Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for scanning. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of scanning are checked below.

L'Institut a numérisé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de numérisation sont indiqués ci-dessous.

- ☐ Coloured covers / Couverture de couleur
- ☐ Covers damaged / Couverture endommagée
- ☐ Covers restored and/or laminated / Couverture restaurée et/ou pelliculée
- ☐ Cover title missing / Le titre de couverture manque
- ☐ Coloured maps / Cartes géographiques en couleur
- ☐ Coloured ink (i.e. other than blue or black) / Encre de couleur (i.e. autre que bleue ou noire)
- ☐ Coloured plates and/or illustrations / Planches et/ou illustrations en couleur
- ☐ Bound with other material / Relié avec d'autres documents
- ☐ Only edition available / Seule édition disponible
- ☐ Tight binding may cause shadows or distortion along interior margin / La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure.

- ☐ Coloured pages / Pages de couleur
- ☐ Pages damaged / Pages endommagées
- ☐ Pages restored and/or laminated / Pages restaurées et/ou pelliculées
- ☑ Pages discoloured, stained or foxed/ Pages décolorées, tachetées ou piquées
- ☐ Pages detached / Pages détachées
- ☑ Showthrough / Transparence
- ☑ Quality of print varies / Qualité inégale de l'impression
- ☐ Includes supplementary materials / Comprend du matériel supplémentaire
- ☐ Blank leaves added during restorations may appear within the text. Whenever possible, these have been omitted from scanning / Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été numérisées.

☑ Additional comments / Commentaires supplémentaires: Continuous pagination.

THE

SANITARY JOURNAL

DEVOTED TO

PUBLIC HEALTH,

AND

INDIVIDUAL HYGIENE.

Edward Playter, M.D., - - Editor.

VOL. III. TORONTO, MARCH, 1879. No. 12.

Monthly, ONE DOLLAR per Annum, in Advance; City Subscribers who have not a P. O. Box, 10cts. Extra.

"The Crying Want is better education of the public in hygiene."—*Med. and Sur. Reporter, Philadelphia.*

"To prevent disease is the most important aim of the science and art of Medicine."—*Sir Wm. Jenner.*

THE purpose of this Journal is to diffuse a knowledge of the Laws of Health among the people. To make prevention rather than cure the first object of both the physician and the public. Cooperation and assistance are respectfully solicited from all who are interested in the future well-being of the Canadian people. Will you assist in this important Work?

CONTENTS.

Extracts from a few of many unasked for Commendatory Letters and Notices to the Editor.

"A very useful, much needed, and thoroughly practical Journal."—Hon. Vice-Chancellor Blake.

"A valuable Journal; I wish all in the profession valued it as I do."—Joseph Workman, M. D.

"If it could be got into all the households of Ontario, there would be a great reduction in the death rate in the country."—Wm. Osler, M.D. (Prof. Phys. McGill University), Montreal.

"It indicates a manly grasp of the enemies of human health."—*Sanitarian, N. Y.*

"Both in its editorial and selected matter it gives evidence of being conducted with ability. It is to be hoped it will be sustained by the Canadian public."—*Popular Science Monthly, N. Y.*

"A valuable serial, which ought to be in the hands of every Mayor, Alderman, Town Councillor, and Health Officer in the Dominion." Report on Epidemic Diseases, &c. By Professor J. T. Bell, of Belleville.

THE

SANITARY JOURNAL.

DEVOTED TO

PUBLIC HEALTH.

VOL. III.] MARCH, 1879. [No. 12.

REFLECTIONS ON THE HIGHER EDUCATION OF WOMEN FROM A MEDICAL POINT OF VIEW; SUGGESTED BY THE HEALTH OF PUPIL TEACHERS.

BY A. HUGHES BENNITT, M.D., FROM THE SANITARY RECORD.

Though this paper is lengthy, the subject, effecting as it does the the generations of the future, is of such vast importance, and Dr. Bennett is such high authority, that we give it in full.

Among the large and increasing flocks of patients who crowd the outdoor departments of our metropolitan hospitals, there is a class of persons who of late years have rendered themselves conspicuous by demanding medical assistance. These are women who have to gain their livelihood by the exertion of their intellectual faculties, and who follow callings which require the constant exercise of their mental powers. An example of this is the so-called pupil teacher, whose career we shall endeavour briefly to sketch. A young school girl of about thirteen years of age is remarked to be unusually intelligent. It is suggested to her parents that she should become a teacher. They consenting, the child is at once placed under training. According to information derived from these pupils, the routine of life for the next six or seven years is as follows:—They have, first, to continue their education, by receiving from others several hours of special instruction every day, and a considerable proportion of their evenings is spent in preparing themselves for this. Secondly, they themselves have to teach the younger children in the school for from five to six hours daily. Thirdly, they have to pass a Government examination at the end of each year, which entails further special private study. This course of instruction continues for five years; and being satisfactorily concluded, the pupil becomes an assistant teacher. During the next two years she either resides in a college and there undergoes a special and systematic course of study, or, if her means preclude, she continues the system already described at school, and further prepares herself for a final examination; after which, if she acquit herself in an efficient manner, she becomes a full teacher, and as such is certified by Government.

Such a career may be said to represent the intellectual life of an ordinary student, in which there is considerable strain, a constant exertion to acquire and retain knowledge, anxiety as to results, and possibly worry and irritation in details. In consequence there is diminished exercise, loss of fresh air, and generally deficient hygienic surroundings. We have said that numbers of such young women are constantly applying to the hospitals for medical assistance. They complain of physical debility, anæmia, dyspepsia, and loss of appetite; their functions are disordered and irregular, and they present the usual conditions of bodily weakness and depression. Their nervous system and mental faculties are also affected. They are irritable, nervous, depressed, and melancholic; they do not sleep at night, partially lose their memories, they suffer from violent headaches and cannot settle to work; they have all kinds of nervous and subjective pains, hysterical symptoms, and in short all the phenomena of nervous and mental as well as of physical exhaustion and debility. If our patients be asked the cause of these ailments they will with one accord say that it is the hard and constant brain work combined with worry and perpetual anxiety.

From teachers let us turn aside for a moment to women who follow other intellectual employments. If we examine the matter we shall find, a certain number of exceptions always being allowed, that as a rule when females are subjected to severe and prolonged mental exertion, more especially if it be associated with anxiety and physical fatigue, they break down under the ordeal. How many excellent and clever women have we known who, either from necessit or from love of study, have eagerly embraced and distinguished themselves in literary, scientific, and educational pursuits. Burning the midnight oil, contending it may be with difficulties, harassed with doubt and anxiety, debilitated from want of rest and bodily fatigue, they struggle on, their circumstances or their enthusiasm impelling them, but at last they, like the pupil teachers, give way and succumb from sheer exhaustion. The objects of this paper are to endeavour to explain why this deterioration of health should so frequently take place in women when subjected to bodily and mental strain, in distinction to men, in whom under the same circumstances it is comparatively unusual; and with the view of elucidating this to discuss the physical and intellectual capacities of the sexes, and to ascertain whether in these respects the male and female are upon an equal footing. That these propositions may be rendered intelligible, some preliminary observations are necessary.

The Physical Conformation of Woman.—It will be generally conceded that woman is physically weaker and less powerfully built than man. With few exceptions, this distinction between the sexes is universal throughout the entire animal kingdom. From the lowest to the highest species, the general structure of the male differs from that of the female in the size and strength of his bones and muscles, the form of his head, thorax, and limbs, and in the possession of special weapons of offence and defence. In the human

being, although this to a certain extent is modified by circumstances, the same general law holds good. Owing to his conformation, the man is capable of performing and of enduring more physical labour and fatigue, and hence on him from time immemorial has fallen the share of manual toil, and of supporting and protecting the other and weaker sex. It is true we sometimes meet with—

> Daughters of the plough, stronger than men,
> Huge women blowzed with health, and wind and rain
> And labour.

