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IS VACCINATION AS IMPORTANT A PREVENTIVE OF SMALL-POX AS IT IS COMMONLY BELIEVED TO BE?

BY THE EDITOR, EDWARD PLAYTER, M.D.

At the present time there is no question pertaining to the prevention of disease of more importance, or receiving more attention, than that of vaccination. The recent experiments of Basteur have increased the interest taken in it. The whole question is one of the utmost importance in relation to the public health. To what extent will vaccination prevent small-pox, and are the advantages of the practice sufficiently great to outweigh the disadvantages, are questions asked by those who feel the deepest interest in the subject. That there are disadvantages, in the form of serious consequences following vaccination, is unquestionable. Of late these serious consequences seem to have been of more frequent occurrence, or to have attracted more attention than formerly, and wide-spread opposition to the operation, and especially to the principle of compulsory vaccination, has been thereby created. If the practice has, of itself, been so far instrumental in preventing small-pox, as its strongest advocates assert that it has been, it is probable that the serious consequences referred to which have followed it on occasions, have not been of such importance as to warrant its discontinuance. The cases in which death has seemingly directly followed, or been caused through, or by means of the operation, on the whole, have been numerous. I will only here allude to the possible evil consequences, other than death, consequences upon future generations,—upon the race, which may be vastly more far-reaching than death itself, which, even though we have no direct evidence of it, it is not difficult to conceive, may follow the introduction into the human body of the vaccine poison.

I desire not to be regarded as one opposed to the practice of

vaccination, but rather as one who, in view of the many evils reported to have followed it, and other possible evils just referred to, has become somewhat sceptical and critical, and who would most carefully and fully, and in every light, examine all evidence relating thereto, favorable or otherwise.

It is difficult, on first view, to believe, from the statistics which have been brought forward by those who are favorable to it, that it has not in the past, with less perfect knowledge of the value of other sanitary measures, been of value, a necessary precaution, and a preventive of the spread of, and mortality from, this most loathsome disease, small-pox; and it is just possible that it will be best to continue it, for some time to come, at least. But I desire to say here at the outset that, after carefully examining and sifting all the obtainable evidence, *pro* and *con*, in regard to the measure, I fear that it has been and is too much extolled, and too much relied upon, to the comparative neglect of other, and, it appears me, more strictly scientific preventive measures, and that it is opposed and repulsive to nature. It is said that figures cannot and do not lie, but unquestionably they may, if they are not carefully weighed and investigated in all their relations and bearings, greatly mislead.

I propose, therefore, to bring forward the strongest evidence that has been advanced on behalf of the practice of vaccination as a preventive of small-pox, and to examine its value so far as space and time will permit; then to notice, very briefly, some of the evils which have been the consequence of the practice; and, finally, the methods of checking the progress of small-pox without vaccination. Before proceeding to this, however, I desire to draw attention to a few points relating to the history of vaccination which will be of interest, and which will bear more or less strongly upon the evidence.

In the original essay of Dr. Jenner, published in 1798, entitled, "An Enquiry into the Causes and Effects of the Variolæ Vaccinæ, a Disease discovered in some of the Western Counties of England, particularly Gloucestershire, and known by the name of Cow-pox," the author gives it as his belief that the disorder does not originate with the cow, but is communicated to that animal from the horse, where it appears on the heels, and is known by the name of *the grease*. Later observations have established the identity of the two disorders, cow-pox and grease, and equination (the communication of the disease from the horse direct to man) has been practised on

the Continent of Europe and in India. Jenner next suggested that the small-pox itself may have been originally morbid matter of the same mild kind, changed by accidental circumstances into that contagious and malignant form with which we are now too familiar. More recently it has been shown, by experiments, that the cow may be inoculated with the small-pox virus, and that by passing through the animal it is converted from small-pox into vaccine. Jenner next stated his conviction, and four years later, in his petition to Parliament, confidently announced, that the cow-pox, when it has once passed through the human body, renders through life the person inoculated with it perfectly secure from the infection of small-pox. How far from what time has proved to be the fact is this last sweeping assertion we all know. In his earliest statements Dr. Jenner led to the belief that the cow-pox in the cow was generally a local disorder confined to the udder. But more recent observations have shown that it is a constitutional febrile disease, accompanied with eruption, sometimes very severe and frequently fatal. The animals in severe cases, after appearing dull and stupid for a day or two, are seized with distressing cough, accumulation of phlegm in the mouth and fauces, and loss of appetite. On the fifth or sixth day pustules make their appearance all over the body, but especially on the abdomen, accompanied with much general distress and fever. The pustules go on to ulceration, the hair falling off wherever a pustule runs its course. The mouth and fauces in bad cases become one mass of ulceration, and mastication is so impeded that death seems to follow from inanition. An epizootic has been reported as occurring in India in which the mortality was estimated as being from 15 to 20 per cent

EVIDENCE IN FAVOR OF VACCINATION EXAMINED.

We have tolerably reliable statistics which show that there was a gradual increase in the proportion of deaths from small-pox in London, England, from about the year 1630 to 1765, or during a period of about 135 years. Since about the year 1765 down to about 1865, there was a gradual decline in the mortality from this disease. The rise and fall was not, of course, gradual, but subject to great fluctuations. The decline, it must be observed, commenced over a quarter of a century before vaccination was practiced, though the mortality appears to have fallen more rapidly after this. Figures, seemingly reliable, show that there has been, on the whole, a greatly reduced mortality from this disease during the present century as

compared with the 18th century, though there have been some especially severe epidemics. There was one epidemic in 1805, not long after vaccination was discovered; another in 1825. Dr. Barron, the friend and biographer of Jenner, says the disease was nearly as prevalent in London in this year (1825) as during any of the three great epidemics of the preceding century. In 1838, '39, '40, in spite of vaccination, which had become very general, small-pox killed in England and Wales, 35,833 persons. In 1870, '71, '72, '73, the worst epidemic, it appears, of the century prevailed, reaching its climax in 1871. In it the mortality appears to have been, proportionately, almost as great as in any of those of the 18th century. Regarding this one, D. Manson Fraser, M.A., M.D., F.S.S., a strong advocate of vaccination, gives us a valuable but sort of apologetic paper in the *Sanitary Record* of April last. A large part of his argument goes to show that whilst, as he himself has it, "in the epidemics of small-pox which occurred before the introduction of vaccination, the mortality caused by the disease was almost exclusively amongst the very young," (from 80 to 90 per cent. of the deaths being of children under 5 years of age), from his figures, it "appears that in the epidemic of 1870 to 1873, the number of deaths from small-pox amongst children under 5, as compared with the total number of all ages, was very much less than it was in the 18th century." Again he writes: "It is held, and the opinion is based on wide clinical observation, that while vaccination cannot, under any circumstances, be called an absolute protection against attack of or death by small-pox, it is, when efficiently performed, an almost absolute protection against attack of and especially death by that disease during the earlier years of life; and when followed by efficient re-vaccination, the protection is renewed for a further period of years." Observe, what a backing down is this from the strong language used in the time of Jenner, as regards the preventive influence and the permanency of vaccination. Near the commencement of his paper Dr. Manson writes that the occurrence of the epidemic "was fully expected," from a certain tolerably definite law of periodicity; but "wholly unexpected, however," he adds, "was the extreme intensity which the disease assumed all over the country." The prevalency of the disease had so diminished that in many quarters, he says, "extravagant hopes had been formed as to the efficacy of vaccination as a protection against small-pox. The great extent, therefore, and the extreme virulence of the epidemic came as a com-

plete surprise." So writes one of the strongest and most able advocates of vaccination.

