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PHYSICAL TRAINING.

Physical training is something so imperfectly understood, too liable to be carried to excess or quite neglected, that we give below lengthy extracts from an admirable paper thereon, by Professor J. Madison Watson, read at the late meeting of the American Public Health Association at Detroit :

Physical training is the essential, in the evolution of animal life from the lower type and state to the highest excellence. Let it be sharply discriminated from physical exercise. The latter, necessary to mere existence, is primarily secured by an irresistible impulse of nature, common alike to man and the lower animals. The kitten, the puppy, the young hare, the colt, the calf, the lamb, the kid, the fawn and the child skip, dance, race, romp, frolic, and enjoy to the utmost their muscular sense in hearty sympathy.

In their primitive state, Jehovah pronounced all living creatures *very good*, not perfect. Even man, made in the image of God, and having dominion over every living thing of earth, "infirm of purpose," was saved only by work, discipline, training. Man, the provident and wise trainer, co-worker with the Deity, has a mission high, holy, limitless. * * * In this presence it would be as much a work of supererogation to urge the importance of physical culture, as that of pure air or living water. And still, in practice, even men of eminence in the learned profes-

sions, who encourage every wise effort for special mental training, are too commonly content with vague and general bodily exercise, which makes nothing for aptitude, special efficiency, or symmetrical development. The whole history of physical training is a most extraordinary exhibition of man's fickleness and pitiable vascillations. At one period made fierce, savage and aggressive by exclusive and overdone bodily discipline—illiterate, immersed in narrow specialties, and despising all beyond ; at another, deifying the mind at the expense of the body and lapsing into decadence.

In ancient Attica and Ionia these two antagonist errors were first co-ordinated. The powers of the mind and the body were developed in common, and the resultants were incomparable beauty of bodily form and feature ; a language unrivalled in sweetness, expressiveness and perfection ; the highest philosophy ; the truest and most inimitable art. In this century, the adoption of a like educational policy by Prussia, during the life of Bismarck has accomplished results quite as wonderful as the most marvelous of antiquity.

In the last two decades we have made a decided advance in the science of physiology and hygiene. The elemental laws of health, so generally disseminated, are not without promise of fruitage. Physicians of every school readily employ a modified *materia medica*, trusting less to drugs and more to air, water, electricity, dress, exercise, and other natural agents.

The formation of numerous sanitary associations, the establishment of national, State, and local boards of health, and the popularization of physical activities mark the spirit of the age and solicit the suggestions of specialists. First let us consider

THE FITTING PERIOD FOR PHYSICAL TRAINING.—In Grote's profound and elaborate history of Greece we are informed that, "From the early age of seven years, throughout his whole life as youth and man, no less than as boy, the Spartan citizen lived habitually in public, always either himself under drill, gymnastic and military, or a critic and spectator of others;" that, "Besides the various descriptions of gymnastic contests, the youths were instructed in the choric dances employed in festivals of the gods, which contributed to impart to them methodized and harmonious movements;" that, as the grand purpose of the Lycurgean system was the maintenance of a vigorous breed of citizens, "The Spartan damsels underwent a bodily training analogous to that of the Spartan youth—being formally exercised, and contending with each other in running, wrestling and boxing—the presence of the Spartan youths, and even of the kings and the body of citizens, at these exercises, lending animation to the scene;" and that "In like manner, the young women marched in the religious processions, sang and danced at particular festivals, and witnessed as spectators the exercises and contentions of the youths." We may well conceive that such an education imparted an eager interest in physical might and beauty that would incite fond and enthusiastic mothers to begin the bodily training of their children at birth.

New York, the past summer, afforded a most felicitous illustration of the happy results of four score years devoted to physical activities. An eminent engineer,

(John Ericsson) celebrated his eightieth birthday by doing his usual amount of work with his accustomed energy. He arose at seven o'clock, indulged in his customary gymnastic exercises, ate a breakfast of eggs, bread and ice-water, and then worked till late in the afternoon, when a dinner was served. Then came further protracted work, followed by a long walk, which closed a daily programme, strictly observed during many years. * *

THE KINDS OF EXERCISE ADAPTED TO THE ENTIRE PERIOD.—It may be well, however, first to illustrate briefly, from history, the ideal aim of human training. This ideal, to-day, is virtually that of Epaminondas, twenty-four centuries since. He mastered the gymnastic and military exercises incumbent on every Theban citizen. But he studied to acquire the maximum of activity rather than of strength; the nimble movements of a runner and a wrestler, not the heavy muscularity of the pugilist. He also learned music, vocal and instrumental, and dancing—in those days including all that belonged to the graceful, expressive and emphatic management, either of the voice or the body. He also manifested, from his earliest years, an ardent intellectual impulse, and finally achieved intellectual triumphs—his eloquence being effective, even against the best Athenian orators. His greatest virtue was his mastery over resentful and vindictive passions. The results of this training are given by his greatest enemy, in the exclamation—"Oh, thou man of great deeds!"

A convenient classification involves exercises for family training, for the school, and for subsequent years. The corrective, remedial, or medico-movement exercises of early infancy, applied under the direction of a trusty family physician, or by a trained nurse, are of incalculable advantage. Nothing then, can more effectively

allay suffering and give cheer. Indeed, during this plastic period, local weakness, imperfect development, and even hereditary defects, may be thus entirely remedied, or greatly mitigated. From two to seven years of age—the period of childish wonder, of eager curiosity, of importunate inquiry, of endless imitation, and of implicit faith—is the children's germ-time of health, the parents' golden opportunity. My brief admonition to them is, "Keep the home cleanly, and bright and sweet with sunshine and pure air. Garnish it with flowers, grasses, leafage, or other simple objects, easily obtainable by all. Enjoy daily music, if only that of the children's voices. Set apart a suitable place in the house, the barn, an out-building, or out-of-doors under a spreading tree, for childish games and physical training, both with and without apparatus. Become the interested observer and wise instructor, when at leisure or during after-hours. Adopt a simple, wholesome diet—the first fruits of the earth for food and water for drink. Wear pure clothing, live a pure life, get nearer to the great heart of nature, and so "your children shall rise up and call you blessed."

The physical activities of the schooling period, from kindergarten to the graduation at a college or a university, include all desirable games and exercises, done with and without every conceivable apparatus, implement, machine, appliance and tool. And still, for a given grade and period, the best results of training are secured with a few select instruments and exercises. The primary office of school calisthenics is to beautify and strengthen the body by pleasurable exercises, which shall develop, regulate and perfect its parts. It is mainly recreative, giving relief to the mind while gratifying the physical sense. Hence, some of the essential elements of success are, first, such a natural,

systematic and logical arrangement, that each position and class of movements shall suggest what is to follow, without taxing the memory or other mental faculties.

Second.—A simple, systematic and complete series of commands is necessary, the students taking the positions and executing the classes of movements in accordance therewith. This will render the instruction intelligible, give the instructor the entire control of the class, and enable him, after the elementary movements are mastered, to command and immediately secure thousands of beautiful combinations without further instruction.

Third.—The movements must have a determined time, the rhythm or division of which shall be well established in the mind. All modes of marking time should be used, such as counting, phonetics, recitation and music. The latter insures enthusiasm and fascination, and converts indolence and sluggishness into cheerful and vigorous activity.

Fourth.—The desired results of the training can only be secured by healthful conditions. These involve comfortable, cleanly, convenient and suitable dress—garments so loose about the waist, chest and neck as not to interfere in the least with the action of the respiratory organs; pure out-door air in summer, and air moderately heated in winter, say from 65 to 70 degrees. But during the continuance of the exercises, the windows should be opened, so that the room may be thoroughly ventilated. At the close, when a sensible perspiration has been produced, the windows must be so closed or regulated as to avoid all draughts of air, and still afford, as far as possible, a perfect ventilation.

Fifth.—A definite time should be adopted for daily exercises. At least one exercise should be given in connection with

each session. In large schools, the general recesses of the regular sessions should be discontinued, and individual recesses given as needed. Half the time of the general recess is usually lost in descending and ascending flights of stairs, involving anxiety and insubordination, and destroying the continuity of the lessons. Instead of the recess in the middle of the session, there should be two short class-room recesses devoted to calisthenics, marching, or vocal music, and to thorough ventilation. Indeed, these exercises are the safeguard whenever, from the condition of the air or any other cause, classes become restless, listless or inattentive. This is especially true in the country, where rural occupations in the open air unfit youth for indoor confinement, and fixed and continued attention. There the best results can only be secured in connection with frequent physical exercise. * *

VOCAL GYMNASTICS, though transcendently interesting and important, is so generally neglected, so indifferently taught, even in our best institutions of learning, that it justly claims the special consideration of this representative body. It involves the development and training of the respiratory organs, of the organs of speech, and of the voice. The respiratory organs should receive such special daily exercise as shall tend to enlarge, invigorate and bring under the control of the will the entire breathing apparatus, so that, even under the most trying and extraordinary circumstances, a perfect respiration may be secured. The vocal muscles receive nerves from the brain and are also under the guidance of the will. The muscles of the organs of speech are the chief agents of expression in man. When disciplined to act smoothly and with perfect freedom, they add greatly to the beauty of the human countenance. A well-trained and musical voice, with its

graceful and easy articulation and its infinitely varied and precise movements, in conversation, oratory and song, possesses marvelous powers of fascination. It makes the very difficulties of articulation tributary, serving as elements of force and beauty in delivery. Vocal gymnastics, properly employed, commands and wards the citadel of health, and wins social and political distinction.

Gymnastics are never to be used as a substitute for plays. Indeed, properly employed, nothing else gives so good an appetite for innocent out-door life, or so great a desire for natural spontaneous exercise as plays. During the most interesting period of childhood, let no attempt be made to suppress the animal energy and untamed enjoyment of the vigorous child, be it boy or girl. In advancing youth and throughout the schooling period, physical sports and games, such as running, jumping, hare and hounds, base-ball, foot-ball, cricket, lawn tennis, lacrosse, and boating, under proper guidance and restrictions, are admirable, and they should receive encouragement and support. They are, however, mainly recreative, for general invigoration, used most by those who need them least, too often not made a happy means to a noble end. Physical training attains its aim when it prepares the young to take an intelligent, serious and lasting interest in their own physical culture and development, an end vastly higher than interest in school or college sports.

