

1. Too early marriages result in sterility, or in the birth of children whose chance of surviving to the average period of life is lessened.

2. Marriages which are not infertile are productive of the same

number of children, independantly of age, provided that the average age of the husband does not exceed 33 years, nor that of the wife 29. After these ages the number of children diminishes.

3. The greatest fecundity attends the marriage of men under 33 years of age to women under 26.

4. Other things being equal, those marriages are most fertile in which the age of the husband at least equals that of the wife, or does not greatly exceed it.

According to our best authorities, by delaying the marriageable age of the female to 25 or 26 years, the health of the mother and consequently of the children is less likely to become deteriorated.

But the most serious effects following unsuitable marriages are those in which both parents have a tendency to the same disease, as consumption or scrofula. When both the father and mother inherit a tendency to consumption, the probabilities are that all the children will fall victims to the disease. When only one of the parents inherits the disease, the danger to the offspring is considerably lessened, though not removed; some of the children will probably escape the disease, though others will not. The same remarks are applicable to most chronic diseases, but more especially to diseases or defects of the brain, giving rise to insanity.

In regard to **CONSANGUINEOUS MARRIAGES**, inasmuch as any inherited taint or tendency to disease is more likely to be the same in both parents, the danger to the offspring is increased. Opinions differ as to the effects of these marriages apart from the existence of any disease tendencies. It has been very generally believed, and many statistics have been brought forward to prove, that close breeding, as by the marrying of cousins, leads to sterility or to deteriorations, physical and mental, in the offspring. But these conclusions have not been fully sustained by more recent investigations. It is not probable that marriages of consanguinity between vigorous, healthy individuals will alone give rise to deterioration and lowered vitality in the offspring. And it is quite possible that such serious consequences as have been attributed to these unions may arise from other than consanguinal causes,—may arise, in fact, in the offspring of those not related by blood, arise by reason of inherited tendencies and predispositions.

ON WATER AS AN AGENT IN THE SPREAD OF DIPHTHERIA.

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The facts I am about to state are, so far as my researches have extended, either almost entirely unmentioned, or else negatived, by standard authorities. As, however, there are reasons for believing that the point in question has not yet been thoroughly worked out, I seek criticism on the evidence, which, after more than ten year's study of various diphtheritic outbreaks, at home and abroad, in town and country, I have collected respecting what appears by no means an unimportant factor in the production of diphtheria—its transmission, namely, by the agency of water.

To avoid possible confusion, I wish it to be understood that I speak of diphtheria as referring to a specific disease, specially characterized by lesions almost invariably localised, at their commencement, in the upper part of the fauces, having a peculiar exudation membrane, and followed by more or less albuminuria, blood poisoning, and paralysis; and that I exclude 'genuine croup,' 'laryngitis stridulosa,' 'muguet' and various forms of 'tonsillitis' and 'scarlatinal' mischief.

Whether this complaint be termed 'diphtheria,' 'contagious synanche' (with an s), 'membranous laryngitis,' 'angina membranacea,' or anything else, it is still one of ill odour, and all avenues by which it may attack the human citadel should be carefully watched and rendered impassable. Without deciding on the correctness of the assertions made by Oertel, Nassiloff, and Ringer, as to its causation by special micrococci, or the denial by Senator that any micrococci beyond the common micrococci of putrefaction are concerned in its origin, it will be allowed, I think, that it is due to a peculiar contagium, and that this contagium probably assumes the form of minute particles, capable of floating in the atmosphere and attaching themselves to various substances; that the exhalations, various matters ejected from the mouth, and even the excreta, of a diphtheritic patient, are infectious, and that the malady has been known to be communicated (*a*) by direct inoculation, as through coughing, kissing, or the partaking of infected food; (*b*) by inhalation of air, surrounding the sufferer, or derived from a sewer or cesspool in his vicinity. Conceding this, there is surely no choice but to admit that water not only may be, but must be, and is very frequently, an active agent in the spread of diphtheria.

Anyone who reflects that diphtheria is far more prevalent in a rural than in an urban district, in spite of the pure air of the former, and the crowded condition of the latter ; that isolation, easy in one, is practically impossible in the other ; that a city water-supply is, as a rule, much less subject to systematic pollution than that of a country place ; that disinfection is more likely to be thoroughly carried out in the town than the hamlet ; that the discharges from the sick and their necessary cleansing waters usually find an exit into a sewer of the city, and a cesspool of the villa or cottage, cannot fail to perceive that the country water is almost certain to be poisoned with diphtheritic contagium, should such be present in its vicinity ; and that, thanks to the execrable closet cistern so abundant in towns watered on the intermittent system, city water must probably often contain this same venom, whether it be bacterial or gaseous. Reviewing these facts, I must own that the absolute omission of diphtheria in almost every book on hygiene and medicine I have yet read from the list of sicknesses due to contaminated water, appears to me a perfectly incomprehensible oversight.

All sanitarians well know how the water-supply in a district where diphtheria is present is largely exposed to the chance of receiving its contagium, and in the country can hardly escape it. Almost universally, the same water is used for cooking, drinking, and washing purposes, without any, or at best an imperfect filtration. Assuming that this water contains diphtheritic germs (which, according to Drs. Thursfield, Dr. Mackenzie, and others, have retained their vitality, in some recorded instances, for quite three years), are not these likely to be implanted, not only in the throat and food passages of drinkers, but also on the walls and floors of apartments, of course, in the latter case, by the process of washing and drying, and being thence subsequently detached, to find a nidus in man or animal, and thus be the cause of a future epidemic ? May not the sudden and simultaneous appearance of diphtheria in various houses, sometimes observed to have had no communication with each other, and where no contagion is to be traced, be thus accounted for ?

Is there not a probability of diphtheritic virus being in this manner accidentally transferred to a house where the complaint has been hitherto unknown, and of remaining harmless for a time, till a fitting prey is provided in the person of a child or otherwise susceptible subject ? And may we not thus explain the uncertain periodicity and location of diphtherial invasions ? I am at a loss to compre-

hend how anyone accepting the doctrine of a fluid transmission of scarlatina and typhoid can refuse to allow the same privilege to diphtheria. The verdict, after due inquiry, should, I submit, be rather, 'not proven' than 'not guilty.'

This appears to be also the opinion of Mr. Power, of the Local Government Board, who, in his recent valuable Report respecting the prevalence of 'throat illness,' as he terms it, in the North of London last spring, attributes the origin of the outburst he was directed to investigate to the milk-supply of parts of that locality becoming affected, and states that he has only arrived at negative conclusions as to how it was vitiated.

He is not disposed to credit water as a cause of the milk infection, since the milk vessels at Kilburn Dairy, one of the two centres of propagation, were washed 'with good West Middlesex water,' and the well at the other was 'of doubtful character.' But, as he states that the sanitary arrangements of most of the houses in the affected districts are faulty, and the sewers often 'strangulated,' and we know that this London district does not differ from others as to the presence of closet cisterns serving in a threefold capacity as ventilators for the sewers, flushers for the 'w.c.s,' and drinking water tanks, and also as to the adulteration of milk with water by retailers, after its purchase from the dairies, there is some *prima facie* evidence against water as a not unlikely accomplice of the guilty milk. The facts, which now from my own experience, I am about to lay before you, will perhaps justify my audacity in venturing to differ from Trousseau, Squire, Röth and Lex, Sannie, Seiz, Parkes, and de Chaumont; and the corollaries I gather from it are, at all events, unbiassed.

Diphtheria first came under my notice in 1859, whilst serving Her Majesty on the Australian station. The mails of 1858 had brought us news of it as a pest in Europe, and the heads of the profession in the Antipodes were on the look-out for its importation. Nine cases were detected in Sydney, the origin of which baffled everyone's inquiries, as did the first few of the 200 odd seen in North Tasmania. All the emigrants have to leave the old continent in good health, and had any been sick from communicable disease on the voyage, or when entering their respective ports, they would not have been permitted to land without undergoing a rigid quarantine. Certainly, in Sydney, at that time, there was every facility for the spread of zymotic disease, for the city, in its sanitary aspect was much like London at the date of the first Health of Towns Commission; but diphtheria

showed itself soon after an arrival of emigrants, and as no primary infection could be discovered, if, as was universally supposed, these people introduced it to the colony, they must have brought its germs there in their clothes and belongings, and developed it by washing their property on shore. As the insanitary conditions were then much the same as they had been since its foundation in 1799, and no diphtheria had been previously known, this new ailment was judged to be brought, as well as certain moral ones, from the mother country, the physical evil rather by the agency of washing than of drinking water (a beverage scarcely ever partaken of there without wilful adulteration.)

In December 1870, a case of primary diphtheria, of most severe type, occurred in the family of a gentleman residing in a village in East Kent. The water-supply of his house was taken from a sewage-polluted river, running through his grounds. Its sanitary arrangements were said to be perfect, an assertion to which, with my present cognisance of hygiene, I must demur.

In spite of the most complete isolation of the patient from the first, and of every successive case subsequently occurring in the dwelling, not one of the household (fourteen persons in all) was exempt from the epidemic, the latter patients being nursed by the convalescents, who thus reciprocated their friend's attentions.

Between Christmas 1870, and March 1871 forty cases came under my care in the parish, four of which, in one house, that of a carpenter, were fatal in less than a week from the appearance of the first, death being due to the gangrenous form of the malady. Fourteen others, of the croupous variety, were noticed, and the remaining eight were of the catarrhal kind.

The total mortality was one in ten attacks. The water-supply of every house, where not drawn from the river, was from shallow surface wells in superficial gravel, usually close to cesspools. We could hear of no diphtheria within a radius of seven miles, or indeed within our ken, and my predecessor informed me that there had been no instance in the country-side for quite ten years. The affected houses were variously situated, some on high land and dry soil, some near woods, some in 'bottoms,' and close to springs or damp ground, some on the river bank, some singly, some in groups, but one and all were in the immediate proximity of hop grounds. Within a week of the first seizure, I had five more distinct and separate foci; and after the strictest investigation I could not trace their origin to any direct communication with each other or with extrinsic sickness. I

have mentioned the previous immunity of this parish. I may state that during the next six years there was one solitary instance of diphtheria there. What was the exciting cause of this epidemic I have now reported? Does it not appear fairly attributable to accidental water pollution, probably fæcal, possibly manurial, rather than to direct personal contagion, or atmospheric miasmata?

In the spring of 1872, I had to attend twenty consecutive cases of diphtheria in another Kentish parish, situated on the top and sides of a chalky undulating down, with water entirely furnished by surface supply, there being no river within some miles. I noted four separate sites almost simultaneously invaded, which were widely distant, and never, from the first, had any communication with each other, except through the visits of clergyman and myself. There were no more diphtheritic patients to be heard of in that part of the country. Three of the victimised places were detached cottages, in various parts of a plateau. The fourth was a collection of four single houses and one double one, arranged as three sides of a square, on the top of a high table-land, the fourth side being open. The sanitary appliances and surroundings of all the buildings in which there was diphtheria were of the customary rural type, pigsties, cesspools, and wells being in close proximity, and the wells, in addition, all fouled by surface drainage of the neighbouring hop gardens. Their water, in each case, gave ample evidence of organic pollution by rough qualitative tests. The inhabitants of the square were supplied by a single central well, and in every house having children, with one notable exception, I witnessed diphtheria. This exception occurred in a part of the double house whose occupants would not drink from the well, but brought water (which, on examination, proved fairly pure) daily from a neighbouring farm. The square swarmed with children, and the five families being more or less related, carried on the freest intercourse between sick and sound during the prevalence of their malady. Their mortality was also one in ten. The hop gardens were then being largely manured with 'fish stuff,' and the first case happened in a solitary house, nearly a mile from the village street, and directly underneath one. Here was a probable instance of water pollution, as hop manure is not seldom a compound of the vilest town filth and refuse.

That the well in the square was an agent in spreading diphtheria seems proved by the exemption of those who did not use its water, but were otherwise exposed to the same chances of infection as their neighbours who did.