Such, all will admit, are exceptions, and by no means represent the standard woman.

The generative organs form a most important distinction between the sexes, and must, to a great extent modify the habits and career of the female. In the natural course of events, many years of the most vigorous and active period of a woman's life are spent in germinating and suckling her offspring, during which time she is physically capable of little else. If she has not children, frequently recurring periodic processes take place, which under the best circumstances render her specially liable to derangement of her general health, and under adverse conditions she is almost certain to fall a victim. This was demonstrated in the days of slavery, when the owners, either not knowing or caring about these physiological laws, forced their women to labour continuously in the fields, in consequence of which thousands of them died of those numerous ills to which female flesh is heir. We cannot here enter at length into this very important subject, but merely indicate that the whole sexual system of women has a profound influence on her physical nature, which does not exist to the same extent in man, and although for conventional reasons such questions are usually suppressed in public controversies on the advancement of her sex, there can be no doubt that they should not be forgotten, bearing as they do a most important and practical influence on the subject.

From these considerations the conclusion may be drawn that woman is structurally less powerful and vigorous than man, that she is less capable of performing acts of physical exertion, of enduring fatigue and exposure, and of combating against adverse circumstances. That moreover the natural functions of her sex, when they do not actually incapaciate her from action, render her specially liable under disturbing conditions, to deterioration of general health.

The Nervous Conformation of Woman.—The whole nervous system, in common with the other structures of the body, is smaller and less voluminous in the female than in the male. Its function is characterised by comparative weakness, as evidenced by great susceptibility and instability, and also by promptness in responding to all kinds of stimuli. In women there is less nervous capacity and vigour, diminished power of control, and a greater readiness to break down under physical and mental strain. It is notorious that the conditions termed nervous and hysterical are almost entirely confined to the female sex, in which they are extremely common.

Every physician at a hospital who treats out-door patients knows, that for every hundred men he prescribes for, he is called upon to treat at least 500 women. On the other hand, the male wards are always full, while many of the female beds may be vacant. This simply indicates that serious disease is most common in men, while trifling nervous ailments are almost universal in women. Most women are naturally so predisposed that, when subjected to fright, grief, anxiety, pain, and other such circumstances, they feel (in addition to the direct distressing effects) various remote subjective phenomena in the form of suffocations, spasms, bodily pains, fainting, convulsions, and a general liability to violent and explosive emotional demonstrations. If the causes are permanent their effects may become so, and deteriorate the general health, and there are thousands of women who are hopeless invalids, often for life, from conditions acting on their susceptible and mobile nervous systems, which in the other sex would have produced no appreciable results. There are, of course, in this as in other things, numerous exceptions to the general rule, many women having their natures much modified and approaching the male type, and in the same way there are some men who are of a nervous and hysterical temperament. We may then assert as a fact that the nervous system of the average woman is more susceptible and impressionable than that of the average man, that it is in consequence more readily unhinged by mental and physical distress or fatigue, and that when thus disordered it reacts upon the system, so as to cause permanent disease.

The Intellectual Conformation of Woman.—The cranium of woman is smaller than that of man. The weight of the average female brain has been estimated at from five to six ounces less than that of the average male brain, and a general inferiority in size exists at every period of life, from the new-born infant to old age. Not only has this comparative decrease in size been determined, but it has been ascertained that the female brain is relatively smaller than that of the male, as compared to the weight of her body, and researches on this subject have shown that while the encephalon of the female is 10 per cent. less in weight than that of the male, her total bodily weight is only 8 per cent. less. The brains of different races vary greatly in size, but whether it be in the most highly civilised nations, or in the lowest savages, the encephalon of the female is always comparatively and relatively smaller than that of the male. These facts show that the difference in size and weight is obviously a fundamental sexual distinction, and not one which can be explained on the hypothesis that the educational advantages enjoyed either by the individual man or by the male sex generally, operating through a long series of generations, have stimulated the growth of the brain in one sex more than the other. All other circumstances being alike, the size of the brain appears to bear a general relation to the mental power of the individual. There are doubtless exceptions to this rule, but unquestionably the general axiom holds good in large

averages; therefore as the organ of intellect in the female is smaller and lighter than that in the male, we may fairly assume that it is less capable of such high and extended mental powers. It is justly stated that quality as well as quantity should be considered, but of this we can only judge by results, in which case it must also be conceded that women are at a disadvantage. This assumption, if it cannot be anatomically demonstrated, is amply proved by facts. From the beginning of the world, as man has been characterised by his physical force as compared to woman, so has he been remarkable for his superiority of intellectual power. At every age, in every country and climate, and under every circumstance, we find that in the highest qualities of mind, of reason, judgment, genius, inventive power, capacity for acquiring and utilizing knowledge, man stands pre-eminent. It is true that there have been some noble and illustrious women who have proved themselves of the highest mental capacity, and who have risen to the first rank in various departments of intellectual culture, but it must be admitted that these are rare exceptions, and that even they in every particular have been enormously outnumbered and surpassed by men. It may then be reasoned that the female has hitherto not had the opportunities or education necessary to fit her to place herself on an equality with the other sex. This argument of itself proves that she has not been born with the mental force to assert her pretensions, for it cannot be maintained that physical strength alone could have forced her into a secondary intellectual position. Besides, it is not so: for in literature, poetry, music, art, and in numerous other braches of study in which she has had as many if not more opportunities of perfecting herself than man, she has rarely proved his equal and never his superior.

The intellectual powers of women not only differ in degree from those of man but also in character. Her mind participates with her physical constitution in being endowed with great sensibility, and hence her acuteness, perception, and tact. She seizes with rapidity objects which come before her, and observes by instinct an infinity of shades of meaning in details which might escape the most observant of men. She often arrives at conclusions with great celerity and adroitness, but then her results are as frequently wrong as right. Her perception is fine and penetrating rather than extended or profound. She readily occupies herself with small impressions and details, but is arrested there, being less capable of grasping general principles. Although her mind may thus embrace a variety of particulars, it is to little practical purpose, from an intellectual point of view, as she cannot fix her attention on any idea or train of ideas for any length of time, and reason out a logical conclusion. Woman dislikes and avoids that hard work which requires long and profound meditation, her character being adverse to the study of abstract science. Her thoughts wander, she becomes impatient, and her too mobile imagination is unable to rivet the attention on the dry details of a practicle subject. She enters with enthusiasm and often with

unnecessary vigour at first, into any new project, philanthropic, educational, or otherwise, but rarely carries it steadily out to a successful termination. Her opinions are formed by her feelings rather than by the operations of reason. Her forte is that species of knowledge which requires more tact than science, more vivacity than force, more imagination than judgment. Her chief moral philosophy is directed to the study of individuals and society, and the sagacity of a woman in acquiring traits of character and penetrating true motive, is what the logic of a man rarely acquires. Wise women—the so-called blue-stocking—know nothing profoundly. Their natural acuteness of perception enables them to seize a number of details and isolated particulars, they fancy they understand them thoroughly, they confound theory with fact, the real difficulties they do not surmount, they cannot fix the attention long and deeply, or persevere in overcoming obstructions, and they feel no pleasure in habits of profound meditation. They therefore remain with their acquired superficial knowledge, pass rapidly from one thing to another, and there only rests in their minds certain crude and incomplete notions, with which they are quite satisfied, and of which they make the most, but which in consequence lead to false and illogical conclusions.

These observations are not for the purpose of merely lauding one sex at the expense of the other, but for a definite practical object as will subsequently be seen. They serve to indicate that the average woman has been by nature endowed with a brain and nervous system of inferior anatomical construction to that of man, and that in consequence her intellectual powers differ from his, both in degree and in character.