In the early days of existence, when man had to establish his dominion over the beasts of the field and the brutes of the forest, when the inferior tribes, hardly emancipated from the lower forms of life, crept out of caves and huts to see the nobler races go forth to exercise those rude arts of war, hunting and reveling, which alone marked their standard of

civilization, there was a nobility, sprung from necessity, which richly deserved the name. But now to live for nothing but hunting fishing boating, and athletic sports—now, when these arts have degenerated into childish imitations, *to live* for them is simply ignoble. The cultivation of human muscle, of brawn without brain, of professional athletes, for gamblings and public struggles for money or fame, is degrading—a crime against humanity.

Physical exercises subsequent to the schooling period, however symmetrical the education, should be employed with the same regularity, if not to the same degree, as mental activities. Let the fact be fully recognized and acted upon, that training alone insures retaining, that length of life and prolonged happiness depend on the continued cultivation of mental and physical existence beyond all else. Ceasing to learn is beginning to die. Schooling is not only needed for girls and boys, but for men and women through every phase of life, if they would complete their career. The early interest and enthusiasm awakened in gymnastics, and the skill acquired by systematic training, may easily be perpetuated. In this respect the maxim, "The child is father of the man," is no less true than the proverb, "Train up a child in the way he should go, and when he is old he will not depart from it."

In conclusion, permit me briefly to refer to two results, "devoutly to be wished," which must inevitably follow the perfect consummation of physical training. First, the practical knowledge of the mechanism of God's crowning work, the human body, of the wonder-working hand, the source of man's supremacy, is such a personal revelation of aptitude as must tend to a diversity of callings, thus supplying from the yearly graduates of educational institutions, who now crowd the professions, the intelligent, trained and cultured recruits so

greatly needed in all human occupations. Second, this knowledge should awaken such a genuine admiration and reverence for the human body as shall tend to shield it from intemperance, fashionable folly, sad sins of omission and commission, gross immorality, and criminal violence. It also should aid us to discern in this body God's living temple, whose open portals must be guarded day and night from every approach of evil—a temple to be cleansed, garnished, beautified, and made meet for the indwelling of the Holy Spirit.

SEWER-SMELLS.

(From *Med. Times and Gaz.*, Lond., Eng.)

Whenever there is a rise or fall of the mercury—if not indeed at other times—the ventilators and manholes of all but the best-laid sewers always give off a sickening stench. Many expedients have been tried in different towns to prevent or to conceal these exhalations from the nether world, but, if the sewers have been imperfectly constructed, invariably without success. Trays of charcoal have been fixed in the openings, but the charcoal becomes rapidly moist in the damp air of the sewer, and soon gets choked with fine dust from the roadway, so that unless the trays are daily replenished, at a ruinous expense, they do more harm than good, by preventing the ready ingress and egress of air which is necessary for the proper ventilation of the sewer. Moreover, even if charcoal is successful in deodorising the sewer-air—as to which the evidence is very contradictory,—it probably has little, if any, destructive influence on the germs which that air may contain. In many places, shafts have been utilised, with or without an artificially produced current. In either case they ventilate the sewers more efficiently than openings flush with the ground; but they are very unsightly, and as, if they are to

be of any use, they must exist at short intervals, it is difficult to find situations in which they will not discharge their current in quite as dangerous proximity to dwelling-houses as the street gratings. At best they are but a palliative of an evil which ought not to exist. The plain truth is, that if a sewer is well laid, well kept, and well flushed, the air in it should not be offensive. It is only when sewage is allowed to remain and decompose in it, owing to the sewer having an insufficient fall, or being unevenly constructed, or too large for the amount of sewage passing through it, that the air emitted by the ventilators is really offensive. Of course, if the sewage is already decomposing when it enters the sewer, as is the case where the latter receives the overflow from foul cesspools, or decomposing blood from slaughter-house cesspits, or even fresh blood, which coagulates and adheres to the sides of the sewer, the ventilators will smell, however well constructed the sewer may be. But, in a properly arranged drainage system, nothing but fresh sewage should be sent into the sewers, and that should leave them before it has time to decompose. Another most important point in the management of sewers is to keep them clear of roadsand, which, if it gains admission to them, will form deposits, impede the flow of sewage, and, becoming impregnated with decomposing matter, will emit a most offensive odour. This exclusion is only to be attained by efficient road-making and scavenging, and by the use of proper road-gullies, so constructed as to intercept sand and mud, and only to allow surface water to enter the sewer. In semi-rural districts a separate surface-water system may be required. As to manholes, they ought never to notify their existence to the nostrils of the passer-by, if they are properly constructed. But often the bottom of the manhole is lower than the level of the

sewer; in which case sewage is allowed to accumulate in it, and the whole becomes little better than an open cess-pool. It should always be borne in mind that, whether they smell or not, street ventilators are a safeguard; it is better that the sewers should discharge their offensive gases into the free air of the street than into the close air of our houses, for few houses even in the richest quarters of towns are so well constructed as never to admit an invasion of sewer-air. But we ought not to be satisfied until a drain-smell is as much unknown in our streets as in our houses. Wherever they exist they may bring with them disease and doctors' bills.

THE SEWERAGE OF TOWNS, (NAHANT MASS. U. S.)

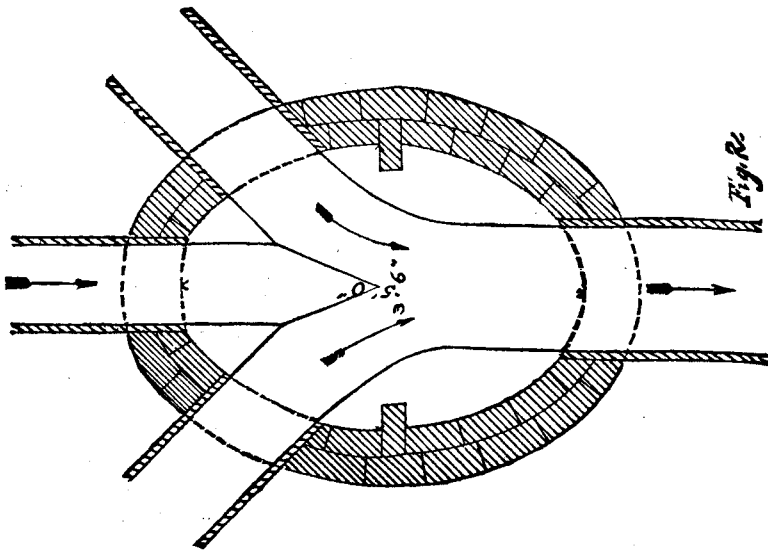
As an illustration of what a town can do when it goes about it in earnest, we give the following description of the way in which the town of Nahant, Mass., U. S., has provided itself with a system of sewers, the cost &c., from the last annual report of the State Board of Health.

The little town of Nahant, containing about 1500 inhabitants, was considerably disturbed during the latter half of 1881, and the first half of 1882, by the appearance of typhoid fever in various parts of the town.

The questions presented for solution were, 1st, what was the cause of disease? 2nd, what should be the remedy? 3rd, how long would it take to give relief? 4th, what would it cost?

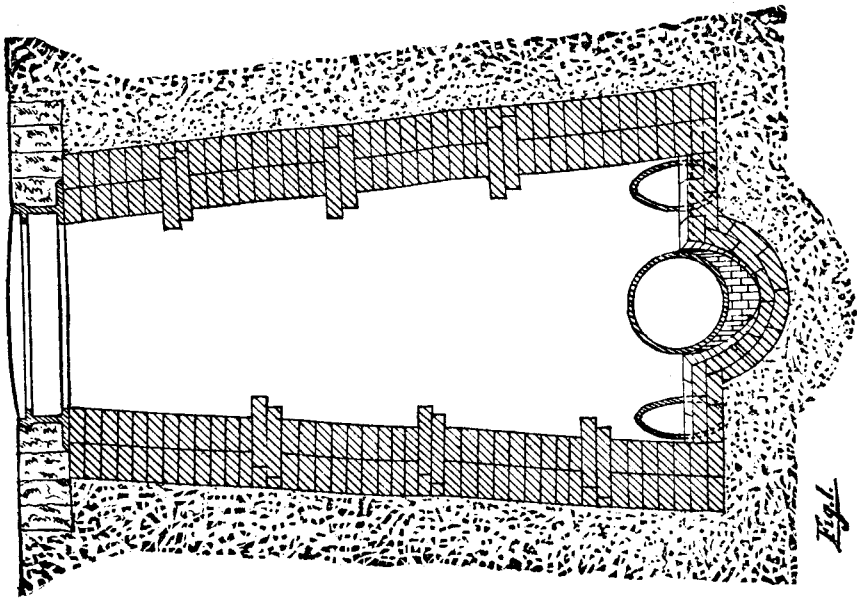
The disease being zymotic, the remedies suggested were cleaning of premises, securing better drainage, plumbing, etc., and removal of all decomposing matters; afterwards trying to better the quality of water, ice, milk, etc.

Without going into details that would



prove but repetitions of what may be already fairly well known, the writer desires to call attention in as few words as possible to those portions of the work that may not be so well understood; viz., separate sewerage, and the apparent recovery of the soil after pollution. The former of these two subjects is better un-

derstood, perhaps, than the latter, although still imperfectly known in this country. The latter subject, so far as the writer's knowledge extends, has never been discussed in print before, and although isolated cases have been noticed where soil was recovered, to greater or less extent, yet it has apparently either been



overlooked, or considered as of small moment.