In Bavaria vaccination has been enforced over three-quarters of a century, with, apparently, very unsatisfactory results; the government since 1871 have issued a series of questions to local authorities and public vaccinators, constituting a sort of investigation (*Friedreich's Blatter fur Gerichtliche Medicin*). In the 22 years, 1860-81, inclusive, there were in the kingdom, which comprises a population of about 5,000,000, 79,534 cases of small-pox, with 11,300 deaths; or a yearly average of 3,615 cases and 513 deaths—a mortality of 14.2 per cent., or about 1 in 7. During a ten years' epidemic period of this time, 1865-74, the yearly average was 8,543 cases, and 1,093 deaths; and in 1871, 30,742 persons were attacked, 4,784 of whom died. And, somewhat strange, if vaccination is of much value, 29,429 of these, or 95.7 per cent., had been vaccinated.

Now, how far does all this go towards proving that vaccination exerted any particular influence in reducing the death-rate from small-pox? What evidence have we of any causal relation between the decrease in the mortality from small-pox and the diffusion of the practice of this discovery of Jenner?

The statistics of that great statistician, Dr. Farr, show us that small-pox began to be much less fatal, as I have stated, during a period of more than a quarter of a century, or about 30 years, before vaccination was discovered. It began to decline soon after the great rise following the practice of inoculation, and the discontinuance of this practice.

It appears that we have these great waves or curves—rises and falls—made up as it were of smaller waves, and extending along for generations and even perhaps centuries, in the mortality from, or prevalence of, epidemic diseases, the cause or causes of which we are unable to explain. It appears that it may be that the particular disease becomes so prevalent and universal that it eventually gives rise in the constitution to a sort of hereditary insusceptibility to itself, for a few generations, when it commences to recede and become at once less frequent and less fatal. Again, it seems probable that the influence or effect upon the system of any one of the epidemic diseases may tend strongly to prevent for a time, long or short according to circumstances, the same organism becoming the subject of small-pox, or indeed of any other of the epidemic diseases. It is now admitted that the cow-pox only protects for a season, as it

were. The period of protection may be becoming shorter and shorter, however long seemingly at first it may have been, and the hereditary insusceptibility to its protective influence may be gradually increasing. It was at first believed, as Jenner declared, that this influence would be continuous, and would render the constitution for ever after secure from the infection of small-pox. We know now that this is very far from being the case. It is very well known that the effect upon the system of many diseases, or rather probably of their accompaniments—the treatment, the hygiene of convalescence, the rest, is of a renovating or protective character, and that the subjects of them frequently experience greater vigor and freedom from disease for a long time thereafter than they had previously experienced. The fact, as appears, that while small-pox has decreased, measles and hooping-cough have increased, is brought forward as an argument in favor of vaccination. It appears probable that enteric fever and diphtheria have also increased in frequency during the present century. May not the increase in the frequency of these diseases have contributed to the decrease in the frequency of small-pox? The improved general sanitary condition of the large cities, such as London, when the present century is compared with the 18th, is believed to have had a marked effect in preventing the spread of, and reducing the mortality from, small-pox, and it cannot be doubted that the improvement in this regard, together with disinfection, isolation in hospital, and the greatly improved methods of treatment of cases of the disease, have contributed very largely to the reduction in the death-rate from it. We have the best of evidence, theoretical and practical, that outbreaks of the disease may be invariably stamped out at once, irrespective of vaccination, as I shall refer to more directly further on; and if all outbreaks were thus stamped out as they occur, we should soon be free from the disease, without this questionable practice. The fact that in spite of compulsory vaccination a most severe epidemic of small-pox prevailed in Great Britain in 1871, the percentage of deaths from which, compared with the total number of deaths from all causes, being, it appears, from a chart by that veteran Sanitarian, Dr. Guy, I think, nearly as high as that in the epidemics of last century, with the fact that the epidemic was soon checked, not by vaccination alone, certainly, but by isolation, quarantine and disinfection, affords evidence, that we may rely too much on vaccination as a prophylactic in small-pox.

Moreover, the disease under consideration is of such a loathsome character and withal so fatal, that since preventive measures have become known and their practical value understood, they have been and are applied to the stamping out of small-pox with probably tenfold more vigor than they are applied to the stamping out of any other disease, or especially of the milder and vastly less terrifying ones, such as measles and whooping-cough.

The cholera, an exotic disease it is true, has been, without the application of any such prophylactic as vaccination, but by other, and I must say, more rational and scientific sanitary measures, bereft of its terrors, and is now almost unknown in Europe.

Now let us notice different, but perhaps somewhat stronger, evidence in favor of vaccination.

During the period between the institution of the first civil registration act in Great Britain (1836) and the passing of the first compulsory vaccination act in 1854, a period of 18 years, the annual average death rate from small-pox in England and Wales was 420 per million, while in the following 28 years of compulsory vaccination, it fell to 196 per million, or to considerably less than half. This is regarded as a strong point; but we must bear in mind that the first of these periods was comparatively a short one, and if a few years of absence from epidemics of the disease were added to it, a greatly reduced mortality in it would be shown. In fact, the reduced mortality in the latter period, in view of the great fluctuations in the mortality from the disease, during the last two hundred and fifty years, does not *prove* anything.

Again, in view of the recent proposed motion for the repeal of the compulsory clauses of the Vaccination Acts in the Parliament of Great Britain, Dr. W. B. Carpenter has addressed a letter to the Rt. Hon. Lyon Playfair against the motion. He points out that great reduction in the mortality from small-pox followed the two principal legislative measures for the promotion of vaccination. But he did not state that these two principal legislative measures were enacted on the decline of two great epidemic periods; such periods being invariably followed by a decline in the mortality. It appears, on the other hand, from the Annual Summary of the Registrar-General for 1880, that there has been a great increase in the number of deaths from this disease since the commencement of compulsory vaccination. In London, probably the best vaccinated city in the world, in the decenniad between 1851 and 1860, there were 7,150

deaths from small-pox; in the next decenniad there were 8,547 deaths; and in the last, 1871-80, there were 15,543, or much more than double the number of 20 years before, while the mean population had increased less than 40 per cent. in that period. Hence, though the mortality has been from this disease much less since compulsory vaccination than it was before, it has greatly increased since the practice was first made compulsory. So it is that figures may mislead unless carefully considered in all their bearings.

THE STRONGEST EVIDENCE.

We now come to what is regarded as the strongest evidence in favor of vaccination: the relative mortality amongst vaccinated and unvaccinated persons in hospitals. During the eight years, 1871 to 1878, there were admitted into the small-pox hospital at Homerton, 6,553 cases. Of these, 1,626 bore one or more good marks; 2,657 had only imperfect marks; in 793 persons there was no evidence of vaccination, although the patients stated that they had been vaccinated; while 1,477 never had been vaccinated. It is estimated that there was only five per cent. of the population who had not been vaccinated, or had not had small-pox, whilst the proportion of unvaccinated persons admitted in hospital was about 22 per cent. of the whole. It is argued from this, taking into consideration the number from whom the unvaccinated were drawn (5 per cent. of the whole), that unvaccinated persons must be far more susceptible to the disease than the vaccinated.