The Disposition of Women.—Voltaire has said, 'le physique gouverne toujours le morale,' which is strikingly illustrated by the present inquiry. In the lower animals there is a marked difference in the disposition and character of the sexes. The males are of a combative nature, and have a great tendency to fight. They are bolder, fiercer, and more untamable. The females have more highly exalted perceptive faculties, they are cautious, artful, and cunning, as is abundantly seen in the ingenious methods they adopt in the hiding and protecting of their young. These properties serve them to some extent in lieu of physical force, and they are altogether more gentle and more tractable in their nature. The same, in a different degree is obvious in the human female. Every mother knows that a male infant is more troublesome to rear than a female. As children grow older the difference becomes more marked. The girl is less boisterous, wilful, and imperious than the boy. She is more delicate, impressionable, and artful, pleased with attention, solicits admiration, and is readily moved to tears at suggestion of sorrow or pain. He courts danger, is bored with solicitude, and, more blunted or careless laughs at what she weeps. She, with her doll, already anticipates the gentle duties of maternity. He, with his sword and trumpet, mimics the glory of war. On the disposition of the fully developed woman poets have written volumes. We, however, have

to take a more matter of fact view of her than they have done. When Hamlet said, 'Frailty, thy name is woman,' he was scientifically correct, in more senses than he intended. Her natural muscular feebleness and delicacy of constitution, renders violent exercise and labour distasteful to her, and her inferiority of intellectual power makes severe and constant mental exertion a task. While the man, full of bodily and mental vigour, goes forth, seeking and braving danger and labour, proud in the responsibility of those dependent on him, the woman fulfills a welcome task at home, in the less active duties of matrimony, and of domestic and social observances, equally happy in the possession of strong arm and head to protect and support her. Such an existence, however, fosters a great susceptibility of character in addition to her natural conformation. Hers is often a mixture of extreme happiness or of profound misery. She feels pain, grief, and anxiety acutely. To these she readily gives way, and as rapidly revives from their effects. Sensations of all kinds act on her powerfully. These she cannot control, but exaggerates into extremes, and manifests by violent demonstrations. If she feels acutely it is not for long, her sentiments at the time being easily replaced by new ones, and her mental distress, if rapidly induced is more poignant than deep. Woman is essentially impulsive and emotional; her sensitive and changeable nature is necessary for the part she has to play in life. She feels more than she thinks. A man forces his way by power of body and intelligence. She acts on him by tact and by all those weaknesses in which with him lie her chief power. Her flexibility of character gives rise to caprice which consists of a brusque passage from one sentiment to another totally opposed. Her habitual feebleness and deficient vigour inspires her with less confidence; and as a woman cannot therefore act directly, she employs indirect measures to effect her ends. Hence the natural desire to please, inherent in the sex, the artfulness, the dissimulations, the little managements and intrigues, the graces, the coquetry and other seductive ways, which to a certain extent have always been ceeded to by intellectual and physical force. For the same reasons, and from the same cause, her weaknesses and vices are greater, and no man can compete with a really bad woman in petty jealousies spiteful actions, revenge, and even in the ingenuity and vindictiveness of crime. It is this affectability which, if it be a cause of her frailties, is equally efficacious in giving lustre to her virtues. It is this which constitutes the chief charm of the mother, who instinctively detects the slightest desire or change in her offspring and impulsively acts for its benefit; of the wife who sympathises with and encourages her husband, lagged and anxious for the common weal; and of the nurse who takes in at a glance all the details and wants of the patient and ministers to his requirements with pity and devotion. It is this which gives rise to that compassion, sympathy, piety, and affectionate disposition which are the chief characteristics of a woman. It is the feeling of powerlessness which makes her identify herself with the unfortunate and unhappy, which natural pity is the base of all social virtues.

The Effects of Social Life and Education on Women.—There can be little doubt that social manners, education, and an infinity of circumstances may affect the qualities woman derives from her material organization, and even efface the original character which nature has given her. In the simplest condition, the man labours with his hands and with his wits for mutual support and protection; the woman rears her children, tends the sick, and conducts domestic affairs. Such, if the most primitive, is probably the healthiest and happiest condition for the female. Her sympathetic and susceptible nature has here every scope for action without being shaken by rude and oft-repeated shocks. In civilized life, especially amongst the upper classes, everything seems combined to foster and increase the natural affectability of woman's nature, and society renders her, already unfortunate by organization, the victim of the most painful and varied series of moral and corporeal affections. Medical philosophers have declaimed, and will long continue to do so, in vain, against the whole system of the education and bringing up of women, which is directed solely to the purpose of making them personally attractive, and subsequently securing for them brilliant settlements for life, at the expense of their health. Much might be written on this subject, suffice it at present to state that the useless and insipid lives that most young ladies lead, the total want of an intelligent interest and occupation, and the unnatural and artificial existence pursued, are highly calculated to injuriously enhance that natural affectability with which she has been endowed. The system of fashionable boarding schools, whose anxiety to render their pupils accomplished and fascinating at all costs, results in a forced and at the same time imperfect training, which, combined with luxurious living, absence of exercise, and other healthy circumstances, tends to increase the irritability of the nervous system and to foster a precocious evolution of character. As this is increased, tone and energy are diminished. The girl returns from school a wayward, capricious, and hysterical young lady, weak and unstable in mind, habits, and pursuits. She enters into society, and there her whole mode of life further contributes to her unfortunate condition. The competitions, disappointed affection and vanity, the artificial excitements of balls, public entertainments, late hours, and all the frivolities and pleasures of fashion tend in the same direction. The cultivation of music, poetry, novels and other inflammatory literature furnish illusions contrary to the actual state of society. Her very dress seems made on purpose to interfere with the healthy function of her most vital organs, and to prevent the free play of muscular action essential to a sound constitution. Girls subjected to such a *regime*, when their minds and bodies should be directed in a totally opposite direction, have one order of faculties alone exercised, and these predominating over the reasoning powers, cause a host of nervous, vaporous, hysterical, and hypochondriacal disorders. Thus women from their earliest days are constantly subjected to the yoke of prejudices, are under the necessity of a perpetual state of acting and deception, of dissembling their desires and real inclinations for

the sake of propriety, of keeping to themselves the most powerful passions and the strongest propensities, and of feigning a calmness and indifference when they are devoured by a burning fire.

As to education, we have already pointed out the general unsatisfactory nature of the intellectual studies of most women. That idleness, and the absence of suitable and substantial occupation for the mind which so commonly exists in the higher ranks of society, are the sources of great evils no one will deny. For the frivolous and luxurious so-called duties of fashionable life, although exhausting and fatiguing, cannot be said to constitute that healthy exercise of mind or body which is desirable for young women to stave off disease and maintain sound health. Study and occupation, at the same time positive, useful, and attractive, are the best correctives of an imagination ardent and disordered, of a nervous system susceptible and hypersensitive. These considerations being made patent, many women, with the impulse characteristic of their sex, have rushed to the opposite extreme. They wish females to receive the same education as males, and to compete with them in the intellectual struggle for existence. We have, however, seen that both the woman's body and mind are inferior in vigour and power to those of the man, and accordingly if pitted against one another in a physical or mental race she, to use a sporting phrase, would be heavily handicapped. She will not, as a rule, reach his standard, and if she endeavors to do so, it will be at the expense of her health. The brain and nervous system, like other organs, if overworked, become the centres of activity, and are fatigued; this increases existing susceptibility, and hence arise symptoms of nervousness, hysteria, hypochondriasis, and insanity. These acting on the body produce emaciation and other diseases, the offspring of an exhausted constitution.

The conclusion, then, to be drawn from this section is, that in addition to the natural affectability of her character, this condition in woman is fostered and augmented by the artificial exigencies of civilized life. That whereas idleness and want of occupation are the greatest sources of many diseases peculiar to the sex, the opposite extreme of mental strain is equally prejudicial.