It being determined to construct a system of sewers, the "separate" system was adopted, as less expensive and quicker to build. It was argued that if manholes were placed at all junctions, and changes of direction, whether vertical or horizontal, it would be comparatively easy to flush with water, or clean with rods, chains, brushes, etc. * * *

The requisite capacities for the sewers were figured, on a basis of the area to be served, the proposed grade for each pipe, the velocity of flow of sewage, in every case, and the quantity of sewage that might be delivered at given points during those hours when plumbing would be in greatest use (between 8 and 10 a. m.) The sizes for pipes, thus determined by calculation, were doubled, so that when in maximum use they would run one-half full. Although many of the lateral sewers, figured on this basis and doubled, should have been four-inch pipes and not larger, the difficulty experienced in obtaining sufficient quantities of pipe of that size, straight enough to admit of inspection between manholes placed 250 feet apart, was so great, that six-inch pipe was selected as the minimum size.

Actually constructed, the sewers vary in size from six inches to eighteen inches in diameter, and are, so far as possible, laid with tight joints, excluding all ground and surface water. At the present time, the only water purposely admitted to any of the pipes, other than house sewage, is the rainfall from the roof of one school-house, that covers an area of 1,300 square feet. This was connected, as that part of the sewer was what is termed a "dead end" and received the sewage from one house only.

It is believed that the pipe system at Nahant represents to-day the only thorough

system of separate sewers in this country. They certainly can be pointed to as the only system of separate sewers that are operated without public water of any description, and that in certain sections have only a very limited supply of even well and cistern water. From their method of construction, however, as has been shown, every portion of the system is capable of being, and actually is, inspected periodically. Every length of pipe can be examined and cleaned, not only by flushing, but by scrubbing with wire brushes.

When it is desired to flush any line of pipe, a sand bag is used as a plug for the outlet of a manhole, which is then filled with salt and water by the town water-cart—rather a primitive fashion of procedure, but one that it was decided to adopt, temporarily, during the first season, or until it should be demonstrated by actual experiment where flush tanks should be located and what their size should be. As a rule, water enough is put into the manhole in question to make a solid water plug, as it were, for forty feet of the sewer, below the manhole.

The flushing by this crude method has been so successful, and has to be attended to so seldom, that it is quite possible the special flush tanks may be omitted entirely.

During construction, silt, in the form of fine sand and clay, found its way into some of the pipes, and upon completion of the work deposits were found in certain sections; in one case to a depth of over three inches, and very compact. The question of removal seemed quite a serious one; the more so, after repeated flushings had failed to carry off the obstruction.

After repeated experiments one of the two following courses was adopted in every case: a shingle with a lighted candle fastened upon it was allowed to

float down the pipe from a manhole, being controlled from the initial point by a string, so that it could be stopped when desired. An obstruction met could be located by measuring the length of the string. This being ascertained, a hoe or rake was introduced on one end of a series of jointed rods (which when screwed together somewhat resemble a fishing pole), and the sand loosened and afterwards flushed off with water; or, a stout twine was attached to a wooden plug, which was floated down from one manhole to another, and to which, in turn, was fastened to a small rope and a section of rather heavy iron chain, which latter could be dragged to and fro, until the whole mass of sediment was loosened.

These appliances, except the shingle and candle, are the ones ordinarily in use for pipe sewers, and were found tolerably satisfactory, though not wholly so. To meet the want still felt, circular brushes of various sizes that could be attached to a rope or rod and then pulled or pushed through, were devised; at first, these were made of stiff bristles, but now are constructed of flat steel wires, fastened to a wooden core, and with the arrangements before mentioned appear to be sufficient for all purposes. After being once thoroughly cleaned, the question of keeping the sewers in that condition was much simplified.

Inspection now consists either in reflecting the sunlight through the sewer, from one manhole to another, by means of mirrors, which enable a very fair inspection without any flush whatever, or in the use of the shingle and candle before mentioned. If any foreign matter appears to be in the pipe, its position can be located (if the day be sunny) by counting the joints in the pipe, which can be seen by the mirrors above referred to, and

the brush, chain, hoe or rake used, as may seem best.

The system, which is nearly five miles in length, is intended to be thoroughly ventilated, and includes not only the public sewers, but all private drains below running traps.

The lower manhole on each trunk sewer is provided with a perforated cover, to relieve the other portions of the sewer from the pressure caused by heavy surf, and not, as has been suggested, as a fresh-air inlet, for, on the upper side of each manhole, is a flap valve or tide gate which would effectually prevent any such use being made of the perforated cover. The sewers and house connections above the last manhole on each trunk line (which manhole is intended for the purpose above described) are water-tight, so far as careful work can make them. House connections are entered in 4-inch Y pipes, and the ventilation for both sewer and house drain is provided for by a 4-inch pipe, connecting outside each and every house, extending from the main drain of each building just below the running trap, to some point above the chimneys. This provides not only for the ventilation of sewer and house drain (the latter is rarely ventilated between the running trap and the sewer, though apt to be fouler than any portion of the public sewer), but it also causes each house drain to ventilate its proportion of the system, and prevents the usual concentration of the gases at a few points.

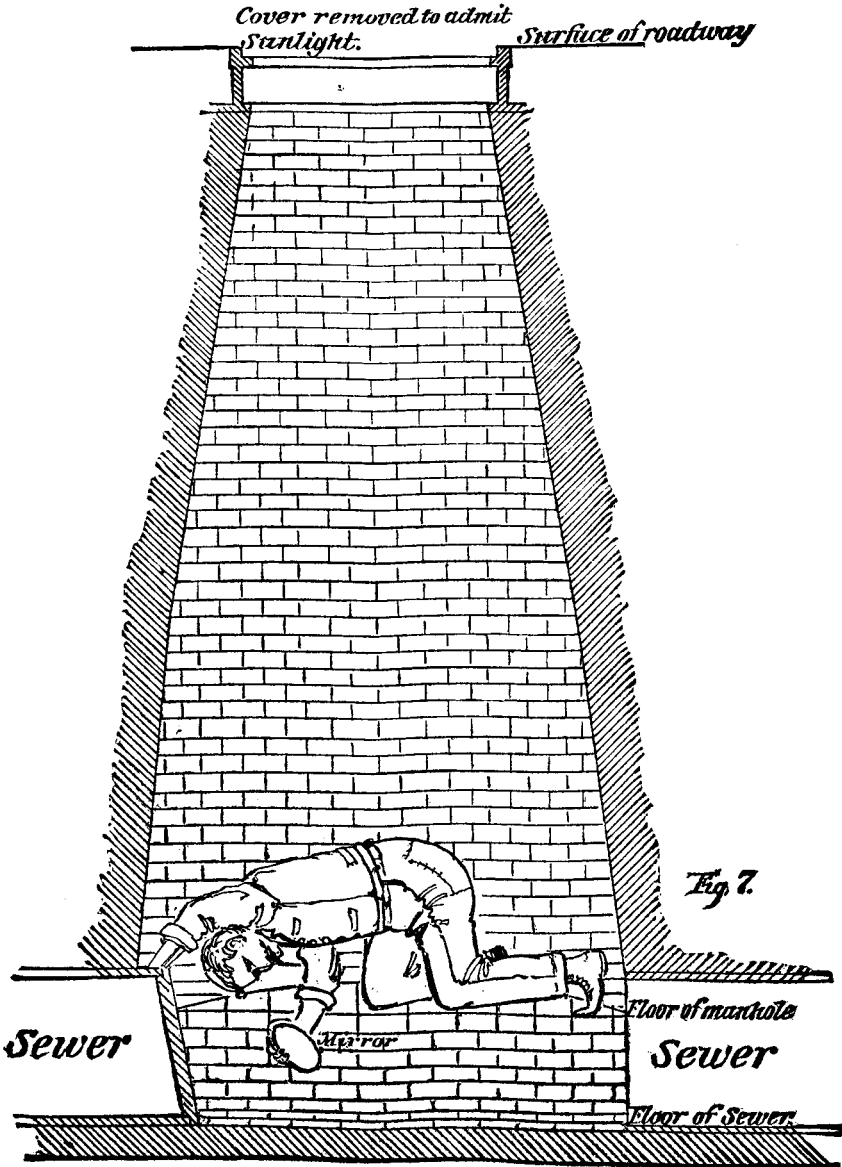
All ventilation being above the top of the house, there is very small chance of annoyance from smell, and so far as known there has been none noticed at any point save slightly at the perforated manholes at the foot of the trunk lines, and in three instances from "puffing" of fresh-air inlets to house drains—both of which were disconnected from the

sewer and drain ventilation referred to.

* * * *

There were 80 cases of typhoid fever during 1881, out of an estimated population of 1,500. In 1882 the summer population was probably not over 1,200, and the number of cases can per-

haps be best reported in the language of the local board of health, just issued: "It is a source of gratification and pleasure to them (the Board) to be able to report that, notwithstanding the epidemic of typhoid fever that prevailed here in 1881, yet the vigorous correctionary measures



adopted by the town, and carefully carried out, completely checked it, and not a single case of the fever has appeared here since, that could not be traced to some other locality, for its origin." *

Ground was broken for the sewers Feb. 16, 1882, and all work on them was finished July, 1882, although some of the private connections were not done till after that date.

The estimated cost of the work was \$52,000; the actual cost including a number of items, not originally estimated upon, was \$51,785.77.

The question has been frequently asked, "With the knowledge gained from the work done, what changes would be advised, was it to be repeated elsewhere? difficult question to answer, as no two places are similarly situated, either geographically, sanitarily, financially, or any other way. It may be sufficient to say, that some of the details of the house connections, such as grease-traps, cesspools, and fresh-air inlets, would probably be somewhat differently arranged, and the former built of cast-iron rather than brick, while the general features of the plan would remain unchanged.

CAUSES AND ORIGIN OF CHOLERA.