The death rates of those admitted are considered to furnish the most reliable or least doubtful evidence of all, on behalf of vaccination. Amongst those having good marks, the death-rate was only 3.32 per cent.; amongst those having indifferent marks, the death-rate was 11.10 per cent.; while amongst those on whom no mark could be found, but who stated that they had been vaccinated, the death-rate was 27.23 per cent.; and amongst the unvaccinated it was 45.76 per cent. The experience of this hospital was borne out by that of other hospitals. In Bavaria, too, the investigations which have been made in the last decade, furnish results similar to those in England. Furthermore, it appears that nurses and attendants in small-pox hospitals who have been re-vaccinated, very rarely take the disease.

But the above figures may greatly mislead, unless certain points relating to them are carefully scrutinized. Before conceding that the fact that the 5 per cent. of unvaccinated persons outside of the

hospitals, who furnished 22 per cent. of the unvaccinated suffering from small-pox in the hospitals, is nearly as strong evidence in favor of vaccination as it appears in the abstract to be, we must know something more about these 5 per cent. of unvaccinated persons outside who contributed the 22 per cent. of unvaccinated patients. Were they not of the poorer, or indeed of the poorest classes? Were they those most exposed to the disease, and who from their general habits and environments were most likely to take small-pox, or any other prevailing epidemic? Who are they who usually escape vaccination? What is their character? Comparatively few were so strongly opposed to the practice as to refuse to undergo the operation, and it is probable that most of the 5 per cent. of unvaccinated persons referred to were the very ones who of all others, in a large city—the improvident, the unsettled—who would be most exposed to, and from their habits, prone to take the disease. Furthermore, the very ones amongst whom by far the greatest mortality would most certainly take place in hospital, or anywhere. We have no figures or other evidence to prove that it is chiefly persons such as I refer to who do not get vaccinated, but it is, I think, a fair and reasonable conclusion.

Again, as a rule, I think we find that those persons who possess the best general constitutions, develop the most perfect vaccinal mark, and small-pox in such persons is least likely to prove fatal, the ratio of mortality amongst such being doubtless the minimum.

I do not wish it to be understood that I believe that the differences in the mortality in the different classes of patients in hospital, as shown by the figures above given, can be accounted for in the way I have just indicated, but I am persuaded that these differences may be in a measure, or to a certain extent, accounted for in that way, and that the protective influence of vaccination is not, to say the least, quite so great as the hospital returns would, on first view, lead us to suppose. There can be no reasonable doubt that the passing through the human body of the disease called the cow-pox, affords to that body for a period of time, probably of a few years' duration, a certain amount of protection from small-pox—even greater protection than would be afforded by an attack of scarlet fever or measles.

Since writing the above, I observe that the *Medical Times and Gazette* (London, Eng.) of May 12, 1883, after noticing similar evidence, states that "there is no other way of accounting for this fact than by allowing that vaccination affords some protection, which may in time wear out." This is not saying much.

THE EVILS SOMETIMES FOLLOWING VACCINATION.

Now as to the evils which may and as we know do result directly from vaccination, I will be very brief and refer to only one fact. A Parliamentary return, Great Britain, 1880, gives the following statistics of deaths resulting from inoculable, and therefore vaccinal, diseases, for a period of about thirty years, just previous, comprising the period of compulsory vaccination:—The deaths from syphilis, of those under one year of age, had increased during that period, according to the return, from 564 to 1738, per million births—observe, having no relation to the population, or increase thereof; the deaths from skin diseases had increased from 183 to 343; from scrofula, from 351 to 908; and from mesenteric disease, from 2981 to 4373. We do not know that the great increase in the proportion of deaths from these causes was the consequence of vaccination, any more than we know that vaccination will prevent small-pox. We have the facts and can only draw our own inferences. I will but just allude to the possibility that, in view of the contagiousness of tubercular disease and its frequency in the cow, vaccination with animal virus may prove as dangerous as arm to arm vaccination.

VALUE OF ISOLATION, QUARANTINE AND DISINFECTION.

Before concluding, I desire to draw attention to preventive measures, other than vaccination, for the suppression of outbreaks of small-pox. As an illustration of their value and practicability, I shall refer to their application in one city, only. In Leicester, England, a city of about 130,000 inhabitants, an experiment of a most valuable and interesting character for the limitation and stamping out of this disease has been tried and with the greatest success. Leicester is said to be the worst vaccinated city in the kingdom. In 1880-81 the number of children vaccinated did not much exceed half the number of births, and there have been there more prosecutions for breaches of the Compulsory Vaccination Acts than in all the other large cities of the kingdom put together. During the first six months of last year there were 29 cases of small-pox admitted into the small-pox hospital, representing 19 distinct importations or outbreaks of the disease. Many of these outbreaks were at the lowest lodging houses, where under ordinary conditions the disease would be most likely to spread. The practice of compulsory notification to the health authorities of cases of infectious diseases is carried out there, and each case, immediately on being known, was promptly reported, and health officers at once visited the premises

where the outbreak occurred and removed the patient and all in the house, together with all who had come in contact with the patient, to the hospital. Those not affected, were placed in quarantine, where they were given a bath, and where they remained till their clothes, and the house from which they had been removed, had been thoroughly disinfected. They were then allowed to go home, but the house was kept under the supervision of the sanitary inspectors until all danger of a further spread of the disease was at an end. In every one of the 19 instances the method was completely successful and each outbreak was at once and effectually stamped out.

SUMMARY OF CONCLUSIONS.

That while it appears evident that vaccination affords a certain amount of protection against small-pox, the evidence which has been advanced in support of its protective value, on careful examination, does not prove that the practice is nearly so great a preventive of the disease as many have been led to believe, and therefore that it has been too much relied upon to the disregard and neglect of other more rational preventive measures, such as isolation, disinfection and quarantine, which experience has proved are alone adequate for the prompt and complete suppression and stamping out of outbreaks of small-pox; that the practice of vaccination is certainly not free from danger, and that it therefore becomes a question for serious consideration whether we shall or shall not continue to introduce into the human body, from man or beast, the poison of a contagious disease, however generally mild in character, with the view that it may prevent a possible attack of a possibly more serious disease; and this when we are, as now, enabled, from our knowledge of contagious diseases, to practically carry out other more certain, prompt and efficient, as well as more rational and more truly scientific preventive measures.

MODERN SANITARY SCIENCE.

Below is an abstract, from the *Sanitary Engineer*, of the very able address delivered before the Sanitary Institute of Great Britain by Prof. F. S. B. F. de Chaumont on "Modern Sanitary Science."

OBJECTS OF SANITARY SCIENCE.

Replying to the question, "What are the Objects of Sanitary Science?" Prof. de Chaumont sums them up in a word, as "seeking to diminish the inordinate waste of life now continually going on."

One-half of the population dying in childhood is throughout its existence absolutely unproductive. The average age at death throughout the United Kingdom is only 39, of which barely one-half has been productive. On the other hand, the average in our great cities has been shown by Dr. Farr to be much lower, as low as 26 in Liverpool, so that there is hardly one-third of this productive. This evil if left to itself tends to increase from the continual removal of the populace from the country into the town and the consequent multiplication of insanitary influences. Sanitary science also proposes to preserve these lives in their best circumstances for adding to the wealth of the community. It is based on the knowledge obtained through other branches of science; geology, mineralogy, etc., give information as to the nature of the ground we live on; through chemistry and physics we ascertain the character and movements of the water and air in the ground and in the atmosphere, their normal constituents and occasional deviations; from medicine we get knowledge of disease, and the methods of its communication from individual to individual.