Conclusion.—We have endeavored, in the brief space allotted to us, to point out the physical and intellectual capacities of women, and in consequence the disposition and instincts which nature has implanted in her. This fundamental difference between the sexes we have seen is not due to education or special cultivation, but to a primary development of the system, each having those peculiarities best fitted for the part it has been born to fulfil. There can therefore be little doubt that the most natural and healthy condition for a woman is a properly assorted marriage, in which she has children, with whom she has useful and congenial occupation, and by whom all her sympathies and best instincts are developed. In modern times great and laudable efforts are being made to effect an improvement in the higher education of women, and as there are many who either from choice or circumstances cannot occupy that position

which it is the pride of most to possess, a movement has been made whereby they may earn an independent livelihood by the exercise of their mental faculties. We are informed by energetic and doubtless well-meaning speakers from the platform, that women have hitherto been under subjection, that they should emancipate themselves, that their intellect is as good if not better than that of men, and that they are as capable as they are, of the highest mental culture, and of profiting and distinguishing themselves thereby. It is unquestionable that suitable occupation and education are of the highest importance to the well-being of women, and that all due encouragement should be given to those who endeavor to provide for them an intelligent interest in life. But in avoiding Scylla care must be taken not to drift into Charybdis. To say that the majority of women are fit to compete successfully with men in the intellectual world, would, we believe, for the preceding reasons, be a most injurious doctrine, and lead to disastrous results. Our text, the pupil teacher, is an example. A young girl, between the ages of fourteen and twenty-one, the most anxious and important period in her whole life, when her mental and physical constitution is undergoing development, is put under a severe intellectual strain. She is irritated and worried all day by teaching children, she is fatigued by hard study, and is rendered constantly anxious by the frequently recurring examinations on which her reputation, and it may be her living, depends. Such a career does not as a rule break down the young man, but in a large number of cases it completely unhinges the woman. She, in fact, is compelled to perform the work of a man without having his organic basis to depend on, and hence, as a consequence, her entire system suffers. So it is with women who follow other pursuits requiring severe mental application; they age before their time and finally succumb. It is true that men occasionally give way under the same ordeal, but these are comparatively the exception, and this is as often brought about by the assistance of other circumstances as by work alone. It is also a fact that there are some women who, overcoming all difficulties, have fully acquitted themselves of the highest mental exertions without injury, thus proving themselves to be of masculine capacity. Whether for these the Church, the Bar, and Physic are to throw open their arms, I leave for others to decide; but that the majority of the sex would be benefited by a systematic encouragement to follow learned professions and other laborious callings, would be, we think, physiologically and practically an error.

How unmarried women who require to earn their living are to do so by the exercise of their intellectual faculties, is one of the great problems of the day, and by far too extensive a subject to discuss at present. Our aim has been to point out that in controversies on the question the medical aspect of the case is frequently lost sight of, and it is forgotten that in the competition for life, woman is the weaker vessel, and liable to be broken when too roughly handled. Sage philosophers may speculate what age may effect evolution, but taking woman as we find her, we believe that her welfare is to be

consulted, not by encouraging her to take an independent position in life and by fostering a contempt for marriage, which is now the professed tendency of the strong-minded young lady; but by educating her in such a judicious and sensible manner as will make her a good wife, mother, and useful member of society, which is unfortunately not the inclination of the present age. If this were more systematically carried out, there would be fewer single women under the necessity of working for their own living; the outcry in behalf of these unappropriated blessings would be modified, and on entering the married state, which is the happiest as well as the healthiest condition, they would place themselves in the position that it is intended by nature they should occupy.

> Seeing either sex alone
> Is half itself, and in true marriage lies
> Nor equal, nor unequal; each fulfils
> Defect in each, and always thought in thought,
> Purpose in purpose, will in will, they grow,
> The single pure and perfect animal,
> The two-cell'd heart beating with one full stroke
> Life.

PAINLESS DEATH.

(From the National Medical Review.)

In one of his lectures Prof. Tyndall spoke of the probabilities in favor of the entire absence of pain accompanying death by lightning. It is popularly supposed that an impression made upon the nerves—a blow or puncture—is felt at the precise instant it is inflicted, but such is not the fact. The seat of sensation is the brain, and intelligence of the injury must be transmitted to this organ through a certain set of nerves, acting as telegraph wires, before we become conscious of pain. This transmission or telegraphing from the seat of injury to the brain requires *time*, longer or shorter, according to the distance of the injured part from the brain, and according to the susceptibility of the particular nervous system operated upon.

Helmholtz, by experiments, determined the velocity of this nervous transmission in the frog to be a little over eighty-five feet per second; in the whale, about one hundred feet per second; and in man at an average of two hundred feet per second. If, for instance, a whale fifty feet long were wounded in the tail, it would not be conscious of the injury till half a second after the wound had been inflicted. But this is not the only ingredient in the delay. It is believed that to every act of consciousness belongs a determinate molecular arrangement of the brain, so that, besides the interval of transmission, a still further time is necessary for the brain to put itself in order for its molecules to take up the motions or positions necessary to the completion of consciousness. Helmholtz considers that one-tenth of a second is required for this purpose. Thus, in the case of the whale, there is, first, half a second consumed in the

transmission of the intelligence through the sensor nerves to the brain, about one-tenth of a second consumed by the brain in completing the arrangements necessary to consciousness, and, if the velocity of transmission from the brain through the motor nerves be the same as that through the sensor, about half a second more is consumed in sending the message to the tail to defend itself. Therefore, one second and one-tenth would elapse before an impression made upon its caudal nerves could be responded to by a whale fifty feet long.

If we regard as correct the calculations representing the average velocity of transmission in the human nerves, and if we estimate the distance from the origin of the filaments in the brain to their termination in the foot, as five feet, the time required in case some one steps on your favorite corn, for the news to be telegraphed to the brain, for the brain to prepare a message, and to telegraph the same to the muscles of the leg to draw the foot away, would be about one-twentieth of a second. Now, it is quite conceivable that an injury might be inflicted which would render the nerves unfit to be conductors of sensation, and if this occurred, no matter how severe the injury might be, there would be no consciousness of it. Or it might happen that the power of the brain to complete the molecular arrangement necessary to consciousness would be wholly suspended before there would be time for the transmission of the intelligence of the injury. In such a case, also, although the injury might be of a nature to cause death, this would occur without feeling of any kind. Death in this case would be simply the sudden negation of life, without any intervention of consciousness whatever.

Doubtless there are many kinds of death of this character; the passage of a rifle-bullet through the brain is a case in point. The time required for the bullet in full velocity to pass clean through a man's head may be roughly estimated at a thousandth part of a second. Here, therefore, would be no room for sensation, and death would be painless. But there is another action which far transcends in rapidity that of the rifle-ball. A flash of lightning cleaves a cloud, appearing and disappearing in less than a hundred-thousandth part of a second, and the velocity of electricity is such as would carry it in a single second of time over a distance almost equal to that which separates the earth and moon.

A luminous impression once made upon the retina endures for about one-sixth of a second, and this is why we see a ribbon of light when a glowing coal is caused to pass rapidly through the air. A body illuminated by an instantaneous flash continues to be seen for the sixth of a second after the flash has become extinct; and if the body thus illuminated be in motion, it appears at rest at the place where the flash falls upon it.

The color-top is familiar to most of us. By this instrument a disk with differently-colored sectors is caused to rotate rapidly; the colors blend together, and, if they are chosen in the proper proportions,

the disc will appear white when the motion is sufficiently rapid. Such a top rotating in a dark room and illuminated by an electric spark appears motionless, each distinct color being clearly seen. Prof. Dove has found that illumination by a flash of lightning produces the same effect. During a thunder storm he put a color-top in exceedingly rapid motion, and found that every flash revealed the top as a motionless object with its colors distinct. If illuminated solely by a flash of lightning the motion of all bodies on the earth's surface would, according to Prof. Dove, appear suspended. A cannon-ball, for example, would appear to have its flight arrested, and would seem to hang motionless in space as long as the luminous impression which revealed the ball remained upon the eye. If then, a rifle-bullet passing through the brain moves with sufficient rapidity to destroy life without the interposition of sensation, much more is a flash of lightning competent to produce this effect. We have well-authenticated cases of people being struck by lightning, who, on recovery, had no recollection of pain.