Other events in Egypt have cast the cholera epidemic rather too much into the shade. The possibility of the spread of the disease next summer is such that all interest in it should not be lost. Anything reliable relating to its cause and origin will be profitable, and ought to be interesting to all who take any interest in sanitary work. At a meeting of the Epidemiological Society of London, (Eng.) on January 9th, 1884, an important discussion took place upon this question, of which the following is a synopsis from a report in the *Medical Times* :—

Surgeon General Hunter, who has been investigating the outbreak of cholera in Egypt, said, that in regard to the recent outbreak, there was one point in his report to the Government which was of such paramount importance, that he wished to bring it before the members of the Society, and he intended to limit his remarks to that one point, viz. : to enquire into the origin of the commencement of the outbreak. Egypt, he said, was about the same size as Belgium, but with a population close upon 6,800,000 inhabitants, or $1\frac{1}{4}$ million more than Belgium. The soil was alluvial, rich in decomposing organic matter; the people were agricultural, and led an out-of-door life. The country was almost rainless, except for three months during the cold season, the sky was cloudless, the air dry, the winds almost always northerly. The Nile was the only source of water supply, and periodically inundated the country; the rise began in June, and attained its highest point in September, then gradually falling till the following June; the subsoil water level of course followed that of the Nile. The inhabitants mostly drank water unfiltered and before it had time to settle. At Cairo there was only one tank for drinking purposes, and the water was highly charged with inorganic and organic impurities; in the fashionable quarter there was no attempt at filtration. The water supply at Alexandria was good, it was the only town in Egypt with a wholesome water supply. The Nile was polluted almost from its very source with filth, garbage, and the excreta of all the towns on its banks. At Cairo and Alexandria it was found to contain minute bacteroid organisms in considerable numbers. There had been greater pollution of the river than usual, by the carcasses of animals that had died of typhus fever being thrown in, in order to avoid the fee payable on their death.

thousands must thus have been thrown into the river. It had been rumoured, too, that the fellaheen had sometimes eaten the bodies of animals that had died of typhus. It was the custom of the country that all the domestic animals should live in the hut with the family. The cess-pit system prevailed at Cairo, *i.e.*, holes were dug in the sand, but these were rarely cleaned or emptied, and the house pipes and cess-pits were in direct communication. Some attempt at a sewerage system had been made in Alexandria, but the contents of the sewers were emptied onto the beach, and though the sewers were provided with ventilators, these had been closed five years before his visit. Moreover, the privies were in direct communication with the sewers. Throughout the country grossly insanitary conditions prevailed, but he was happy to be able to state that the *Conseil de Santé* had been abolished. The prevalence of bowel disorders was very marked, and he had no doubt that under the head of diarrhoea were included many deaths from cholera. As a rule, no attempt was made to register the cause of death until after the burial. In one town, out of 40 deaths 26 were due to diarrhoea; in another, out of 174,93 were so caused, and at a later period in the same town, 57 out of 110. In Cairo, in 1882, out of 17,290 deaths, about 38 per cent. were due to some affection of the alimentary canal. In Bombay, in 1881, the mortality from bowel complaints was 2 per cent. Passing then to the events more immediately connected with the outbreak, he said that the campaign was very short; it took place away from the Delta, and the troops who came from India, and being picked, were healthy, began to suffer from diarrhoea directly they got to Cairo. Since 1831 there had been five epidemics of cholera in Egypt, excluding the one in 1865. In his opinion, no country was ever more ripe

for an outbreak of cholera than Egypt was. A commission, appointed immediately the news of the outbreak was given, decided that the disease was cholera, but could arrive at no conclusion as to its origin. Dr. Flood's theory of a stoker on board the *Timor* having brought it from India had been shown to be baseless, as the man was simply a drunken scoundrel, and did not arrive at Damietta until two days after the commencement of the epidemic. Ahmed Chaffey Bey and Salvator Ferrari had admitted, as the result of their investigation, that the insanitary state of Damietta afforded ample scope for the genesis of cholera. The other importation theories had also broken down: one was still under inquiry, *viz.*, that the disease had been introduced by stokers and firemen plying between Bombay and Port Said, but he was confident that it had no foundation. He then referred to Dr. Couvidon's report, the substance of which was given in an article in the *Times*, and also to a communication in the pages of a medical contemporary, against the theory of importation. For himself, he did not believe in the specific nature of cholera, and regarded the recent epidemic as an outcome of a disease that had existed endemically in the country. He then referred to the evidence he had been able to collect of the existence of cholera before last June, mentioning the two children at the Greek School at Damietta, and quoting extracts of letters from Dr. Dutrieux, Sonsino, and Sierra, all of which were given in his second report, and have already been alluded to in these pages. Dr. de Castro has supplied some account of suspicious cases that he had seen from time to time, but he was of opinion that though they resembled Indian cholera, yet they were not cholera, because they were less grave, and because the cases did not spread. Dr. Mackay had done some good work in this

direction. On the whole, he (Dr. Hunter) considered that he had ground for the belief that the disease had been endemic in Upper Egypt since 1865. He then briefly referred to the valuable aid he had received from the medical men sent out to assist him, especially from Surgeon-Major McNally, at Zagazig, and Mr. Honman, in the neighbourhood of Mehalletel-Cebir, and quoted a speech made to Sir E. Baring by a high official: "We all know that cholera has been constantly here, and generally follows the cattle-plague, but we are told to say nothing about it." He had arrived at the opinion that cholera had been endemic in Egypt since the great epidemic in 1865, and his information had been received from medical men not in the employ of the Egyptian Government. It was no argument that the disease was not cholera, because its importation could not be traced, or because it did not spread. If the cases of cholera were not true cholera, then cholera was not endemic in Bombay, for the cases presented no difference, either clinically or pathologically, from cholera. He believed that cholera was endemic in many towns in Europe and in the British Isles. Passing to the consideration of the atmospheric conditions, he referred to Glaisher's work in connection with the three epidemics in this country, and said that in India cholera had been associated with a high temperature and moist stagnant atmosphere. Dr. Kirker, R. N., had described how stagnancy of the air over one town had seemed to force the disease into existence, and had collated a series of charts for 13 years, from which it appeared that the weather of last June was exceptional, whilst that of the 9 or 10 days before the outbreak was unique in character. Dr. McDowell had dwelt upon the peculiar condition of the atmosphere, noting its yellowness, and the fact of the mi-

gration of the sparrows. The Arabic phrase for cholera meant—"the yellow air." He thought it was undoubted that there was some close relation between these atmospheric conditions and outbreaks of cholera, but whether of cause and effect or not, he was not prepared to say.

Surgeon-General Murray said that Dr. Hunter's experience had well fitted him for the task which he had undertaken. There was no foundation for the theory that the disease had been imported from India. Dr. Hunter said that it arose spontaneously from insanitary conditions. What was meant by the term "spontaneous?" Did the disease suddenly spring into existence, or was there a gradual development, and if so, how long did it take? or was it called spontaneous because it could not be traced to any other source? The history of the disease displayed a dormant state, it might assume an active form in a few minutes, hours, days, weeks, months, or even years. He referred to an outbreak at Agra, where it was taken in the wards of the hospital by himself and others in a few minutes. The disease did not often remain dormant in a person more than 3 to 4 days. It was often communicated through the ground, as in the case of a healthy regiment following an infected one on a camping ground. Coolies had been known to contract cholera in a very short time from opening graves from six to eight years old. In Bengal there was not a single district that had been free from cholera for the space of one year. An endemic disease, he considered, depended on the locality, those living there would get it and might take it away with them, but they would not give it to any one elsewhere, it was a non-contagious disease. The communicability of cholera had been proved beyond doubt by two epidemics. In Hurdwar, in 1867, it broke out among some pilgrims who dispersed over the

country and it broke out wherever they went, amongst the inhabitants of the district. Dr. Bryden had endeavoured to account for this by saying that an epidemic of cholera was then due. But in 1879 there was another pilgrimage to Hurdwar, and again it was spread all over the country following the track of the pilgrims, but this time, owing to the introduction of the railways, it spread much more rapidly, appearing in Mooltan two months sooner than on the previous occasion.

Brigade-Surgeon Scriven was not strong in the belief that cholera did not originate spontaneously, but he was not convinced by the evidence adduced by Dr. Hunter, that the earlier cases had been instances of true cholera; sufficient details had not been given to satisfy him. If the disease did not spread under such insanitary conditions, the disease could not be cholera. It was possible that hereafter he might be convinced that cholera had been endemic in Egypt, but there was not as yet sufficient evidence.

Prof. de Chaumont considered this a very valuable paper. Pettenkofer had distinctly asserted that our troops, during the late campaign, had brought the cholera from India; no cases were brought, but the troops had brought the disease to Egypt, and left it there. According to this theory, the disease was not communicated from one to another, through the vomit or fæces, but rather as a germ or ferment, which could flourish when it found a suitable soil. He agreed with Dr. Murray, as to the communicability of cholera, and did not believe in its spontaneous origin. In Egypt, the theory of importation had not been proved. He considered that Pettenkofer's was the most plausible hypothesis; if this would not hold, then the germs of the disease had lain dormant for many years. There was in this country evidence of that kind, in regard to enteric fever, which could certainly lie dormant for a while.

EARTH-BURIAL *v.* CREMATION—A COMMON-SENSE VIEW FROM THE SANITARY RECORD.

So much has been written, even by the adherents of ordinary interment, on the dangers to health arising from the proximity of graveyards to human habitations, that it would be well to inquire how far these dangers are real or imaginary, and preventible or not. This Dr. Hinsch has attempted to do in a paper read last March before a Hygienic Congress at Hamburg, and now published in the *Centralblatt für Allgem. Gesundheitspflege*. After referring to the several forms of furnace employed for cremation, and classifying the cremations that have already been performed in different countries, he proceeds to discuss the question *pro* and *con*. As to the reported cases of persons having died, or been struck by disease after descending into vaults, and of lights being extinguished by the gases evolved therein, he gives it as his opinion that either the vaults were ill-constructed and arranged like those in the burial-ground for the poor at Naples, than which he admits nothing could be more horrible, or that the gases were simply the carbonic acid which everywhere forms so large a proportion of ground air even in the absence of such a mass of decomposition as is here assumed, and which may be drawn into a vault from the surrounding soil, although the cells containing the coffins are securely cemented up. This is admitted by Küchenmeister, the most strenuous advocate of cremation.