CONDITIONS FAVORABLE TO DISEASE.

On this basis of scientific fact certain points have been ascertained which make the science practically a matter of certainty. Some diseases have been actually traced to active causes, or at least the possibility of communicating them with certainty has been so well demonstrated as to limit the area of search. Others still remain more or less unsolved problems, although we have made some progress in ascertaining the conditions favoring their propagation. We are pretty certain of this, that diseases do not arise indifferently, but are due to certain causes, which we hope will admit hereafter of being traced out and analyzed. Recently researches by various inquirers have held out hopes of still further progress being made, so that not only the real causes of individual maladies may be demonstrated, but even that it may be possible so to treat and, as it were, cultivate those *verae causae*, as to produce a benign agent which shall protect from the severer form, just as vaccine virus does from small-pox. We have ascertained that certain conditions of existence are favorable to the development of certain diseases; that the living on a wet and contaminated soil, the drinking of polluted water, the breathing of a vitiated atmosphere, the crowding together of human beings, all have their own powerful influence in favoring the spread of disease.

MATTER IN THE WRONG PLACE.

We have come to a general opinion of some importance, *that human ills in a sanitary point of view arise from the presence of matter in the wrong place.* What we require is a continual redistribution of matter, an unremitting attention to the great problem of how matter is to be taken to its proper place in the world, where it shall expend its potential energy in useful productive work, and not in effecting the destruction, rapid or gradual, of the human race.

This principle is best carried out by finding the appropriate place for all kinds of matter, and allowing matter, particularly organic, to remain nowhere where it is likely to expend its energy in the propagation of such low forms of life as are believed to be inimical to human economy. We must adopt such means of removal as will carry away from our dwellings at once all refuse and excreta, prevent effluvia from drains or emanations from the soil on which the house is situated from entering our dwellings; we must cause a continuous change of air in sleeping and living rooms, and cease to pollute the soil and the water courses with organic filth, using such material for cultivation, or throwing it into the sea. We must procure wholesome drinking water under such conditions as to render contamination impossible. Rigid personal cleanliness must be practised, and we must scatter our town population, by attempting to provide better dwellings and more open spaces to form lungs of towns. The advantages of this last principle are very considerable, and have been dwelt upon by many writers.

INFLUENCE OF OVER-CROWDING.

London is undoubtedly the healthiest of the great cities of the world, and it compares favorably in point of space with most others. Paris is computed to have 40 square metres per head, whereas London has more than double that. Dr. Farr has shown that the death-rate in England corresponds very markedly with the degree of proximity of the population. Liverpool, where the average distance from person to person is only 7 yards, loses annually 1 person out of 26, and the mean duration of life is only 26 years. Manchester, where the people are 17 yards apart, loses only 1 in 31, and has 3 years more of life—9 districts, 28 yards apart, lose 1 in 36, and have an average duration of 32 years., and they proceed thus:—

74 districts,	46 yards apart,	lose 1 in 40,	and live 35 years.
137	" 97	" "	46, " 40 "
345	" 139	" "	53, " 45 "
53	" 147	" "	60, " 51 "

These numbers show the influence which crowding exercises on the health of the community. In particular instances it has been recognized as one of the most disastrous factors in the propagation of typhus, plague, small-pox, and many other fatal diseases.

ACHIEVEMENTS OF SANITARY SCIENCE.

As to the achievements of sanitary science, the returns of the last census have shown that the death-rate was smaller than was expected during the last ten years. Had the rate continued between 1871 and 1881 the same as between 1861 and 1871, there would have died in England and Wales alone nearly 300,000 persons who are now living, a convincing proof that, as Lord Carrington told the House of Lords recently, "Modern Sanitary legislation had produced useful and important effects." This is a diminution of 5 per cent. on the death-rate, or an addition of more than a year to the mean age of the community. The population of Great Britain has doubled in about 60 years in this century, and there is every probability of its doing so in about 50 years, or perhaps even less in the next period. In the last century it took nearly 100 years to double the population. It is not easy to calculate out the details of a case when so much is wanting, but if the birth-rate had been the same as at present, this would argue a death-rate of at least 28 per 1000, and a mean age at death of only 33 years. Previous to 1700 the doubling of the population must have been very slow, and what with wars, famines, and visits of plagues and pestilences, there was probably a diminution at times of population rather than an increase. Immunity from general pestilence due to gradual adoption of rules of hygiene—increased cleanliness in person and dwellings and improvement in character and quality of food, mark off the modern from the older time. If, however, we turn to groups of the community more directly under control, we may perhaps better appreciate what has been accomplished. Our army and our prisons are two good examples. The former has been especially valuable as furnishing instances, first of the evil effects of insanitary conditions, and secondly, of the excellent results of careful sanitation. Our prisons tell a similar story; from being mere pest-houses in former times, they are now among the healthiest places in the kingdom.

THE PROSPECTS FOR THE FUTURE

Are regarded as encouraging. The number of writings and discussions on sanitary matters, the impetus given to the production of improved appliances, the sanitary societies, testify to the deep hold

the subject has on the popular mind, and the recent legislation has been on the whole encouraging. There is one point on which we ought to insist, and that is more extended means of instruction for all classes, and the exaction of certificates of competency from all who are officially charged with sanitary duties, Medical Officers of Health, Borough and District Surveyors, and Inspectors of Nuisance. At present such certificates are entirely voluntary, and taken by few.

CONTAGIOUSNESS OF PULMONARY PHTHISIS.

The following valuable conclusions bearing upon this question will be of interest. They are from a paper on the "Contagion of Pulmonary Phthisis from the point of view of History and Public Hygiene," read by Prof. A. Corradi, of Pavia, at the meeting of the International Congress of Hygiene and Demography in Geneva, a few months ago. (Translated by Dr. O. H. Wright, Health Officer of Detroit, Mich. From *The Detroit Clinic*).

1. Belief in the contagion of phthisis or tubercular consumption dates from remotest antiquity. It has been maintained in every age, not only as an opinion among the people, but also as a scientific doctrine.

2. In the second half of the last century, this belief culminated; probably because the disease became more frequent than ever before. The State, in several countries, was compelled to interfere and to take measures in the interest of public health, for the purpose of preventing the spread of contagious phthisis.

3. On the other hand, in the first half of our century, the doctrine of contagiousness lost ground, anatomico-pathological investigations having taken the lead in etiological questions.

4. Only recently experimental pathology has resumed the question, and undertaken to give the doctrine of contagion the support of the results of inoculation with tuberculous products. Still further, ability to demonstrate that the virulent principle of the disease is represented by a mycrophyte, a bacillus has been claimed.

5. Clinical observation must determine the question which experimentation has so definitely propounded; pathology has to settle many other questions raised by the doctrine of the parasitic nature of tuberculosis, and to reconcile this doctrine with the fact of predisposition and heredity.

6. If contagion or transmission is possible, the conditions thereof still remain to be determined.

7. Meanwhile, hygiene must regard phthisis as a suspected disease, that is, as a disease which may be communicated or transmitted under certain conditions.