The Rev. Dr. Bartol, who was lately nearly killed by lightning, expressed the belief that if the stroke proves fatal it must produce the most agreeable mode of death; but to be stunned, as he was, is very unpleasant. As soon as consciousness returned he experienced a terrible sense of oppression and an irresistible weight seemed passing through him, while his mind was dazed so that for a while it seemed he had suddenly been precipitated into wonder-land. His recovery was attended by headache, continued for a week.

The following case is described by Hemmer: On June 30, 1788, a soldier in the neighborhood of Mannheim, being overtaken by rain, stationed himself under a tree, beneath which a woman had previously taken shelter. He looked upward to see whether the branches were thick enough to shed the rain, and in doing so was struck by lightning, and fell senseless to the earth. The woman at his side experienced the shock in her foot, but was not struck down. Some hours afterward the man recovered, but remembered nothing about what had occurred, save the fact of his looking up at the branches. This was his last act of consciousness, and he passed into the unconscious condition without pain. The visible marks of a lightning stroke are usually insignificant, the hair being sometimes burnt, slight wounds occasioned, or a red streak marking the track of the electric discharge over the skin.

Prof. Tyndall relates, standing in the presence of an audience, about to lecture, that he accidentally touched a wire leading from a charged battery of fifteen large Leyden jars, and the current passed through his body. He says life was absolutely blotted out for a very sensible interval, without a trace of pain. In another second or so consciousness returned. He saw himself in the presence of the audience hand in contact with the apparatus, and immediately realized that he had received the battery discharge. The *intellectual* consciousness of his position was restored with exceeding rapidity, but not so the *optical* consciousness. To prevent the audience being alarmed he

stated that it had often been his desire to receive, accidentally, such a shock, and that his wish had at length been gratified. But while making this explanation the appearance which his body presented to himself was that of being in separate pieces. His arms, for example, seemed to be detached from his body and suspended in the air. Memory and the power of reasoning and speech were complete long before the optic nerve recovered from the electric shock. The Prof. dwelt upon the absolute painlessness of the shock, and believes there cannot be a doubt that to a person struck dead by lightning, the passage from life to death occurs without consciousness. It is an abrupt stoppage of sensation unaccompanied by a pang.

SANITARY REFORM.

In a paper under this heading, in the *Sanitary Record* (Jan. 3, '79). Mrs. Judge discourses very intelligently, and takes opportunity to hit the doctors pretty hard in reference to not giving hygienic advice to their patients. The following are extracts from the paper.

'In this age of advanced civilisation it is astonishing to find how little attention is directed to a question which, more than any other affects the interests and well being of the community—the question of sanitary reform. Instead of being regarded as one of the most serious of our time, it is looked upon by the generality of people with at least indifference, and considered irrelevant to the ordinary needs of life; with illness there is, as a rule, only one means of remedy associated, and that is, the medical profession. This, people are content to go on overstocking, simply because they will not see that it is better to abolish the cause of disease rather than to wait and cure the result. Although great progress has been made of late in respect of sanitary matters, there yet remains a vast amount of work and teaching to be done before the sanitation of this country will be as it should be.

'Public health authorities are, happily, becoming more impressed with a sense of the importance of sanitary laws, and do much that is commendable towards carrying them out; but, nevertheless, their efforts will not be of much avail until the value of them is recognized in every household, and people become convinced that illness is principally caused by non-compliance with them. Therefore the main thing to be accomplished in the first place, in the work of sanitary reform, is the education of the people on the subject. In a work recently published on Sanitation, allusion is made to people 'who wish to conform to sanitary regulations, if only they know what those are.' Now how are they to know unless they are taught, and what provisions are there anywhere made for such teaching? Whose fault is it that even a woman whose position in life is such as to demand particular knowledge of the laws of health, very rarely knows anything about sanitary regulations?

It is treading on dangerous ground to approach the question of 'Woman's Work' and 'Woman's Sphere,' but surely it will be

admitted—even by the most ardent admirers of 'womanly women' —that of all other sciences, sanitary science is specially adapted to the capabilities of women, upon whom the rearing of the human race devolves. To those women who realise the sacredness and responsibility of the office entrusted to their care, the highest aim in life must surely be the successful accomplishment of this important work for upon it the future of the world depends. It is, however, a fact that although women have the bringing up of the future generation, the majority of them among the middle a d lower classes are deplorably ignorant of the laws of health which should guide and govern their lives; they surround themselves and their children with conditions totally opposed to sanitary requirements, and resort to the aid and advice of some neighbouring doctor, when illness, the simple and unavoidable result of the neglect of sanitary laws, occurs.

Despite the exertions that women have for some time past made to gain the right of *entree* into various professions hitherto monopolised by men, they have yet to assert their claim to what is obviously a most suitable profession for them, viz., sanitary science, the profession of preserving health. Women are eminenly fitted, both by their nature and their position in life, for sanitary work.

Do the members of the medical profession recognize the importance of sanitary science? It may be that they do among themselves, but why do they not preach it, and teach sufferers the value of it? Over and over again does it happen that doctors prescribe and prescribe and do no good, simply because sanitary laws are not obeyed. In illustration of this, take but one case, which recently occurred. A child was seized with a fit, and the medical man, one of some eminence, was summoned. The child was teething, and required nothing but pure air, bathing, and simple and wholesome diet to enable it to pass safely through the ordeal generally dreaded by mothers. What had it been getting? A wash now and then, no systematic bathing, a diet totally unfit for a child, confinement indoors, and, finally, sleep in a small bedroom occupied by four other persons, two children and two adults! The doctor arrived, made no questioning, merely lanced the child's gums, and departed with the announcement that he would 'send a powder,' and with the deportment of one who had acquitted himself well in a 'dangerous case,' as he described it. Not a word was breathed about the neglect of sanitary laws, no advice was given as to the necessity of pure air, no reference was made to diet, and bathing was altogether ignored. This last was, perhaps, not so much to be wondered at, for most of the faculty seem to shrink from the use of water as they would from poison. *Apropos:* a patient lately after going through a perfectly healthy and natural process, horrified the surgeon by asking for a glass of water. 'Not water,' he said: 'you must have brandy and water, or I cannot answer for the consequences.' The patient, however, undertook to answer for the consequences, and these proved to be nothing more serious than feelings of relief. The antipathy displayed towards water, and the incredulity with which it is regarded

as a preserver of health and power in the cure of disease, is exceedingly difficult to account for. Let us hope that sanitary science will succeed in dispelling this strange and foolish prejudice.

DR. DRYSDALE'S VIEWS ON THE DISEASES OF TOBACCO.

Nicotine, which is contained in infusions of tobacco, (*Quarterly Journal of Inebriety*) is a very deadly poison; and hence chewing, which introduces small quantities of nicotine into the blood by means of the absorbents in the mouth, is likely to cause more rapidly any of the diseases produced by tobacco than smoking. On one occasion, while attending the practice of the London Ophthalmic Hospital, I saw within a short time two cases of atrophy of the disc, of which the origin, in men under thirty, seemed clearly due to the fact that both patients had been continually in the habit of chewing tobacco. Then, with respect to smoking, Melsens, a chemist, collected 30 grammes of alkaloids from 4,500 grammes of tobacco-smoke passed through water. Alkaloids are almost as poisonous as nicotine, and are used by gardeners to kill insects, who fumigate their plants by burning tobacco in closed houses. The effect of smoking is to act on the nerves by absorption of the alkaloids mingled with the saliva of the mouth, and to cause dilation of the small vessels by the paralyzing effect of the drug on these. Dogs may be killed by giving them quantities of tobacco—of course larger as compared with that taken by persons who chew or smoke. Men who smoke are often plagued with palpitation of the heart, etc. I once made inquiries concerning two hundred patients at the Metropolitan Free Hospital, who were great smokers, consuming at least half an ounce of shag daily, and found that most of them were more or less chronic invalids.