Against mere burial in the earth the objections appear at first sight more plausible. The gases evolved in putrefaction are carbonic acid and various hydrocarbons, ammonia, and compounds of sulphur and phosphorus with hydrogen; but Pettenkofer failed to detect any of these in the air of cemeteries, and Fleck was equally unsuccessful in discovering products of de

composition in air drawn by an aspirator direct from the soil of the graves. If they do escape, the fault lies in the mode of burial, not in earth-burial itself; and he adduces several instances in support of his allegation.

The pollution of wells and springs by the rise and fall of the ground water among the graves is no doubt possible, but can be easily obviated in light soils by proper drainage, keeping it at a constantly low level; while in stiff clays no such circulation takes place, and decomposition is extremely slow. Besides, we must not forget the power possessed by pervious soils of destroying the products of putrefaction, as shown in the earth-closet; and the fact that Fleck, Wiebel, and others, who have examined the waters in the proximity of cemeteries, have failed to find any evidence of pollution.

As to the communication of fevers by germs retaining their vitality in the soil, he is utterly incredulous, and quotes the evidence of Dr. Holland, the English medical inspector of graveyards, of Hofmann and Pettenkofer, to prove that such dangers have no real existence, and that the alleged cases of the prevalence of disease in the neighbourhood of cemeteries have been invariably traced to foul ditches, cesspools, and similar causes.

The economic aspect of the rival modes he treats fairly and fully, urging that while the question does not enter into that of permissive cremation, compulsory cremation would demand in the end nearly as much space for the urns as earth-burial, with re-employment of the same ground after a term of years, does now. Nor can the cost be taken into account one way or the other, for while only the wealthy would avail themselves of permissive cremation, the expense would be greatly reduced if ever it were universal and obligatory. He rejects the objections urged against crema-

tion as precluding exhumation for medico-legal examinations, since such a resort is a confession of the miscarriage of justice or of erroneous diagnosis, which might be provided against by the special precautions adopted in Italy when the parties elect cremation; and as to the sentimental question much may be said on both sides. There is no need to contemplate the buried horrors of putrefaction and the worm, while those of cremation are not wholly concealed from view, and there is a pathetic poetry around the grass or flower covered grave to which no marble *columbarium* can lay claim.

The general conclusions to be drawn from Dr. Hinsch's paper seem to be that, while overcrowded burial-grounds and badly arranged vaults are open to serious objections, there are really none to cemeteries well drained and to properly constructed vaults on the cell-system; that the air of graveyards does not differ from that of other places; and that in general the alleged dangers are, if not imaginary, the result of gross neglect and easily preventable. Of course the subsoil water may become polluted if the earth be taxed beyond its powers or drainage be neglected, but these circumstances are not to be deemed necessary attendants of earth-burial.

MIND-BUILDING.

The human mind is a subject for consideration as vast as it is incomprehensible, and as interesting and important as it is vast. Of the beginning and the end of its development—individually and as regards the whole human race—and of its marvelous workings and connection with brain matter, very little indeed is yet known to mortals. The investigations of science have revealed and proved, however, that the brain is the special organ of the mind, the instrument of manifestation of

the thoughts, ideas and will ; the material substance through which men become conscious of the world around them, and hold communication with other men ; and that as the brain is so are the thoughts, the ideas and the will. *Mens sana in corpore sano* (a sound mind in a sound body) is a saying as true as it is old and commonplace. Without a sound a body, especially a sound brain, there cannot be a sound mind.

As an eminent authority on physiology writes : "The nature of the connection between the mind and nervous matter has ever been, and must continue to be, the deepest mystery in physiology ; and they who study the laws of nature, as ordinances of God, will regard it as one of those secrets of his counsels ' which angels desire to look into.' The individual experience of every thoughtful person, in addition to the inferences deducible from revealed truth, affords convincing evidence that the mind can work apart from matter, and we have many proofs to show that the neglect of mental cultivation may lead to an impaired state of cerebral nutrition ; or, on the other hand, that diseased action of the brain may injure or destroy the powers of the mind. It may be readily understood that mental and physical development should go hand in hand together, and mutually assist each other ; but we are not, therefore, authorized to conclude that mental action results from the physical working of the brain. The strings of the harp, set in motion by a skillful performer, will produce harmonious music if they have been previously duly attuned. But if the instrument be out of order, although the player strike the same notes, and evince equal skill in the movements of his fingers, nothing but the harshest discord will ensue. As, then, sweet melody results from skillful playing on a well tuned instrument of good con-

struction, so a sound mind, and a brain of good development and quality, are the necessary conditions of healthy and vigorous mental action." But of the nature of the connection of the brain. "With the sentient mind," says Dr. Brown, (Phyl. of human mind), "we never shall be able to understand more than is involved in the simple fact, that a certain affection of the nervous system precedes immediately a certain affection of the mind. That a peculiar state of the mere particles of the brain should be followed by a change of state of the sentient mind, is truly wonderful ; but, if we consider it strictly, we shall find it to be by no means more wonderful than that the arrival of the moon at a certain point of the heavens should render the state of a body on the surface of our earth different from what it otherwise would naturally be ; or that the state of every particle of our globe, in its relative tendencies of gravitation, should be instantly changed, as it unquestionably would be, by the destruction of the most distant satellite of the most distant planet of our system."

Science plainly reveals that between the brain and the mind there is a direct relative ability for good or for ill, a direct relative association of perfection or imperfection, and that as the one is so is the other. It is well known, and we need not dwell upon it here, that the brain is built up of the food eaten and the oxygen breathed ; its construction being influenced very largely by ancestry or heredity, and largely by the habits of life, as well of the parent as of the individual. And it is therefore as plain as can be that, in the earliest development and formation of the human mind, through the human brain, individual men and women have in their own hands great power and influence ; in their hands largely they have the moulding, for good or ill, of the minds

of the coming generation—of the young who will so soon be the men and women guiding the destinies of the world. A knowledge of this fact should bring with it to every thoughtful parent a feeling as of a great, even fearful, responsibility.

The elements and forces which enter into and influence the development and formation of the brain and the mind, may be arranged for consideration under three principal divisions, as follows:—

First, the natural Divine laws relating to all created things;

Second, the special material elements of which the brain is constructed—the prepared nutriment received through the digestive organs, and the oxygen of the air which is breathed;

Third, inherited tendencies, and the habits of life, physical and moral, of the parents and of the individual, exercise of both mind and body, general education, and all other influences not included in divisions first and second.

Relating to the first, the natural Divine laws, little need be written. In the natural development and growth of anything in nature, when, in connection with nature's laws, suitable materials for construction are provided, and the environments are not obstructive nor unfavorable, these laws tend invariably to perfection of type, physical and mental. Furthermore, it is well known that they will, in time, in favorable conditions, correct, overcome and eradicate evil tendencies and morbid developments. We may here refer to the article in the January number of the JOURNAL on overcoming and eradicating hereditary diseases, with special reference to the teeth. Cases of a similar character are not uncommon.

As relates to the second division, we shall not enter into details. Abundance of pure, fresh air, and simple, nutritious,

digestible foods, containing all the elements essential for complete nutrition, are indispensable in the building up of the brain and mind—indispensable alike to the parents and the individual offspring. Indigestible, irritating, over-stimulating foods tend to produce mental irritability, and a diet consisting largely of such substances will assuredly give rise to an irritable condition of the mind, which may be transmitted to the offspring of parents so conditioned, and will not build up a well balanced mental organization.

It is under the third division that are found enumerated the great human influences which effect for good or ill the developing mind. Heredity, the general habits of the mother during gestation, early education, mental and physical, and association, are the great architects and moulders in the construction of that marvellous organism, the human brain, and the yet more marvellous human intellect.

Doubtless, of all influences in the moulding of the mind, the greatest is heredity. Parents constantly transmit their various traits and peculiarities of character to their offspring. Parents of high intellectual attainments, as a rule, beget intellectual children. The exceptions are frequently owing to the ill effects of certain habits of life of the parent or parents. The good amiable children are usually the offspring of a virtuous, pious father or mother, or both. A criminal becomes the parent of hundreds of criminals; of which fact many instances are upon record.

The powerful influence of mothers, and even of fathers, too, over their unborn children cannot be fully recognized, or more consideration and practical attention would be given to the period of gestation in mothers. When will parents "get wisdom" and act upon it in regard to their relations and responsibilities in the build-up of the mind of those yet unborn who

will be near and dear to them? An over-worked, fretful or despairing mother cannot but make an impression for evil of some sort upon the brain and through it upon the mind of her unborn developing infant. The habits and conduct of the father, even at this period, and especially before it, have great influence upon the future of the child. It is a fact that, amongst a large class of people, especially in rural districts, more attention is paid to the condition of the domestic animals—the horses, horned cattle and sheep—which are kept for procreating the species, than is paid to the condition of the parents of children. This must be largely owing to a want of knowledge and fore-thought. Most parents will make sacrifices and exercise self-denials on behalf of their children which they would not do on their own account. Who are they who expect to have children who do not most earnestly desire that the children shall possess a mind of the first order—the best and most vigorous? It must be that general knowledge only is wanting in regard to this most important subject; a knowledge that would surely be almost universally acted upon if imparted or disseminated.

In conclusion, we can only add that, for parents to lead a life of strict temperance in all things is of the first importance. This may be regarded as the first and most comprehensive law of physical and mental health. They should attend carefully to all other laws of health, breathe only pure air, avoid over-work and idleness, dress judiciously and keep the surface of the body in a healthy condition by means of the bath; and strive to live a patient, cheerful, charitable, virtuous, God and man-loving life. And who can estimate or conceive the possibilities of the human race if thus wisely and properly developed generation after generation?

TEMPERANCE AND SANITATION.