In 1875, I met with seven cases of diphtheria in the family of the master of a railway station in another Kentish parish, and two others nine in all. I could ascertain no previous contagion, but found the existence of the customary polluted shallow well, close to the public latrine, the whole premises being isolated, standing on a lofty chalky embankment. Two casual visitors to the station (not to the dwelling-house) who drank some water in the waiting-room also contracted the disease. There was no more of it before or afterwards in this parish while I knew it.

Was not this an example of water infection? Taking my Metropolitan experience as a Medical Officer of Health, now of one year's standing, I find that in every house which I have inspected after the occurrence of diphtheria, the water cistern or butt has given me a much larger quantity of organic ammonia than it should have done. The water-butt was invariably associated with defective drainage, allowing a free escape of sewer air into the court. The cistern never failed to receive and store whatever gases, harmless or lethal, chanced to pass through the house-pipe and sewer.

I would suggest to you that in the country epidemics I have mentioned, at their commencement, no direct personal contagion could be made out, although it was anxiously sought for; that ærial infection seemed everywhere contra-indicated, owing to the open and breezy situation of nearly all the implicated dwellings; that in all the drinking water was organically impure, and received surface filth of every description, and that in the town cases there was also clear evidence of water pollution by sewer gas or fetid emanations, if not by actual deposit of dirt. And I venture to submit that I have therefore supplied some of that 'evidence' which is by Dr. Parkes and others deemed 'still wanting' to prove the 'production of diphtheria by contaminated water.' If I am in error I share (as I find since I commenced this paper) my heresy as to one form of the causation of diphtheria with such men as Drs. George Johnson, Wynter, Blyth, George Wilson, and Morell Mackenzie.

But the fact that I have just succeeded in infecting two kittens with this disease, by feeding one with milk mixed with water in which I had kept diphtheritic false membrane and sputum, and the other with milk adulterated with water taken from the cistern of a house where a fatal case of diphtheria had recently occurred, causes me *permissu superiorum*, to maintain the opinion which I have always entertained, that diphtheria may be, and often is, spread amongst the

community by the agency of water. [Microscopic sections of the diphtheritic membranes from these animals were shown after the meeting, and pronounced to be identical with specimens taken from human beings.] In some recent reports as to the sanitary condition of various residences tenanted by illustrious families who have suffered from the ravages of diphtheria, I have seen no mention of the details of water-supply. Probably this point was over-looked ; possibly it seemed better to the reporters to preserve a judicious silence regarding it.

In any case I am sure I shall meet with cordial support as to the absolute necessity of improving the present system, if not of water supply, of water reception and storage in towns, and of providing water in the country.

TYPHOID FEVER AND MILK.

An account of an outbreak of typhoid, traced to the milk supply, has reached us from the Antipodes. The medical officer of health for Melbourne has reported to the City Council that a milkman who had typhoid fever in his family had been supplying milk in a certain neighbourhood of the city, and that no fewer than fifteen cases of fever had broken out amongst his customers. One of his children has since died of the fever. Mr. Girdlestone thus traces the origin and progress of the outbreak. 'After a careful examination of the locality, and a house-to-house visitation, I have come to the conclusion that the exact origin of the recent outbreak of fever is, as usual, obscure. But there can be no doubt that the disease has been communicated through the milk supplied by one dairyman, in whose house there was a case of typhoid fever which terminated fatally on the 2nd inst. A brief history is necessary to throw light on the course followed by the contagion. In 1878 there were two cases of typhoid fever in a house in Jolimont Terrace, on the high ground, which is at the eastern side. One of these cases terminated fatally at the end of the year, and was quickly followed by two other cases in the same house. In January, 1879, the family moved from this house to the country, and there has been no case in it since then. They used to keep their own cow which was fed at home. In November 1878, a gentleman, then residing with other members of his family at 8 Jolimont Place, was also attacked with the same kind of fever. He recovered in the following December. The disease did not spread, but the family left the neighbourhood on the 1st inst. While at Jolimont

they took their milk from Baker's dairy. The next case occurred in the same street as the last one mentioned, a few doors lower down the hill, at 3 Jolimont Place, on or a little before March 19, 1879, in the young man who died of the disease on the 2nd inst. His father, a milkman named M'Auley, served a good many families in the neighbourhood, and continued to follow his calling during his son's illness and after his death. He used to keep four or five cows, which were milked in a small, confined backyard, behind the house, where also the cans were washed. I am informed that his Jolimont customers were for the most part supplied with milk from these cows, and it was frequently, or perhaps always delivered by one of his children. He also kept cows in the country, whence he received a considerable quantity of milk for other customers. But the carts which carried the country milk frequently called at his yard at Jolimont Place. Soon after his son's death M'Auley left his residence at Jolimont, but continued to supply milk. I am obliged to refer to this particular dairyman, because all the cases, or nearly all (there being one only which may be doubtful), which subsequently occurred in Jolimont, were among his customers. The result of my investigation is that I have obtained statistics from the 74 different families or households, the domestic servants included, which virtually comprise the whole of Jolimont. Only two or three small families—about six or seven persons—are omitted, owing to absence or other causes. Since January 1879, typhoid fever has appeared in 11 different houses. The first of these attacks was on, or perhaps one or two days before, the 19th of March, and at the dairy in Jolimont-place, as already stated. The next two cases both occurred on the 25th of the same month, in a house in Jolimont Square. From this day to the 15th April inclusive altogether twenty persons residing in Jolimont in ten different houses were attacked. There has been no fresh case after the 15 inst., and no death in the twenty cases. Some are convalescent, but the majority are still ill. Twenty-eight Jolimont families took their milk from M'Auley during the time his son was ill, and it is most significant that all the subsequent attacks in the locality occurred among these persons. That is to say, out of twenty cases of fever nineteen received their regular milk supply, as just stated, and the remaining one, a girl aged nineteen, visited the dairy three times, and took home about a pint of milk on one occasion, of which she drank some in her tea, and a portion by itself, unboiled, eight days before she became ill. Of the remaining families, forty took their milk from other dairies, and of five houses the source of supply is

unknown, but in these forty-five households not a single case of fever has taken place. Moreover, infected milk is not confined to Jolimon, and although there are difficulties in tracing its ramifications, I have discovered six houses in other localities in which twelve persons, all supplied with M'Auley's milk, were attacked with typhoid fever between March 23 and the 15th inst.'—*Sanitary Record*.

ATHLETIC SPORTS.

The contests between professionals in rowing, wrestling, pedestrianism, etc., have, particularly during the past year or so, stirred up quite an interest throughout the country, and have produced quite a number of amateur imitators. The extent to which these athletic sports is practised is sufficient to call the attention of the medical profession to them. While we regard the interest manifested in these things as a healthful indication, we cannot close our eyes to the dangers to which an indulgence is subject. Youth is given to excesses, and a wholesome restraint in the matter of athletic sports is as well-timed as it is in other directions. Professional athleticism is physically, as well as morally, an evil, the only redeeming feature of which lies in the stimulus it has a tendency to give to physical culture in the community, for men are more wont to admire physical prowess than mental acumen, and it is well that it is so; for without strength of body, masculinity of body is never found. The tendency of modern education, and especially in this country, is to the development of the mind to the neglect of the body. While such a system is favorable to production of that "cuteness" which is an American characteristic, it does not produce that robustness of intellect which always takes the lead. We can afford, therefore, not only to tolerate, but also to encourage the exhibitions of physical endurance and muscular activity which have been more than usually abundant lately, seeing that their evil physical effects at least, are confined to those who undertake them, and are willing to run the risk of the dangers incident thereto for the money and the *eclat* which are the direct outcome. Such exhibitions, however, should not be held up as examples for emulation by the youth and young men of the country; they are useful only for the interest they excite in that which they are an abuse of.

A proper amount of physical exercise is necessary to bodily as well as mental health; that is a fact which goes without saying. When indulged in systematically, and with a view to bringing into play muscles

which are but slightly worked in the ordinary avocations of life, and in those of sedentary habits and leisurely lives, exercise is undoubtedly a prophylactic against disease. Such exercise should be incorporated not only in the training of youth, irrespective of sex, but should be strongly recommended to all whose avocations do not call for much muscular exertion. Its effect is, moreover, salutary, in that it conduces to a healthful restraint to passion and appetites whose indulgence is fostered by lives of indolence. Every observer must have noticed the diminished power of self-control in those leading such lives, as well as in those who have been depressed by disease.

The danger arising from athletic sports lies in the physical exhaustion which follows an excessive indulgence in them. Natural pride has very often prevented the youth from submitting to his rival until compelled to give in from sheer exhaustion, and he has regretted his indiscretion for years, if not for the remainder of his life. The oarsman who breaks down in a race, or the pedestrian in a match, never fully recovers. This is a fact which it is the duty of medical men, as hygienists, to impress on the public mind.

A noteworthy fact is the influence which mental training has on muscle. The finest athletes are those whose attention has not been given solely to physical training. In the tests adopted in the British army this fact has been conspicuous. On the authority of the Duke of Cambridge, Viscount Bury, and Lord Cardwell, the men who now enter the army under these tests, while, for the most part, remarkable for their physical, are also remarkable for their high average intellectual qualifications. It is true, instances of great strength may be pointed out among those of low mental calibre, but that "staying" power which is the best evidence of a sound constitution, and which is of so much importance in the soldier, is found, under the tests adopted, to much the largest degree among those who exhibit evidences of mental training. The superior efficacy of an educated soldiery is therefore owing to other causes than the intelligence which they bring to bear on the discharge of their duties. The Greeks combined great physical strength with great mental power, and though it is usual to regard the latter as due to the former, it is more than probable that the relations of dependence were just the reverse. It has been well said, if you train a man's body only you make a magnificent brute; but train his body and mind and heart, and you have a magnificent specimen of humanity.—*Mich. Medical News.*

EXPERIMENTS ON DISINFECTION.

Two sets of important researches on disinfection have been lately going on at Berlin. In both, the test of the efficacy of the particular disinfectant used has been the effect produced by it either in destroying bacteria and vibriones in putrid fluids exposed to its action, or in preventing their development in a form of "Pasteur's fluid," in which the objects that had undergone disinfection in various degrees were immersed.

The first experiments, those of Dr. Mehlhausen, Director of the Charité Hospital, refer chiefly to the disinfection of rooms in which scarlet fever and other infectious cases have been. The result arrived at is that the most energetic and cheapest disinfectant is sulphurous acid. Chlorine gas has the disadvantage of destroying clothes and furniture exposed to it, while it is less easy to manipulate, and four or five times as expensive as sulphurous acid. Twenty grammes of sulphur per cubic metre of space destroy, when burnt in a closed room, all bacterial life in sixteen hours. Besides blocking up the doors and windows, Mehlhausen advises that the room shall be previously warmed, if the weather is cold, in order to prevent the gas finding its way into the neighbouring apartments. It is also advisable to damp the floor before lighting the sulphur, so as to profit by the great solubility of sulphurous acid in water. Eight hours is long enough to keep the room shut up after the sulphur begins to burn, and at the end of that time any clothes or bedding in it will be effectually disinfected. Mere free exposure of an infected room to the air by allowing the windows to stay open several days is not enough to disinfect it. This has been practically proved at the Charité Hospital after scarlet fever and measles in several instances.