8. Attention must especially be paid to the relations established by cohabitation ; by making such relations less intimate and continuous, the sources of infection will be weakened, if not destroyed ; and at the same time those exhalations will be removed, which aside from any specific action, enfeeble the organization and predispose the phthisis.

9. Although it cannot be certainly demonstrated that food communicates tuberculosis, nevertheless it will be prudent to abstain from the flesh and milk of phthisical animals.

10. Especial care should be taken in the selection of lymph, bovine or humanized, for vaccination.

11. The institution of exclusive hospitals, at least of separate pavilions, for phthisical patients is earnestly recommended.

12. The results of recent studies and investigations arrived at, determining under what conditions and by what ways tuberculosis is transmitted, indicate the especial prophylactic measures to be adopted.

13. Whatever opinion may be entertained on the subject of the nature of pulmonary phthisis, no one doubts the advantages in the struggle which organic resistance affords ; for this reason one of the most potent barriers to the diffusion of this plague of civilization must be erected by the practical hygiene which secures the physical and moral well-being of the people.



MEAT AND TUBERCULOSIS.—The *Live Stock Journal* says the remarks of the Secretary of the Royal Agricultural Society on "English Meat and Tuberculosis" are not exactly pleasant reading, unless we are vegetarians. When at Hanover, Mr. Jenkins visited the new cattle market and slaughter-houses, where he found that every carcass was submitted to a microscopical examination by experts before being allowed to be sold. In one month, out of 637 head of cattle thus inspected, sixteen, or $2\frac{1}{2}$ per cent., proved to be more or less affected with tuberculosis or consumption, and were instantly condemned, the disease being held to be communicable to human beings through meat taken as food. In London no such provision is exercised, and if the proportion of affected animals is the same as at Hanover, it follows that 7500 head of cattle which have suffered from the disorder are eaten in the metropolis every year. How many in Canada ?

HINTS TO HEALTH OFFICERS.

It may be stated as a broad fact that most diseases, for the prevention of which a medical health officer, especially in a city or town, may be called upon to exercise his skill, have their origin in or through excrete matters, more particularly human excreta, finding their way into the human body along with the air, or water, or even sometimes the food consumed.

There are three principal causes of disease with which a health officer may practically and profitably deal : (a) Foul air from collections of excreta or filth of various sorts ; (b) foul water from wells ; and (c) patients suffering from contagious diseases, as centres from each of which hundreds and even thousands of cases may arise.

In the largest cities even in Canada, there are some crowded tenement houses and cheap boarding houses which cannot fail in various and obvious ways, to give rise to disease, and to the spread of epidemics, and which demand the attention of the health officer and authorities. If these are not better looked after, we shall soon have in this country, as in the older countries, outbreaks of true typhus. There are such places in Toronto, furnishing the very soil and conditions where typhus would doubtless develop and spread, were the germs once present—or, if it be possible that such diseases ever arise spontaneously (which we doubt), develop without the germs.

All cesspools and privy vaults, when not far removed from all dwellings and wells of water-supply are, in the light of our present knowledge of sanitary science, truly nuisances, and we do not see why, without a special municipal by-law, they cannot be dealt with—removed under the provisions of the present public health Act (36 Vic., cap. 43). This provides that health officers may, in the day time, as often as they think necessary, enter into and upon any premises within their jurisdiction and examine the same, and “if upon such examination, they find that the premises are in a filthy or unclean state, or that any matter or thing is there which, in their opinion, may endanger the public health, they or any two of them, may order the proprietor or occupant of the premises to cleanse the same, and to remove what is so found there.” There being further provision, in case of neglect or refusal of the proprietor or occupier to remove the same, by which the officers may have it done forthwith, and the proprietor or occupier will be compelled to pay for it.

We should like to see this matter tested in the courts. And why could not foul wells, too, be dealt with in like manner.

COMPULSORY NOTIFICATION OF INFECTIOUS DISEASES.

Medical journals in Great Britain agree that it is indisputable that the "compulsory notification of infectious diseases," with all it may involve, has become one of the most "burning" questions of the day. There the profession are almost a unit in their opposition to making the duty and responsibility of notification incumbent upon medical men, though, for the most part, they are favorable to the principle of notification, but think the duty should be imposed upon the householder, custodian or guardian of the patient. In this we are disposed to agree with them. Unquestionably, in the interests of the public health, prompt notification should be given to the health authorities, in order that means may be at once employed for preventing the spread of the disease, but we can see no good reason why the medical attendant should be compelled to perform the duty when it can be just as effectually done by those who engage the physician. In the few cases amongst the poorest class (very few in this country), in which there would be indifference and irresponsibility, we are convinced the medical attendant would invariably, without compulsion, give the necessary intimation.

Dr. Carter, of Liverpool, Eng., has founded an association for opposing the compulsory notification by medical men, and according to the *Medical Times and Gazette*, it has "rapidly become a numerous and powerful society, with branches in many of the large towns." As regards the United States, competent lawyers there assert that such a compulsory measure would be unconstitutional.

While we heartily approve of the plan of compulsory notification—have advocated it years ago in this JOURNAL, and were the first, so far as we have any knowledge, to advocate such a measure in this country, we do not think it wise to place the responsibility on medical men. It will tend to create opposition to the principle of notification, and disturb the harmonious relations existing between medical practitioners and medical health officers.

In some cities in Great Britain, a fee of fifty cents is paid physicians for notification, and the plan has been found to work well. But we cannot see that the fact of paying a fee, small or large, does away with the objection to compulsory notification.

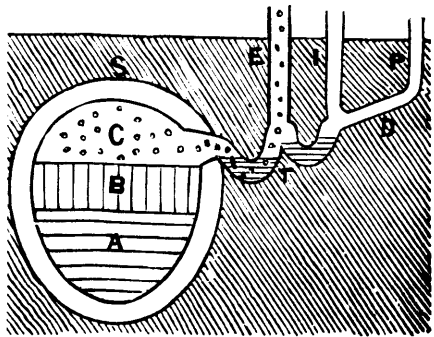
THE *Citizen* states that at the vegetarian restaurants in the city of London, Eng., the dinners daily served average 1,550.

DRAIN TRAPS AND SEWER GASES.

Too great precautions cannot be taken in order to prevent the deadly influences of sewer gases in our dwellings. The only safe rule is, to have the house drains and soil pipes kept always free from sewer gas, by means of traps between the drain and the sewer and by free ventilation of the drains and soil pipes. The greatest difficulties we have to contend with is in the sewers themselves. In defective construction of these, in want of free ventilation of them, and in the altered conditions of their contents from storm water, winds, etc., the chief troubles are to be found.

A double trap between the sewer and house drain must afford better protection than a single trap. A plan recently proposed by Mr. H. Masters, in the *Sanitary Record* for April, illustrated in the following figure, appears to have many advantages, especially in providing for unusual pressure from storm water in the sewers.

