

THE DOMINION SANITARY JOURNAL

DEVOTED TO THE
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CONTENTS.

| | | | |
|---|-----|--|---------|
| The Germ theory of disease | 129 | Tobacco and Cancer—Damp houses..... | 143 |
| Consumption—its contagiousness—the bacillus | 130 | Leading articles—The Mortuary statistics —Cillars—House building | 144-147 |
| Physiology in physical culture | 132 | Recess and Current—Our Volunteers—Toronto Water Supply—Toughened Glass for drains—Heaps Patent Closet—New Temperance Society—Pan closets—Sanitary League — and other items | 148-151 |
| Cholera prevention—Ozone..... | 133 | A good example from Orillia..... | 151 |
| Mental over work and premature disease amongst public and professional men. | 136 | Current Literature—items..... | 152-154 |
| Notes on Cholera in St. Louis | 137 | | |
| Life saving from drowning..... | 139 | | |
| The Patent Medicine evil..... | 140 | | |
| Causes of Insanity—Disinfectants..... | 141 | | |
| Influence of Tobacco—New Germicide Cholera..... | 142 | | |

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THE GERM THEORY OF DISEASE.

At the annual meeting (Jan. 27, '85) of the Yorkshire Association of Medical Officers of Health Dr. Hime read a paper on "The Germ Theory of Disease." He said (*Sanitary Rec.*) that his paper was intended to show the basis of belief for what is known as the germ theory of disease, to trace out the leading events in the history of the theory, and to show the position in which it stands at the present time as a scientific theory fully verified by facts. - It was about two hundred years since Robert Boyle first referred to fermentation as being the process strictly analogous to fever; and the same belief had become permanent amongst us, as indicated by the use of the word *zymotic* as applied to fevers, which really meant fermentative diseases. In more modern times Helene had, entirely on theoretical grounds, established the theory of germ disease before anything was known of the actual existence of germs; but it was to Pasteur and Koch that the theory was indebted for its present scientific aspect. It was not a little remarkable that Pasteur's early work had nothing whatever to do with disease. It was entirely concerned with fermentation proper, and it was he who first proved that what we know as ordinary fermentation was a process which was distinctly the outcome of the vitality and energy of the yeast plant, and not (as was taught by Liebig) a result of the development of the yeast plant. One remarkable characteristic of ferments was the great disproportion between the results which it was capable of producing when placed in a suitable medium and the exceedingly small quantity of material which could produce those results. It might be compared to the multiplication of infectious material, such as vaccine, when inoculated on the body. In further studies

Pasteur ascertained that while some ferments required air to enable them to live and flourish, others were killed by its action. Hence he divided all ferments into two great classes—those which did not require air, or *anaerobes*, and those which did require air, *aerobes*. Subsequent investigations into another process—the idea of which even was disgusting, viz., putrefaction—convinced Pasteur that it, like ordinary fermentations, was due to a specific ferment, which did not require air for its development, and which alone produced the phenomena of putrefaction; a process strictly analogous to fermentation, the two differing only in one circumstance—that in putrefaction offensive smelling gases were given off. The important bearing of putrefaction upon the organic matter of the world was illimitable, the ultimate fate of all animal and vegetable matter being the same—viz., its restoration to the air, effected by the three omnipotent processes of fermentation, putrefaction and slow combustion. The first great work which Pasteur was engaged in was the state of the wine disease, the remedy of which he discovered as well as the cause. He was next engaged in the investigation of the silk worm disease. Next Pasteur was engaged on the state of the disease affecting vinegar and beer, and this also he proved to be due to a specific minute fungus. When this was excluded the liquor remained unaffected. The central point of investigation—the application of the germ theory to the higher animals—was then mentioned, and the strict analogy between the process of fermentation and certain kinds of disease (such as fevers) was described. It was, however, in surgical practice that the truth of the germ theory first bore its fruits, and to England, in the person of Sir Joseph Lister, was due the glory of having established a method of surgical practice which had not only rendered familiar operations free from danger, but had

rendered possible operations which, a few years ago, it would have been considered criminal to attempt. What was known as the antiseptic system of surgery was practised by the leading surgeons in every country in the world, and Sir Joseph Lister was recognized throughout the civilized world as one of the greatest benefactors of humanity. The first actual disease of animals to which Pasteur devoted his attention was anthrax, or malignant pustule. In 1850 it was discovered that the blood of animals affected with disease contained a number of little hair-like bodies, but it was not until some thirteen years later Dr. Devine, in the light of Pasteur's researches, bethought him that possibly these little bodies might be ferments which caused disease. He discovered by numerous experiments that these little germs were inseparably connected with the disease, and the following remarkable sequence of facts established the necessary connection between the germ and the disease. In the first place, these minute bodies were found in the blood of infected animals, but never in healthy blood. In the next place, the inoculation of healthy animals with these minute bodies caused the unaffected animals to become affected with the same disease, and the blood to swarm with identically minute germs. Thirdly, blood taken from the infected animals after infection, but before the appearance of these minute bodies, and inoculated on healthy animals, failed to produce disease. Fourthly, healthy blood inoculated on healthy animals never produced disease. Fifthly, blood might be disinfected or even filtered and thus freed from the germs, and then when inoculated would be quite harmless. The method which Pasteur devised, and experimentally tested, was simply beautiful and conclusive. The essayist then described the "flask experiment." Pasteur also discovered that it was possible by proper methods of culture to deprive infectious germs of a portion of their virulence, and that in their debilitated condition they may be propagated from generation to generation and reproduce themselves. He further learnt that these attenuated or weakened bacilli might be inoculated upon an animal, giving it a mild form of disease, which, however, would prevent it from contracting disease in its most severe form. The protective inoculation against anthrax was not, unfortunately, permanent. Pasteur's researches into chicken cholera and various

other diseases were referred to, and the remarkable induction by which Pasteur obtained an attenuated protective virus by which this disease could be avoided, was also alluded to. The greatest experiment which Pasteur ever performed was that to test the efficacy of his protective virus on anthrax, and this experiment was lucidly detailed. In conclusion, Dr. Hime said that the bearing of that important theory upon public health was of very wide extent, and opened up to them an horizon, the extent of which exceeded anything ever dreamt of. If they really had ascertained the specific cause of consumption, anthrax, pneumonia, diphtheria, typhoid fever, and a number of other of the greatest plagues of humanity, more than the first step had been taken towards successfully combatting those diseases. But they could not hope for rapid progress in this country while they were hampered by measures which entirely prevented the possibility of scientific research, and which, while it rendered perfectly legal the killing of rats and other vermin with the wanton intention of merely getting rid of them, rendered it a penal crime to inoculate a rat or a mouse with the object of saving human life.

CONSUMPTION—ITS CONTAGIOUSNESS— THE TUBERCULAR BACILLUS.

Three recent meetings of the Royal Medical and Chirurgical Society of London, England, have been occupied in discussing a paper by Dr. Kidd relating to the relative preponderance of tubercle bacilli at the various stages of the progress of phthisis. The discussion took a wide range. There appears to be no longer any doubt as to the direct relation, as cause and effect, of the bacilli to consumption. This appears to have been the general opinion of those at the meetings. In commenting on the meetings, the *Lancet* says, "we may take it, then, as established that in the lesions of the phthisical there are to be found, in varying quantity, the bacilli discovered by Koch in tubercular products. Here, then, we have valuable aid on a diagnostic point, by seeking for these micro-organisms in the expectoration. . . . The doctrine harmonises well with the facts, spoken to on all sides, as to the relative prognostic significance of an abundance or paucity of bacilli in the sputa. How, then, does the acceptance of this doctrine affect the whole question of the nature of phthisis? It

implies that it is an affection which cannot be initiated spontaneously, but it by no means disregards the idea that for its origin, and even more for its extension, other factors than the introduction of a poison from without are essential. There must be a vulnerability of the organism, a disposition to undergo the phthisical changes; and not only a general vulnerability such as may be supposed to be derived from inheritance, but often a local vulnerability determining the appearance of the tubercular lesion in this or that legion. We fully concur with Dr. Green that the discovery of the bacillus in no respect alters the opinion which pathologists had arrived at regarding the infective character of tuberculosis. Ought we now—with Koch—to admit this morbid condition into the category of contagious disease? On this question the data are strikingly insufficient; for although logically there seems to be no escape from the view that tubercle may be transmitted by inhalation and by food, we are surrounded by a host of other considerations which must first be explained away before that view can be finally accepted. Here, again, the subject of predisposition comes to the front; and if measures of prophylaxis are to be taken at all, it must be in respect to such individuals in whom the predisposition exists. We deprecate as emphatically as does Dr. Wilson Fox even the suggestion of treating the unhappy victims of consumption as if they were dangerous to the health of the community. It would be lamentable indeed if science should thus come to override sympathy."

The disease is evidently contagious, but in a mild degree. That is, the bacilli for their development and multiplication require a special condition of the soil in which to take root. As a medical journal referring to the meetings says, the recent discussion on Dr. Kidd's paper, if it has achieved nothing else, has served to bring out a remarkable unanimity among physicians as to the presence of this organism in the products of phthisis, including the sputum, while on the other hand but little doubt as to its *etiology* & *significance* was expressed. The ground is therefore cleared of all uncertainty on these points, and the direction in which future workers must proceed in respect to treatment is pretty clearly indicated.

The successful treatment of disease is the end and object of the physician's work, and can only be obtained when the *materies morbi* and its mode of action are thoroughly

understood. The curative treatment of phthisis has long been regarded as hopeless by all save a few ardent therapeutists and by the ignorant quacks who trade on human credulity. Those who are acquainted with the nature and extent of the lesions will realize that safety is alone likely to be found in prevention; it is hardly to be doubted that very much more stringent preventive measures will have to be insisted on, for one of the first outcomes of the bacillar theory of phthisis will be the establishment of the infectivity of the disease. Even then, if we would utilize this knowledge, it would be necessary to know how it is infective, and in what manner the infection spreads, whether the bacillus itself is conveyed, or only the spores. When we think of the minuteness of the organism, and bear in mind that the spores cannot be recognised at all at present, it will be seen how difficult a problem lies before us. That the sputum contains the parasite, and probably its spores too, in vast numbers is established; and hence one of the first and most obvious precautions to take will be the total and absolute destruction of this poison-laden material. It should no longer suffice to throw the sputum down the drains; it should be destroyed by fire, and everything with which the sputum has come in contact should be rigorously disinfected. The mud of the gutter to-day becomes the dust of the air to-morrow, with all its many potentialities for harm.

Let us, then, begin the campaign against the common enemy by destroying this means of its propagation. The encouragement of free expectoration, the cautioning against swallowing phlegm, care in not polluting the floors of public buildings and the highways by the careless scattering of the vehicle of disease, are matters of importance, which we must do our best to promote. The so-called "antiseptic treatment" of phthisis is a delusion not without danger. Experiment has shown how tenacious of life the bacillus really is, even when treated in a test tube. What, then, can we expect from such inhalation as the living lung would tolerate, and how can inhalation affect the interior of lymphatic glands, the mediastinal cavity of the long bones, or the closed lymphatic spaces of the central nervous system! In short, in this case as in so many others, prevention is not only better than cure, it constitutes the only effective means of attacking the disease.