It has often occurred to us that if those who have been so enthusiastic and energetic in temperance work, in attempting to prevent the sale and use of alcoholic beverages, had taken a deeper and more comprehensive view of existing social evils, and manifested the same amount of enthusiasm and vigor, and spent as much time and money in efforts to promote the health of the masses of the people by lecturing and contending against filth, foul air in rooms, bad cookery, and tobacco, quite as much drunkenness would have been prevented, and a great deal more permanent good done. Unquestionably filth, foul air, bad cookery, and tobacco, are prolific causes of drunkenness, as well as of disease. In the more profitable work indicated, such efforts would not have met with opposition from any class of people, hardly even from an individual; on the other hand almost everybody would have rendered them more or less assistance. Everybody believes that filth, foul air, bad cookery, and tobacco, are injurious to health, and everybody is ready to sanction or aid in the removal of all such causes of disease, and to promote "prohibition" as it bears upon all such causes. Hardly anyone will contend for much even on behalf of tobacco. Nearly all but a few directly interested in its sale, acknowledge that its habitual use is but an idle habit, bringing at most but temporary solace to a few. But when it comes to abolishing or prohibiting that which a large majority of the most intellectual people know does much good if only it be used rightly or in moderation, a fact which there is no getting over, notwithstanding the contrary assertions of such eminent men as Dr. B. W. Richardson, and which a large majority can use in moderation, the work becomes of the most "uphill" character. Opposition to it is at once

created on all hands, and progress is greatly impeded. Many who do not use alcoholic beverages at all themselves, and many who perhaps do use them very moderately but would deny themselves for their brother's sake, knowing that there is good in their use after all, if rightly used, do not enter warmly into the work of prohibition. We desire not to be misunderstood. We would place the strongest restrictions on the sale of such beverages short of the prohibition asked for, and abolish the saloons and bar-rooms as at present conducted, with the keepers of which we have not a trace of sympathy. But science teaches that there are food properties in alcohol of the most valuable kind, and truth will prevail, and the use of alcoholic beverages can only be restricted and not prohibited. It would be a great aid to the cause of public health if all the energetic "temperance" workers would join heartily with sanitarians and work as vigorously to promote perfect cleanliness and true temperance in all things.

IRRESPONSIBILITY OF CRIMINALS.—An Austrian physician has published a book in which he endeavours to prove that habitual criminals are so because they are incapable of helping it. He appears to have examined the brains of a number of persistent criminals, and has invariably found that the superior frontal convolution is not continuous, but is divided into four sub-convolutions analogous to the parts found in predatory carnivorous animals, and he thinks that the mental characteristics of criminals are due to this peculiar formation of brain.

ADDISON, it is said, was one of the ablest of medical teachers, and yet he was born of insane blood and died by his own hand.

OUR MISSION—THEN AND NOW.

This JOURNAL has never been given to much boasting of its success and successes, in any way. Quietly and steadily, with two or three unavoidable and lamented interruptions, it has pursued the course it marked out for itself in the beginning. It now desires to bring before the public, and remind them of, some facts. Seeing that thousands of lives were cut short every year in Canada by diseases which might be prevented, and that there were yearly, hundreds of thousands of cases of preventable disease, with all their attendant and consequent anxieties, anguish, bereavements, tears and costs in money, the JOURNAL scattered with a liberal hand all over the Dominion, thousands upon thousands of copies, containing from month to month the best means of the prevention of disease known to science; resolved not only to educate the masses of the people as far as possible in ways of prevention, but, and especially, to stimulate the Legislators in the different Parliaments to assist in the work of public health education and to help and require the masses to put into practice the knowledge obtained.

Many physicians in the highest positions in Canada, and many not physicians, give credit to this JOURNAL for having been the chief agent in creating the present interest in sanitary proceedings in Canada. Certainly when this JOURNAL was commenced, eight or nine years ago, the subject of sanitary science, or public health, was hardly even heard of any where in the Dominion, or alluded to in print, nor did any one appear to take any interest in it, with the exception of some spasmodic action from a few leading physicians in the larger cities when threatened with a visit from the cholera. The subject was not then taught, and not only was it not taught as a branch, but it was not taught

in any way or degree, in any one of the medical schools in Canada, and was not of course required by the medical council in final examinations. How is it now? The medical council require that every medical student, before commencing practice, shall pass an examination in sanitary science, and in every medical school in the Dominion is given every session, by one of the professors, a regular course of lectures on this science, which students are required to attend. Ontario has an active board of health, educating the people in health laws, by means of pamphlets, reports, lectures, sanitary conventions, and in other ways; while promoting legislation which will require and compel compliance, on the part of the public, with sanitary laws. Manitoba has been the first province to follow Ontario's example, and organize a provincial health department for promoting, in like manner, the health of the people. A number of cities have been induced to appoint medical health officers, by the action last year of the Federal Government, on behalf of the collection of statistics for the promotion of the public health. A Dominion Sanitary Association and a Quebec Province Sanitary Association have been formed, and others are talked of and will doubtless soon be organized, all with the one main object in view—the prevention of sickness and the prolongation of life. Besides, we find now in the usual daily and weekly papers, ten, or perhaps twenty or more, times as much as could be found seven years ago, of useful instructive matter relating to the prevention of disease. The prospects are good that in the near future, Quebec Province, largely through the efforts of Dr. LaRocque, of Montreal, will organize a health board similar to that of Ontario, and, perhaps more important than all, that there will be one principal centre of health for the Dominion by the formation of a

Dominion or Federal Bureau or Board of Health with head quarters at Ottawa.

All this ought to be, and is, gratifying to the editor and publisher of the Journal, who has often gone outside of his connection with it in order to advance the more rapidly the important interests involved. The progress has seemed to be slow, but in looking back now, it can hardly be thought to have been slow, for when compared with like work in other countries, it has been fast.

The editor does not forget, nor will he ever forget, the prompt and valuable assistance rendered in the work by the foremost medical men in the country, and indeed, if not direct aid, encouragement, from almost the entire profession, especially in Ontario. Ever ready, all seemed to be, both in the Legislature and Parliament and those not legislators, to assist in the prevention of sickness—to assist in cutting off in a measure the means of obtaining their own livelihood, in order to promote the public good. We should like to mention the names of some of the foremost and most active in assisting, but must forbear.

In the future there is much to be done, very much, but there are now many laborers in the great uncultivated wastes, and much is hoped for.

QUARANTINE.—The members of the Pasteur Cholera Commission are of opinion that the immunity enjoyed by Marseilles from cholera is due to the rigorous enforcement of quarantine regulations, as this is the first time that the city has escaped the scourge when the disease has been raging at Alexandria.

DR. BUCKNILL will deliver a lecture at the London Institution, this month, on the "Relation of Madness to Crime."

MICROSCOPIC ORGANISMS IN BUILDING MATERIALS.

A French scientist, M. Parize, has discovered in the powdered materials of soft and decaying bricks a new source of danger to health. The wasting away of badly burned bricks has been attributed to the action of moisture, or the atmosphere, or both combined. Noticing some blisters on a wall he punctured them, on which a fine pulverized dust came out. Examining this for larva of insects, with a strong lense, he failed to find anything, and on using the microscope found the dust to be full of living microscopic organisms. Not only were they present on the surface, but on drilling a hole a little way into the brick, they were found in the dust obtained from the bottom of the hole.

Dr. Gooderich, of San Francisco, claims to have noticed these organisms six years ago, and he mentioned them, in a recent publication, before hearing of M. Parize's investigations.

He says: Having had occasion to examine a brick that was taken from an old ruined building, he was startled to find, under the microscope, a colony of the rod-like animalculæ. They were semi-transparent, with a light scintillating column nearly two-thirds of their length, extending from their heads to their pointed tails, like a spinal column.

As this brick was from the foundation and underground, and next to the street, it illustrates forcibly the fact that however hard-burned and well-made, porous substances should not be put underground for the foundations of houses or for sewers.

M. Parize suggests that the presence of these organisms may account for the wasting away and rapid destruction of numerous semitic monuments built of slightly baked or merely sun-dried bricks, by the Assyrians and other ancient nations; and also that this cause may possibly play

a part in the disintegration of schisbose rocks and agglomerates or clods that enter into the composition of arable soils.

WAS IT ACCIDENTAL?

Paying a somewhat lengthy visit to a relative not long ago, we were vexed to find the waste pipe of the bath gradually display symptoms of being choked. Of course the blame was laid on the children; "they had been stuffing all manner of things down the pipes," etc., etc. We tried all sorts of devices to clear the pipes, and being of a somewhat scientific turn of mind finally concluded that it must be from want of air, and proper ventilation, that the water was unable to get away freely. However, the unaccommodating bath water at last refused to run out at all, and a plumber was reluctantly sent for. With malicious triumph gleaming in his eye, our much-dreaded bachelor relative stood over the workmen to obtain the damning proof of our youngsters' guilt. We had not long to wait. On opening the screw valve of the trap, the cause was discovered at once, and with an air of our-firm-never-do-such-work, the plumber triumphantly produced a piece of solder, two and a-half inches long, and weighing a full quarter of a pound! and he was quite oblivious to our pleasantry as we asked him if he could call that a case of "lead deposit" in the pipe.

A RATHER frivolous lady told her husband not to go hunting, as, in her opinion, it was a cruel pleasure. "How can it be a cruel pleasure?" returned her spouse. "I enjoy it and my dogs enjoy it. I know you enjoy yourself when I am absent; and even the quail enjoy it, for I can't hit one on the wing to save my life."

THE NUMBER of packages of patent medicines sold twenty years ago in Great Britain was over six millions, the number sold last year was over eighteen millions.

Matters Recent and Current.

THE PROVINCIAL BOARD OF HEALTH will hold a Sanitary Convention in Ottawa, early next month, when some valuable papers will be read and discussed.

A FOREIGN COMPLIMENT.—In a report made by Dr. VanLeent before the General Assembly of the International Congress of Medical Men of Colonies, held at Amsterdam, Holland, the reporter compliments Canada on its quarantinery organization, which he calls *tres complets et tres efficaces*—most complete and efficacious.