In the section of sewer, *s*, the space *a* represents the average amount of sewage flowing in it. When a storm occurs, as a heavy shower of rain, the water poured in from the street gullies quickly increases the quantity of sewage and it rises into the space *b*, compressing the air or gases into that of *c*. Now, although



there may be, at intervals, street openings for the escape of the compressed gases, a certain amount of these gases will be forced through the first trap at *t*, as shown in the figure. With an escape pipe, as at *e*, of the same area as the drain itself, and a second trap between it and the house drain, as at *t*, the greatest amount of safety is obtained. The soil pipe, *p*, as in all cases, should be carried up full bore above the roof of the house; and there should always be an inlet for fresh pure air, as at *i*, by which the drain, *d*, and the soil pipe will be kept free from foul air. The distant opening of the inlet may be, according to circumstances, either in the yard, when this is large, or the pipe may be carried up above the roof.

THERE MUST SOON be hundreds of medical health officers appointed in Canada. Physicians should keep "posted" by subscribing for this JOURNAL.

THE REAL "PUBLIC HEALTH" WORK OF THE ONTARIO MEDICAL ASSOCIATION.

The recent meeting of this Association was not marked by a large proportion of work specially relating to the public health; not so much indeed as the meeting of last year, or as those of late years of the Canada Medical Association. We regret this, and trust there will be more at next year's meeting. A valuable paper bearing closely upon it—"Bacilli of Phthisis," by Dr. Graham, was read, and discussed at great length. Dr. Cassidy read a paper upon "Typhoid Fever," referring to special cases. One by Dr. Covernton, a "Translation on the New Microbes" was, unfortunately, passed over in some way; and it is to be regretted that the one on the important subject of vaccination, published in another part of this JOURNAL, was not read for the purpose of discussion, and getting the feeling of members upon this prophylactic. Indeed, we must say that the programme of papers at the meeting of this Association has not been usually carried out in a fair, and the customary way.

The report on public health, for the preparation of which credit is due chiefly to Dr. Oldright, drew attention to the work of the past year, and urged the importance of municipal boards, and of teaching hygiene more generally in the public schools, in place of other less important subjects. The report included a paper on local boards, by Dr. Oldright, which was read by him, the report proper being read by the Chairman, Dr. Playter. It referred specially to the success of the health delegation at Ottawa in December, and to the cordial reception accorded by Sir Charles, and Hon. Mr. Pope, and to the most agreeable private reception given by the latter honorable gentleman to the delegates after the meeting.

Some questions on the use of alcoholic liquors, submitted to the Association by the "Ontario Women's Christian Association," who desired an expression of collective medical opinion thereon, and which had been referred to the public health committee, were referred, owing to want of time, to a special committee afterwards appointed, consisting of Drs. Burrill, Buchan, Workman, Geo. Wright, and Playter, who were desired to consider and report upon the same at the next meeting.

THERE are now twenty-three towns in Great Britain in which the notification of infectious diseases has been made compulsory.

"WANTED"—MUNICIPAL BOARDS OF HEALTH.

Almost ever since the commencement of this Journal, we have through it urged the desirability of having municipal boards of health formed,—one indeed in every city, town, village and township in Ontario. Personally, too, we have urged upon the Attorney-General and the Provincial Secretary, the great importance of these, and in pressing for the Provincial Board, it was in order that it might serve as a centre for the municipal boards. In fact that is, or ought to be, the chief function of the Provincial Board, the organizing and keeping in working order of local bodies, which can best, by all odds, do practical sanitary work. It was much regretted that provision was not made for the formation of these two sessions ago; yet another session of the Legislature has been allowed to pass without action in this behalf. The stand taken by Dr. Carney, of Windsor, is highly commendable, and if numerous other medical practitioners would do likewise, it would aid greatly in bringing about the desired legislation. We trust all will assist, in accordance with the resolution passed at the recent meeting of the Ontario Medical Association, by using their individual influence in urging the importance of it upon individual members of the Legislature.

THE HAPPY MEDIUM.

Greatly blessed are they who are so constituted, either by inheritance or education, as to be able to strike in all things the happy medium. Many persons of both sexes there are who are extreme in their views and actions in everything; and there are those, not small in number, who go to extremes in some things, though they are moderate in others. But there are not very many who can take the medium course in everything.

In nothing is a judicious moderation of greater importance than in matters relating to health. Those are healthiest, for example, in body and mind, who, in eating and drinking partake in moderation, perhaps in great moderation, of most of the many and various good things which a wise Providence has provided for mankind, and who do not subsist almost wholly upon coarse bread, vegetables and water; who, without over-work or over-play, take abundance of regular out-door exercise; who bathe for cleanliness, without soaking themselves too constantly in water; and who clothe moderately and sleep not too little nor too much.

Again, changes from one extreme to another are most injurious. Some who have always been large, perhaps inordinate eaters, will, on learning that they are eating too much, or that abstinence is good, possess enough resolution to go to the other extreme and henceforth eat too little. Lacking the judgment to discern and pursue the happy medium, they perhaps give rise to more serious harm by not supplying the system with sufficient nutriment for health, than they had done in eating too much. They may take enough probably after the change if it were all thoroughly digested, but the stomach having been accustomed for many years to digest only a portion of what had been eaten, will not now digest completely the much smaller quantity which it receives. The change from even over-eating, when made, should be gradually made—a little and a little less eaten from day to day and from week to week—rather than suddenly, except it be for a meal or two, or a day or two, with some individuals.

So in exercise : one has long been of sedentary habits and learns that he should take exercise, perhaps a good deal of exercise. He is very liable to commence at once to take too much—to walk or to row too far or to play too hard at some game, and he is rather injured than benefited. He should have commenced the exercise by taking only a little at first, increasing the amount, short of great fatigue, from day to day.

So, in like manner, in all other things connected with health ; all should pursue the happy medium.

SEWER VENTILATION.—Many methods have been proposed for the ventilation of sewers. The latest, perhaps, is that of forcing fresh air into them. We do not believe in the principle of this method, and cannot see how it can be put into practice without increasing the tendency to the unsealing of traps from pressure. Nor do we approve of the practice of ventilating by carrying pipes from the drains on the sewer-side of the drain-trap up the side of the houses. The correct principle, as seems so manifest, is that of *drawing off* the sewer gases towards the sewer outlets, and keeping up a constant current *from* the houses, rather than toward them, regardless of gravity, which is readily overcome. This may be accomplished by means of furnaces with tall chimneys, or pneumatic pumps. This last method has been carried out, it appears, most successfully in Paris. We purpose to soon deal with this subject at greater length.

SUMMER CARE OF INFANTS.—During the hot weather in summer many infants and young children suffer from intestinal disease, and the mortality therefrom, especially in the cities, is usually great. This is chiefly owing to organic impurities in the air—the germs or seeds which give rise to moulds and bacteria—finding their way into the food. The most scrupulous cleanliness should be observed in regard to vessels used with milk and other foods. The feeding bottle, which is a sort of necessary abomination, is very difficult to keep clean and sweet, and the nipple is frequently a hot-bed for the rapid growth of microscopic vegetation, of a very poisonous nature. The *Medical Times and Gazette* suggests that pictures of the “world” found in a drop of sour milk from a dirty feeding bottle be hung up in every nursery. Keep the children out in the fresh air in the parks and such places and away from close, dirty yards and badly ventilated rooms. Keep the skin clean, and clothe so that the limbs may have full play. Let them have what pure cold water they like to take, offering it frequently to those too young to ask for it, and they will then not be likely to take more milk or other liquid food than they require or can digest. Food suited to the age and powers of digestion must be provided. As Sir William Jenner says, proper food, pure air and cleanliness, are the three great essentials.