PHYSIOLOGY IN ITS MORE PUBLIC RELATIONS—PHYSICAL CULTURE.

Nathan Allen, A.M., M.D., LL.D., of Lowell, Mass., U.S., is an active sanitarian. At the last meeting of the American Academy of Medicine in Baltimore, Md., he read an instructive paper on the above subjects from which the following selections are made:—

Physical culture, in one sense, is sanitary science applied directly and specifically for improving the different parts of the body. This is composed of tissues, which by the law of exercise and nutrition can be materially changed, especially in early life. No human being was ever born into the world with a perfect body. Generally there are some parts too weak and others too strong, or, in other words, there is a want of harmony and balance.

There is such a thing as a normal standard of physiology throughout every organ in the body, but this perfect standard is never found, only approximates towards it, and the nearer it is approached the more valuable the organism. There is no question but one form or kind of organization is better than another; and if so, there is a form or standard better than all others. What is that form or standard, then, so desirable? We maintain that it is this normal standard where all the organs are perfect in structure and each performs its own legitimate functions. In all our discussions on this subject it is highly important that this normal standard should be kept constantly before the mind.

In the making up of all parts of the body there is a point of very great importance which is not taken into account as it ought to be—that is *harmony, or balance*. If all the organs are evenly balanced and each performs its own functions without disturbing the others it will be seen at once that such an individual will have better health, greater power of endurance, and longer life will follow. In some respects the human body may be compared to a complicated machine, made up of many parts. Now, the more thoroughly constructed is such a machine, and the greater the harmony in all its operations, where the "wear and tear" will come properly upon all the parts, the less likely will that machine be to get out of order or need repairs, and it will be easily kept in good working order. It is so with the human body. Keeping in mind

what constitutes a normal standard of physiology, and the importance of harmony or balance in organization, the weak or defective parts in every individual's constitution can be found out. Thus, by means of this knowledge, the weak parts can be strengthened so as to improve health and prolong life.

As the most favorable time for improving physical organization is in early life, it is important to direct attention to that period. With the increase of wealth and the powerful influence of fashion, together with the pressing claims of education, there is great danger that the vital interests of the body will be sacrificed. In this state of things it becomes the duty of physicians to point out the danger and urge more than ever the necessity of physical culture.

Throughout our whole educational system, as now conducted, from the primary school to the university, the leading tendency is to develop the brain and nerve tissue at the expense of the muscles and other parts of the body. The fact that all mental acquisitions are very dependent upon strength and health, the physical system is too much overlooked. Another fact should be better understood—that no one thing contributes so much to success in any kind of business, or in professional pursuits, as a sound, healthy body. All experience of the past and knowledge of the present state of society confirms the truth of these statements. Notwithstanding this, most educators, in their zeal for mental acquisitions, pay little or no attention to physical development.

In a school system where children, from five to fifteen years of age, are confined to study most of the time, great pains should be taken that the body is not injured, nor in any way stunted, but that every possible facility be afforded for its healthy growth and development. This caution is more necessary in cities, where the leading tendencies among the young age to a state of physical degeneracy.

It is almost twenty-five years since Amherst College introduced a regular system of gymnastics, compelling all the students in classes to practise these exercises half an hour or more every day. A thoroughly educated physician—Dr. Edward Hitchcock—was placed in charge of this department, who gives also lectures upon physiology and hygiene. These physical exercises are considered as important as lessons in the classics

or mathematics, and improvement or deportment here are reckoned in the rank and merit-roll of every student. Since the introduction of these exercises there has been a marked change in the health and the physique of the students. President Seelye recently stated that the health and constitution of the students improved every year—that there was less sickness and leaving of college on account of ill health than formerly, and what affords still stronger evidence, the Sophomores have better health than the Freshmen, the Juniors better than the Sophomores, and the Seniors better than the Juniors.

From careful measurements of every part of the body taken of students upon entering college and again, after four years, upon their leaving, decided changes are found to have taken place for the better in the growth and development of the body.

The physical training at Harvard is different from that at Amherst. It is not compulsory, but voluntary; it is not carried on by classes, nor at set hours. While a large number of students exercise in the gymnasium, they do it at their own convenience and engage in such exercise as they think will do them the most good. A highly educated physician—Dr. D. A. Sargent has charge of the gymnasium, and makes a specialty of advising what particular kind of exercise is best adapted to improve the health and strength of individual cases. Thus, if among the students entering the University some are found suffering from certain physical weaknesses or defects, they are placed under his training, and in process of time are greatly benefited. Within a few years there has been a great increase of interest as well as improvement at Harvard in sanitary matters to which the new gymnasium and its superintendent have very much contributed. In a recent address before the Alumni, President Elliott stated that the more he saw of the men graduating from the University who had gained distinction in life or eminence in the learned professions, the more he was convinced that the basis of their success depended much upon the vigor of the body and a sound constitution.

AN ENGINE said to be the smallest in the world has been made by a watchmaker. It is of the upright pattern and is made of steel and gold. It rests on a twenty-five cent gold piece and can be worked either by steam or compressed air. The cylinder is a little less than a sixteenth of an inch in diameter.

CHOLERA PREVENTION—OZONE—BIRDS FLEE FROM THE EPIDEMIC.

FROM THE NEW YORK MEDICAL TIMES.

Animals seem to be strangely provided with a remarkably keen sense of intuition of approaching danger of all kinds. A singular display of this characteristic is reported to us from Honduras. About 1,000 yards from the house where our informant lived was a numerous growth of very sappy pines, among which trees of various other growths were occasionally found. Among these pines, but never on any other variety of tree, an immense flock of parrots came in every evening to roost, flying away again in the morning to their feeding grounds, some four or five miles distant. During the day there was almost invariably a north-east wind blowing, which usually died out at sunset. The feeding place of these parrots was in and about a patch of swampy marsh, such as, under favorable circumstances, would give off immense volumes of zymotic matter. During the prevalence of the north-east wind, loaded down as it was with ozone, these products of decomposition were probably oxidized before becoming a source of atmospheric pollution. But at night, when this source of destruction did not exist, the same locality was, beyond question, freighted with fatal miasmata, while the pines, which had absorbed amounts of ozone through the day, were prepared to give it off at night. This is in accord with the known habits of birds to flee from pestilence. In his report on the cholera epidemic at Marseilles last summer, United States Consul Mason states that "the sudden disappearance of certain birds and insects from the entire district of Southern France, and their failure to return during the present declining stage of the epidemic, are among the other evidences which indicate some abnormal condition of the air." In his report on cholera, read before the Société National de Médecine, of Marseilles, Prof. Ch. Livon states, as the result of experiments and researches, as follows: * * * The experiments of the committee were of two classes, the first being made with the *dejections, vomit and bed linen* of choleraic patients in all stages of the disease, the second having reference solely to the blood. The results have, therefore, a direct bearing on the fundamental question, whether cholera is a disease of the digestive organs, and is transmitted in substances swallowed, or, on the contrary, a disease of the blood, the contagion

of which is inhaled by the lungs. In the first group of experiments, the rice-water dejections and matter from the stomach and intestines of cholera patients, as well as concentrated wash water in which freshly soiled linen from their beds had been cleansed, were injected into the stomach and intestines, the diaphragm and femoral artery, of various rabbits, dogs and guinea-pigs. No fatal or injurious effects were produced in any case except one, in which a rabbit, into whose stomach intestinal matter, filled with these comma shaped bacilli, had been injected, died seven days after the operation, without, however, evincing any symptoms characteristic of cholera. Upon dissection, the intestines of the animal were found filled with the microbes, showing that they had found there favorable conditions for development. It was thus proven that the so-called choleraic microbe can be propagated in animals without producing any disease analogous to cholera. The hydrant water of Marseilles and the purest spring water in the neighborhood were both found to contain the "bacille virgule," in the proportion of 250,000 per litre, and this large number was not sensibly reduced by passing the water through three layers of filter paper. It is therefore concluded that the so-called cholera microbe is simply a harmless animalcule, common to most river and spring water, and equally abundant in localities where cholera is unknown.

The second class of experiments was with the blood of cholera patients, taken at various stages of the disease, and injected into the veins of animals or examined under the microscope. Of twenty-eight injections made with blood taken, first, from a cholera patient at the beginning of the "algid" period; second, from the corpse of a person who had died in the same stage; and, third, from a living patient in the later or reaction stage of the disease, the second only had a positive result. These were the cases of two rabbits, into whose veins had been injected blood taken from a cadaver which had died in the "algid" stage. Both animals died, one after twelve, the other after eighteen hours, and the blood of both showed the same lesions and changes as had been established as having occurred in the blood of human cholera victims. The net results of the entire series of experiments are summed up and the conclusions stated as follows:

"First. That the cholera can be trans-

mitted to animals. This fact is fully confirmed by experiments and observations made at Pondicherry and Chandernagore (East Indies) during the past forty years.

"Second. That the rice-water dejections and contents of the stomach and intestines of cholera patients are absolutely innocuous.

"Third. That it is only the blood of a cholera patient, taken during the 'algid' stage, that is infectious, and this toxic property is greatest in the early part of this 'algid' or collapse period. This is simply a confirmation of the theory of Robin, first announced in 1865.

"Fourth. That this infectious property in the blood disappears within a period not exceeding twenty-four hours after the close of the 'algid' period."

Messrs. Roux and Strauss, two eminent French surgeons, now practising in the hospitals at Toulon, and who studied cholera thoroughly last year in Egypt, have made an official report declaring that "they find the microbe to be the result, rather than the germ, of cholera. That similar microbes are generated in the intestines in typhoid fever and other zymotic diseases, and that they are found by myriads in water, which, being drunk, does not create cholera."

All this seems to point to one prominent possibility, viz: That it is not what we eat or what we drink, or what we wear that causes cholera or any other infectious disease, but what we inhale, or rather a something that finds its way into the blood, presumably through the lungs. That it is not the soakage from vaults, sewers, etc., polluting the water we drink, that induces contagion, but the volatile zymotic matter, which, under the influence of putrefaction and decay, is given off into the atmosphere. Where these elements of pollution are most abundant (in uncleanness of person or property) there do we find the primeval source of contagion. Many are the means of transmission. On the average-sized person there are about fifteen square feet of exposed surface. Further, this person takes into his lungs about 400 cubic inches of air per minute. If in that air, which bathes his body and lungs there exist germs of disease and if in his clothing or his lungs they find conditions favorable to their development that person becomes an agent of infection wherever he goes. Very often as stated by Dr. Jacobi, diphtheria is brought into a family by some transient visitor, as a seamstress, or may be

imparted to a room full of scholars by one of their number, who may have been only superficially exposed to infection, and whose personal constitution may be strong enough to throw it off. Being thus dispossessed of their temporary habitation, the first congenial throats they find very naturally become a place of abode and development for these vicious germs. Prof. Ehrenberg has found that the infectious germs in the atmosphere exist in swarms or clouds. Thus, in a room containing infection one part of the room may be nearly free while another part may be swarming with infection, which probably accounts for singular cases of escape from zymotic influences.