The second series of experiments was made by Dr. Wernich of Breslau, in the chemical laboratory of the Berlin Pathological Institute (*Centralblatt Med. Wiss.*, No. 13, 1877), upon the disinfecting power of sulphurous acid and of dry heat. The method adopted consisted in preparing an "infecting material" by steeping woollen threads, pieces of linen-rag, and cotton-wool, previously proved to be free from atmospheric organisms, in putrid solutions of fæces or meat, and gently drying them. These substances were then tested for their capability of producing bacteria by means of the modified Pasteur's fluid above mentioned, which consisted of distilled water

100 paris, cane-sugar 10 parts, ammonium tartrate 0.5 part, and 0.1 part potassium phosphate. This solution was freshly prepared before each set of experiments, filtered, boiled for half an hour, and immediately poured into the test-glasses and preserved with the usual precaution. To test the effect of disinfection, the wool or wadding, after exposure for a definite time to a definite degree of heat in an oven, or to a measurable volume of sulphurous acid in a bell-glass, was immediately transferred to the Pasteur's fluid, and the efficacy of the disinfectant was estimated by the rapidity of development of bacteria if such appeared, or by their complete absence, as indicated by the fluid remaining perfectly cloudless. It was thus found that 3.3 per cent. of sulphurous acid by volume failed even after many hours to prevent the development of bacteria, but that if the amount of gas reached from 4.1 to 7.15 per cent. by volume of the contents of the bell-jar, and the process had gone on for at least six hours, no bacteria at all developed. On the other hand, while exposure to a temperature of 110° to 118° Cent. even for twenty-four hours failed to destroy the bacterial germs, five minutes' exposure to one of 125° to 150° Cent. invariably succeeded, and the test fluid remained clear even for eleven days or longer. Dr. Wernich specially reminds us that his results must not be taken as applicable to all forms of bacteria, some of which probably require severer measures for their complete destruction. He also points out that it is easier to disinfect wool than linen, and that cotton wadding is the most difficult of all to free from infectious germs.—*Medical Times and Gazette*, Lond. June, '79.

JADED HEADS.

The school of popular morality which ruled a generation ago is responsible for no little mischief: and its teachings have not yet quite gone out of fashion. It knows but one virtue—unceasing application to work or study; but one sin—the neglect of business for recreation. For a man to stop work to rest himself or to play was a symptom of inherent laziness, or worse, an inclination toward moral, mental, or physical dissipation. Untiring industry, even when unnecessary, was raised to the topmost pinnacle of social virtue; and to say that a man “died in the harness,” was to pronounce the highest eulogium.

A reaction has taken place; yet the fashion of overdoing still compels many a man to toil on unnecessarily after the physical and mental strain has become all but unbearable: and too often, by the time a

man has trained a young family to life conditions which only a large income can sustain, he breaks down and leaves his children to bear the brunt of a poverty made tenfold more severe than it otherwise would be by the daintiness of their previous living. And even when the broken down merchant or professional man leaves his family a competence, they are very apt to inherit an ill-balanced and ill-nourished nervous system, which makes a positive and sustained enjoyment of life an impossibility.

In a recent lecture in this city, Dr. G. R. Agnew said that if there is more nervous disease in this country than elsewhere, it is because the average American youth is supposed to be able to do anything. Men should know on what points they are ignorant, and so escape many damaging strains. Mental application does not weaken the brain. It strengthens it, if not carried to the length at which wholesome food and plenty of sleep fail to refresh it. Never in any age, said Dr. Agnew in another connection, have man's faculties been so taxed as now; and the great problem is for each man to do his share of the world's work and keep well. The civilization of to-day does not call for any faculties that a man does not possess; but it calls upon him to use in the best manner the faculties he has and learn how to bear the strain of living.

One of the first and most imperative symptoms that the strain of living is becoming too great is the jaded head, which Dr. Agnew described as one that cannot be depended upon for a long stretch of work, that grows weary prematurely, that has to be coaxed from the pillow in the morning, and that does not force the work of the day cheerfully. "There are more of such heads than might be supposed. They are found in every rank of life; but chiefly among persons of sedentary pursuits and among both sexes and almost all ages above fourteen. Generally the early symptoms of the malady is discomfort during headwork in the back of the head and in the upper part of the spinal region. He is a happy man who meets this symptom with rest, and seeks in sunlight and fresh air some fresh investments for his nervous system, and drops every habit that does not do him positive good. If he takes to artificial stimulants for relief, he will begin a career which, soon or later, will place him among the incurables or bring him to an untimely end. Alcohol and all sleep-producing drugs are dangerous in the highest degree; for they mask the malady, without curing it. No organ in the human body is so abused as the brain, and no organ is so well fitted for daily use.

Still, the brain is not so susceptible to disease as some suppose. It was probable there was not a man present who had not during the day abused his brain by overwork, anger, tobacco, alcohol, fuss, hurry, too little sleep, too much sleep, by indolence, by not studying to be quiet, by not doing his own business, by attempting to do something beyond his reach, by attempting to do something for which he had not been sufficiently educated, by carrying an evil conscience, or by the unmanly strain of trying to outdo his neighbor. The remedy of the jaded head is the giving up of all habits which cannot be defended by the highest kind of reasoning; the careful determining of each man of his ability to stand work; the avoidance of doing anything for which a man has no adequate education; rest, recreation, and the keeping up of the tissue-building powers by wholesome food."—*Scientific American*.

THE CONTAGIOUSNESS OF TYPHOID FEVER.

As a contribution to this subject, the following well-worked-out account, by Dr. Armistead, of a limited outbreak of typhoid fever last year in one of his districts will prove interesting.

On October 10th, R. S., a servant girl, was taken ill with typhoid fever, at the Vicarage at Dunmow, and went to her home at Lindsell on October 12th, where she died on November 10th. Her sister took her place at the vicarage, and was taken ill with typhoid fever on October 22nd; was removed to the Workhouse Infirmary on October 26th, and recovered. From what source the contagion was introduced into the vicarage, in the first instance, is still doubtful; and whether the second case took the contagion at Lindsell on October 12th, or at the Vicarage after she arrived, is also doubtful. In either case the period of incubation of the disease could not have exceeded ten days. At Lindsell, after R. S. went home, the disease spread to her father, who began on October 26th; and on October 31st, to a niece living in the same cottage. The next victim was a girl, aged 10, living in the next cottage but one, who, on or about November 1st, took some milk to R. S., and began with typhoid fever on November 15th. Another girl, about the same age, living in quite another part of the parish, when on her way to a school one day, near the end of October, called at S's cottage for a drink of water, and on November 15th (14 days afterwards), she began with typhoid fever.

Some observations of great value on this subject are also contained in the last report of Dr. Bond on the Gloucestershire combined

sanitary district—a report which is brimful of interest to the student of etiology. Dr. Bond gives an interesting sketch of the course of an outbreak of typhoid fever, which commenced at Cirencester and worked its way back to its point of origin some six months after, having made a circuit of ten or twelve miles. A young woman who had been in service at Cirencester went home to her village with enteric fever. An impression got about in the neighbourhood that the disease was not infectious, and the result was that a sister, who was allowed to sleep with her, took the disease, and she was followed by three other members of the family, and by the occupants of a neighbouring cottage, who had been in the habit of frequenting the infected house. From this village the disease was carried to another three miles off by a man who visited a house in the first village, where his brother was lying ill with typhoid, and took away two children to his own house. The man and his father were both attacked by typhoid and the father died. Two younger sons who, though they slept in the house with their father and brother for a few days after the latter were taken ill, were removed as soon as the nature of the illness was distinctly made out, were also struck down, and one died. Meanwhile an old woman who was sent by the Board of Guardians as a nurse to the family, and who, having acted for some years as a nurse in an infectious hospital, might have been thought to be fever proof, succumbed to the disease. From this case, or possibly from it and another, the infection spread to a young woman, who appears to have washed their clothes, and here it seems to have rested.

The moral of this little history Dr. Bond takes to be that what is commonly called ‘typhoid’ fever is, under certain circumstances, an excessively infectious disease. Whether it be communicated by emanations from the sick person himself or from his excretions, is practically not a matter of much moment, so long as it be once admitted that the atmosphere of the sick room and the clothes and other harbourers of infection which have come from it may be the media through which it may find its way into the system of susceptible persons, and so infect them. ‘To some persons,’ says Dr. Bond, ‘such an inference may seem to be so obvious as to be a mere truism; and yet it is certain that there is a considerable number of medical men, who, from their experience of the general impunity with which typhoid patients are treated in the wards of general hospitals, and in the well-ventilated rooms of the well-to-do, without the disease spreading, assume that its infectiveness is not more virulent in the cottages of the poor. I am convinced that such an idea is most fallacious,

and that, even admitting that all forms of continued fever are not equally infectious, it is much better to err on the side of excessive caution, and to prohibit unnecessary communication between the healthy and the sick, even in cases of simple continued fever, than to run the risk of allowing an apparently mild type of the affection to develop, as it appears often to do, into a virulent one, by transference into more congenial soil.'—*Sanitary Record*.

THE DANGER IN KEROSENE OIL.

It is simply to be set down to good fortune if one who has employed the light oils for household purposes has escaped injury, since no amount of care can avail against the inevitable result which must follow one accident. It is easy to understand how persons ignorant of the highly dangerous character of the light petroleums may unknowingly make use of them in the manner above named; but it is really a matter of concern and surprise that so many, even of those who are thoroughly aware of the nature of the incendiary they are introducing into their households, are, nevertheless, thoughtless or indifferent enough to continue the suicidal practice—for no term can be too strong to properly characterize the fearful nature of the risk one is constantly running while employing these oils in the household.

There seems to exist a notion that the explosive or inflammable properties of the light petroleums can be effectually neutralized by adding various substances to them. The Patent Office records for the past few years contain numbers of claims for such mixtures of naphtha or gas'oline, with a great variety of substances too numerous to mention.

Whether or not the inventors of these recipes really have faith in the claims they present is a matter of small importance; but the deceptive illustrations which they are able to offer in vindication of their assertions, no less than the attractive names which they attach to their incendiary mixtures, are the sources of many distressing calamities.

There is one simple and, for practical purposes, satisfactory method of determining the character of all such mixtures, and which applies equally as well to the common oils. Let a few drops be poured into a saucer and apply a match; if the material burns, reject it as unsafe. The fact that the material can be set on fire at

the ordinary temperature of our dwellings should be sufficient evidence to a person of ordinary intelligence that, when employed in the household, it may, at the first thoughtless or careless act, become the cause of a frightful accident.

Now for the reason why these dangerous oils find their way into the market in defiance of legal prohibition :

The crude petroleum, as it comes from the wells, is not a simple substance, but consists of a mixture of a number of oils. The operation of refining the crude product consists essentially in subjecting it to a system of frictional distillation, whereby it is separated into some six or seven products, to which the commercial names of rhigolene, gasoline, naphtha, benzine, kerosene, etc., are attached.

The benzine or naphtha makes up generally about 15 to 20 per cent. of the crude oil, and for this the demand in the various industrial arts is by no means equal to the supply, in consequence of which it commands but an inferior price in the market ; in fact, considerably less than that demanded for the burning oils proper. Here, then, exists a direct temptation to dishonest or ignorant manufacturers and dealers to adulterate their stock of burning oil with oils of inferior price and dangerous quality. To what extent this reckless practice is carried on the community have no just conception, but the writer feels safe in asserting that it is as general as any of the trade adulterations.

So general has it been practised, in Philadelphia at least, that only three years ago an examination of 3,000 oil samples sold in various parts of the city and its suburbs showed that not more than one-twelfth of one per cent. of all the burning oils sold in the shops of this city were of sufficiently high grade to pass the fire test ; and it may be added that there is no reason to suppose that any improvement of this condition of things has taken place since the time when the examination was made. The constant occurrence, therefore, of accidents with coal-oil—so long as the cheap and highly dangerous products of the refinery are indiscriminately used to adulterate the comparatively safe-burning oil, the kerosene, or doctored, with equal impunity, into the numberless burning mixtures with alluring names that meet one at every turn—is a perfectly natural result, and one that should occasion no surprise. And so long as inspection is a farce, and the inspector and vender are beyond the pale of legal accountability for their deeds of omission and commission, just so long will coal-oil murders and disasters continue to be deplored.—*In Sanitarian, from Polytechnic Review.*

ON OZONE IN RELATION TO HEALTH.

BY HY. DAY, M.D., F.R.C.P., London.