THE DOMINION SANITARY ASSOCIATION.—It is expected that there will be a meeting early next month in Ottawa of the Executive Council of this Association. We alluded last month to the difficulty of great distance between the different members preventing a meeting and active work, but did not mean to be uncharitable toward the Association, nor any of the members thereof. We believe the Secretary, from whom much was expected—much power being left in his hands—has suffered from family affliction, and that he has not, therefore, been able, during much of the time since the Association was formed, to give much time in its behalf. There ought to be a goodly number in Ottawa of men interested in sanitary work who would join the Association, and if there be a meeting here we hope to find a large increase in the membership.

IN BROOKLYN, the sanitary authorities have a sensible method of dealing with milk-dealers. They invited the dealers to meet in the Common Council Chamber, when it was explained to them by an expert how they could determine by various tests whether the milk purchased from the farms is of the required standard. It was then hinted to them that the licenses of such dealers as were thence-forward detect-

ed in selling adulterated milk would be peremptorily revoked.

QUEBEC SANITARY ASSOCIATION.—Ottawa has had a visit from the active health officer of Montreal, Dr. LaRocque. He informs us that the above-named association is progressing fairly and that it has been fully decided to publish a journal in the French language devoted to public health work. We are much pleased at this, and trust the Journal may accomplish much good amongst the French speaking people of Quebec, and awaken them up to the importance of using means for the prevention of sickness. There is a large and as yet rather uncultivated field.

IN THE *Scientific American*, one of the foremost scientific papers published in any Country, in the number for the 9th February, inst., is a representation of the Geneva Movable Isolation Hospital, precisely as given in this JOURNAL in October, and exhibited by the Provincial Board of Health.

THE SOUVILLE SPIROMETER CASE.—We are pleased to congratulate Dr. Bray, of Chatham, and Dr. McCammon, of Kingston, on the result of the recent trial at the Civil Assizes in Toronto. The evidence brought out just about what one would naturally expect in showing the nature of the ex-Aide-Surgeon-of-the-French-Army, Souville-Spirometer "business." The case will probably end there. Drs. Bray and McCammon acted in the interests of the public and of the profession, and we think it would be but fair for the Ontario Medical Council to bear their actual costs in the case.

A Subscriber in Hamilton writes to ask the best yet simplest way in which to provide for constant ventilation in ordinary houses not provided with any means for the purpose, except the usual double sash windows. Enquiry received too late for an answer in this number, we will answer fully in our next.

THE TORONTO TRUNK SEWER.—This is again being talked of, and it is probable that at no distant day it will be built. It is certainly high time something were done to lessen the evil of a huge sewage receptacle along the whole front of the city. There is one point in connection with its construction which must not be overlooked, and which cannot be looked to too soon. It is this: all intercepting sewers tend to intercept and obstruct the escape of the sewer gases, and so increase their tendency to back up toward the houses. Free ventilation of this trunk will be indispensable. We believe this could be most effectually and economically accomplished by means of tall air shafts or chimneys, communicating as directly as possible with the trunk, and heated in some way. One such shaft, reaching above the house tops, placed at the foot of each of the main sewers emptying into the trunk, would lessen very much any backward flow and pressure of gasses toward the dwellings.

POPULAR LECTURES ON HEALTH.—At the Canadian Institute last week Dr. Oldright, Chairman of the Provincial Board of Health, delivered a lecture on "Preventable Waste of Life, Health and Wealth." This was the first of a course of popular lectures to be delivered under the auspices of the Provincial Board of Health and the Canadian Institute. After alluding to the Humber disaster, he said that on an average the same loss of life occurred every week throughout the province from causes that might be prevented. But people were so accustomed to seeing one after another cut off in that way that it did not have the same appalling effect as when the deaths were massed together in one catastrophe. In reference to isolation, notification of infectious diseases, and placarding houses in which there were any cases of infectious disease, he said, nobody in the audience would willingly allow children to come in-

to his house while malignant contagious disease existed in it, on the other hand, they would take means to inform people of the presence of such disease. Then why not place a little card on the door informing them of this fact, rather than allow them to come into the house and take the disease—or have a health officer do so? He alluded to the importance of restrictive measures for preventing the spread of infectious diseases and to the millions of dollars that might be saved annually in Ontario by the practical application of Sanitary work. The lecture was well received by an appreciative audience.

D. W. TRIPE, M. D., Medical Officer of Health, and Food Analyst, and late President of the Society of Medical Officers of Health, Great Britain, suggests that regulations should be made for the whole of London for enforcing a periodical cleansing and repairing of houses at a less rental, say, than 20*l.* a year, and of all houses let in lodgings; and that a register should be kept at the office of the local authority for registration of the name of the owner.

PROVINCIAL BOARD OF HEALTH.—The quarterly meeting of the Provincial Board of Health was commenced in Toronto on the 6th instant. The most of the day was taken up with the consideration of the proposed Consolidated Public Health Act. At the session on the 7th, a communication from the Minister of Education was read requesting the Board to prepare a text-book on hygiene for Model and Normal Schools. Drs. Oldright, Rae, Covertton, Yeomans, and Cassidy, were appointed a committee for the purpose. The consideration of the consolidated bill was completed and the bill ordered to be sent to the Provincial Treasurer for the consideration of the Government. On the 8th the advisability of the Board incurring

the expense of a course of ten lectures on sanitary reform was discussed. It was finally, on motion of Dr. Rae, decided to have only two more lectures. The question of publishing the *Health Bulletin* monthly instead of weekly was also discussed, and left to the Publication Committee to report upon. A communication from the proposed Toronto Tenement Building Association, with a draft of a bill to be laid before the Legislature in reference to the erection of tenements, was referred to a special committee. The meeting then adjourned.

ALCOHOL IN BREAD.—A Mr. Knight, in the *Chicago Clinical Review*, points out for the benefit of those who abhor alcohol, that all yeast-made bread contains it, and in quantities that are not altogether insignificant. Fresh-made bread contains 0.30 per cent. of absolute alcohol, and bread a week old from 0.12 to 0.13 per cent. In the process of fermentation a much larger quantity is produced, but the greater part of it is lost by evaporation in the oven. The annual loss of alcohol in bread making is enormous, and efforts have been made in large bakeries to condense and collect it but without success. One hundred thousand dollars were spent in a fruitless endeavour of this in the Military Bakery at Chelsea. Now, as yeast-fermented bread is the only kind of bread that can be eaten for any length of time without producing satiety, says the *Sanitary Record*, for aerated bread, although it is light, and of very agreeable flavour, quickly palls upon the appetite, and persons very soon become tired of it, is it not probable that the great superiority of bread as an article of daily consumption, compared with other farinaceous products that are not fermented, is due to the presence of alcohol? It is interesting to note that a loaf of bread contains somewhere about the same quantity of alcohol as a glass of ale.

COMMENCING SCHOOL LIFE.—Dr. Somerville, at the Congress of the Educational Institute of Scotland, last month, read a most sensible paper "on the Proper Age for Commencing School Life." (*Medical Times*, London, Eng.) He maintained that, for Scottish children generally, the age of seven was a better time for beginning education than five, which was the recognized age, or three, which those in authority were contending for. By forcing children prematurely into school, a good deal more of what was really valuable in man would be obliterated, than if they were encouraged for two or three years longer to grow as nature and natural instincts would have them. One hour a day was quite enough for a child to be kept to lessons, but when an infant went to grant-aided schools, he must be three hours in school every day, and if he got religious instruction, that must be extra. In the case of a little girl, she must be kept in still longer to get sewing; and he was told that a little girl of five or six might be in school from nine in the morning till half-past three in the afternoon. That was perfectly monstrous, and if the object had been to ruin the health of the child, and to make it, in other respects, a poor useless creature, the means could not have been better adapted to the end. Their rigorous climate did not admit of young infants going day by day to school with impunity, during the winter especially. On the fine days he would say they ought not to go to school at all. Fine days were too precious for an infant to waste them in school; they should be spent out of doors.

DR. OSLER, of Montreal, has announced the discovery of a third blood corpuscle, different from that of Norris, and one-eighth the size of the red corpuscle. It can be seen in the blood vessels of the living animal, or in the vessels of freshly removed bits of tissue.

ON THE COMMUNICABILITY OF CONSUMPTION, Dr. A. L. Day gives, in the *Chicago Medical Times*, for February, the following examples, given amongst others in reply to the questions of the investigation committee. He thinks the replies on the whole were accompanied with "evidences which establish the theory of the communicability of the disease beyond a reasonable doubt." Miss R., age forty-eight years, a dress-maker, had three apprentices, young girls from different places and not related, who took it in turn to remain in the house and sleep with her, each one a week at a time; during this time Miss R. was taken with phthisis and died. In less than two years afterward all three apprentices died with phthisis, although in the family histories of each, no trace of phthisis existed. Another case was of a perfectly healthy child, with a family history free from all traces of tubercle. It became infected by a consumptive nurse, and died from hemoptisis after the disease had run a rapid course. Dr. Day gives the following two recent cases in his own practice: Two men in the prime of life, strong and healthy, without previous conditions in the least favoring the development of phthisis, had wives who died from the disease, shortly afterward the husbands were taken with unmistakable symptoms of consumption, severe cough, which seemed to come on without coryza, loss of strength and flesh, night sweats, etc. Possessing very strong constitutions naturally, under appropriate treatment they both recovered after a few months. He concludes, that, while the possible communicability of phthisis is pretty well established, it must be remembered that communication is rather the exception than the rule, and that while it suggests the propriety of good ventilation, disinfection and separate beds, sufferers from the disease may be tended with comparatively little risk.