Now, if we hope to arrest these contagions we must look for some atmospheric germicide—something with which we can impregnate the atmosphere and which shall prove *sure death* to the germ but at the same time equally *sure life* to the patient. Many of the present methods of disinfection have recently been shown by Major Sternberg and others to be a mere mockery. In fact, they probably do harm, for they prove a source of disturbance to the germs rather than destruction. Being again, in this case, dispossessed by an unfriendly influence, they would rather very naturally start off to "seek whom they might devour." Better for them to stay in the sewers, vaults and other deposits of fecal filth than to be driven into our houses by the agency of these so-called disinfectants. If you were to put cayenne pepper in sufficient quantities in the grain you give your chickens they would be apt to let it alone and attack your *flower beds* in search of nourishment in place of that which *you had made repulsive to them*.

Let us look into the laboratory of nature and see if we cannot there find a germicide that not only disturbs but actually burns up miasmatic matter and reduces it to ashes as surely as the coal is burned up and reduced to ashes in our furnaces. Certain it is that an all-wise Creator has furnished us with such an agent in nature, else epidemics would never die out. What is this agent? From whence does it come, and how does it operate?

Dr. William A. Hammond, in his "Treatise on Hygiene," states that during his service at Fort Riley, in Kansas, "cholera prevailed on two occasions to an alarming extent. That during the epidemic the atmosphere was noted for its dryness

and the total absence of ozone. That the occurrence of a violent *thunder storm put an end to the epidemic in both cases*, and ozone reappeared in the atmosphere." In other words the display of electrical energy during the thunder storm condensed or energized enough of the oxygen of the air to *oxidize or burn up* the elements of contagion and reduce them to a harmless ash, while, at the same time, the same agent would act as a stimulant and blood disinfectant to those afflicted with disease. Again, Consul Mason states in his report, before referred to: "It is fairly within the province of this report to note that there has prevailed during the present season some mysterious taint or unwholesome influence in the *atmosphere* of this entire region, which has affected many persons, even in localities not attacked by cholera. * * * That in general opinion it is now the well-established fact that the presence or absence of *ozone* in the atmosphere has a marked effect upon choleraic conditions. It was noted early in the present epidemic that there was a marked *deficiency of ozone* in the atmosphere of Marseilles, and means were adopted to supply this deficiency at the Pharo Hospital in this city, by means of an electrical apparatus." In conclusion, Consul Mason states the following facts:

"*First*. That the whole period of the cholera epidemic has been marked by a notable deficiency of ozone in the atmosphere of Marseilles.

"*Second*. That the wards of the Pharo Hospital, where *artificial ozone* was provided, the death rate was considerably diminished.

"*Third*. That the days of greatest fatality, in respect to both the number of new cases and deaths, were those during which the proportion of *natural ozone* in the air was the smallest.

"*Fourth*. That the setting in of a south-west wind, which, although warm, brought an *increase of ozone* to the local atmosphere, was, in every instance, followed by an immediate and marked decrease in the death rate, and the number of new cases reported."

These same relations between atmospheric conditions and epidemics have been noted in the Mississippi valley during a protracted siege of yellow fever. Let our boards of health, bureaus of disinfection and sanitary committees devise some means of giving us an increased supply of ozone, artificially produced, as the Department of Public Works

increases our supply of water with an increased demand, and then, and only then, will epidemics be a thing of the past.

MENTAL OVERWORK AND PREMATURE DISEASE AMONG PUBLIC AND PROFESSIONAL MEN.

The "Toner Lectures" were instituted at Washington, D.C., by Joseph M. Toner, M.D., who placed in charge of a board of trustees a fund, the interest of which is to be applied to at least two annual essays relative to some branch of medical science, and containing some new truth fully established by experiment or observation. As these lectures are intended to increase and diffuse knowledge, they have been accepted for publication by the Smithsonian Institution in its "Miscellaneous Collections." Since the establishment of this fund, nine lectures in all have been delivered. The first was delivered March 28th, 1873, by the late Dr. J. J. Woodward. Other lectures have been delivered successively, at irregular intervals, by Dr. C. E. Brown-Séquard, of France, Dr. J. M. DaCosta, Dr. H. C. Wood, Dr. W. W. Keen, Dr. Wm. Adams, of London, Dr. Edward, O. Shakespeare and Mr. George E. Waring, Jr. The ninth lecture was delivered by Dr. Charles K. Mills. His subject, suggested by Dr. Toner, was "Mental Overwork and Premature Disease among Public and Professional Men." This lecture, in the form of a pamphlet of thirty-four pages, has just been published by the Smithsonian Institution, and the following synopsis of it is given in *The Polylinic* :—

The longevity of intellectual workers in general is first considered, and is found to be above that of most other classes. The inferences and conclusions of the paper are largely based upon a study of sixty cases, especially collected by the author, cases in which loss of health or life had been mainly attributable to excessive brain work and brain strain.

These cases are arranged into two classes : (1) Men in political and official life, including cabinet officers, senators, representatives, department officials, governors and candidates for office ; (2) Professional men, including physicians, lawyers, clergymen, journalists, scientists and teachers.

The actual occupations were: cabinet officer, 1; senators, 8; representatives in Congress, 10; department officials, 6; governors, 2; candidates for important offices, 2;

physicians, 6; lawyers, 7; clergymen, 2; journalists, 4; scientists, 6; teachers, 7.

Twenty-eight of the sixty, therefore, were men in political and official life, and eighteen of these were members of Congress.

The average longevity of men in the higher walks of political life in this country is regarded as considerably below the average of those who occupy similar positions in England. Comparing, so far as information was available, the ages at death of United States Congressmen and members of the English Parliament, who have died since 1850, the following results were obtained :—Fifty-nine United States Senators gave an average of 61 years; one hundred and forty-six United States Representatives an average of 55 years; the average of both being, therefore, 58 years. One hundred and twenty-one members of Parliament gave the remarkable average age at death of 68 years.

Taking twenty-five of those that might be regarded as the most eminent American statesmen of the last one hundred years, and comparing their ages at death with those of the same number of the most distinguished English statesmen, the United States gave an average of 69 years, and Great Britain of 70—no practical difference. It was noticeable, however, that much of the best work of the great English statesmen—of Palmerston, Derby and Beaconsfield, for instance—had been done at an advanced age, when most American public men have ceased to do anything important.

The special conditions which lead to overwork and its consequences among physicians, lawyers, journalists, scientists and teachers are presented at some length, with illustrative cases. The evil effects of competitive examinations and cramming, upon both teachers and scholars, in our public schools, are also described.

The symptom-groups and diseases represented by the series of sixty cases are summarized as follows :—Acute neurasthenia, 18; insanity, 10; phthisis, 9; diabetes, 4; cerebral hemorrhage, 4; Bright's disease, 3; posterior spinal sclerosis, 3; pneumonia, 3; bulbar paralysis, 1; angina pectoris, 1; erysipelas, 1; hepatitis, 1; enteritis, 1; glossitis, 1.

The most important conclusions are summarized as follows :—

1. Intellectual work does not of itself injure health or shorten life, but mental overwork, particularly when associated with

emotional strain, is a frequent cause of nervous break-down and premature disease.

2. The average longevity of men in the higher walks of public life is less in this country than in England. Politics here is not, as there, in the best sense a vocation; and our public men, in many cases, succumb to ill health, or fail to attain long life because they go into careers unprepared, by inheritance, education and training, for the severe demands to be made upon their powers.

3. Health and life are sometimes lost through forgetfulness of the fact that mental strain and overwork are particularly dangerous to those in middle life or advanced in years who attempt brain work and responsibilities to which they have not been accustomed. The effects of suddenly-imposed mental strain upon these classes are especially disastrous.

4. If not subjected to unusual mental or physical strain, public and professional men, as well as those in other walks of life, although afflicted with organic diseases, may live in comparative comfort, and able to do a moderate amount of work for many years.

5. Among special causes of premature disease in public life are onerous and perplexing duties on Congressional committees, the uncertainties and disappointments attendant upon public positions, the great strain to which candidates are subjected during political campaigns, lack of recreation, and social excesses and abuses at the National Capital.

6. Among physicians, lawyers and journalists the performance of brain work under pressure for time, and under bad hygienic conditions, is a common cause of ill-health. Defective education and pecuniary harassments are also special causes of nervous break-down and premature disease among physicians and lawyers.

7. Comparatively few clergymen succumb completely to mental overwork, although many suffer from a mild but annoying form of neurasthenia.

8. The danger to the scientific worker usually arises from too intense and too prolonged activity of the mind in one direction.

9. The system of severe competitive examinations in vogue in many communities saps the health of both teachers and pupils. In our schools generally educational methods are bad, recreation is too much neglected, and unhealthy emulation too much encouraged. Education is not properly individualized.

10. Chronic neurasthenia is not common

among men prominent in public affairs and in the professions. Such men are, however, sometimes the victims of a severe acute nervous prostration, which may result in serious organic disease.

11. Nervous strain is one of the causes of lithæmia, which is of not infrequent occurrence among public and professional men, but lithæmia and neurasthenia are not interchangeable terms.

12. The warnings of mental overwork and overstrain vary with individuals and circumstances, but certain physical symptoms, and such physical symptoms as immobility of countenance, diminished resisting power, heart failure, sleeplessness, cervico-occipital pain or distress and dyspepsia are of most frequent occurrence.

13. Insanity, particularly in the forms of melancholia and parietic dementia, is sometimes developed by brain strain and overwork. A family history of insanity is often present in such cases.

14. Phthisis, diabetes and Bright's disease are among other diseases most likely to be developed by mental overwork. Men in whose families phthisis is hereditary should carefully guard against such overwork.

15. Overtaxing the mind and nervous system may be the exciting cause of almost any serious disorder to which chance, accident, imprudence or infection exposes the individual.

16. Many diseases, not nervous in their seat or manifestation, are developed directly or indirectly as the result of mental and nervous strain, through exhaustion, impairment, or lesions of the centres of the organic functions.

NOTES UPON THE HISTORY OF CHOLERA IN ST. LOUIS.

The first appearance of cholera in St. Louis was in 1832 (R. Moore, C.E., &c., in *The Sanitarian* for March). According to Dr. Peters it was first brought to Jefferson barracks, a few miles below this city, by soldiers from the United States military post at Rock Island, to which point it had travelled from Quebec by way of the great lakes. The mortality was very great, rising to 20 per day in a population of about 8,000, which is equivalent to 975 in the city of to-day. But as no record of deaths was then kept the total number cannot be given.

Cholera also appeared there during the next year, being this time imported from

New Orleans. The mortality was less than the previous year; but the absence of records makes it impossible to give any exact statements.

The severest visitation of cholera in St. Louis was that of 1849, by which time the population within the city limits had increased to 63,471, as shown by a census taken in February of that year.

The disease had been brought to New Orleans on emigrant ships early in December, 1848, and in a few weeks was carried to all the principal cities on the Ohio and Mississippi rivers.

During the next four years, including the years 1849, 1850, 1851 and 1852, it was never wholly absent from the city, except for three short intervals of about four weeks each. It did not, however, at once become epidemic. The deaths from cholera in January were 36. In February they were but 21. During the next month, however, the deaths from this cause were 78, or over double the number of January, and in April there was a still further increase to 126.