AN ADDRESS DELIVERED BEFORE THE SANITARY INSTITUTE OF GREAT BRITAIN AND IRELAND, AT STAFFORD, ON THURSDAY OCT. 3D, '78.

“Since the state of life necessitates the state of death, and since the functions of life are productive of decay, it becomes evident that in the scheme of nature there must exist the means of breaking up all effete and noxious compounds, the resultants of decay, into either their original elements or into other innocuous compounds fitted again to serve and subserve the purpose of vitalized matter. The best agent—perhaps the only agent—suited to the performance of such a duty is that all-pervading elementary gas, which Priestly (its discoverer) called vital air—a gas now universally known under the name of oxygen, and found to be present in our atmosphere to the extent of one part in five. Oxygen, you are aware, is essential to everything that lives ; but, in addition to and beyond this, it enacts the important part of Nature’s greatest scavenger by effecting those very decompositions the necessity for which I have just referred to. It appears that, under certain conditions, this gas has the power of combining with itself, or, speaking more correctly, I believe, of existing in a condensed form. So condensed, we recognize it under the name of ozone, the name having been given to it in consequence of its possessing a very disagreeable odor. It is in this condensed condition that oxygen (ozone) appears to exercise the intensity of its action in a manner so remarkable that I have chosen it, and its relation to health and disease, as the subject of the present address.”

In respect to what ensues when ozone is absent from the air, the speaker said there was a good deal of concurrent testimony as to the connection which existed between the absence of ozone and epidemic cholera. He quoted observations made in India at fifteen different stations, which showed that cholera was at its greatest ascendancy when ozone was either absent from the atmosphere or at its minimum ; that the disease showed a most marked diminution when ozone was registered as increasing ; and when at its maximum the disease ceased altogether if the maximum continued for any length of time. Experiments at Strasbourg in 1854 and 1855, and others by Dr. Moffatt and Mr. Glaisher, pointed in the same direction. The speaker handed in tables showing the atmospheric conditions which prevailed during six months of the cholera epidemic in London, in 1868, and remarked that it was almost impossible to

resist the conclusion that there was some connection between epidemic cholera and the absence of ozone.

As to the part that ozone might be capable of playing in preventing or arresting disease, it was necessary to bear in mind its properties. "Soret's experiments," the speaker said, "prove that it is heavier than oxygen; it is also quite insoluble in water, while its power is intensely increased beyond that of ordinary oxygen, so that air saturated with it destroys dead organic matter with great rapidity; thick india-rubber tubing is quickly eaten through by it, and all ammoniacal products are speedily decomposed by its action. It is, however, principally in its chemical character that we must look for its good effect in preventing or arresting disease."

Ozone is a most powerful oxidizing disinfectant, and it is so in virtue of possessing the power of resolving and decomposing all animal and vegetable putrescent matter into primitive and innocuous forms. A stream of ozone passed through a mass of black, offensive, and putrescent blood effects a change in it as if by magic; immediately, almost as soon as the operation has commenced, all disagreeable odor is removed, it reassumes its florid red color, and coagulation is restored. The products of putrefaction are, as no doubt you are aware, not only favorable to the development of special poison germs, but such products also, by their continued action, prevent the proper oxidation which should go forward in the various tissues of the body, thus causing a predisposition to the action of any poisoned germs to which the body may be exposed. If ozone be diffused through apartments or elsewhere, it not only disinfects, by removing noxious vapors and poison germs, whatever their character may be, but, being itself in the gaseous form, it is inhaled during respiration, and, passing into the blood through the lungs, it oxidizes the used-up and effete matters produced during assimilation and the renewal of the various tissues, thus effecting in no inconsiderable manner a certain resistance to their pernicious influence if retained within the human body.

There has been much discussion as to what the precise nature of disease germs may be; but be they in the form of bacteria, or of any other form, ozone is potent for their destruction. . . . There are other competing disinfectants, such as iodine, chlorine, bromine, etc., but it has always appeared to me that we have in ozone Nature's own provided disinfectant; and, although I admit that artificial states often require the application of means correspondingly artifi-

cial, yet, by keeping on Nature's lines, and using the very means she herself makes use of for the maintenance of life, the continuance of health, and for rendering innocuous the products of the functions of life, we are more likely to effectually attain the object in view than by making use of any other means whatever. The always and everywhere present oxygen needs no expensive process for its production, while its conversion into its most active condition, in the shape of ozone, may be arrived at by means so simple and so inexpensive that on these grounds, if on no other, it stands, at least in my estimation, as the best, the safest, and the least objectionable of all disinfectants. Lastly, ozone admits of being administered as a remedy for disease, and is, indeed, so administered in the form of ozonized oil, ozonized ether, and ozonized water. Here it ranks with remedies containing chlorine, bromine, and iodine. Whether in any respect it may, as a remedy, prove to have greater advantages than any, or all, of these agents, must be arrived at by determining whether it will do what the others cannot do. This, of course, can only be clearly and decisively made out by applying to it the test of an inductive philosophy—a rigid exclusion of all that is ineffective. —*Sanitarian.*

LABOR AS A FORM OF EXERCISE.

Open-air labor is the most effective cosmetic, an almost infallible panacea against all kinds of bodily deformity. But the remedial virtue of labor, *i. e.* sound bodily exercise, is greater than that of open-air life *per se*; for among the rustic population of Scandinavia, Scotland, and Northern Germany, who perform a large portion of their hard work in-doors, we frequently find models of health and vigor; far more frequently than among the inhabitants of Italy, Spain, etc., who pass the greater part of their indolent lives in the open air.

But, besides all this, athletic exercises have a moral value, which our social reformers have strangely failed to recognize; they afford a diversion and a vent to those animal energies which otherwise are sure to explode in debauch and all kinds of vicious excesses. The sympathetic thrill by which the mind accompanies a daring gymnastic feat and the enthusiasm of athletic contests form the most salutary and, perhaps, the only normal gratification of that love of excitement which is either the legitimate manifestation of a healthy instinct, or else a wholly irremediable disease of our nature. The

soul needs emotions as the body needs exercise, and the exciting sports of the palæstra met both wants at once. We try to suppress these instincts, but their motives remain, and if thwarted in their normal manifestations they assert themselves in some abnormal way, chemically instead of mechanically, as Dr. Boerhaave would say, by convulsing the organs of digestion, since the organs of motion are kept in unbearable inactivity. In times of scarcity the paupers of China and Siam silence the clamors of their hungry children by dosing them with opium; and for analogous reasons millions of our fellow-citizens seek relief in alcohol; they want to benumb a feeling which they cannot satisfy in a healthier way.

After finishing his day's work the Grecian mechanic went to the gymnasium, the Roman to the amphitheatre, and the modern European and American goes to the next "saloon," to satisfy by different methods the same instinct—a longing for a diversion from the dull sameness of business routine. There is no question which method was the best—the only question is which of the two bad substitutes may be the worse: the brutalizing, *i. e.*, soul-hardening spectacles of bloodshed of the Roman arena, or the soul and body destroying poisons of the liquor-shop?—*Dr. Oswald in Pop. Sci. Mon.*

DIPHTHERIA.

BY JAMES A. GRANT, M.D., M.R.C.P. ETC., OTTAWA. FROM AN ADDRESS
DELIVERED BEFORE THE BATHURST AND RIDEAU MEDICAL ASSOCIATION.

(*From Canada Lancet.*)

Of the various diseases observed in our section of country, few have attracted a greater degree of interest than diphtheria, and chiefly through the unfortunate circumstance, the death of the Princess Alice, which was a source of deep regret to the whole medical profession. It may with truth be said, that all classes alike in this country sorrow for the loss the Queen has sustained. Diphtheria as a disease has long been known, and its etiology shows it to be not of a continuous character, but rather of apparently unconnected outbreaks and epidemics. It has been traced back as far as the days of Aretæus, and during the 16th and 17th centuries it was observed in Spain, Italy, Sicily and various other parts of Europe, the records leaving no shadow of doubt that the disease which then prevailed was 'genuine diphtheria.' In the next century it was epidemic in several of the more northern parts of Europe, including Great Britain and France, and also in several parts of the Continent. In 1818 diphtheria made

its appearance in Tours, and from that date it has been recorded by various writers as epidemic in France, Great Britain, Canada and the United States. In 1859, a series of questions were framed by Mr. Simon, then medical officer of health for the Privy Council of Great Britain, as points of enquiry for tracing the history of the disease, which resulted in much practical observation. These questions related to the general features of the districts effected; to the duration, extent and novelty of the epidemic in each district; to the local and personal conditions predisposing to the disease; to the degree of communicability of the affection; and, lastly, to the symptoms and forms of treatment adopted. Such heads certainly are of great importance, if carried into operation in the various infected districts in this section of country. The disease was frequently found to be communicable to persons under the same roof. It was also observed to cling to houses once the seat of the disease. It was also considered that if the poison did not arise *de novo*, the material cause was capable of existing and moving from place to place independently of its subjects, and in some instances the transference of the disease was found to be very remarkable. Such also were the characteristics of this disease, as observed in the Ottawa Valley during the severe epidemic of 1860 and '61. In the early part of the present year, several outbreaks occurred—at the Desert, Gatineau, Hull, Papineauville, and the City of Ottawa, manifesting varied degrees of intensity. As is usual during such epidemics, a considerable amount of ordinary sore throat has prevailed, but not in any manner lessening the immunity from subsequent attacks of undoubted diphtheria. The country districts adverted to, in which this disease has recently been epidemic, have been known as healthy sections heretofore; high and elevated; well watered, and thoroughly drained. The few cases which came under my observation this winter, were in the best situations of our city, and in families where every possible degree of care and attention was bestowed upon the children attacked. So much has such been the case, that I have not been able to arrive at any definite conclusion concerning the etiology of diphtheria. I certainly incline to the opinion of Dr. Morrell McKenzie, that the exciting cause of this disease is a 'specific contagion.' My own observation does not lead me to favor the opinion so vigorously advocated by Oertel, that a 'minute fungus is the essential contagium' of the disease. The recent researches of Dr. Beale demonstrate beyond a doubt, that the presence of fungi in diphtheritic deposits, is not of importance, inasmuch as vegetable germs are present in almost every part of the body, in

the normal state. These data are also confirmed by M. Duchamp and other able observers. At a meeting recently held in St. John's Wood, London, and presided over by Professor Huxley, the conclusion arrived at was, that diphtheria was due to defective drainage. The milk supply of the neighbourhood was also set down as the cause of the outbreak of the epidemic. The escape of sewer gas has also been considered as a prolific source of the disease. With all these effects non-existing I have seen the disease in full force, and therefore hesitate to express an opinion as to its precise origin, involved as it is in considerable doubt, not explicable even by the process of evolution, so ably advocated by Dr. Thorne, at the Epidemiological Society, London, in May last. . . .

The restriction of diphtheria, by proper sanitary precautions, is a matter of great moment. Until within a recent date, small-pox was the only disease in which sanitary regulations were strictly enforced. The same precautions are certainly necessary in diphtheria. In our public schools careful enquiry should be made, and a certificate of safety procured from the attending physician prior to the re-admission into the school of those children coming from families where diphtheria has been known to exist. By the strict enforcement of these sanitary precautions, by the local Boards of Health, where such exist, much good may be accomplished, and in carrying out the necessary regulations, the public will receive the hearty co-operation of the medical profession. At present no subject is so widely and so generally discussed as *public health*. The public are seeking information on the sanitary duties by which diseases are prevented and health protected in the widest acceptance of the term.

NEW PRESERVING AGENT.