THE RELATIONSHIP OF CANCER TO THE DIET.—In a communication to the Académie de Médecine de Bruxelles, M. Vanden Corput made a suggestive reference to the etiology of cancer (*Revue de Thérapeutique Med.-Chir.*, January 15), for the following translation in reference to which we are indebted to the *Philadelphia Medical Times*, January 9th, 1884: Upon considering the geographical distribution of cancer the author found that it is almost unknown in hot countries, and also among certain religious communities in other latitudes which abstain from the use of meat. The only apparent connection between these two classes is the diet. It is apparently, therefore, to an exaggerated animal diet—which, at the same time, causes an excess of chloride of sodium in the system—that we must look for the principal pathogenetic cause in the cancerous diathesis. This must reside in an infection of the organism, either by certain nitrogenized products susceptible of disturbing or changing the normal nutrition processes, or by certain inorganic elements, such as the phosphates, capable of favoring the histogenesis of neoplasms. A confirmation of this view was found in the rapid emaciation of the patients, accompanied by the decreased discharge of urates in the urine. The application of these views to the treatment of cancer is obvious, but it does not appear that the author has succeeded as yet in demonstrating the correctness of his views by clinical investigation.

THE PRACTICE OF CREMATION in this country, says the *New York Medical Times*, is making slow progress, but its advocates claim considerable gain in the number of its adherents.

MUSIC is now being employed in Paris as a therapeutic agent. A regimental band has been detailed to play at each of the three hospitals one day in the week for an hour.

GIVE THE INFANTS COLD WATER.—This has repeatedly been urged in this JOURNAL. In a communication to the *New York Medical Journal*, Dr. Remsen, of the Nursery and Child's Hospital, calls attention to the general ignorance which prevails as to the necessity of furnishing infants with a sufficient quantity of water, especially in hot weather. For want of this the fluid portion of any food introduced into the stomach is quickly taken up, leaving the solids too thick to be easily digested. They ferment and produce indigestion and colic, together with diarrhoea. As a consequence of the thickened state of the blood thus produced, excretion of sweat is arrested, and a state of collapse and hyperpyrexia is developed. In warm, dry weather, babies will drink cool water every hour, or oftener, if it is, as it should be, offered them. The earliest sign of the water in the system being below its normal standard is a slightly depressed condition of the anterior fontanelle. This may be present in children apparently in perfect health, yet in whom a slight increase of temperature or the deprivation of the breast for a few hours, may give rise to a sudden febrile condition. Attention is usually first aroused by the fretfulness of the child, a moderate rise of temperature and pulse, a hot, dry skin, and a constant desire to suck. If more care were taken to give children a proper amount of water, and restricting their hours of sucking or feeding, the mortality due to hot weather would decrease, and less would be heard about the troubles of teething.

EARLY COPY of Sir E. Beckett, Bart., Q.C.'s Address: "How did the World Revolve Itself?" A large, especially convened meeting was held by the Victoria (Philosophical) Institute of London—a Society consisting of American, English

and other members, founded to investigate all scientific questions, especially any said to militate against the truth of the Bible—on Monday, January 21, to hear the above named address. In it the speaker described, in popular language, the laws of nature, reviewing the steps in the progress of scientific research, and showing how they bore on the question,—Is all creation, in its perfection, its beauty and grandeur, self-evolved, as some assert; or are we not compelled, after patient investigation of its many departments, to confess that there is something beyond, which we are forced to recognize, evidence the existence of one of Great, all-controlling, wise Mind? "It is little short of lunacy to talk of intelligence being generating gravity—if such a force could be." One reason, we have sometimes thought, we may add, why man was not made perfect, but must wait for perfection, may be this, that man himself might have the privilege and honour of being a co-worker with the Deity in working out, as a free agent, his own perfection.

Work on the ice palace at Montreal was commenced about the beginning of the year. Its size is 100 feet by 150 feet. Cost, about \$3,000.

A REPORTER who attended a banquet concluded his description with the candid statement that "it is not distinctly remembered by anybody present who made the last speech."

VIDE'S FLORAL GUIDE for 1884 is handsome, interesting, and profitable to such as have a practical interest in the growth of flowers or vegetables. It contains one hundred and fifty pages—has three colored plates of flowers, and more than a thousand illustrations. James Vick, of Rochester, N.Y., will be glad to send it to those desiring it.

Literary and Scientific.

FICTION.

It is feared by some that books of fiction, pure fiction especially, tend to beget, and particularly in the young, a disregard for the pure truth—that in fact and in truth they teach boys and girls, and men and women, to lie. So soon as a boy can read or understand a story, books are placed in his hand, or he is told the stories, about “Jack and the Bean Stalk,” and “Jack the Giant Killer,” “Tom Thumb,” and “Bluebeard,” and such-like vile stuff. The writer, when a boy, was not overlooked in regard to such literature, and was, at the usual early age provided with the customary supply of it. He learned, perhaps as soon as other boys, that the stories were not true, and wondered why they and others such were ever told and written, and by truth-loving people. If they loved the truth why relate such abominable stories? There are truths strange enough to excite the wonder and imagination of the young, if wonderful stories are an essential part of a child's early education, which is very questionable.

It is argued that there is a wide difference between falsehood which is intended to do others good and falsehood intended to do harm. Certainly the former is not so bad as the latter; but it is easier to step from habitual falsehood that will not do direct harm to another, or that may even do another temporary good, to uncharitable falsehood that will do direct harm, than it is to step to falsehood of the latter kind from the pure, unadulterated and simple truth. In this age of misrepresentation, deception and falsehood, we submit this question of the uses and value of fiction as one worthy of the most serious consideration.

“THE WEEK.”—This journal is certainly supplying “a long felt want” in Canada, and ought to, and doubtless will, receive liberal support. Its “Topics of the Week,” “Current Events,” and “Literary Gossip” and “Reviews” are particularly interesting, and, we judge, manifest a very fair amount of independence and impartiality which, indeed, one would expect from the writers associated with it. To professional men it ought to be a welcome periodical. In the ninth number (Jan. 31) we find it sharply questioning the usefulness of the proposed “Library Act” of the Local Government. In this, “*The Week*” alludes to the distress in Toronto—which is of a local character and evidently not general, as follows: “Night after night the police stations are beset by unfortunates seeking for a night's shelter; what is still worse, and disgraceful to any Christian community, persons guilty, of no real offence, are being sent in greater numbers than ever to the city gaol where they must herd with criminals, merely to give them shelter and save them from dying of hunger.”—And to the “Free Library” there: “With these sufferings unrelieved and these scandals unremoved, to spend money in the circulation of free novels, to which nobody has any more claim than to free theatre or excursion tickets, may be the height of liberality and enlightenment, but surely it is not the height of justice.” This distress and the herding of the hungry with criminals is certainly a disgrace to the wealthy Metropolitan “Queen City” of Ontario. “Half a loaf” would be better there than the “no loaf” of the “free” fiction to be circulated. We must ask “*The Week*” though if it would not be more in accordance with its aspirations to correctness whatever its own views of “empty titles may be, to give to “Mr. Tillef” and “Mr. Cartwright” their proper and correct designation.

"A SKETCH OF THE LIFE OF LORD LANSDOWNE," by J. E. Collins, author of the *Life and Times of Sir John A. Macdonald*, has been published by the Rose Publishing Company of Toronto, in connection with a number of "The Rose Library," Wilkie Collins' "Haunted Hotel:" Ottawa, Messrs. Hope & Co., Price 25 cents, free of postage. A large portion of the sketch consists of a notice of the antecedents or ancestry of the Marquis. We are told that he "is not an adventurer, and is not likely to attempt to demoralize us with flattery or unwholesome hospitalities;" like a predecessor of some years ago, might well enough have been added. With each copy of the book is given free a really good lithograph likeness of the Governor-General, a bust about life size.

IN "ST. NICHOLAS," that most attractive "Illustrated Magazine for Young Folks," published by the "Century" Company, New York, is a little poem, "In the Park," by Bessie Chandler. She and her mother have perhaps been living in University Park, Toronto, with its "stagnant." She writes:

"We mustn't go near the pond, sissy,
Cos there's something—I don't know what
—there.

But I heard mamma talking about it ;
It isn't exactly a bear—

But a *stagnant*, I think mamma called it ;
And she says she's afraid every day
To live by the Park any longer,
And she wishes they'd take it away.

I never have seen a *real* stagnant,
But I guess it has teeth and would bite ;
But don't be afraid, little sissy,
Because, if it comes, I will fight.

* * * *

And don't take your eyes off the water,
And we'll watch for the stagnant to come."

THE FORTHCOMING report of the Challenger on deep-sea fishes will contain some remarkable forms new to science. Many are luminous, showing fire spots upon

the head, like the headlight of a locomotive, or along the fins. It is supposed that these are their means of communication. Some of the localities from which they were taken were two or three miles from the surface, where, if a man stood, the pressure would equal that of two obelisks like the one in Central Park piled upon his back. The temperature of the water is just below freezing.

A CORRESPONDENT of *La Nature* mentions a singular instance of the kindling of a fire by the concentration of the sun's rays by a globular water-bottle through which they passed. The bottle was "onion-shaped," and filled with water, forming a perfect lens. It sat upon a table, and the fire would have done great damage had not the relater observed and extinguished it. On the next day an experiment was made, and a fire kindled by this means.

A NEW EMPLOYMENT for the electric light has been found in Bavaria, where a committee has reported upon its use as a head-light for locomotive engines. The colour and form of signals can be distinguished by the engine driver on a cloudy night at a distance of 800 feet. The lamp is so constructed that it moves automatically when the engines traverses a curve so as to light the track far in advance.

A POWERFUL ANTISEPTIC and deodoriser may be made by mixing carbolic acid and chloride of lime, which, when combined, contains sufficiently active properties to correct fermentation. A weak solution is used as a dressing in some gangrenous affections as it does not cause irritation. The smell can be disguised by a little oil of lavender.

TO PRESERVE FRUIT in a fresh condition for many months place it in very fine sand sufficiently thick to cover it, after it has been well washed and dried and moistened with brandy. A wooden box is the best receptacle to use, and it should be kept well covered and in a warm place.

Questions and Answers.

We will again in this volume as in a former one, devote a certain amount of space to questions and answers of correspondents on all subjects pertaining to health. Any question relating to health addressed to this JOURNAL will be answered as satisfactorily as possible.