The total mortality from this cause for the year 1849 is given by Dr. Engelmann at 4,317, or nearly 67 per thousand of the population as given by the census of February. Other accounts give the total cholera deaths for the year as 4,555. The mortality from all causes for this year is given by Dr. Engelmann as 8,495, or nearly 134 per thousand.

During the next year, 1850, cholera was also a cause of death in every one of the twelve months. The total for the year is 883, of which 458 occurred in July, figures which seem small only when compared with the frightful record of the previous year.

In 1851 the deaths from cholera reached 845. Of these 505 occurred in June. In three months of this year—February, October and December—there were no deaths from this cause; but in the next year, 1852, every month claimed its victims, and the total for the year was 802. During these four years, 1849, 1850, 1851 and 1852, cholera was a permanent resident, and by the most conservative report caused the death of 6,847 persons.

During 1853 the disease was wholly absent for the first time since 1848. But in 1854 it again appeared with renewed vigor, and swept away no less than 1,534 lives, or about 12 per thousand of the population. After this it wholly died out, and gave us no

further trouble until again imported in 1865.

The precise route by which cholera reached the city in 1866 is not altogether certain, but it probably came by rail from New York, and not as heretofore, by way of the Mississippi river. Its first appearance was in the week ending August 3rd, during which there were 5 deaths from this cause. There had been good reason to expect it for many months. The council, though action was urged upon them, steadily refused to do anything. The cholera was not here, and it was argued that any measures of preparation for it would frighten strangers and injure business. So that when it finally appeared the city was wholly unprepared to fight it. There was a so-called board of health, which, as in 1849, consisted of a committee of the council and a health officer, but they had neither the authority nor the money, even if they had the knowledge necessary to stamp out a pestilence. The disease, therefore, spread with great rapidity. During the second week of its pestilence it caused 120 deaths. For the third week the number rose 754, and in the fourth week, ending August 24, it reached 991, or an average of 142 per day.

By this time the need of some vigorous and concerted measure to fight the enemy had become so great that volunteers had once more come to the rescue. This time, however, the organization took the form of a committee of citizens in each ward, who, acting in consort with the mayor, visited from house to house, furnishing nurses and medicines to those who needed them. During the next week after the work began the mortality fell to about one half that of the previous week, and steadily declined thereafter until, for the week ending October 30th, the number of deaths was only 30, and a month later the disease had wholly disappeared.

The total number of deaths due to the epidemic this year was 3,527.

CHOLERA AND FILTH.

The location of the deaths in this year, as given by the assessors' reports, with the approximate mortality per thousand, for each block, is shown on a map which accompanied this paper. It shows, in a very striking manner, the close relation between cholera and filth. Those parts of the city where the people and their habitations were clean and where no wells were used for drinking-

water, escaped almost entirely, and the whole force of the epidemic was spent upon those parts where the houses and the people were unclean and well-water was in most frequent use. While "Kerry Patch" and "Frenchtown" show on the map in deep black, Stodard's addition is almost blank.

The man whose food and drink was free from filth would seem to have been as safe in St. Louis in the midst of the epidemic as if he had been a thousand miles away.

In June of the next year, 1867, cholera appeared once more, and threatened again to sweep the city. But this time a real board of health, with adequate powers, and with Dr. John T. Hodgen at its head, had been organized. It is therefore no surpriss that, in spite of its earlier start, the cholera in 1866 caused but 684 deaths, or less than one-fifth of the number of the previous year.

In 1873, when cholera appeared again, it was hardly recognized as such, and the victims, as counted by Dr. McClellan, from reports of local physicians, number only 392.

LIFE-SAVING FROM DROWNING BY SELF-INFLATION.

Dr. Henry Silvester, widely known as the author of the best method of resuscitating the apparently drowned, publishes in the *Lancet*, Jan., '85, a method which he claims will prevent persons from drowning. The drowning season is near at hand, and in order that any who may go out to sea, and who desire to become familiar with the method may do so, the SANITARY JOURNAL gives it, as follows:—

The method (*Therapeut. Gaz.*) is to distend the skin of the neck and upper part of the chest sufficiently with air to support the weight of the body when immersed, the inflation being effected by the person himself by means of his lungs without the intervention of appliances. The necessary operation consists in making a small puncture, not larger than necessary to allow of the passage of a small blow-pipe, in the mucous membrane of the mouth, the object being to open a communication for the passage of air from the cavity of the mouth into the subcutaneous space of the neck. The situation chosen for the puncture is in the angle formed between the gum of the lower jaw and the side of the under lip or cheek, about opposite the first molar tooth of the lower jaw. The point of the instrument perforating should be passed down

a short distance between the skin of the side of the face and the superficial fascia of the neck, its point being guided by the finger placed on the outside of the face and neck, taking care not to puncture either the skin or the superficial fascia. This having been done and the instrument removed, in order to inflate the skin of the neck and the chest, the person should close the mouth and the nose, and make a succession of forcible expiratory efforts, when the air contained in the cavity of the mouth will pass freely into the subcutaneous tissue of the neck. These expiratory efforts, inspiration being effected through the nostrils, should be continued until the skin is fully distended with air, which will pass readily to both sides of the neck and down the chest as far as the nipples; and this is all that is required to render the body buoyant in water. Should it so happen that the superficial fascia has been punctured and the air pass beneath it, the only difference in effect would be that the extent of air would be limited by the attachments of that membrane to the cavicle below and the border of the jaw above. The amount of air which the skin of the average neck is capable of holding without undue distension has been measured, and found to be enough to support ten pounds, and is amply sufficient to support the body immersed in water. The time required for inflation is found to be less than three minutes. The neck may be kept in an inflated condition by closing the puncture by pressure on the outside of the cheek by the finger, or by keeping the mouth distended with air; and when required the air may be immediately discharged from the neck by allowing the puncture to remain open, or by suction.

The advantages which Dr. Silvester claims for this method may be summed up as follows:—

1. The proceeding is perfectly harmless and almost painless, quickly done and almost immediately recovered from.
2. It may be learned in a few minutes, no technical knowledge being required, and may be accomplished by the person himself without assistance.
3. No special apparatus is required. In an emergency the point of a pen-knife, or even a sharp-pointed splinter of wood, is all that would be required. The inflating apparatus is the person's own lungs.
4. The air could be repeatedly re-inflated and even during prolonged immersion.

THE "PATENT MEDICINE EVIL."

"That the present almost universal use of the innumerable and various nostrums for the cure of all real and imaginary diseases and disorders to which the human body is subject has become a serious evil in almost every civilized country, but few, excepting those engaged in trafficking in the poisons, will deny. At a meeting of the Indiana State Sanitary association, Dr. Harvey, of Indianapolis, made the following observations on this subject: Allow me, Mr President, to ask the medical profession to call to mind the number of cases that demand their attention which grew out of the deplorable habit of swallowing, with reckless avidity, the numerous patent and proprietary medicines that are thrown upon the market; among which are measureless quantities of drastic pills, found in every house, and which are thrown into the stomach with sinful indiscrimination until a habit is formed of taking them every few nights to run off an enormous dinner, or hastily swallowed supper, or it may be to relieve the stomach in the morning from the effects of a magnificent spree of the night before, in which it has been made a laboratory for the analysis of drugged whiskey and beer, as well as a storehouse for a countless list of rotten, half-cooked, indigestible restaurant supplies.

In the concatenation of villainous nostrums found everywhere advertised by the gratuitous distribution of almanacs are stimulating, nauseating, intoxicating, narcotic, stupefying bitters, syrups, and other poisonous fluids, the influence of which tends to pervert nature's normal relations, and by their influence on the nerves of the stomach produce an appetite for strong drink and other intoxicants, and in the end to fill the country with drunkards and opium-eaters.

The adult may, in many instances, resist the effects of these poisons, but when little children and babes are dosed with them, a humane and intelligent community should close their eyes to their helpless appeals and blush with shame while the panorama of innocent sufferers pass before them. A babe is fed food it has no ability to digest, which acts as a foreign substance in the stomach and bowels, and irritates the sensitive surfaces, when the little sufferer becomes so restless and fretful that the nurse can get no sleep. It must then in some way be quieted, and a soothing syrup is brought into requisition, which checks nature's effort

to pass off the offending substance from the stomach or bowels; this determines the blood to the head, spasms or meningitis irritation is the result, and a dear babe closes its eyes upon a world of sin.

I can take you, Mr. President, to two little graves around which the spring birds have not yet carolled their sweet songs to the spirits of the sleepers. These are, however, but two of the many little graves found in every city of the dead in our State.

Without extorting illegitimate conclusions from groundless inferences, or straining facts to swell statistics to create undue alarm, it is safe to say that from this cause alone five hundred homes are desolated each year in the State of Indiana.

HOMEOPATHIC MANAGEMENT OF THE INSANE.—The fourteenth annual report of the Homœopathic Asylum for the Insane, Middletown, New York, (*N. Y. Med. Times*,) through its Medical Superintendent, Dr. Selden H. Talcott, has more than ordinary interest, as it reviews to a certain extent the ten years' work of the institution since its organization. . . . The asylum has sheltered 1,532 sufferers from mental maladies, of whom 1,250 have been discharged. Of the whole number discharged 566 were fully recovered, 183 were improved, and 330 were discharged as unimproved, most of them having passed into the chronic or hopeless stage. In other words, 45.78 per cent. of those discharged were cured, and 14.64 per cent. were improved, while 26.40 per cent. had not been benefited by treatment. When it is remembered that this asylum receives chronic as well as acute cases these figures make a showing that no similar asylum can surpass, and are eloquent in the testimony that they bear as to the skill of the physicians in charge and the efficacy of the gentle and rational treatment which has always characterized the Homœopathic Asylum. The methods employed there for the restoration of the insane are: 1. Kindness and gentle discipline. 2. Rest as a means of physical and mental recuperation. 3. Enforced protection (the restraining of violent patients.) 4. Exercise, amusement and occupation as stimulants in the renewal of health. 5. Diet and artificial feeding. 6. Mental and moral hygiene. 7. Sanitary surroundings. 8. Medicines. 9. Furloughs—giving leaves of absence to convalescent patients before final discharge.

CAUSES OF INSANITY.—The causes of insanity are briefly discussed by Dr. Talcott, of the Middletown Asylum, (*N. Y. Med. Times*), and the public will note with satisfaction that he asserts that hereditary insanity, which many alarmists have declared was increasing with startling rapidity, is in reality decreasing, a great reluctance being manifested to marrying into families the members of which are insane, while in nearly every instance those inheriting an insane taint develop it early in life and die young. Inherent predispositions to insanity are assigned to pre-natal influences—hysteria on the part of the mother, drunkenness on the part of the father, and others similar thereto, while among the acquired predispositions are mentioned imperfect nutrition; injury to the brain in childhood; fear; overtaxing undeveloped physical powers; unwise forcing of the mind; unnatural sexual excitement. Worry and overwork are mentioned as the most common and exciting causes of insanity, and the means of preventing insanity are, therefore, evident.