In the course of a series of experiments made by Mr. H. Jannarch for devising a method for separating the crystallizable sugar from the molasses, a double salt of borate of potassium and sodium was accidentally formed, which exerted an antiseptic influence on the sugar. Further experiment showed this salt to be a most powerful antiseptic agent. It is now being made in larger quantities by dissolving in water equal quantities of chloride of potassium, nitrate of sodium and boric acid, and evaporating to dryness after filtering. The salt obtained is, of course, not a pure borate, but a mixture of potassium nitric borate, potassium nitrate, and sodium chloride. Its action is

very prompt and continues undiminished for a very long time. It has no injurious effect either as regards taste or smell or healthiness of the substances impregnated with it. It is easily soluble in water and quite deliquescent, so that it has to be kept in closely stoppered bottles. It is at present sold for 25 cents a pound.

In Germany it has been extensively used already by butchers, sausage makers, tanners, etc. ; but its most important use is at present in the manufacture of butter and cheese from sweet milk. When butter is made from sweet milk in the ordinary manner, the milk must be kept very cold ; when the 'preserving salt,' as it is called in Germany, is used, the milk may be kept at ordinary temperature without souring, the remaining sweet milk may be worked up into a superior quality of cheese. If 15 grs. of the salt are added for each quart of milk, the latter will keep sweet for at least a week. Fresh meat, game, etc., may be prepared by dipping it into a solution of 1 pound of the salt in 6 pints of water. When the meat is intended to be kept for a very long period, the meat is rubbed in well with the powdered salt in the proportion of $1\frac{1}{2}$ drachm to each 2 pounds of meat. In 24 hours the impregnation is completed, and the meat only needs to be dried. A piece of meat prepared in this manner in January, 1877, was in perfectly good condition in January, 1879. For pickling the meat is prepared in the same manner, and then placed between layers of a mixture of 2 lb. of common salt, $\frac{1}{2}$ lb. preserving salt, and $\frac{1}{4}$ lb. of sugar. In this way the largest hams can be salted in four days. For preserving skins, from $\frac{1}{2}$ to 2 lb. are used, according to size. Eggs are placed for 15 minutes into a solution of 1 oz. of the salt in a quart of water. To preserve beer, wine, etc., it is sufficient to rinse the bottles, previous to filling them, with a solution of the salt in the proportion of 1 : 10, and adding to the beverage itself 8 grs. per quart. For fish, lobsters, oysters, fruit and vegetables the preparation has also been used with the best success.

—*Deutsche Gewerbe-Zeitung.*

COOKS AND DOCTORS.—It is related (*Union Med.*) of a celebrated physician, Phillippe Hecquet, born at Abbeville in 1961, that when he was called to visit any wealthy patient, he frequently repaired to the kitchen in order to shake hands with the *chefs* and cooks, and exhort them to continue to fulfil their occupations diligently. "I owe you, my friends," he would say to them, "my gratitude for all the good services which you have rendered to us doctors, for without you, and your art of poisoning, the Faculty would soon find itself in the workhouse."

COMPETITIVE EXAMINATIONS.—Above all things, let my imaginary pupil have preserved the freshness and vigor of youth in his mind as well as his body. The educational abomination of desolation of the present day is the stimulation of young people to work at high pressure by incessant competitive examinations. Some wise man (who probably was not an early riser) has said of early risers in general that they are conceited all the forenoon and stupid all the afternoon. Now, whether this is true of early risers, in the common acceptation of the word, or not, I will not pretend to say; but it is too often true of the unhappy children who are forced to rise too early in their classes. They are conceited all the forenoon of life, and stupid all ¹ts afternoon. The vigor and freshness, which should have been stored up for the purposes of the hard struggle for existence in practical life, have been washed out of them by precocious mental debauchery—by book-gluttony and lesson-bibbing. Their faculties are worn out by the strain put upon their callow brains, and they are demoralized by worthless childish triumphs before the real work of life begins. I have no compassion for sloth, but youth has more need for intellectual rest than age; and the cheerfulness, the tenacity of purpose, the power of work which make many a successful man what he is, must often be placed to the credit, not of his hours of industry, but to that of his hours of idleness, in boyhood. Even the hardest worker of us all, if he has to deal with anything above mere details, will do well, now and again, to let his brain lie fallow for a space. The next crop of thought will certainly be all the fuller in the ear and the weeds fewer.—*Prof Huxley.*

ERYSIPELAS CAUSED BY SEWER-GAS.—Years ago, the idea that facial erysipelas, or indeed that any variety of this dire disease, could be originated by the entrance of sewer-gas into houses, hospitals, or institutions, would have been condemned as too absurd for credence. Bitter experience, extending over a number of years, backed by the researches of Mr. Pridgin Teale and others, has, however, finally settled the question in dispute. There is now no more doubt that erysipelas is originated by sewer-gas than that typhoid fever is due more often than not to impure water. For instance, at the Old Infirmary, Lincoln, which was situated on a hill above the city, erysipelas and sewer-gas were constantly present in the wards. We remember seeing twelve or fifteen cases there some twelve years ago. At that time the hospital drains communicated with the town sewers; and as neither were ventilated or disconnected, the hospital had the benefit of the full pressure of the sewer-gas of Lincoln, because the hospital lavatories and closets occupied the highest points to which any of the sewer connections extended. At Manchester, as we showed some months ago, sewer-gas had demoralised the health of the staff, and had so increased the amount of erysipelas and pyæmia that the surgeons were afraid to perform even the smallest operation. Recently the authorities of a large London hospital proceeded to ventilate the whole of the drains and sewers in connection with their

institution. Up to the time these alterations were made, pyæmia and erysipelas had almost driven the medical staff to despair. When the whole of the ventilation was completed, and so soon as the pressure was removed from the traps of the closets and lavatories, no fresh cases were found to occur. For months the hospital wards were free from erysipelas and pyæmia. Suddenly, however, there was a fresh outbreak of these diseases, but it was noticed that the epidemic was confined to one of the surgical wards, built apart from the main building on the pavilion plan, and having only one storey. Close investigation proved that the ventilation pipe in this wing had been stopped up by a careless workman. When this was remedied, all trace of the epidemic disappeared, and for four years this hospital has been almost free from these diseases.—*Sanitary Record*.

THE ACTION OF SEWER GAS ON LEAD AND ZINC.—It is impossible to determine otherwise than by experience and observation how long an ordinary lead pipe or trap will resist the action of sewer gas before perforation takes place, but it is certain that a thick one will do so much longer than a thin one, and it is equally true that one efficiently ventilated will serve nearly double the time of one continuously air-bound. I have paid particular attention to the action of sewer gas on zinc rhones on eaves of buildings where it was striking on the under part, and found in the course of a couple of years or so pretty large holes eaten completely through, showing that that material could not long withstand the effect of the gas. Lead is, of course, more durable than zinc, but the difference is only a question of degree, as shown by the fact that, in not a few of the water closets repaired by the officers of the department during the year, small apertures were found in the main vertical lead pipe, and in the cross or horizontal one leading from it to the trap of the closet various perforations were found on the top, indicating clearly the operation of foul air from the drain. Lead traps and soil pipes from water closets, baths, and fixed basins, are all subject to tear and wear, but the traps, being burdened with the additional strain of barring the passage of sewer gas, do their work less efficiently and for a much shorter period than they are generally credited with, hence the necessity for proper ventilation and occasional inspection. There is often considerable indifference shown by many plumbers when sent by their masters to examine into complaints of smell supposed to be coming from lavatory appliances. They usually look for a fluid leakage; and when that is not perceptible they leave, declaring to the complainer that the pipes are all right, when probably a little longer time spent in making a more complete examination would have revealed that such was not the case. They seem to imagine that it is the liquid only which wears holes, and do not even dream that the gas from the drain is the most powerful agent of the two as an element of mischief. This is another fruitful means by which sorrow is brought to many a home. It is indisputable that drain air accelerates decay in lead fittings, and these and their drain

connections ought to be periodically examined. To facilitate this they should be placed in a position of easy access, with their covering left to open freely, and not hidden in an out-of-the-way corner as they usually are.—*Plumber and Sanitary Engineer.*

EFFECT OF DIET ON LIQUOR-DRINKING. — Charles Napier, an English scientific man, has been testing the truth of Liebig's theory that liquor-drinking is compatible with animal food, but not with a farinaceous diet. The experiment was tried upon twenty-seven liquor-drinking persons, with results substantiating the Liebig theory. Among the more striking instances of reform brought about by a change of diet was that of a gentleman of sixty, who had been addicted to intemperate habits for thirty-five years, his outbursts averaging one a week. His constitution was so shattered that he had great difficulty in insuring his life. After an attack of delirium tremens, which nearly ended fatally, he was persuaded to enter upon a farinaceous diet, which, we are assured, cured him completely in seven months. He seems to have been very thin at the beginning of the experiment, but at the close of the period named had gained twenty-eight pounds, being then of about the normal weight of a person of his height. Among the articles of food which are specified by Napier as pre-eminent for antagonism to alcohol, are macaroni, haricot beans, dried peas, and lentils, all of which should be well boiled and flavored with plenty of butter or olive oil. The various garden vegetables are said to be helpful, but a diet mainly composed of them would not resist the tendency to intemperance so effectually as one of macaroni and farinaceous food. From this point of view, highly glutinous bread would be of great utility, but it should not be sour, such acidity being calculated to foster the habit of alcoholic drinking. A like remark may be applied to the use of salted food. If we inquire the cause of a vegetarian's alleged disinclination to alcoholic liquors, we find that the carbonaceous starch contained in the macaroni, beans, or oleaginous aliment appears to render unnecessary, and therefore repulsive, carbon in an alcoholic form.—*Louisville Medical News.*

A PRACTICAL REFORMER.—An occasional protest is raised against the extravagance of funerals, but no one seems ready to inaugurate the reform which few will deny is desirable. Doctors are as much interested in this reform as any. People who consider the undertaker's bill a debt of honor, and who will scrape and save to pay it, are not at all distressed about the doctor's bill. Possibly if the relicts could be persuaded to lavish less wealth on the dust of the "dear departed" they might find it less difficult to settle for the medical attendance. A doctor recently died in England, who, doubtless, often felt, as we all have, the senselessness of the extravagance of modern funerals, and took a sensible and practical means of working a reform. He believed that this reform, like charity, should begin at home, and the following are the provisions of his will, touching his interment :

“There is to be no wake whatever. My brothers and sisters, with their children, are to be the only persons admitted while my body is laid out. No clergyman is to be invited to my funeral: as they do not attend the burial of the poor, they shall not attend mine. No crape, gloves, cypruses, hat bands, or such emblems of mourning, to be made use of at my funeral. The cost of my coffin shall not exceed £1. The money thus saved, amounting to over £60, shall be distributed among the poor of the village of ———, where I have lived for the last thirty-three years.”—*Mich. Med. News.*

BODILY WATER AND HEALTH.—Professor Jager, of Leipsic, has written a book in which he maintains that too great a proportion of water in the tissues and fluids of the body is a predisposing cause of disease. A little observation is sufficient to convince one that there is truth in this doctrine. The rugged, the most healthy, and those capable of most endurance are the spare and the thin. Obesity is inconsistent with health, and obesity is most frequently but another name for a water-logged condition of tissues. The trainer of athletes enjoins as part of the training regimen a very sparing use of fluids. Prof. Jager advises as a guard against disease the ridding of the system of the super-abundance of water. To this end he recommends the wearing of close-fitting woolen clothing throughout the year; all bodily movements which promote perspiration; on outbreak of disease the use of vapor or sweating baths, of drinks that excite perspiration, or of foods that do the same; constant ventilation of sitting and bed rooms, so that the moisture of the air may not become great.—*Mich. Med. News.*

THE INFLUENCE OF TOBACCO ON THE EYE.—Recently several papers have appeared on the above subject, in which the authors assert, with great unanimity of opinion, that tobacco is frequently the cause of diseases of the eye. Disordered vision, which merges into amaurosis, and the general decline of sight, with nervous blindness, are mentioned as quite common. Cases of delirium tremens have been noticed which ceased when tobacco was withdrawn. Facial paralysis and general neuralgia are often noticed. Atrophy of the optic nerve is a common result. All persons who use tobacco in any way, excessively, will have defective vision and color blindness. Myopia is also present, with changeable vision; at one time clear, then cloudy, or very sensitive when concentrated for any length of time on one object. Frequent congestions and weakness may be said to be present all the time. Nearly all the more common functional diseases of the eye are traceable to tobacco.—*Quar. Jour. of Inebriety.*

IMPURE AIR.—A man may eat arsenic, mercury, opium, or drink alcohol in small quantities for a considerable period, without any immediate attack of disease. So may he indulge in gluttony, in debauchery, or engage in the most severe labor of body or mind for a time without bringing on disease. When disease will appear depends

upon the constitutional strength of the individual, the degrees of excess practiced, and the co-operation of other causes. Precisely so is it with breathing foul air. Strong persons will resist the milder influence longer than weak ones; but carry the air poisoning to an extreme degree, or give it the aid of other causes, and it will speedily prostrate the most vigorous. Furthermore, it always tends to wear out life long before the natural period, making men and women grey, wrinkled, feeble, and lank, as if from great age, while their years ought to bear the signs of prime vigor.—*Black.*

INFANT'S FEEDING BOTTLES should not have india rubber tubes, as these become coated with particles of decomposing and fermenting milk. The best kind of bottle is one with a glass nozzle, with a black rubber cap: this can be removed, turned inside out, and cleaned by thorough rubbing with salt after each use.—*Can. Fur. of Med. Sci.*

Editorial.