Dr. Kestral, physician to the Royal Tobacco Factory at Iglau, near Vienna, tells of 100 boys from twelve to sixteen, recently entering the works, 72 fell sick in the first six months. Most of them had symptoms caused by tobacco-poisoning. The work-girls are frequently subject to amenorrhœa, or chlorosis. When pregnant, abortions, caused by the tobacco-poisoning, are frequent among married women; and of 506 births, 206 children soon died, the majority at from two to four months of age, when their mothers returned to the factory and breathed the air charged with nicotine, which poisoned their milk.

The intelligence of young men is greatly affected by tobacco. Bartillion's statistics of the Ecole Polytechnique in 1855, show that 108 of the scholars smoked and 52 did not smoke. Yet of the first twenty who obtained honors at the school, fourteen were non-smokers and six smokers. This caused the Minister of Public Instruction in in France in 1861, to prohibit the use of cigars and pipes among young students.

DUTY OF PHYSICIANS.

We are pleased to find one other journal besides the *Sanitary Journal* boldly take the position that a large part of the duty of the physician lies in efforts to prevent disease, and advocate practical manifestations of the exercise of such duty. The one other journal to which we refer is a new and handsome monthly, the *St. Louis Courier of Medicine and Collateral Sciences.* The remainder of this article, which has a ring about it which we so much like, we extract from the second number of the *Courier*, and hope it may interest our brother practitioners.

'The health of the people is the supreme law,' and this should be, must be enforced.

We are in a condition to undertake the initiation of a movement that, if we commence in the right mode and unceasingly and unitedly endeavour to advance will in time attain a force which I feel satisfied will overcome all he obstacles which now frown so threateningly in opposition—obstacles of custom, obstacles of ignorance, obstacles of prejudice, obstacles of intention.

We must 'take up arms against this sea of troubles, and by opposing, end them.'

In this journal we purpose that one of the chief departments shall be devoted to matters relating directly and practically to public hygiene, urging the importance of the formation of local societies and boards of health, and this department will give constantly the latest results of the effect of attention to local causes of disease in this and foreign countries, and, in connection with this, instructive essays—simple, so plain and easy, that he who runs may read and comprehend; often of so popular a character that the secular journals, the daily and weekly newspapers shall copy them, and so commence the education of all people who read. We feel sure they will be read.

Farmers and villagers are concerned in understanding drainage, the neglect of which has wrought sad disaster in our country. A ditch is cheap, and ditches are cut on every farm, but they need to be cut intelligently, and every country doctor ought to be able to tell his patients where one is needed, and where it had best lead.

Wells are dug to form dépôts for drainage from cesspools, when a little needed knowledge would as easily avoid the lurking danger, that is only concealed by ignorance.

Infected bedding and clothing have carried illness and death, by reason of expensive economy or death-dealing charity, because the infectiousness of filth or disease has been unknown, or the value of time as a purifier, ignorantly estimated to be great; and even in this city are found men and women, some unfortunately with the cacoethes scribendi, who make themselves heard, and exert baneful influence against the blessed protection of vaccination.

Oh! that we could vaccinate against wilful ignorance.

THE MUCH-MALIGNED PIG.

A perusal of some recent local reports (*Sanitary Record*, Jan. 24, 1879) in which that despised animal, the pig, has infinite abuse and contumely heaped upon him as a quadruped of the most vicious and degraded propensities, induces us to say a word or two in favour of the much-maligned porker, and to ask that he, as well as animals of better repute, may have fair play. The fact is that the pig has a bad name as an unclean animal, whose habits are essentially and naturally filthy, and who will feed on disgusting food, from which other animals will turn away. He is thus left to revel in the refuse that he is supposed to prefer, and for the most part no pains are taken to teach him better. A little knowledge of his instincts will, however, show that so far from the pig being naturally an unclean animal, he is naturally the reverse: and this view is strongly borne out by Dr. Ballard, in a report which he some time ago presented to the Local Government Board on the 'Effluvium nuisances arising in connection with the keeping of Animals.'

'When the pig wallows in mire,' says Dr. Ballard, 'he merely follows an instinct implanted in him, in common with some other pachydermatous creatures, the object of which is cutaneous cleansing. The mud stands to him in the relation of soap to a human being, but instead of washing it off with water he allows it to cake and dry upon the skin, and then rubs it all off, mud and cutaneous débris together, upon some sufficiently rough surface. Loose hair and cutaneous scurf irritate him, and he takes his own way of cleansing his skin from them. Cleanse his skin for him and he will rest in contentment, without offending the eyes of his supercilious betters, often less scrupulous in this matter than he is, by his wallowings, scratchings and scrubbings. It has long been known that a pig thus cleansed with soap and water, not only becomes less objectionable, but grows fat more speedily than if left to clean himself in his own way. Similarly as respects his food. Garbage is not the food that the pig selects by preference. In fact a pig which has been fed for any time upon sweet food will turn away from sour and disgusting food. If left to pick up his living where he can find it, he will eat anything he can find that is eatable, but even then will eat acorns, fallen fruit, or roots in preference to garbage; and human beings in similar straits will act precisely in the same way.' It may be economical, and perhaps even desirable, to convert into pork matters which can in no other way, or in no way more convenient, be made subservient to the subsistence of mankind, and the pig is possibly properly utilized in this manner. Our only desire is to vindicate his character as a cleanly feeder, if only he has the chance of cleanly feeding vouchsafed him.

ANY INSENSIBLE PERSON, who, having been left undisturbed for from ten to thirty minutes, has contracted pupils, which dilate when he is shaken, without any return to consciousness, and then contract again, is suffering from alcoholic coma.

COOKED AIR.

A clever writer in the Philadelphia *Ledger*, writes the *Scientific American*, very happily characterizes the air which most city people breathe indoors in cold weather as "cooked air." The lower down the thermometer goes the higher the burning coal is piled; all the chinks and cracks are stopped that would let any fresh air in, and its main chance, indeed, is when the front door opens for twenty seconds, or when the beds are made in the sleeping rooms. In the living rooms of the family there is no occasion, many people think, to raise the windows ever, except to wash them on periodical cleaning days, or to close the shutters. So carpets and furniture and people, lungs and skin, are dried and baked in the hot, dry rooms, until ingenious persons can bring out electric sparks from their finger ends by skating rapidly up and down the room in their woollen slippers.

These breathers of cooked air are often extremely particular about wearing their own clothes, and would by no means consent to take the cast-off garments of a neighbor; yet one and all of them are perfectly comfortable to breathe over and over again the cast off and soiled air from each other's lungs, when it is cooked especially; for in summer time they do insist on a change of it, and do get their houses ventilated. Janitors of public buildings, in a short-sighted economy of fuel, will shut up all the apertures by which fresh air might get in, lest they should suffer some heat to escape thereby, and are rewarded by sleepy audiences, especially when the gas burners are at work, also draining the cooked air of what little life it has. There are some people—many, it is to be hoped—who open an inch or two of their bedroom windows every night to insure a modicum of fresh air to sleep by. But these do not in the least care to have fresh air to be awake in, it seems, for they are content to have their furnace draw all its supplies from the tightly sealed cellar, and from the stale atmosphere of the ash boxes and vegetable bins in that subterranean apartment. And these breathers of cooked, sealed, devitalized, and debilitating air, wonder why it is they take cold so easily! The writer suggests that when people learn to live in fresh air within doors as without, with its proper proportion of moisture for the skin and breathing apparatus to keep up their healthy tone, it is likely they will have found out one way at least of how *not* to take cold.