INCUBATION OF INFECTIOUS DISEASES.—Vacher divides the various periods which elapse between the reception of infection into the body and the first manifest symptoms of the disease into five sections, as follows:—1. *Shortest*—one to four days—cholera (malignant), charbon, plague, catarrh, and dissecting fever. 2. *Short*—two to six days—scarlet fever, diphtheria, dengue, idiopathic erysipelas, yellow fever, pyemia, influenza, pertussis, glanders, farcy, grease, croup, puerperal fever. 3. *Medium*—five to eight days—relapsing fever, gonorrhoea, vaccinia, inoculated small-pox. 4. *Long*—ten to fifteen days—natural small-pox, varicella, measles, rotheln, typhus fever, typhoid fever, mumps, malarial fever. 5. *Longest*—forty days or more—syphilis, and hydrophobia. Small-pox ceases to be infectious in 56 days after the appearance of the eruption; modified small-pox in 35 days; chicken-pox in 17 days; measles in 27 days; rotheln in 14 days; scarlet fever in 49 days; diphtheria in 28 days; erysipelas in 35 days; typhus in 21 days; typhoid in 28 days, and mumps in 21 days.—

DISINFECTANTS—THREE KINDS.—All the at present known agents of disinfection (*Deut. Med. Zeit.*) can be classed in three categories according to the nature of their action, viz: the physical, physiological and chemical disinfectants. As purely physical

disinfectants rank dry heat and hot vapors. Both are powerful agents, but labor under the disadvantage of having but a limited applicability as to the area involved. The physiological method is based on the supposition that the majority of infecting agencies are living organisms, and intends their destruction by drugs which prove poisonous to them without, in the quantity exhibited, injuring the human organism. The chief representatives of this group are the corrosive sublimate and the products of dry distillation, as carbolic acid. The sublimate is unfit for any extensive use on account of its powerfully poisonous action even in small quantities on man and animals, whilst the carbolic products are not sufficiently energetic in their action. The third group is formed by chlorine, bromine and sulphurous acid and owes its effects to a chemical decomposition of complex compounds. Bromine, especially in its vaporous form, has proved the most efficient of the three, especially for the disinfection of rooms and houses. It can be employed as a pure vapor, or mixed with air or steam. As a simple purifier of air in crowded apartments, ships, hospitals and barracks, bromine is the most eligible agent.

ATMOSPHERIC PURIFICATION BY ELECTRICITY.—In the last issue of this journal reference was made to an apparatus used in some of the N. Y. City hospitals for accomplishing the static electrization and disinfection of an atmosphere. In reply to numerous inquiries Henry A. Mott, Jr., Ph. D., etc., makes the following statement: "There are many features about this machine which are novel and highly commendable. What is most interesting is the amount of static electrization or ozone the machine is capable of producing in a given time. By quantitative test, the amount of ozone generated by the machine was found to be 2.4 per cent. of the oxygen in the air admitted, which is equal to 83 cubic inches of ozone per minute, (one cubic foot in about twenty minutes). As the room contained 2,147 cubic feet of air, this air would contain in the fifteen minutes $\frac{1}{57}$ of its volume of ozone. To determine the amount of albuminoid ammonia in the air some of the water in the air was condensed by suitable refrigerating apparatus, to show the per cent. of this undesirable element. The electrical apparatus was next set in operation for fifteen minutes, when some more of the water contained in the air was condensed. Analysis showed that $33\frac{1}{2}$ per

cent. of the albuminoid ammonia was decomposed in this short space of time. It must be remarked here, that during the test there were six persons in the room, some of them smoking, as also a mass of decomposed animal matter, the object being to show the efficiency of ozone under the most trying circumstances. The fact that the room was not provided with any artificial system of ventilation is also worthy of remark."

INFLUENCE OF TOBACCO SMOKE ON THE HUMAN AND LOWER ORGANISMS.—From a large number of experiments upon men and lower animals, Zulinski (*Prz. Lek.* No. 1., U. FF., 1884, *St. Peters. Med. Wochen.*) arrives at the following conclusions: 1. Tobacco-smoke, even in very small quantity, acts as a strong poison upon lower animals. 2. Unless taken in very large quantity, its evil effects upon the human system are scarcely to be compared to its action upon animals. 3. The toxic action of tobacco-smoke does not depend solely upon the nicotine, for the smoke freed from it is still poisonous, although in a less degree. 4. The other toxic principle of the smoke is collodina, a body having alkaloidal properties. 5. In addition to these, the smoke contains other ingredients which very speedily exhibit a poisonous action on the lower animal, *e. g.*, carbonic oxide and prussic acid. The author has also made a quantitative estimate of the toxic powers of the different grades of tobacco, as well as of the evils pertaining to the different methods of smoking. The most injurious method is cigar-smoking; then come cigarettes; next the pipe, and least of all, the water-pipe. The difference in the qualities of tobacco is not so great as would probably be theoretically supposed, although the quantity of nicotine in the different specimens varies to a great degree. Finally, the author comes to the conclusion that the pernicious effects of tobacco-smoking depend not upon the kind of tobacco consumed, but upon the method of its consumption.

NEW GERMICIDE—M. Schnetzler has communicated some observations to the Académie des Sciences which serve to illustrate the germicidal qualities of formic acid. *Bacterium subtilis*, one of the most difficult micro-parasites to kill, dies when in the presence of formic acid, even when it has resisted the action of boiling water for one hour; a drop of water containing a thousandth part of formic acid to a drop of water teeming with thousands of the bacteria, is sufficient to des-

stroy it. The swarming fluid so treated may be introduced into the digestive tract with impunity. The trial of formic acid on the cholera bacillus is recommended and its action upon *Bacillus anthracis* is deserving of experiment. If it should be found capable of destroying the dried virus of charbon, provided it does not injure imported wool, the *N. Y. Medical Times* suggests that all imported wool be washed in a weak solution of formic acid to prevent the occurrence of malignant pustule and all allies.

CHOLERA PREVENTION.—A recent address on the Parasitic Doctrine of Epidemic Cholera, by Austin Flint, contains reminiscences just now to the point, as showing how an incipient epidemic may be effectually strangled in its birth by the prompt and searching application of the principles of sanitation, where earlier precautions had not been taken to prevent uncleanness and so prevent the birth of an epidemic. In 1866 New York was threatened with cholera. "In anticipation of its prevalence a system of immediate and thoroughly disinfection analogous to that of a fire department, was adopted by the Metropolitan Board of Health, which had lately been reorganised. Sanitary inspectors, of whom some were always on duty at the central office of the Board, were appointed to at once visit all cases as reported, and to decide upon the diagnosis. A "disinfecting corps," composed of soldiers who had recently been employed in the Civil War, was organised under the command of an officer of the army. Waggon loads with materials for disinfection, and with their horses ready harnessed, awaited only a moment's notice to proceed to any infected spot. All these arrangements were placed under the supervision and direction of the sanitary superintendent, and their object was to disinfect the houses and the surroundings, wherever a case of cholera occurred, just as it is the object of a fire brigade to extinguish a conflagration as speedily as possible. The results achieved by the thorough application of these measures afford the best proof of their efficiency. During the summer and autumn 1866, cases of cholera occurred, in 362 houses more or less widely separated from each other; and "in no case did the disease extend proximately beyond the house in which case or cases occurred." In the course of the succeeding year twenty-seven deaths from cholera took place in New York City, five in Brooklyn, and eighteen at the

military post in New York harbour. The measures used for stamping out the malady were the same as those employed in 1866, and the disease did not prevail as an epidemic. Dr. Flint maintains that in Marseilles, Toulon and Naples—cities which have been lately scourged by the disease—its progress might have been arrested, and thousands of lives might have been saved by measures such as those which proved so successful in New York in 1866-7." "I believe firmly he says, that should the disease be again introduced into this country, to decide whether or not it shall prevail as an epidemic lies within the power of preventive medicine." But it would be much better not to wait till the disease comes, but to organize and prevent it taking root at all.

TOBACCO AND CANCER.—Almost every physician, says the *N. Y. Medical Times*, has met cases where the frequent pressure of the pipe or the cigar holder upon the lips, and the continual influence of the nicotine of the tobacco upon the mucous tissue of the lips and mouth have been followed by cancer. If there is one thing more than another in which a person is apt to be intemperate it is in the use of tobacco. It seems to bind the mind to what may be a deadly influence, and hold the will-power under its control. Temperance is seen in the moderate use of the pleasures of life. Tobacco may never be the direct cause of cancerous degeneration, but that it paves the way to it by creating a morbid condition of parts we have every day illustrations, which are apt to pass unheeded unless the victim occupies so high a position in the community. Very recently a malignant case of epithelioma of the lip was brought to our notice which was developed precisely at the point of its contact with the cigar. Prompt and vigorous treatment was used, but the cancerous poison had extended to the glands and mouth, and death speedily ensued. The other day we cut out a horny excrescence from the lip of an old smoker. The tobacco throat and the tobacco heart are familiar to all, but these conditions are generally relieved by a discontinuance of the habit. Not so with epithelioma after it is fully developed, for that may defy our skill.

DAMP HOUSES.—C. T. Davis, in the *American Architect* says, the common bricks produced by most of the dry-clay machines absorb much more water than do those made by machines which thoroughly temper the clay. There is too much ignorance displayed

in regard to the material produced by this line of inventions, and which enters so largely into the construction of buildings, and this lack of knowledge is often shown by those who ought to know better. In the desire to get up a showy house, "something that will take, you know," mistakes are often made, and which are usually paid for by the loss of health, and sometimes by the sacrifice of the lives of those who inhabit them. It is difficult to call to mind houses that people call "unlucky places," in which an unusual number of persons die? These "unlucky places" are for the most part nothing more or less than damp houses, resulting usually from the employment of porous bricks in the construction of the walls.

HEALTH AND ITS CAUSES IN SAN FRANCISCO.—Annual report of J. L. Mears, M.D., health officer, for fiscal year ending June 30, 1880:—Mortality for the year, 5,000, an increase of 12 over preceding year; of these 502 were Mongolians. On an estimated population of 270,000 the ratios were: of total, 18.47; of Mongolians, estimated 22,000, 22.8; 1,361 were of children under five years of age, and 670, or 13.4 per cent. of the whole, only, were caused by zymotic diseases. But of this comparatively small number of deaths from preventable diseases, 180 were caused by typhoid fever. The general good results and high degree of healthfulness is attributed measurably to improved and extended sewerage, and the execution of the drainage and plumbing law.

THE MORTALITY OF CHILDREN AT LOS ANGELES is said to be (*Det. Lancet*) remarkably small. "The combined death rate from cholera infantum, scarlet fever, and diphtheria for the last seven years has been less than one a month." It is given as reasons for this small mortality, "the diurnal breeze from the ocean, which constantly purifies the atmosphere; the constant ripening of fruits all the year round; constant fresh vegetable each month of the year; such constant clear weather that out door life is possible almost every day of the year." This last probably most important of all.

DRS. REINSCH AND CUTTER have been studying with the microscope the dirt in the indentations of old coins. They find innumerable bacteria, and unicellular algae. There are oscillating bacteria, vibrating, spherical and dancing bacteria. Dr. Cutter then examined the dirt under his finger nails and found bacteria and algae.