WATER IMPURITIES.—Amongst the results of the experiments on water analysis by the National Board of Health, U.S., are the following (*Med. Times and Gaz.*, June 2-83): That it is not so much the quantity of organic matter as the presence of organisms which renders certain waters unwholesome. Waters containing large amounts of nitrates and nitrites were found to exert specially injurious effects on the rabbits experimented on; and these results, together with medical testimony as to the unwholesomeness of the same waters, suggest that these salts indicate not merely “previous sewage contamination,” but the presence of noxious organisms—probably those to which the very process of nitrification has recently been attributed,—thus attaching special importance to these salts in water analysis. So far as the results of observation on *concentrated* waters go, they tend to show that in some cases at least, contrary to the usual belief, vegetable impurities, particularly those derived from decaying woody fibre, were even more dangerous than those of animal origin, and in those found to be most pernicious the amount of organic carbon was relatively higher than that of organic nitrogen.

MANKIND'S MISTAKES.—(From an exchange). It is a mistake to labor when you are not in a fit condition to do so.

To think that the more a person eats the healthier and stronger he will become.

To go to bed at midnight and rise at daybreak and imagine that every hour taken from sleep is an hour gained.

To imagine that if a little work or exercise is good, violent or prolonged exercise is better.

To conclude that the smallest room in the house is large enough to sleep in.

To eat as if you had only a minute to finish the meal in, or to eat without an appetite, or continue after it has been satisfied, merely to satisfy the taste.

To believe that children can do as much work as grown people, and that the more hours they study the more they learn.

To imagine that whatever remedy causes one to feel immediately better (as alcoholic stimulants) is good for the system, without regard to the after effects.

DR. TACHE'S INVESTIGATION ON CENTENARIANISM.—The careful investigation of the Deputy Minister of Agriculture and Statistics at Ottawa, Dr. Tache, into the records relating to the actual age of so-called centenarians in Canada, is of much importance, bearing as it does so directly upon the longevity of Canadians. In only 82 cases out of 421 reported to have survived the age of 100 years, could authentic documents be obtained, it appears, for close examination, and out of these 82 alleged centenarians, it was found that only 9 (5 men and 4 women) were really 100 years old or over. The greatest number of errors were committed in good faith, and the age of several *seemed* based on authentic records. We shall probably refer to this subject on another occasion.

WOODEN-BLOCK STREET PAVEMENTS.—We have many times been asked our views on the probable effect on the public health of the cedar block pavement which is coming into such general use. In the next number of this Journal we purpose giving the latest views obtainable on this question. In the meantime it may be stated that any future ill effects on health from the wooden pavements will proceed more from the manner of construction and after management than from the pavement, *per se*. It should be laid on a well constructed, thoroughly under-drained bed, be kept well cleaned afterwards, and all sunken spots be repaired at once as they appear.

CANADIAN SANITARY ASSOCIATION.—The movement to form an association of this kind in Canada ought to be successful, and we trust all our readers will join in promoting it. We have repeatedly, in this JOURNAL, urged the desirability of organizations of this kind, and have, on several occasions, at the meetings of the Medical Associations, personally suggested that one be formed for the Dominion. The credit of suggesting to take advantage of the meeting of the delegates on health and vital statistics at Ottawa in December, in order to make a commencement—appoint a committee, etc., belongs to Mr. F. N. Boxer, C.E., of Montreal. He was warmly supported, and has taken a good deal of trouble in the preliminary work of organization, and the prospectus will soon be issued.

MANAGEMENT OF CONSUMPTION.—Dr. Satterthwaite, Pathologist St. Luke's and Presbyterian Hospital, New York, terminates an elaborate paper on "The Origin and Natural History of Tuberculosis," with the following conclusion: "As a natural deduction from the above views, attention should be chiefly directed, in prophylaxis and treatment, to the vicious constitution which is conceded to be an essential prerequisite of the disease, rather than to a contagium that at the best plays only a comparatively infrequent and subordinate rôle."

BAD PLUMBING—JUSTICE.—An action was brought by a plumber in the Croydon County Court against a civil engineer for upwards of £30, for the erection of a lavatory. The defendant made a counter-claim of £120 on the ground that, the work being improperly done, sewer-air escaped into the house and caused the illness of six members of his household and the death of his son. He therefore claimed the doctor's bill and other expenses. The judge disallowed the plaintiff's claim and gave judgment for the defendant.

COMPULSORY VACCINATION, SWITZERLAND. — A correspondent (*Med. Times and Gaz.*) writes: "I have just received information that the city of Basle, after six months' agitation, and the most vigorous efforts on the part of the medical faculty, voted, on Sunday, the 17th ult., in favor of the suppression of compulsory vaccination by a majority of 3539 against 716, or five to one, being about the same proportionate excess that made an end of the despotic Federal Vaccination Bill on July 30 last."

INDOLENCE AND LONGEVITY.—No instance can be found of an idler having attained to a remarkably great age.

LITERARY AND SCIENTIFIC.

THOUGHT-READING.

A leading London medical journal (*Med. Times and Gaz.*) has discussed the subject of thought-reading. From it, it appears that Mr. Bishop's so-called thought-reading "resolved itself simply into the interpretation of the involuntary and unconscious muscular movements of persons whose attention was fixed on some particular object. Similar results have been obtained by Mr. Stuart Cumberland, who entirely disclaims the possession of any peculiar power, and avows that he works simply by the means of the communication we have stated."

The children of a clergyman in Derbyshire, of unblemished character and tried integrity, had been accustomed to amuse themselves with the "willing" game—*i. e.*, one of them would leave the room and in her absence the others would think of some object, and the absent one on being re-called would try to guess the object thought of. The children attained such great skill in "guessing" as to surprise their father, who in consequence gave to their proceedings more than usual attention. It seemed to him so wonderful, that he invited members of a neighboring family to join them, and the fame of the family spread. The presence of the father seemed to increase the successes. On one day, when there was ill-success, it was attributed by the children to inertness after an early dinner. The family are convinced that when mistakes are made the fault rests, for the most part, with the thinkers, rather than with the thought-readers. Dull and undemonstrative people make success difficult. The *Gazette* concludes:—"It seems that in some organizations thought can be communicated by means apart from the generally recognized modes of perception. How such communication takes place—whether it depends upon some peculiar power, or whether it is simply that some quick children have so trained their perceptive powers that they notice indications of thought, ordinary in kind, but so slight in degree that less skilful observers are not aware of their existence,—we will express no opinion."

UTOPIAN.

LEAVES FROM THE DIARY OF A CENTENARIAN.

JUNE—1983.—To-day I went in the "Sky Fly," high up over the beautiful fields and houses and trees, to the great city of Hygieapolis, to see the enormous balloon and other preparations for the proposed expedition to the moon. I hope this, the third expe-

dition, may be successful, and also that I may live to read the report of this ex-terrestrial trip and speak with a man who has stood on the moon. What a huge gas chamber when compared with those I remember in my boyhood, and what wonderfully delicate propellers. And all must be made so very light to float in the ethereal space beyond the earth's atmosphere. They are surely taking enough condensed foods to supply them for many years, and the improvements for preparing water and oxygen from condensed hydrogen will prevent the possibility of a failure in the supply of these essentials of life. What a happy discovery, that of Platina, that everything in the universe is made up of multiple equivalents of hydrogen gas, which pervades all space. The late improvements for utilizing for heating purposes the rays of the sun beyond the earth's atmosphere, will also give this expedition an advantage over the others.