CLIMATOLOGY.

Highly important as the subject of climatology is, in its relations to both the agricultural interests and to the public health, very little has been done in this country toward developing it. The first step in the establishment of a medical climatology is the obtaining of a thorough knowledge of the meteorology of the country; in which but little has yet been accomplished in Canada. As the subject involves a thorough acquaintance with all the meteorological agencies which influence both animal and vegetable organization, and a comparison of the effects of these agencies through a long series of years, it is not a matter of surprise that the science is yet in its infancy. Medical climatology consists of two divisions: one concerns its relations to the causes of disease, the other to the cure of disease. The first deals with the influences of the weather on mortality and on the sickness rate in the country—with the weather as an agent in the cause of disease; the second deals with the influences of the weather in certain localities in promoting health or in curing certain diseases.

Though man is not able to control in any degree the weather, in the great work of preventive medicine a knowledge of climatology furnishes valuable assistance. The action of the forces which make up climate may be observed, and maxims and laws deduced from these observations which should control our methods of living. It is only when we know the nature and working of Nature's laws that

we can conform to them. And it is largely the province of Sanitary Science to counteract the injurious tendencies upon health, or rather perhaps upon the environments of life, of the vicissitudes of climate. Hence a knowledge of meteorology and climatology is essential to the practical application of scientific sanitary knowledge.

As regards that division of climatology which relates to the promotion of health or cure of disease: no efforts have been made to show that there are, as will eventually most probably be found, in this vast Dominion, which stretches from the Atlantic to the Pacific, localities favorable not only to the giving of new life and vigor to the over-worked and debilitated, but well adapted to give health to the diseased. As faith diminishes in the power of drugs to cope with disease, more congenial and natural agencies are sought, and "change of climate" is destined to take the place of not a few hitherto vaunted drug remedies. Doubtless there will be found in this extensive country, localities with meteorological or climatological conditions highly favorable to the cure of certain diseased conditions. It has recently been published that in the northern part of the State of New York there is an extensive tract of high, rolling, piney country which has been proved by the experience of a number of years to be especially favorable to the cure of consumption—in its earlier stages, it is to be supposed. Shall we not find such in Canada?

It would be highly advantageous to have any such localities in this Dominion found out and made known. Consumption in Canada, as in most other countries, is most destructive of life, much more destructive than any other disease, and if some spot could be found within her own boundaries to which those who contract this dread disease in the unventilated shops, factories and dwellings of badly drained but most 'civilized' localities, could be sent and regain health, it would be worth more to the Dominion than a vast sum of money.

We trust that some movement may soon be made, having for its object the development of this part especially of the climatology of this country.

INFLUENCE OF WEATHER ON HEALTH.

A good deal of attention is now being given to this subject, and it is no doubt one of considerable importance. There is some danger, however, in attaching too much importance to the influence of the weather on health, unless it can be put or understood in a somewhat different form or light. In the etiology and causation of disease, doubtless the weather is a factor of considerable consequence. But

it must be borne in mind that the rises in mortality, for example, under certain climatic conditions, is not due so much to these conditions themselves, or to their effects upon the constitution, as to their effects upon the filth by which we allow ourselves to be surrounded, and to the development and spread thereby of disease germs; or, again, to their effects upon constitutions debilitated and rendered prone to disease through neglect of ordinary hygienic laws. No one would believe that if Toronto and other cities were in a perfect sanitary condition—free from all cess-pools and privy vaults, foul yards and lanes—in such a condition as we hope for but cannot expect very soon to realize, that there would be anything nearly approaching the high death-rate among young children, especially, which, in the cities, has invariably accompanied the warm dry weather of July and August. Warm dry weather, *per se*, will not destroy life; but on the contrary will develop it; and does rapidly develop germ and bacterial life in the congenial soil found in most cities, which causes the high mortality. And furthermore, few would believe that the usual rise in mortality from nervous diseases, so-called, during the cold wet weather in March and April, would thus prevail amongst a people living in the best of hygienic environments—amongst a people with healthy vigorous skin (not only covering the body but lining its cavities), properly clothed and fed, and dwelling in properly warmed, well ventilated apartments.

Inasmuch, then, as it is not in man's power to change in any appreciable degree the usual order of Nature as regards the weather, if the public are taught simply that the weather may at any time have a seriously injurious effect upon their health, so far as practical hygienic work is concerned, they might about as well believe, as was the belief in past ages, that diseases are caused by evil spirits, or are sent by Divine Providence as punishment for moral sins committed. It might have the very undesirable effect of checking practical efforts to remove the more immediate and direct causes of disease—of producing greater apathy in sanitary work. Let the people be taught, as far as possible, the precise share which the weather has in the production of disease.

SWEET OIL—A REMEDY FOR POISONS.—It is stated by an exchange that sweet-oil introduced into the stomach is a neutralizer of all poisons of an acrid or corrosive character. The remedy is harmless, nearly always at hand and is worthy of a trial.

THE MACROBIOTIC ART.

The macrobiotic art, the art of prolonging life, must be distinguished from the common art of medicine or hygiene; its means, aims and boundaries are different. It is to be much feared that in the practice of the 'healing art,' in the prescribing as well as in the taking of medicines, the distinction is not recognized as it should be. The object of the medical art is health; that of the macrobiotic, long life. In sickness, both the physician and the patient are intent upon the restoration of health; forgetting sometimes, it is to be feared, that the means employed to restore health may tend to eventually shorten life. Whoever, physician or patient, thinks of enquiring whether by the means employed to regain the health which has been lost, life, upon the whole will be lengthened or shortened. Is it not very well known, probably few medical men will deny, that life is not unfrequently shortened (not so often markedly at the particular time, but in the long run) by many of the methods employed in medicine. It is not that this point would often be disregarded in practice were it sufficiently considered, but it is simply overlooked. It appears that long life has ever been the great, chief wish, the principal object, of the great majority of mankind. We all know how numerous yet how confused and contradictory have been the methods of obtaining it; from the really valuable writings of Hippocrates on the six articles—air, aliment, exercise and rest, sleep and wakefulness, repletion and evacuation, the passions and affections of the mind—to the efforts of the Alchemists and Rosicrucians, and thence down to recent times, when the medical art endeavours to elevate mankind to the highest possible degree of physical strength and perfection. Many believe that 'training,' as frequently practiced, shortens life. And it is highly probable that the developing and strengthening, to the fullest extent, of the physical man, without, at the same time, developing and strengthening the moral or mental powers, may so accelerate life, as it were, as to shorten its duration.

The conservative influence of disease, or especially of many of the symptoms of disease, is becoming to be very generally recognized. The process of inflammation occurs in obedience to a conservative law. Fatty degeneration of the heart causes reduced heart force, which may save the patient from apoplexy. It has been suggested that articular rheumatism, inasmuch as it is commonly associated with heart disease, is conservative, by necessitating muscular rest.

But the medical art is constantly, and perhaps too indiscriminately, breaking in upon and checking the progress of important conservative influences. Take a common symptom of disordered digestion, loss of appetite, probably from over eating. Means are usually at once employed, bitters and tonics are taken, to remove this, to produce a false appetite ; instead of employing nature's remedy, as plainly indicated—abstinence, fasting—until the return of the natural appetite. No one can say that the taking of bitters and tonics will not, under such circumstances, lessen the supply of vital force, and eventually shorten life.

So that in all efforts to promote health, to cure disease, and especially perhaps to remove or treat symptoms, the possible future effect upon life should not be lost sight of.

VITAL STATISTICS.

There is no subject, as everyone will admit, more important than that of the public health ; and at the present time there is not in Canada one which should so much concern the legislators of the Dominion or of the Provinces. Closely associated with it is the subject of vital statistics, and a perfect system of registration, giving full and complete statistical returns, forms the chief basis for practical public health work, especially that which concerns public health officers.

It was in considering how to avert the recurrence of the terrible plagues which visited London in the sixteenth century, that the first step was taken to find out where and under what circumstances people died, and how variously different localities were effected. And for this purpose registration was organized, imperfect, it is true, but sufficient to give many important hints.

We all want to know, and it is very essential that the Governments of the Provinces and of the Dominion should know, the number of people in the various provinces, counties, cities, towns, etc., and it is equally interesting and desirable to know the numbers which are born and the numbers which die, at what ages, and under what precise circumstances and conditions deaths occur, and what are the true causes of deaths in the various localities. These are very interesting matters. Every man who takes any degree of interest in the welfare of the country or of the community in which he lives, must feel some considerable interest in all knowledge relating to such events,

and feel the real and lasting value of such knowledge. Through such knowledge an insight is obtained into the condition or QUALITY of the people, and which insight cannot be obtained in any other way.

Every man then should take and act out an interest in registration—in helping to secure complete statistical returns in reference to births and deaths. It is every man's duty to do so, and such returns cannot be made complete without the co-operation of the people generally. A prominent medical exchange (now in its xxxiii vol.) says in reference to the part medical men ought to take, that "there is no excuse for a medical man who fails to comply with the reasonable request [to assist in making the returns complete], made in the interests of humanity as well as of his chosen profession."

But all other men of average intelligence, especially council-men, school trustees, teachers, magistrates, and all municipal officers, are equally inexcusable if they do not use their influence to secure the prompt registration of every birth and death, and with accurate details.

DIVISION REGISTRARS AND THE PUBLIC.

It is repeatedly said that the registrars (who are also clerks) of municipalities in many cases dare not use means or make efforts to compel people to register cases of births and deaths, or they would after the next election be almost certain to lose their situations. It seems difficult to believe that if the clerks would prosecute those who after a reminder, especially, failed or neglected to register any such cases, the opposition to them thereby created would amount to much, or that it could not be fully counteracted, or more, by those who would in this enlightened age give them credit for doing their duty. The more intelligent people in the municipalities should see to this; and we feel confident that they will do so, and 'stand by' the registrars if these will but fairly and calmly, but firmly and fearlessly, after fair warning to delinquents, do their full duty. We trust they will have such spirit and independence as will cause them to try it.

IT IS A FACT worth noting, that many of the cases of Hysterio-Epilepsy studied in the wards of the La Salpêtrière, Paris, Prof. Charcot, are found to be children of drinking parents, and to inherit an unstable, nervous condition, which, through causes more or less accidental, takes this phase of disease.

KITCHEN EDUCATION—COOKEY SCHOOLS.

We are pleased to learn that there is a prospect of a movement being made to establish a School for Cookery in Toronto. We hope the project will be carried out, and that many schools of this kind will soon be established in Canada. Many are springing up in England and in the United States.