Leading Articles.

THE MORTUARY STATISTICS—INTERESTING FACTS.

The last report of the mortuary statistics of the cities from the department of Agriculture brings out some interesting features relating to the ratios of mortality according to nationalities and religious denominations. Being for only one year the statistics do not possess that value in illustrating peculiar conditions that a succession of years will give, but they are, nevertheless, of no little significance, and are worthy of attention.

In Montreal there was in 1883 an assumed population of 83,867 of French nationality. Amongst these they were 3,145 deaths, or over 37 deaths per 1,000 of population. There was an assumed population of 29,744 of Irish nationality, amongst whom there were 849 deaths, or over 28 per 1,000 of population. Also a population of 17,211 of English nationality, with 314 deaths, or 18 per 1,000; and 13,121 of Scotch nationality, with 212 deaths, or 16 per 1,000 of population. Thus the death rates, per 1,000, of the four different nationalities were, French, 37; Irish 28; English, 18; Scotch, 16. In Ottawa the differences were less marked; being 33, 25, 23 and 16, respectively. In this city the death rate amongst the English population was vastly in excess of that amongst the English in Montreal. This was also the case in Toronto, and likewise in Hamilton and Halifax. In Toronto where there were only, it appears, 1,430 persons of French nationality, there were amongst them less than 19 deaths per 1,000—or 27 deaths in all. In that city there was an assumed population of 34,010 of Irish nationality, with 831 deaths, or over 24 per 1,000. Of English there were 38,079 of a population, assumed, with 991 deaths, or over 23 per 1,000. There were 15,212 of Scotch with 246 deaths, of over 16 per 1,000.

In the six cities—Montreal, Toronto, Hamilton, Halifax, Ottawa and St. John, there was a total assumed population of 97,108 of French nationality. Amongst these there were 3,532 deaths, or 36 per

1,000. In the same cities there was an assumed population of 111,155 of Irish nationality, giving 2,799 deaths, or 25 per 1,000. There were 95,865 of English nationality, with 2,044 deaths, or over 21 per 1,000, and 30,059 of Scotch nationality, with 817 deaths, or 16 per 1,000. The totals being for the six cities for each nationality, French, Irish, English and Scotch, respectively, 36, 25, 21 and 16 per 1,000 of population.

The high mortality among the French and Irish was doubtless largely due to the high infantile mortality among these people; while a larger proportion of them belong to the poorer classes who are not so well housed and provided with the necessaries and comforts of life, as the more well to do classes. The few French in Toronto and the comparatively few English in Montreal, in both of which the mortality was low, are, we are lead to believe, largely of the better class and enjoy the comforts and luxuries of life.

Among the Roman Catholics in the six cities above named the death rate was over 33 per 1,000. Among the Church of England people, the rate was 23 per 1,000. Among the Presbyterians it was less than 16, and among the Methodists, barely 19 per 1,000. Among the Roman Catholics in Montreal the rate was over 35 per 1,000, and in Ottawa 37. In Toronto the rate was 26; in Hamilton, 24; and in Halifax, 21.

What are the causes of these great differences in the rate of mortality? While a number of causes operate, the one great cause is doubtless unsanitary conditions. It is dreadful to contemplate this great loss of life, which might be prevented were proper means employed. In bringing out these facts is the great value of mortuary statistics. It is to be hoped that the lessons they teach will not be disregarded by those most interested.

THE MICROSCOPE reveals that there are more than four thousand muscles in a caterpillar, and that the eye of a drone contains one thousand mirrors. There are spiders as small as a grain of sand, and they spin a thread so fine that it would require four hundred of them to equal the size of a single hair.

CELLARS.

We have on former occasions referred to the probability of a time in the future when man will entirely dispense with these relics of savage life or of pre-historic man—holes or caves in the ground, and instead, construct his habitation—his home—so above ground that the air may have the freest circulation under it, as free indeed as around it. But so far are we from that time that there is hardly a dwelling-house to be found without a cellar. In a large proportion of dwellings the cellar is the receptacle of decomposing organic matter, when it ought to be about the last place about the premises in which such matter should be permitted to lie, for there is no other place whence the elements of decomposition can so readily pervade the entire dwelling above. We frequently find in our many exchanges a report of an outbreak of diphtheria in a family in which the only cause that could be discovered was decaying vegetable matter—potatoes, cabbages, &c.—in the cellar of the dwelling. It would seem as if the contagions of the disease had in some way been conveyed to this prolific soil and there developed and spread. We would therefore urge upon our readers the great importance at this season of the year of looking after the condition of the cellar. Have every trace of decaying matter removed so that every part of the cellar—every corner and crevice—shall be perfectly clean, as clean and sweet as any other part of the dwelling. If necessary, as it most likely will be after the winter's use of the apartment, have water, soap, disinfectants and lime-wash freely used. Above all, let in fresh air and sunlight freely. We have recently drawn attention to the importance of dryness in the cellar—to the necessity of good drainage of the soil down two or three feet beneath the floor of the cellar—as by a system of tile drains. This is indispensable to health. If health officers, inspectors or officers of some sort could be appointed to visit every cellar in the land and have them thoroughly cleaned it would doubtless save many lives during the next few months, especially of little ones, which we fear may otherwise be sacrificed to either ignorance, indifference or procrastination.

NOTES ON HOUSE BUILDING.

The home should of all places be most considered. Largely in accordance with its construction, its keepings and its surroundings will be the health and comfort of its occupants. Those constructing a new home should deeply consider its importance and study every point, and those occupying an old dwelling might often with a little study and a comparatively trifling expense greatly improve it. The following notes are chiefly from a lecture before the Society of Arts, by Robert W. Edis, F.S.A.:

Good planning means not merely the arrangement of a certain number of rooms on a certain number of floors, but careful and close attention to the general domestic requirements and arrangements of the ordinary householder, and to all smaller details which make up the comfort and convenience of the house. It means that every foot of space shall be properly laid out, that there shall be no dark corners, and no inaccessible places, and that every room, closet and staircase shall have ample light and ventilation, and that staircases shall be conveniently arranged, easy, with broad landings, and of sufficient width to allow of passing conveniently.

Each room has to be considered, and its relative proportion and position in the plan. The dining-room, or general eating-room of a house, should be so arranged that, although above the kitchen-level, it shall not be at any unreasonable distance, whereby an extra amount of carriage of dishes and service is required.

In ordinary houses nothing has struck me as so wanting in thought as the general arrangement of the staircase. As a rule you enter from the front door into the narrow passage-way, with perhaps an internal screen, with folding-doors which are rarely shut, and immediately opposite is the main staircase of the house, so that any one, on entering, not only commands the absolute thoroughfare of the house, but sees everybody who goes up or comes down, by which privacy is materially interfered with, and the whole house is made subject to sudden

draughts of cold air, which are driven up the well-hole, as it is called, by the opening of the street-door.

There is no reason why the ordinary narrow entrance shall not be increased two or three feet, so as to make a moderate-sized hall, in which you may have a fireplace, which will help to supply warm, fresh air all over the house, and, by a little care in planning, the first flight of stairs at least may be screened from view.

The scullery should, as a rule, form part of the kitchen, where the kitchen is not used for servants' meals and sitting-room, and not be shut off, or, if so, only by a low glass screen. It is merely a washing-up place, and should be under the immediate supervision of the cook, and not, as is so often the case, a small, dark, unpleasant, and ill-ventilated hole, in which bad smells are supposed to be allowed. It should be as fresh and as sweet as any portion of the basement.

Line the whole of the scullery walls and, as far as possible, those of the kitchen also, with glazed tiles, so that there be no absorption and retention of the smell which must necessarily accrue with the ordinary work of this portion of the house; bring in fresh air, provide means for extraction of foul, but do not make a pestilential corner.

We can not too strongly advocate the finishing of all the walls in a basement, so far as the working portion of it, and the passages, are concerned, with glazed tiles; they are clean, absolutely non-absorbent, reflect and give light, are easily washed, and tend to make the house sweet and healthy. The pantries and larders should be so arranged that they have continued ingress of fresh air, and should in all cases be lined with glazed tiles or bricks, or some non-absorbent material, so that the emanations from the contents should not be absorbed in discoloured walls. The walls may be painted a light color and then covered with a coat or two of heavy varnish, which makes an admirably clean and good finish.

They can easily be made fresh by bringing in outside air, by means of external gratings

and tubes, and everything should be done to provide a constant draught and sweeping out of the foul air which is naturally engendered by hanging game and uncooked meat. The shelves should be of slate, or, better still, of polished marble, so as to be absolutely non-absorbent and easily cleaned.

In every basement a comfortable room for servants should be provided; some small sitting-room, fitted up with book-shelves and cupboards, and if possible facing the street, so that the workers of the house may have some sort of spare room in which they may be at rest from their ordinary duties; for if you want good servants you must treat them as ordinary beings like yourselves, and it is hardly fair to leave them for all hours in the heated and not altogether pleasant atmosphere of the working-rooms.

I would insist says Mr. Edis, upon the necessity of making those about us as comfortable as possible; for I am quite sure that, if we provide comfort and health for them, they will be much more capable of doing their daily work fairly and acting well by us.

The kitchen department should, as far as is consistent with proper and quick service, be shut off from the staircase of the basement, as this naturally acts as a funnel up which all smells ascend, so that, when the door at the top, which opens into the hall is open, they escape and permeate the whole house; a swing-door can generally be arranged at the bottom of these stairs, provided with one of those patent American valve springs which close the door at once without allowing it to bang.

All closets and bath-rooms should, too if possible, be lined with some non-absorbent material, for, unless this be done, they soon become stuffy and unpleasant.

The drawing-rooms of the house should naturally be made as cheerful as possible, and doors arranged so as to allow for the proper circulation of your guests when the rooms are crowded.

The arrangement of windows and fireplaces should be carefully studied, so as to allow of sufficient wall-space for furniture, and in these rooms bay and recessed windows

and cozy nooks will help to make them more liveable and comfortable, whether for the ordinary occupants, or on occasions when you receive your friends.

As a rule, two fireplaces are regarded as a mistake, unless the rooms be absolutely divided by doors or *portières*, as, when only one fire is alight, there is a tendency for it to act as a pump, and to draw down smoke through the other.

If the room be very long, a small coil of pipes, taken off the hot-water service, may generally be arranged under the back window, over which fresh air may enter for ventilation.

Street houses are, more or less, by the limited nature of the ground on which they stand, bound to be very similar in plan; but they can all be materially improved by a careful study of the wants and requirements of the ordinary householder, and by a proper regard and attention to all the smaller conveniences which practically render the house comfortable or the reverse.

As a general rule, bedrooms are often very badly arranged; either the wall-space is planned so that the bed must be placed immediately opposite the light, or in a thorough draught probably. The modern system of arrangement in French bedrooms might with advantage be more frequently carried out in town-houses, and that the rooms might be made suitable for the double purpose of private sitting as well as bedrooms. In a house in which there are several grown-up sons and daughters, it will be evident that some such arrangement will commend itself, so that each may have a private working-room, for writing or studying, apart from the general living-rooms of the house. The bedroom may often, therefore, be divided up so as to form at one end—that farthest from the window—recesses for bed and washing-closet, which can be screened off in the daytime by a curtain, and the rest of the room fitted up as a sitting-room, wherein the occupant may receive his or her own more intimate friends if need be.