I could not help dwelling mentally on the wonderful change in the appearances in the streets of the city since I was young. Now, no dust nor dirt of any sort; no dirty, untidy men nor women; no "smokers"; no dogs nor horses. How did men so long endure to associate with animals? And the saloons and showy shop windows, tempting men to spend their substance in drinks and in articles of "merchandise" they did not need, all disappeared. Had these not been done away with, the artisans could not now have so much time for recreation, and for improving individually their mind and body and their home.

EDUCATION AND CRIME.—The French court records show (*Detroit Lancet*), that the increase of education increases the amount of crime specifically. (1) That 25,000 persons wholly illiterate furnish five criminals. (2) That 25,000 of the class able to read and write furnish six criminals. (3) That 25,000 of the class of superior education furnish more than fifteen criminals. (4) That the degree of perversity in crime is in direct ratio with the amount of instruction received. (5) That in the departments in which instruction is most general, crime is greatly more prevalent—in other words, that morality is in an inverse ratio with instruction. (6) That relapse into crime is much greater among the instructed than the non-instructed portion of the community.

YOU MAY PROFIT much by reading the advertisements in this JOURNAL; only reliable ones are accepted.

WEATHER AND HEALTH.—Sydenham, after bestowing much time and consideration on this subject, concluded that his time and trouble had been lost. Van Swieten, after keeping a record of barometrical and thermometrical readings for ten years, arrived at the conclusion that he was no wiser as to the effects of atmospheric variations on epidemic diseases than when he began. Ramazzini, after devoting considerable time and labour to the matter, said that he could see no constant relations between the changes of the atmosphere and disease, and was as ignorant as ever at the termination of his work. And the same may be said as to the investigations of Huxham and many others.

BACTERIA OF WHOOPING-COUGH.—Dr. Karl Burger, of Bonn, who claims to have discovered the bacterium of whooping-cough, regards these as being the cause of the disease, “because—(1) he does not find the bacteria in other sputa; (2) they exist in such proportion in the expectoration of pertussis that their influence cannot be doubted; (3) their number is directly proportionate to the intensity of the illness, whether in the course of the same or different individuals; (4) the symptoms and progress of the disease may be best explained by the development of the bacteria.”

PASTEUR'S "VACCINATIONS" A FAILURE.—The *Medical Times and Gazette*, May 12, '83, in discussing the experiments of Koch and Pasteur, states that the latter has utterly failed, on the scanty basis of his partial successes in the case of two diseases—fowl-cholera and splenic fever—to establish any law of immunity, still less has he made any progress towards realizing his dream of extending its application to the prevention of every infectious disease to which man or beast is heir. His operations are more akin to small-pox inoculation than to vaccination.

RELIGION AND STATE MEDICINE.—In France, the editor of the *Medical Gazette* remarks that true religion is the needful thing to prevent suicides. “Society demands religion. It constitutes an essential part of state medicine, without which individuals and communities tend to a condition of reckless irresponsibility, which ends in most cases in a species of mental and social anarchy. In our opinion, therefore, whoever attempts to loosen this anchor is an enemy to his own race.”

NOTICES OF BOOKS, ETC., RECEIVED.

- FIRST ANNUAL REPORT of the Provincial Board of Health of Ontario, for the year 1882.
- TENTH ANNUAL REPORT of the Secretary of the State Board of Health of Michigan, U. S., for 1882.
- FOURTH ANNUAL REPORT of the State Board of Health of Illinois, U. S., for 1882.
- SIXTH ANNUAL REPORT of the Board of Health of New Jersey, U. S., for 1882.
- SIXTH ANNUAL REPORT of the State Board of Health of Wisconsin, U. S., for 1882.
- FORTIETH REPORT OF BIRTHS, MARRIAGES AND DEATHS of the State of Massachusetts, U. S., 1882.
- ANNUAL REPORT OF THE NATIONAL BOARD OF HEALTH of the United States for 1882.
- THE CANADIAN GAZETTE, a weekly journal of information and comment upon matters of use and interest to those concerned in Canada. London, Eng.
- HEALTH AND HEALTHY HOMES IN CANADA, by Dr. Robert Sproule, B.A., Peterboro'; a little work containing much valuable information for lay and other readers.
- THE "ORIGINAL CHATTERBOX," an admirable magazine for the young, handsomely illustrated; unrivalled indeed in its field. Boston: Estes & Lauriat.
- OUR LITTLE ONES AND THE NURSERY, Oliver Optic, editor. Boston: Russell Publishing Co. "A more beautiful magazine for the little ones we have never seen."—*Evangel. Messen.*
- A MANUAL OF GYNÆCOLOGY, by Dr. Berry Hart, M.D., F R.C.P.E., Lecturer on the subject, School of Med., Edinburgh, and A. H. Barbour, M.A.B.Sc., M.B. Vol. I, with 8 plates and 192 woodcuts. New York: Wm. Wood & Co. A new work, which has been very well received by the press and profession.
- LEGAL MEDICINE, vols. I and II, by Charles Meymott Tidy, M.B., F.C.S., Prof. Chem., Forensic Med. and Public Health, London Hospital, etc. New York: Wm. Wood & Co. It is enough to state that the reviewer in the *Medical Times and Gazette* of London, Eng., believes it "will become the standard work on the subject" in that country.

DR. O. W. HOLMES says he has known a practitioner—perhaps more than one—who was as much under the dormant influence of the last article he had read in his favorite medical journal as a milliner is under the sway of the last fashion plate.

THE PUBLIC HEALTH IN TORONTO.—The city health officer states there is no special epidemic prevailing, though a good many cases of puerperal fever have been reported. In this connection we would draw attention to the fact that the powers conferred upon the health officer are very limited, he being rather an advisory than an executive officer, and his hands are in a large measure tied. In the cities in the United States much more power is conferred upon such functionaries. A change in this regard here is desirable.

NUMEROUS DEATHS FROM VIOLENT GAMES are chronicled, especially from playing foot-ball, and the practice is being condemned by medical journals. The *Detroit Lancet* says, "Physicians should use what influence they possess in their several communities to teach the true principles of physical development in opposition to the false ones now so universally prevalent."

THE SUGGESTION OF DR. GRANT, of Ottawa, at the Medical Council meeting this week, that Government levy a tax on every patent medicine advertisement, was a healthful one. Everything tending to suppress the sale of these nostrums will promote the public health.

THE TORONTO GENERAL HOSPITAL has the reputation, and doubtless deserves it, of being one of the cleanliest, sweetest and best kept hospitals on this continent. The great difference in the character of the atmosphere in it now, as compared with that of twenty years ago, is surprising.

FUTURITIAL.—The next number of this *JOURNAL* will contain articles on the following subjects:—Must we always follow nature? Mistakes in education; The diet makes the man and the nation; Midde men; Block pavements; Bacilli; and many other topics.

FROM OTHER CITIES we are preparing to obtain regular, monthly health reports, which will be published in the *JOURNAL* from month to month, commencing with next number.

A SANITARY ASSOCIATION ought to be formed in Toronto. It would interest the citizens in sanitary work and aid the health officer. Who will move for it?

ONE COW'S MILK.—A child fed on one cow's milk recently died of tuberculosis, and the cow died a few months later of tubercular disease.