The national training school of cookery at South Kensington, London, has a world wide reputation. It was the outgrowth of the London International Exhibition of 1873; a division of the exhibition having been devoted to 'Food and its Preparations.' The Duke of Westminster is president of the school, and it is patronised by all classes. Ladies, young and old, many of whom are representatives of nobility, meet there not only to study, but to learn by actual practice the preparation of soups, meats and dishes of all sorts, which shall render appetizing and healthful the future dinners of the English people rich and poor.

The following remarks of Prof. Youmans in reference to the kitchens of the United States, are in a large measure applicable to Canadian kitchens: 'Our kitchens, as is perfectly notorious, are the fortified intrenchments of ignorance, prejudice, irrational habits, rule-of-thumb, and mental vacuity, and the consequence is that the Americans are liable to the reproach of suffering beyond any other people from wasteful, unpalatable, unhealthful, and monotonous cookery. Considering our resources, and the vaunted education and intelligence of American women, this reproach is just. Our kitchens, are, in fact, almost abandoned to the control of low Irish, stupid negroes, and raw servile menials, that pour in upon us from various foreign countries. And, what is worse, there is a general acquiescence in this state of things, as if it were something fated, and relief from it hopeless and impossible. We profess to believe in the potency of education, and are applying it to all other interests and industries excepting only that fundamental art of the preparation and use of food to sustain life, which involves more of economy, enjoyment, health, spirits, and the power of effective labor, than any other subject that is formally studied in the schools. We abound in female seminaries and female colleges, and high-schools, and normal schools, supported by burdensome taxes, in which everything under heaven is studied except that practical art which is a daily and vital necessity in all the households of the land.'

Annotations.

SPARE WOMEN, it is said, may acquire flesh and roundness of form by the use of warm baths and inunctions of oil.

IN THE PRACTICE of the advanced physician, "Let me see your cellar" is beginning to take precedence of "Let me see your tongue."

CHOLERA INFANTUM AND STRAWBERRIES—Professor Storer, of Cambridge University, recently proclaimed that strawberries produced constipation. Dr. Williams, in the *Boston Journal of Chemistry*, proves the notion. He prescribed for a child dying with cholera infantum one strawberry each hour. The child speedily recovered.

IT HAS BEEN lately suggested that rotten potatoes and apples are causative of diphtheria, the fungi on these being identical with the fungi of the diphtheritic ulcer. An observer says that the disease invariably attacks families in which the Irish tuber is eaten, and that, during epidemics, families who abstained from the vegetable enjoyed immunity from the disease. Sweet potatoes are not supposed to be similarly injurious. So says a welcome exchange, the 'National Med. Rev.'

PRIZE FOR AN ESSAY ON DIPHTHERIA.—The German Empress has offered a prize of 2000 marks (£100) for the best essay on Diphtheria. The conditions are, that the writer is to bring forward important *new* facts as to the essential nature (*das Wesen*) of the disease, especially with regard to the infectious matter which propogates it, its dissemination, and the means for arresting its progress. The essays may be written in German, English or French, and must be sent to Professor V. Langenbeck, Berlin, on or before December 15, 1880.

A DEATH FROM GLANDERS recently took place in St. Mary's Hospital, London, Eng., and at the Police-courts several persons were summoned for having glandered horses in their possession without giving the necessary information. Mr. Paget, the magistrate, told one of the defendants 'that a glandered horse was more dangerous than a mad dog; and it was perfectly monstrous that this loathsome disease should have been allowed to exist in the number of cases only now brought to notice, with all the risks which each one entailed upon the community at large.

NEED OF SLEEP.—The habitual use (*Jour. of Ineb.*) of alcoholic drinks acts as a destroyer of nerve power. Tobacco operates as a powerful sedative and depressor of nerve force. When in a state of nervous prostration both tend to prevent sound sleep. Want of sleep is one of the earliest symptoms of loss of nerve-power, and a brain overworked, over-fatigued, or unduly stimulated, is more quickly relieved by proper preparations of the phosphates than by any other remedy. Flint says, "simple repose suffices to relieve fatigue of the muscles; but sound sleep, and sound sleep alone, relieves fatigue of the brain; without it there can be no rest for the organ, and no repair of brain tissue." To get sound sleep the brain must be fed, not narcotized.

LEAD POISONING.—The following well illustrates how simple and unexpected may be the sources from which come causes of disease. The case was one of lead poisoning, reported from Mesback. The patient began to suffer some years before 1876, and consulted several physicians in vain, until Dr. Witmer made a correct diagnosis, and after a treatment of over three-quarters of a year entirely cured him. The poisoning was caused by imperfectly-tinned lead snuff boxes, in which a particular brand of snuff was packed, which the patient was in the habit of buying from one and the same manufacturer, and which became contaminated with lead. A suit against the tobacco dealer was filed, and he was convicted and sentenced to incarceration for eight days and payment of costs.

ARTIFICIAL ICE.—The Boston *Journal of Chemistry* believes that one of the most remarkable triumphs of science and art as developed in this progressive age is seen in the devices for producing artificial ice in large quantities. It is claimed that, so perfect has the apparatus become, ice can be formed on the shores of any of our northern lakes and rivers at less cost than that necessary to the cutting and storing of natural ice in winter. One of these interesting devices in operation on the shore of the St. John's River, Florida, last winter, was found capable of "turning out" ten tons of ice daily, in the form of blocks about two and a half feet long and ten inches in thickness. The congelation was perfect, and the product met with a ready sale at the hotels and private residences, ammonia was the agent employed to produce refrigeration.

EIGHT MINUTES UNDER WATER.—A boy seven years of age was seen to fall from a bulkhead into the Hudson River, June 2. After considerable delay a youth named Thomas Berry came to the rescue,

and the spot where the boy sank was pointed out to him. By a plucky dive and long swim under water he succeeded in recovering the boy, who had been in the water eight minutes, and was apparently lifeless. A successful effort was made to resuscitate him, signs of returning consciousness appearing at the end of twenty minutes. The officers of the patrol of the water front pronounced this the most remarkable case of resuscitation after long submergence that had come within their knowledge, and it was put upon record as such. The happy issue should encourage hope and persistent effort in all similar cases.

UNSHOD HORSES.—It has been before stated (*Scientific American*) that an experienced farrier in England was advocating the abolishment of horse-shoeing, and now a writer in the *London Times* has been trying the experiment, and thus reports: "When my pony's shoes were worn out I had them removed, and gave him a month's rest at grass, with an occasional drive of a mile or two on the high-road while his hoofs were hardening. The result at first seemed doubtful. The hoof was a thin shell, and kept chipping away until it had worked down beyond the holes of the nails by which the shoes had been fastened. After this the hoof grew thick and hard, quite unlike what it had been before. I now put the pony to full work, and he stands it well. He is more sure-footed; his tread is almost noiseless; his hoofs are in no danger from the rough hand of the farrier; and the change altogether has been a clear gain, without anything to set against it. My pony, I may add, was between four and five years old—rising four, I fancy, is the correct phrase. He had been regularly shod up to the present year."

A FATALLY POLLUTED STREAM.—A distressing case of wholesale poisoning, through criminal ignorance or worse, recently occurred in a country school, in Vermont. The school opened Monday, May 26, and as usual the children got their water from a little brook that ran close by. The teacher noticed the bad taste of the water and forbade its use; but the caution came too late or was neglected, and in a little while seventeen of the children were prostrated with alarming illness, ten or twelve dying within a day or two, the bodies of the dead corrupting so rapidly that immediate burial was necessary. Investigation showed that a farmer had polluted the stream by the carcasses of a horse and several sheep, and the drainage of his barnyard. A medical investigation resulted in a report that diphtheria was the

cause of the terrible mortality, aggravated by poisoned water. Diphtheria in a mild form had been in the vicinity, and four cases were known to exist, so that water poisoned by barnyard drainage and putrid carcasses of dead animals was just the thing to feed the disease into the development of the terrible disaster

NEW METHOD OF DISINFECTION.—The *National Medical Review*, on the authority of the *Scientific American*, states that M. Boschau has devised a method of disinfection based on the continuous and economical production of ozone by means of manganese dioxide, which is of timely interest. Ordinary light brown wrapping paper is thinly covered with size, and on the latter the pulverized dioxide is sifted, so that it forms an adherent layer. It is merely necessary to hang the sheets thus prepared in the apartment to be disinfected or ærated. M. Boschau states that he lined a trunk with paper thus prepared, and placed therein some old cheese and strong radishes, which he left in the receptacle for a fortnight. At the end of that period the materials were removed and the lid of the trunk quickly shut. Fifteen minutes afterward, on opening the trunk, not the slightest odor was perceptible, the ozone given off by the dioxide having completely disinfected the carbonic and butyric acids produced. The inventor proposes to manufacture wall-paper, prepared in an analagous manner, for use in schools, hospitals, etc.

CONTAMINATION OF DRINKING WATER.—The investigations of the British Health Commissioners, says the *Scientific American*, July, '79, have discovered that in scarcely one of the beautiful old towns that so delight the traveller in England, was it possible to find a well that was not a source of sanitary peril. The older the town the more thoroughly the soil had become saturated with filth, and the greater probability of the direct contamination of the drinking water by leakage from privy vaults. The frequency and fatality of typhoid and other epidemics due to filth-contaminated water in some of the most beautiful and, above ground, salubrious towns, gave them a death rate that was simply appalling; yet the inhabitants could scarcely be made to believe that the sparkling water of their wells was little less than deadly.

In this country closely built towns are scarcely old enough yet to have the ground they stand on quite so completely saturated with filth; yet the degree of saturation and consequent danger is in many cases greater than people imagine.

THE YELLOW FEVER IN 1878.—Some months ago, a committee of so-called experts was formed in the United States, empowered by Congress to glean all particulars in connexion with the late disastrous epidemic. Including the thirty-four infected cities and towns visited by the Yellow Fever Commission, more than fifty localities were carefully and personally examined. A great number of facts were thus gathered, but the urgent demands for public health legislation during the late session of Congress caused much haste in dealing with this very large subject. It appears that at least 100,000 persons were stricken with the disease last year, and that 20,000 lives were sacrificed. Of this number it is stated that about three-fifths were minors and two-fifths adults, and the expenditure in money in connexion with the epidemic amounted to at least \$15,500,000.

In the Louisiana State Board of Health for 1878 is an official account of the terrible epidemic in New Orleans in that year.

Births reported for the year (exclusive of still-births), 2,629.
Marriages, 1,455.

The total mortality in that city, from all causes, for the year 1878 (exclusive of 399 still-born), was 10,318, of which 8,062 were whites and 2,256 colored. Ratio per thousand of population, 50.17,—55.32 of whites and 39.13 colored.

Deaths from yellow fever, 4,046—3,863 whites, 183 colored. Deducting yellow fever: Deaths from all other diseases, 6,272—ratio per 1,000 of population, 30.02, or 28.81 of whites and 35.95 colored. Ratio of mortality from yellow fever, 19.80; from malarial fevers, 3.77. Deaths from small-pox, 151.

SANITARY PROTECTIVE ASSOCIATIONS.—In the early part of 1878, a Sanitary Protective Association, for the sanitary inspection of houses, &c., was formed in Edinburgh, Scotland. The first annual meeting of the Association was held on the 26th of March last, when its members numbered nearly 500. Every member had had his house inspected, or had an opportunity of inspection offered. We have received a report of the first years' work, and shall notice it more at length in a future number.

A similar association, the first in America, has been formed more recently in Newport, R. I., U. S., with a council of eminent men, physicians and others. When will similar associations be formed in Toronto and other Canadian Cities?