EARLY VACCINATION.—Dr. Russell, of Glasgow, has recorded an instance of an infant born into a small-pox atmosphere being vaccinated within twenty-four hours after birth. The child was born the day after its father was removed to the hospital with small-pox. The vaccination did well; the child was not in the least disturbed in general health, and escaped a disease which would almost certainly have proved fatal. When small-pox is in the house or family, *no age must be considered too early* for vaccination, which appears to be quite as safe and quite as successful directly after birth as it is at a later period.—*Sanitary Record.*

SEWERAGE OF ANCIENT ROME.

Dr. W. Essie, C.E.,F.L.S., (*Sanit. Rec.*, Dec. 27, '78, in Detroit *Lancet*) reports the results of investigations into the sewerage of ancient Rome. The main sewer was composed of three semi-circular arches enclosing one another. These concentric rows of enormous stones are piled above each other and fitted in place without mortar or cement. The average width of the sewer is twelve feet innermost diameter, and the average height about thirty-two feet. It was constructed of peperino blocks, some of which are over five feet long and three feet thick.

It was built about seven centuries before Christ and intended to drain the lake that surrounded the hill upon which the city was built and the contiguous marshes, thus permitting the Romans to have free intercourse with the Sabine town on the hills across the lake. As the city extended, new sewers were built connecting distant points with the great sewer. These sewers conveyed to the Tiber the storm waters from the hills, the overflow of the springs and marshes, and the overflow of water brought to the city by the stupendous aqueducts; they removed the wastes from the public fountains, the flow from the streets, the fish reservoirs, the wastes from the magnificent baths, and the slops from the houses. It is probable that they began to be used as sewerage about four centuries B. C. When it is remembered that in the time of the emperor Augustus the city contained over two millions of people, it will be seen that in no other way could the city be kept in a tolerable condition of cleanliness.

As a huge landmark in the path of progress the cloaca maxima still remains. Estimated not only by its vastness but by its purpose, it transcends in magnitude the pyramids or the great wall of China.

VACCINATION.

In a recent report (in the *Proceedings*, Feb. 1879) of the committee on hygiene of the Medical Society of the County of Kings, N. Y., on vaccination and re-vaccination, the following conclusions are arrived at:

Vaccination is the only means of preventing small-pox.

Vaccination ought, in ordinary cases, to be done not later than the third month.

Vaccination does not endanger the health of the child; the mortality is 35 times less during the three weeks which follow the vaccination.

There is no protection for adults without re-vaccination.

Re-vaccinations should be done about the *tenth* year, not later than the *fifteenth*.

Vaccinations and re-vaccinations should be made regularly, and recorded as regularly as *births*; with date, and date of inspection.

A small-pox hospital, properly located, is entirely safe for those living in the vicinity.

The number of patients does not increase the danger, and the mortality in hospital is less than in private practice.

MEDICAL INSPECTION OF SCHOOLS

A good deal has been written and said in different countries about the necessity for medical supervision of schools. It is time some attention were turned to this subject in Canada, as it is one of much importance.

The members of the Liverpool Medical Institution *(Med. Times and Gazette)* have lately presented a petition to the President of the Local Government Board in favour of a systematic supervision and inspection of public schools. They say—'We consider this a necessary measure, and hope that the recommendation of it will meet with your approval, particularly since medical supervision has been made obligatory in analogous conditions, viz., under the Factory Act and in the Emigration Service. Your memorialists suggest that the duties of the proposed medical inspectors of schools should chiefly consist in preventing children who have been suffering from infectious diseases from attending school before the infective period has passed; in visiting the houses of children absent from school in consequence of illness; and in making strict inquiries into the general sanitary condition of the respective families. Under existing arrangements the warnings sent to schools by medical officers of health generally came too late to answer any practical purpose, and it must further be considered that such officers by no means obtain information of all infectious cases. The duties of the proposed medical inspectors should further consist in ascertaining and certifying that the children seeking admission have been properly vaccinated, and are free from contagious skin disease. There should be also medical inspection of the school premises and of the children in attendance, carried out in such a way as to interfere as little as possible with the work of instruction.' And they add—'Your memorialists are aware that they must limit their request for medical inspection to public schools which are under the control of the Government; but they feel confident that managers of private schools will very soon not only not object to, but court, medical supervision'

HYBRIDS OF TYPHOID FEVER WITH RELAPSING FEVER.—In the blood of one typhus and four typhoid patients, whose symptoms presented some of the characteristics of relapsing fever, Borodulin *(Petersburgh, Med. Woch.*, Nov. 28, '78; *Med. Times and Gazette)* succeeded in discovering Obermaier's *Spirillum*, and thus proving that these cases were truly hybrid. The peculiarities which directed attention to relapsing fever were irregular variations of temperature, perspirations, and the fact that cerebral symptoms were but slightly marked. Physical examination revealed very decided enlargement of the liver and spleen, and petechiæ of vermillion colour occurred at the very onset of both the typhoid and typhus fevers. One case died, and the pathological changes were essentially those of typhoid fever. The sprilla were more abundant in the blood the nearer the disease appeared related to the pure form of relapsing fever.

THE DISPOSAL OF SEWAGE.

In one of the Public Health lectures recently delivered at Glasgow, *(Sanitary Record* Jan. 17, '79) Dr. William Wallace pointed out that sewage was a very mixed liquid, and that that was one of the chief difficulties in the way of the satisfactory disposal of it. The question to be solved, he afterwards remarked, was how to get rid of it in the most convenient, least injurious, and least expensive manner. Underground sewers generated gas. If sewers could be kept on the surface, and the supply of water was plentiful, there would be no danger from this cause, although that might be more or less offensive to sight and smell. Perhaps the most perfect town from a sanitary point of view would be one in which a small stream of water flowed down the centre of each street, with the stream connected with the houses and a fall of water sufficient to prevent the lodgment of matter. Water *per se*, it was pointed out, had no purifying quality whatever. In ordinary cases the air more than the water had to be depended upon for oxidation, though in the river Clyde there was a sufficient quantity of water to dilute the actual sewage with 1,600 parts of water. The first step and the only manner by which sewage could be satisfactorily disposed of was by the appointment of Conservancy Boards. There could be little doubt that it would be of little use to introduce for the purification of the Clyde a system which did not embrace the upper reaches of the river, and this could only be accomplished by means of a Conservancy Board. Proceeding to discuss the merits of the two systems of disposing of excreta—the dry system and carriage by water—Dr. Wallace described the former as the most rational and most consistent with public health and national prosperity.

WHOOPING COUGH AND FUNGUS.

Some years ago *(Scientific American)* M. Sventzerich made the assertion that whooping cough was caused by a certain fungus. This assertion seems lately to have been confirmed by the researches of M. Yschamer, who says he found certain lower organisms in the spittle of whooping cough patients—organisms not met with in any other disease accompanied by cough and expectoration. Examining the spittle after it has been a short time suspended in water, there are found corpuscles about the size of a pin's head, of white or slightly yellowish hue, and these show, besides apathetical cells, a network frame of polygonal meshes, with rounded greenish sporules; at a more advanced stage, colorless hyphæ are seen, and large sporules, yellowish or brownish red, sometimes even ramified. It is interesting to learn that the champignons in question are quite identical with those which, by their agglomeration, form the black points on the skins of oranges and the parings of certain fruits, especially apples. Thus, M. Yschamer, by inoculating rabbits with this dark matter, or even causing it to be inhaled by men, produced fits of coughing several days in duration, and presenting all the characters of the convulsive whooping cough.

DRAINAGE.

Since the first issue of the *Sanitary Journal* it has repeatedly drawn public attention to the importance of thorough drainage of the soil. Damp, undrained soil is one of the most fruitful sources of preventable disease. Imperfect drainage, or damp soil, is said to give rise to nine-tenths of all fevers that occur. The fevers most common in undrained districts are intermittent (ague) and remittent, and in more southern latitudes, yellow fever. Numerous instances have been recorded in which in certain localities fevers had been constantly prevalent for many years, but entirely disappeared after thorough drainage of the soil.