As Emerson says truly, in one of his essays: "Take off all the roofs from street

to street, and we shall seldom find the temple of any higher god than prudence. The progress of domestic living has been in cleanliness, in ventilation, in health, in decorum, in countless means and acts of comfort, in the concentration of all the utilities of every clime in each house. . . . The houses of the rich are confectioners' shops, where we get sweetmeats and wine; the houses of the poor are imitations of these to the extent of their ability." Avoid all such imitations; let our houses be fitted for every-day wants, for every-day requirements; let them above all be clean, be comfortable, be healthy; let there be no unfound skeletons, no tangles that are not unraveled; open up the doors, let light and air in upon the skeletons, search them out; make the houses you live in pure from end to end, and depend upon it you will have less disease of mind or body, less worry, less enervation, unless you agree with the Scriptural statement that "Ahiathophel set his house in order and hanged himself." One would have expected him to hang himself because his house was not set in order.

Remember always that the healthiness, the comfort, and the pleasant and artistic arrangement of your houses mean the healthiness, the education, and the bodily and mental soundness of your children.

SEWERAGE FOR PROVIDENCE, R.I.—The report of City Engineer Gray on the various systems of sewerage examined by him in European and American cities (*The Sanitarian*), with reference to the adoption of a plan for Providence, virtually resolves itself into a recommendation very similar, if not, indeed, identical with that now approaching completion at Atlantic City, known as the "West System":—Intercepting sewers or tanks, conveyance of the sewage thence to a convenient place (mouth of the Providence river) for precipitation, clarification, and disposal by overflow of the effluent into the river, and utilization of the precipitant. Mr. Gray is satisfied from experiments he has made in this direction that the whole of the sewage—about 34,000,000 gallons daily—may in this manner be effectually disposed of without nuisance.

Recent and Current.

OUR BRAVE VOLUNTEERS.—We learn that everything possible has been done for preserving the health of the brave men who have gone to the North-West to suppress the rebellion. The chief medical officer, Dr. Bergin, has given much attention to sanitary matters, as indicated by the provisions in his factory bill. He has been incessant, day and night, in his efforts to have every thing connected with this and the medical department in general as complete as possible. Hon. Senator Dr. Sullivan is purveyor of medical supplies, and is not one that will be likely to overlook anything that the men may require. The Surgeon General, Dr. Roddick, professor of Clinical Surgery in the medical department of McGill University, Montreal, is a most active, able and skilful surgeon. The Surgeon Major and assistant surgeons are men selected on account of their special fitness for the work. And one provision of much importance is that, the attendants for the sick and wounded, instead of having been or to be taken from the ranks, are advanced medical students, selected, we understand, by Dr. O'Rielly, of the Toronto General Hospital, and Dr. Fenwick, of Montreal. Furthermore, provision has been made for a special hospital car, fitted up with all necessary hospital appliances, for conveying the disabled to Winnipeg, whence they may be sent home when desirable by way of Chicago. So that all of us who have relatives and friends engaged in the service may rest assured that all their medical necessities will be well attended to.

THE HARDSHIPS, not designed but unavoidable, which the brave volunteers were called upon to endure on their way to the West but tested their powers of endurance and the better fitted them for the work of effectually quieting or exterminating the rebels. Taken directly from city comforts, and conveyed to Qu'Appelle in comfortable cars, abundantly supplied with good things eatable, they would be much less fitted for the trying combat before them. The value of "roughing it" in rapidly invigorating the entire

physical organization, is well known, and the extent to which man may go in this direction with absolute benefit is to some people surprising. When one unused to hard work first starts out to it he feels very tired and used up for the first few days, and then he gets rested. The hardships encountered by the brave fellows at the commencement inured them to the more serious work to which they are advancing. Then after the partial rest and after reaching Winnipeg, they will be well prepared to march and meet the enemy. The few poor fellows who "fell out" by the way in their tramps above Lake Superior form no exception. Their strength has been tested and they have been cared for and recruited in a way they probably could not have been had they so fallen out when near the enemy. We trust and believe the health of every one of the men will be well looked after. If among them there are boys in age, there is not one in heart. All hail to every man of them.

A RATHER FUNY THING was brought up at the meeting a few days ago of the Toronto Sanitary Association. The *Chicago Sanitary News*, a plumber's organ, read almost solely by plumbers, and which, by the way, seems to enjoy the abusing of medical men and the belittling of their efforts in public health work, had reported, as from the report of the Toronto Medical Health Officer, that the Toronto water was impure. Just about such old "news" as much that the *News* usually gives. And at the meeting in Toronto some one brought up a resolution protesting against such reports passing unrefuted. Is it not an established fact that the water supply pipes leading across the bay leak, and, we need not add, that the bay water is intensely foul—contains "things you can see with your nose;" gives off "loud smells that you can hear." How then can the water supply be pure? Those who have the use of their physical senses do not need Dr. Carpenter nor Dr. Ellis to enable them to judge as to whether the water is or is not fit for use. We were under the impression

that everybody admitted it to be impure, and that the leading Toronto papers proclaimed it abroad as the health officer reported it, all hoping thereby to induce the people to rouse up and remedy the dangerous, deadly evil. The meeting, the last one of the season, wisely decided, we understand, that the resolution to refute the report of the Chicago periodical be laid over till the "next meeting."

TOUGHENED GLASS for drains and soil pipes is among the possibilities, indeed, we should say, probabilities of the future. *The Hydraulic and Sanitary Engineer* gives an account of the Siemens process for hardening glass, as brought before the Applied Chemistry and Physics Section of the Society of Arts, on the 26th ult. Toughened or hardened glass is no new thing, yet some of the uses to which it is proposed to be put are decidedly novel. It is said that one variety of glass produced by Siemens is hard enough to answer as material for a railroad—rails, cross-ties and all. He hopes too to add to the desirability of the new product the element of cheapness. So far as chemical action is concerned, glass is one of the most unalterable of substances. It is hardly at all affected by alkalis and resists the strongest acids; it is impervious to gases and effectually "bottles up" everything placed within it. It has needed only strength and cheapness to fit it as a substitute for all metals in drainage work. For durability and consequent safety it will entirely eclipse all other substances.

THE STATE BOARD OF HEALTH, lunacy and charity of Massachusetts has just issued an extra circular to local boards of health, physicians, school officers, superintendents of public institutions, railroads, proprietors of hotels and householders. It reads, "thorough measures should be taken to ensure as perfect sanitation as possible before the advent of the hot season, and it is recommended that the energies of local boards be directed, during the ensuing months between the present date and midsummer, to the sanitary inspection of cities and towns. It is a common practice for local boards to wait for com-

plaints of nuisances and sources of disease before taking definite action. It is therefore recommended that special officers or *inspectors shall be appointed by local boards for the ensuing three months or more*, whose duties shall be specified, viz.: the inspection of houses, stables, outbuildings, tenements, hotels, schools, public buildings, almshouses, railway stations and camp-grounds. Measures of this sort should be taken in advance of an anticipated invasion of cholera and not in the midst of an epidemic."

"HEAP'S PATENT" dry inodorous earth or ashes closets, which are so strongly recommended by the leading sanitarians, are in such demand that the company have been unable to make them fast enough at their Owen Sound factory. They have now taken central premises at 57 Adelaide street, West, Toronto, where they propose making their headquarters, and where they are fitting up a factory and storeroom. The "Heap's Patent" is generally admitted to be the only perfect dry earth closet made in Canada. There is a perfect distribution of the deodorant material, and the liquid is separated from the solid excreta. They have been awarded thirteen prize medals, and over 15,000 of them are in use. The company are daily receiving orders for them from various parts of the Dominion—from Calgary and Regina to the Maritime provinces, and also from the United States.

CLEVELAND CITY ENGINEER in his annual report outlines a plan for improving the sanitary condition of the river by freeing it from sewage pollution. His scheme is to build intercepting sewers and a conduit leading to the lake, and to produce a sufficient current by pumping. The scheme can be extended as the city grows.

A PHILADELPHIA builder, referring to chemical obstructions in water pipes, says two methods of prevention are being successfully practiced in this city. "One, coating the interior of pipes with coal tar answers well enough for large mains, keeping them practically clear for a quarter of a century. The other method consists in subjecting the

pipes at a high temperature to the action of steam or air, thus forming a film or coating of magnetic oxide acquired by the metal, which insures a smooth surface for a great while."

JEFFERSON, ILL., has granted to Nathan Skelton the exclusive privilege for thirty years of supplying water to the town. The water is to be obtained from Lake Michigan through Lake View, the machinery employed to be sufficient to force four million gallons every twenty-four hours, and this machinery to be increased in capacity as the necessities of the town of Jefferson demand. The works will cost about \$450,000.

MAYOR O'BRIEN, of Boston, has appointed a committee of nine physicians to act as advisers of the Board of Health in case of an invasion of cholera.

A NEW TEMPERANCE SOCIETY has been organized in Toronto for the purpose, it appears, of opposing the traffic in ardent spirits, as a beverage, but not opposing the use of wine and beer. We are in full sympathy with this movement, and have been watching with much interest, we may add, in this connection, the progress of a bill proposed by Mr. James Beaty, M.P. in the House here, having for its object the suppression of the use of ardent spirits as a beverage. As *The Week* says:—"You cannot extirpate the taste for stimulants by force; you may turn it into other channels and perhaps in doing so deprave it; you do deprave it when from beer and wine you drive men to ardent spirits, or possibly to opium. The minister or the philanthropist sipping his tea or coffee feels that he has done a very good work in cutting off from the labourer on the Pacific Railway his cup of beer; but, as we saw the other day, the labourer in place of his cup of beer is supplied by the smuggler with spirits which may truly be said to be poison."

THE MINISTERS OF PHILADELPHIA, in view of the possible visit of cholera next summer; have been requested to preach a sermon on the duty of cleanliness and the general observance of sanitary regulations. "What-

ever objections may be urged against political preaching," says the *Orillia Packet*, "there certainly can be no objection to this sort of preaching. Nor will there be any difficulty in finding texts in the Bible appropriate for such a service."

"COMMON SENSE," in the *Orillia Packet*, says:—"The talk about forming a 'home guard' to take the place of our volunteers called to the North-West, is very absurd. Of course there is at all times more or less danger of damage from Fenian dynamiters along the frontier, but who has any apprehension of members of the brotherhood reaching Orillia? The only enemy that can possibly reach us here this summer is cholera, or some other contagious disease, and the best service the home guard could do would be to organize and give the town a thorough good spring cleaning."

THE SANITARY INSPECTOR for the Township of Nepean, has been sent out on an official tour of the township for the purpose of giving the residents warning to clean up their premises. Every municipality in the Dominion ought to follow the example of Nepean.

THE REPORT OF THE TORONTO BOARD OF HEALTH for last year, which is in reality the report of the medical officer of the board, has but just been received. It deals chiefly with drainage and the water supply, and reports the number of inspections made and the condition of premises. We purpose referring again to the report in our next issue.