INSTRUMENT OF RESUSCITATION.—A Frenchman it appears (*Scientific American*) has invented an apparatus for aiding in the resuscitation of persons apparently drowned, or who from any other cause have been temporarily deprived of animation. It consists of a cylinder of sheet iron large enough to contain the body of an adult person. It is closed at one end, and the inanimate individual is inserted, feet foremost, in the receptacle as far as the neck, round which there is placed a padded diaphragm, fastened to the cylinder so as to be airtight. An air pump, attached to an opening in the tube, creates a partial vacuum, and then the outer atmosphere, by its own pressure, forces its way into the lungs by the mouth and nostrils, which are left exposed. By a reversed action of the pump the air is allowed to re-enter the cylinder, and respiration is thereby re-established. A glass plate inserted in the iron casing enables the operator to watch the movements of the chest, which rises and falls as in life with the working of the pump. The action may be repeated, it is stated, eighteen times in a minute, in exact imitation of natural breathing.

WINES AND THE PELEE ISLAND VINEYARDS.—The eminent London physician, Dr. Robert Druitt, says that "the experience of the world has stamped wine as one of the greatest blessings to man." Very many believe that if there were no other alcoholic drinks except good pure wine, there would be comparatively but very little drunkenness. And there can be no doubt whatever, that true temperance may be promoted by encouraging the substitution of pure wines for ardent spirits. The high price of wines has usually heretofore operated against their use in this country, but now Canadian wines are manufactured in abundance, and owing to there being no duty, they can be sold at about the price of ordinary whiskey. According to Prof. Croft and other competent judges, Canadian wines can now be made which equal the lighter wines of France and Germany.

PELEE ISLAND is the most southern portion of the Dominion, and is the only part of Canada, it appears, where the season is long enough to allow the Isabella and Catawba grape to come to perfection. The wines of the "Vin Villa" vineyard there are very highly spoken of, and were the only Canadian wines awarded a prize medal at the Paris Exposition last year. The Prince of Wales, who ought to be a good judge, tasted them, and expressed himself as highly pleased with their flavor and quality. Delicious, rich, fine-flavored wines from this vineyard, can be obtained in five-gallon lots, for \$1.50 per gal., from Messrs. Hamilton, Dunlop & Co., Brantford, or McCormack Bros., Toronto, and in other places. Who would not prefer such to whiskey.

THE CITY WATER.—It is a matter of very great regret that the water supply of Toronto is in such an unsatisfactory condition, after so much money has been expended on it. It can hardly be doubted that with a properly constructed filtering basin, either on the Island or on the high ground north of the city, an unexceptionable supply from the lake might be obtained. We hope to be able to give a valuable paper on the Water Supply of Towns, especially in reference to that of Toronto, in the next number of the Journal.

REGISTRATION OF SICKNESS.—Almost from its commencement the **SANITARY JOURNAL** has advocated the registration of diseases as well as of deaths. There would of course be difficulties in the way of registering every case of disease, and the dividing line between sickness and health might not always be easily discriminated, but provision might be made for the registry of all cases of the more important or distinct diseases, more especially for those of a contagious character. Provisions are made in localities in Great Britain, and throughout the State of Michigan for the registration, and notification to the health officers of the localities, of all cases of contagious diseases. And such provision is indispensable for the proper isolation of such cases, and preventing the spread of the diseases.

At a late meeting of the Toronto Medical Society a resolution was passed endorsing a scheme of health registration.

We purpose entering more fully into the discussion of this subject in our next issue.

A NATIONAL BOARD OF HEALTH.—Since our last issue a National Board of Health has been established in the United States, with headquarters at Washington. The sum of fifty thousand dollars was appropriated for its expenses, and that sum has since, we believe, been very largely increased. The duties of the National Board of Health shall be to obtain information upon all matters affecting the public health, to advise the several departments of the government, the executives of the several States, and the Commissioners of the District of Columbia, on all questions submitted by them, or whenever in the opinion of the Board such advice may tend to the preservation and improvement of the public health.

The Board shall report to congress a full statement of its transactions, together with a plan for a national public health organization, which plan shall be prepared after consultation with the principal sanitary organizations and the sanitarians of the several States of the United States, special attention being given to the subject of quarantine, both marine and inland. This action will probably lead to a department of health in the Government.

TOTAL NO. OF DEATHS REGISTERED IN ONTARIO IN 1878, FROM ALL CAUSES AND FROM CERTAIN PREVENTABLE CAUSES.

PROVINCE OF ONTARIO, 1878.	Males...	Females.	Total....	Measles.	Scarlatina.	Diphtheria.	Dysentery.	Diarrhoea.	Cholera Infantum.	Typhoid Fever.	Phthisis.	Total Number of Deaths in Ontario.
				2	33	496	50	219	157	200	915	9358
				3	43	490	43	182	117	179	1084	8450
	5	76	986	93	401	274	379	1999	17808			

NO. OF DEATHS REGISTERED IN THE COUNTY TOWNS IN ONTARIO, FOR THE HALF YEAR ENDING JUNE 30, 1879.

COUNTY TOWNS.	Total No. of Registrations.	No. of Deaths, 1879.	No. of Deaths, 1878.	Population, in 1878.	Rate p'r 1000 living, 1879.
Brantford.....	244	74	67	10792	13.5
Walkerton.....	90	12	9	2547	9.6
Ottawa.....	346	109	232	24000	9.
St. Thomas.....	165	35	22	6446	10.
Sandwich.....	29	13	7	1099	23.
Kingston.....	330	70	66	14072	10.
Owen Sound.....	100	26	24	4320	10.2
Cayuga.....	32	9	8	841	21.4
Milton.....	26	3	4	1266	4.7
Belleville.....	266	116	93	9612	24.1
Goderich.....	102	30	29	4663	12.9
Chatham.....	146	37	41	7325	10.1
Sarnia.....	76	23	22	4012	11.5
Perth.....	60	12	10	.....	....
Brockville.....	150	31	29	7102	8.7
Napanee.....	77	24	16	2894	16.
St. Catharines...	191	77	70	11079	14.
London.....	571	196	160	19186	19.5
Simcoe.....	70	12	9	2787	8.6
Cobourg.....	87	24	42	5177	9.2
Whitby.....	59	13	24	3415	7.6
Woodstock.....	118	27	36	5069	10.
Brampton.....	104	32	24	3007	21.
Stratford.....	162	32	24	8645	7.
Peterborough.....	186	48	52	6825	14.
L'Original.....	50	12	10	500	8.
Picton.....	67	21	20	2869	14.
Pembroke.....	96	21	18	2577	16.2
Barrie.....	121	31	29	4515	14.
Cornwall.....	133	34	44	3712	18.3
Lindsay.....	121	26	24	5591	9.2
Perlin.....	103	32	30	3893	18.2
Welland.....	50	10	2	.....	..
Guelph.....	286	63	69	.....	13.
Hamilton.....	945	345	284	33511	20.5
Toronto.....	2414	719	679	70867	20.3
Montreal.....	.....	...	...	.....	27.

Death-rate per 1,000, annually, from all causes; National Board of Health Bulletin.—From *Sanitarium*.

PLACES.	No. of weeks ending July 5th, '79.	Cerebro-Spinal Fever.	Consumption.	Diarrheal Diseases.	Diphtheria and Croup.	Kidney Diseases.	Lung Diseases, acute.	Malarial Fevers.	Measles.	Puerperal Disease.	Scarlet Fever.	Small Pox.	Sunstroke.	Typhus and Typhoid Fevers.	Whooping Cough.	Yellow Fever.	Deaths under 5 years.	Total No. of Deaths.	Population.	Death-rate per 1,000.
Augusta, Ga.	1			2	23	14	25	3	8	2	28						3	6	26,574	11.5
Baltimore	4	2	74	250			1	3			28							704	400,000	31.7
Birmingham, N. Y.	1			15	39	7	17				1							4	18,000	11.5
Boston	4	2	88	214			67	3	25	6	23		1	5	6			436	365,000	15.5
Brooklyn	4		95			3	3	3						2	16			876	564,000	20.1
Charleston, S. C.	4		2				3	1										39	57,000	35.6
Chicago	1		1	86			7	2			8							287	537,624	27.8
Cincinnati	1		22	49			12				41			3	10			470	280,000	21.8
Cleveland, Ohio	4		43	6			8		2	3	3				4			87	162,000	13.9
Jacksonville, Fla.	2																	2	10,000	11.2
Lowell, Mass.	1	4		4							2							15	52,000	15.0
Milwaukee	1				9													77	125,000	16.8
New Bedford, Mass.	2			2														9	27,000	12.6
New Orleans	1	1	40	61			4	1		2	30			2	4			331	210,000	20.4
Philadelphia	3	1	160				40	4	4	3	2			15	4			1,037	817,442	16.2
Pittsburgh	1	5	5	39		4	4				2			1	1			91	145,000	32.6
Quincy, Ill.	1			3			2							1				17	35,000	25.0
Reading, Pa.	1		5				1				5			4				17	40,000	22.1
Richmond, Va.	1			1			2											1	80,000	21.0
Savannah	1		9	6			2											19	32,636	30.3
Utica, N. Y.	1				1		2											3	35,000	4.3

Report of Mortality for two weeks ending June 14th, 1879.

Berlin	142	86	46	62	2	7	7							4	12		672	1,145	1,049,071	28.4
Breslau	17	36	4	20	1	2	1							3	2		187	331	270,000	31.8
Dresden	44	8	7	17	3	1	1							6	1		83	206	212,000	25.2
Frankfort	21	6	1	17	22	2	6							6	3		48	105	124,000	22.0
Hamburg	51	12	9	10			6							3	3		94	395	377,068	27.9
Hanover	3	61	2	16			4							9	3		36	98	121,363	24.9
Munich	42	16	8	34													170	346	250,000	39.1

A PEN WORTH RECOMMENDING.—We have been favored with samples of the celebrated Spencarian Double Elastic Steel Pens, and after trying them feel justified in highly commending them to our readers. They are said to be made of the best steel, and by the most expert workmen in England, and have a national reputation for certain desirable qualities which no other pens seem to have attained in so great perfection, among which are uniform evenness of point, durability, flexibility, and quill action. It is thus quite natural that the Spencarian should be preferred and used by professional pen-men, in business colleges, counting-rooms, government offices, public schools, and largely throughout the country. Indeed, so popular have they become, that of the 'Number One' alone, as many as eight millions are sold annually in the United States. The Spencarian Pens may be had, as a rule, from any dealer; but, when not thus obtainable, the agents, Messrs. Alexander Buntin & Co., 345 St. Paul Street, Montreal, will send for trial, samples of each of the twenty numbers on receipt of twenty cents.

BOOK NOTICES.

RHYMES OF SCIENCE: WISE AND OTHERWISE. With illustrations. New York: Industrial Publication Company.

This is an amusing little book, containinn among other rhymes 'Sir Thomas the Good'; 'A Story of Science,' with the moral 'whether a thing is large or small depends on the way you view it'; and 'The Philosophical Chicken,' who is supposed to say: 'What I can't understand I won't believe in. Where *did* I come from then? Ah! Where, indeed? This is a riddle monstrous hard to read.'

THE ILLUSTRATED JOURNAL OF AGRICULTURE, published by the Department of Agriculture for the Province of Quebec. Monthly, \$1 a year. Address Ed. A. Barnard, 10 St. Vincent St., Montreal.

This is a very useful and practical Journal, and every one who cultivates even a garden or fruit trees, or keeps poultry or a cow should receive it, as it treats upon and is a sure guide in all these things.

FOURTH ANNUAL REPORT OF THE STATE BOARD OF HEALTH OF MASSACHUSETTS. Boston: Hand, Avery & Co.

SIXTH ANNUAL REPORT OF THE STATE BOARD OF HEALTH OF MICHIGAN. Lansing: W. S. George & Co.

THIRD ANNUAL REPORT OF THE STATE BOARD OF HEALTH OF WISCONSIN. Madison: David Atwood.

These reports are all large volumes, and as usual are filled with highly instructive matter of great value to the public, in whose interest they are published. We wish thousands of them were circulated in Canada.

STATE PREVENTIVE MEDICINE. First annual address to the State Board of Health of Connecticut. By J. S. Butter, M.D., etc., President. Hartford: Case, Lockwood and Brainard.