It may be that in a locality not very well drained, there will be a very tolerable degree of health among the people, other conditions being favorable to health; but the most perfect freedom from disease can only be obtained by good drainage. It is well known that the best products of both the animal and vegetable kingdoms—the best sheep and cows and horses, the best grains and roots, are the products of the best drained soils. The records of the Registrar General of Great Britain show that in well drained districts the people suffer less than half the average amount of sickness and disability, and their life is prolonged from 20 to 25 per cent.

The death-rate from consumption has been reduced in localities 50 per cent. by proper drainage of the soil. Bronchial and rheumatic affections are well known to be much more common on undrained soil.

The agriculturist often spends large sums of money in draining his fields, yet leaves his cellar and grounds around his dwelling damp and most detrimental to the health of his family. Not thinking or knowing, or if knowing, not caring, that the health of those in his house would be at least as much benefited as that of his plants or his cattle by dryness of soil.

Villages and towns, and even cities, are frequently built on damp retentive soil, without any attempt being made at systematic drainage. Here and there an imperfect drain permits the superfluous water to flow from some excavation in the ground, called a cellar, but which is often far from being as dry as it should be. The time will probably come when it will be to the direct pecuniary interests of proprietors of village lots to thoroughly underdrain their lots before offering them for sale for building purposes; and when there will be an Act of Parliament against houses being built on soil not perfectly drained.

It is the duty of the corporations of towns and villages to see that the health of the people of the locality over which they preside does not suffer from dampness of soil.

SUSPENDED.—We regret that a very welcome and valuable exchange, '*The Doctor*,' has been suspended for a time, until outstanding accounts can be collected. We hope soon to see it commenced again.

DIPHTHERIA AND MILK.

In response to the appeal made by us in our last week's issue, we *(Sanitary Record)* have already received information which appears to show that an extensive epidemic of diphtheria, investigated by a Government inspector some time ago, was probably spread by means of milk specifically contaminated with the infection of diphtheria. We learn from our informant that diphtheria broke out first at a public house in a village three miles from the town in which it afterwards became so fatal, and that next door to this house lived a cowman, whose two children caught the disease. The cow-man in question had to nurse and attend to his sick children, and as his duty was to milk the cows belonging to his employer, and afterwards sell the milk in the town, the theory is that the infection of diphtheria was distributed by him along with the milk. We are informed that on the houses supplied by this milkman the incidence of the epidemic chiefly fell.

PARKDALE, we believe, is entitled to the credit of being the first village or corporated place of any sort in Canada, or even probably on this continent, to adopt the 'interception' or 'dry' system in the disposal of excrement. It will not permit any accumulations of fecal matter to take place on any premises within its boundaries. All such matters must be disinfected, or in other words destroyed at frequent intervals, and none will be allowed to remain as fecal matter to foul the air and water. We hope to be able to give more particulars in reference to the working of the system on future occasions; and trust we shall learn of many other villages and towns in Canada reached, and it is to be hoped influenced, by the SANITARY JOURNAL, following the example of Parkdale. Many towns in England have long ago put into successful practice a similar system. Doubtless there are many medical practitioners in Canada who if they would but set resolutely about it, might induce the councils of the respective towns and villages in which they live to adopt a like practice. It would probably, if carried out, lessen their income somewhat, but medical men are not usually made of such stuff as to let a consideration of this sort deter them from what they learn to be their duty. We hope we shall hear of some of the readers of this journal making the effort referred to.

ENGLISH BOARDS OF HEALTH.—The English sanitary regulations emanate from a Central Board of Health, created by an act of 1875, with very extensive powers. It controls all local boards, and these also take charge of varied interests; for example, the construction and maintenance of sewers, the cleaning of streets and country roads, and the removal of impurities from private enclosures, with measures of precaution in view of epidemics, the visitation and amelioration of tenements, and in general, a minute and constant surveillance of the cleanliness and salubrity of the district under their management,

and of the health of its inhabitants. They alone can authorize the establishment of slaughter houses and certain kind of factories; they have the power to open and widen streets, and to create parks and squares, and they must see to it that an adequate supply of gas and water is forthcoming. Much of this work they are permitted, and in some cases required, to let out to contractors, but they cannot free themselves from responsibility and the duty of supervision. Not only the maintenance, but the security of the public thoroughfares, to a large extent, falls within their functions. It is for the health boards to make regulations regarding public vehicles, and to deliver licenses to hacks, and it is their business to enforce penalties for a number of petty delinquencies, such as obstruction of the highway; the discharge of firearms, or any species of disorderly conduct. In a word, Boards of Health in England, at present, engross, or encroach upon, powers distributed in other countries among at least half a dozen distinct organs of government.

The local Boards of Health are at present forced to obey the initiative of a central bureau, to register its orders and carry out its plans. The expenditure is under the control of men appointed by the national Executive and representing the whole people.

A DISCUSSION ON SMALL-POX IN CANADA took place recently in the Senate at Ottawa, arising from the following enquiry, by Hon. Senator Haythorne:—'Whether the attention of the Government had been directed to the subject of the prevalence of small-pox in Canada, with a view to arrest the spread of that disease by a general system of vaccination or otherwise.' A lengthy discussion followed in which it was stated that a serious and alarming outbreak of small-pox has occurred in Prince Edward Island, proving fatal in many instances. The advantages of vaccination were dwelt upon and illustrated at much length by Hon. Mr. Haythorne. A member of the government, Hon. Senator Aikins, stated that the matter did not come within the purview of the Dominion Government, except as regards quarantine, but was a subject for Provincial Legislatures.

Hon. Senator Dr. W. H. Brouse, who has given so much attention to public health legislation, took occasion to speak at considerable length on the subject in general. He referred to the fact that all civilized nations [except Canadians] are striving to legislate for the health of the people, and to the extent to which the death rate had thereby been reduced in many countries. We trust this discussion will be of service to the country, and intend to refer to it more fully on a future occasion, as we have not space enough for it in this number of the journal, which is just going to press.

DRUNKENNESS.—According to the *Boston Medical and Surgical Journal* the French have the following law: 'Every person who may be condemned by the police twice for the crime of open drunkenness, will be held incapable of voting, of elective eligibility, and of being named for the jury or any public office.'

BEWARE OF HURRY. From the *London Lancet*.—The maxim of safety—to avoid physical and mental hurry alike—is, prepare, deliberate; in a word, adopt an orderly method. The man with a weak heart who endangers his life by hurrying to catch the train, unless under altogether exceptional circumstances, is probably the victim of a defect in early training, which leaves him at the mercy of impulse without order; or he is striving to fill a place in life for which his chief qualification has been the faculty of accomplishing by effort more than can be achieved naturally by steady labour. Some persons are ever hurrying after their engagements; others are goaded onward by the pressure behind them; but however the 'hurry' is produced, it is full of peril to happiness of mind and health of body, and in the end to exhaustion, if not prematurely by accident, it *kills*.

LAUNDRIES AND THE SPREAD OF DISEASE.—The public should be reminded that contagious diseases may be spread by laundries. Such establishments may, the proprietors not being aware of it, receive the clothing from the bodies of those who had suffered from contagious disease; for there are, doubtless, individuals thoughtless enough to send such clothing to a laundry.

SPECIAL NOTICES.

AS THIS IS THE LAST NUMBER OF VOLUME III, we hope those in arrears will kindly remit the amount due without delay.

TO ALL IN ARREARS for MORE than the last volume, AFTER THE 25th MARCH, we purpose sending accounts, for collection, by express.

BILLS WILL NOT BE SENT with this number, as they have been sent several times already, but the amount due will be found marked on FIRST PAGE OF COVER.

ARRANGEMENTS ARE ABOUT TO BE MADE whereby it is hoped the next volume of the SANITARY JOURNAL will be greatly superior to any of its predecessors. The first number may be delayed however.

ANY REQUIRING TITLE-PAGE for binding Volume III, will please send address by P. O. card.

SOME NOTICES OF BOOKS and Journals received will appear in next number.

INDEX TO VOLUME III.