AT THE SANITARY ASSOCIATION MEETING in Toronto this month, Mr. S. G. Curry introduced the subject of pan closets and spoke strongly against those in ordinary use. This provoked a warm discussion by the plumbers present. It was finally moved by Mr. G. Burke and seconded by Mr. D. B. Dick, architects, That section 15, clause 4, schedule A, of the public health act, of Ontario, providing for the use of closets, be amended as follows:—"That no pan closet or any other closet which will permit of the accumulation or retention of filth or deleterious gases be permitted to be used." This was carried by a vote of fifteen to five.

MR. W. E. GARFORD, of Normanton, England, has invented a simple apparatus for detecting fire-damp in collieries. It consists of a small India-rubber hand-ball fitted with a protected tube. By compressing the ball and then allowing it to expand in a suspected atmosphere, it becomes filled with the air. It can then be taken to a safe place, and the air can be tested in a lamp.

THE SUBJECT OF BURNING KITCHEN GARBAGE in the kitchen range or cooking stove is being discussed. A writer in the *Scientific American* urges that the great bulk of kitchen waste might be burned and the work of the scavengers thereby greatly lessened. He writes: "get the help of your individual citizens by press appeals, and teaching, and let every family daily burn, cremate, destroy, as much of their garbage as will be found practicable."

A. SANITARY PROTECTIVE LEAGUE has been organized in New York, to render such aid as lies in its power—to advance the health of the city of New York and vicinity, and to ward off epidemics: 1. By sustaining and stimulating the health authorities in their official work. 2. By improving the sanitary condition of our own houses. 3. By looking out for the safety of our employés and dependants." The central office of the League is at 119 Pearl street, Chas. F. Wingate, Secretary.

INTERESTING OUTBREAK OF "HORSE-POX."—At a recent meeting of the French *Académie de Médecine* (*Gaz. Hebdom. de Med. et de Chir.—N.Y. Med. Times*) M. Blachez related the particulars of an outbreak of casual "horse-pox" among the sheasses used for giving suck to the inmates of a nursery where only syphilitic children, or children supposed to be syphilitic, are received. One of the children was found to have a large ulcer on the lower lip, with considerable swelling of the part, and at the same time a deep, indurated, discharging excoriation was found on the teat of an ass that had suckled the child. It was ascertained that, a fortnight before, the same ass had suckled a child with a specific ulcer of the tongue. It

was hastily inferred that this child had infected the ass and (mediately) the first child with syphilis, but Professor Bouley, the veterinarian, was asked to investigate the case, and he decided that the disease was really "horse-pox," originating from a vaccinated child. The disease spread among the asses of the establishment, and "cow-pox" was produced in two cows by inoculation from one of the asses.

FOR ALL READERS.—AN ADMIRABLE EXAMPLE TO FOLLOW.—Occasionally an interested subscriber and friend of the SANITARY JOURNAL sends to the publisher the name and amount of a year's subscription of a new subscriber, which kindly act is always fully appreciated. Sometimes the publisher has thought that a larger number might in this way assist in the good work. From letters being almost daily received it is plain that the readers of the JOURNAL—feeling that it is a work that should be widely circulated—would be glad to have its circulation extended. Now is there one, especially a physician, who could not, by a few timely words, secure a subscriber or two, and so help to defray the heavy costs of publication and at the same time promote the public health? Will not each and every reader of the JOURNAL so help to double its circulation and confer a special favor both upon the public and the publisher?

THE ORILLIA MEDICAL HEALTH OFFICER, Dr. C. S. Elliot, sends on the 8th inst., the names of six new subscribers—a clergyman, three barristers, a bank manager and a druggist—and nine dollars, and writes, as follows.—"As I have said to many of my friends here, that among the many journals I receive there is not one I peruse with more pleasure and profit, and in making a little effort to extend its circulation I felt I was not only doing the proprietor a good turn, but was doing a better turn for the public. I am confident your journal only requires to be better known to be appreciated by the public." How many of our readers will do likewise this spring, when cholera is threatening to visit this country?

HEALTH AND DENSITY OF POPULATION.—

Professor de Chaumont (*Pop. Sci. Monthly*) recently illustrated the influence of density of population on health, by comparing London and Paris. In Paris every individual had an area of about forty square metres, while in London he had eighty. The result of the difference was clearly shown, not only in the lower death-rate in a larger population, but in the character of the diseases, while some diseases—scarlet fever, for instance—were more severe in London than on the Continent; others, such as typhoid fever and diphtheria, were much more common and fatal in the large cities of the Continent than they were in England. In London the streets were filthy and the sewers abominable, but the houses were the perfection of cleanliness; whereas, in Paris, one might give a dinner-party in the sewers, and the streets were perfectly clean, but the houses were abominable filthy. In Paris, all the filth was kept in or under the houses, while in London it was all sent away. The result was shown in the differences in the health of the two cities, particularly in diphtheria, which was described by French sanitarians as the scourge of their country, while in London it took a comparatively low position in the class of zymotic diseases.

BAD SMELLS "TO LET."—An altercation once arose between a landlord and his tenant (the latter having given notice to quit) as to whether the tenant was lawfully bound to display in his window a paper intimating that the house was "To Let." Both parties were stubborn about it, and to make matters worse, they "went to law." The judgment was given for the plaintiff, and the defendant was ordered to display the paper within a certain time. The landlord was so delighted at his triumph over his antagonist that at the expiration of the specified time he not only went himself but took a friend with him to see the discomfiture of the tenant. When they came within sight of the window there was the veritable paper showing that the house was "to let" prominently displayed, and there was also a slip of paper underneath it, with the following words written in a bold hand: "Leaving on account of the bad smells arising from defective drainage."

Current Literature.

IN THE APRIL CENTURY the opening article is "A Florentine Mosaic," Mr. Howell's second illustrated paper on Florence, a reproduction of Mr. Pennell's etching of the Ponte Vecchio being the frontispiece. Admiral David D. Porter contributes to the War Series a striking paper on the opening of the Lower Mississippi. Accompanying the article are portraits of Admiral Farragut, Admiral Porter, Captain Theodorus Bailey, General Butler, who was in command of the land forces, General Lovell, the Confederate commander, and other leading participants in the conflict. Theodore Roosevelt contributes a paper on "Phases of State Legislation," in which he reveals the dark side of the legislative picture, the methods of the lobby, and the perils which beset legislators. A reply to Mr. Cable's recent paper on "The Freedman's Case in Equity" is contributed by Henry W. Grady, of the *Atlanta Constitution*, who writes under the suggestive title "In Plain Black and White." In "TOPICS OF THE TIMES," is an editorial on

"THE ATTEMPT TO SAVE NIAGARA."

"A natural phenomenon of the proportions of Niagara constitutes a public trust. The people cannot escape responsibility for its care and preservation, even if they would. The experiment of private ownership and management of the lands about the Falls has been fully tried, under circumstances more favorable than can ever exist in the future, and has failed completely. The existing state of things is one which no intelligent person can defend. The demoralization is natural and inevitable; competition between the owners of rival "points of view" naturally develops a tendency to the employment of tawdry, sensational attractions. The increasing ugliness everywhere, the destruction of all vernal beauty and freshness; the crowding of unsightly structures for manufactures of various kinds around the very brink of the Falls; the incessant hounding of travellers, and the enormous exactions of which they are the victims. . . The only practicable remedy is ownership by the state, and suitable permanent guardianship over these lands, with such provision for the safety, convenience, and comfort of myriads of visitors as can be supplied only by a competent directory clothed with the authority of the State and acting in the interest of the general community. This is the object of the measures recommended by the Commissioners appointed by Governor (now President) Cleveland in the spring of 1883. These Commissioners have selected about one hundred and eighteen acres of land contiguous to the Falls, comprising Goat Island and all the other islands in the river, with a narrow strip of land on the "American shore," running from the upper sus-

pension bridge to Port Day, and including Prospect Park. The various separate portions constituting this tract have been appraised, and the Supreme Court has confirmed the appraisal, which fixes the value of the lands in question at \$1,433,429.50. The Commissioners recommend the appropriation of this sum by the Legislature for the purchase of these lands, and the establishment of a State Reservation, as the only means of preserving the scenery of Niagara.

A NEW DAY OF ISSUE FOR "THE CENTURY."—The editions of *The Century Magazine* are now so large that it has become necessary either to go to press at an earlier date or to postpone the day of issue. The latter, and surely more rational, alternative has been accepted. The April number, the edition of which was 225,000, was delayed until the 25th of March. The May number—edition 250,000—will be issued on the 1st day of May, thus inaugurating with the first number of the thirtieth volume a change which has long been considered desirable by the publishers, and which it is believed will be heartily commended by the public. Future numbers of *The Century Magazine* will be issued on the 1st day of the month of which each bears date.

THE MAY NUMBER OF HARPER'S MONTHLY is very strong in its stories. Miss Woolson's story of "East Angels" grows in the strength of its study of characters as well as in interest as it proceeds; and "At the Red Glove," the anonymous story, illustrated from sketches made at Berne, the scene of the story, Mr. Reinhart, draws to its close. There is an admirable story, "Constance Royal," strongly dramatic, and told in three pages; and a humorous love-story set forth in "Passages from the Diary of a Hong-Kong Merchant." There are "Through London by Canal" and "Española and its Environs," both profusely illustrated. In the "Editors Drawer" is an amusing article on

"DECEASED WIVES' SISTERS."

"The desire of the Englishman to marry his Deceased Wife's Sister is one of the most marked phenomena of the times. The Deceased Wife's Sister Bill may be said to be his steady occupation. In all his breathing spells from emergencies he turns to that. When he is not being massacred by the South Africans, or slaying Soudanese, or fighting Afghans, or pacifying the Irish, or being blown up in his Tower, he is attending to the Deceased Wife's Sister Bill. He comes back to it out of all victories and all defeats with unwavering pertinacity and courage. It appears to be the passion of his life to marry his Deceased Wife's Sister. We who live in a land where nobody opposes such an alliance cannot conceive the attraction it seems to have to Englishmen. And seeing how universal and strong this desire is in

England, we can not but inquire why the Englishman does not marry the wife's sister in the first place. Why does he go on marrying the wrong one, and then wait for death and the law to help him out?..... He is attracted by outward appearances..... Nine cases out of ten the man will take the girl of the family who knows the least about cooking, or the management of a house, and is the least patient in trial, and has the least common-sense..... The man loves his wife—of course he does; even her faults, her little selfish demands upon him, are better in his eyes than the virtues of other women. But when real life begins, and the sister comes to live in the house, as she pretty certainly will come, then he sees who it is that makes life go smoothly..... She has a kind of pleasure in seeing her sister preferred and led away to the altar. She likes the man all the better for being such a goose as to choose the pretty and more incompetent one. And in the new household, whether she is permanently a part of it or only has an occasional superintendence of it, she develops in her subordination many of the lovely virtues..... It is probably useless to urge the Englishman to marry his wife's sister in the first place. It would take away one of his greivances; and something of this kind to put into a Reform Bill he must always have.

"ST. NICHOLAS" FOR APRIL—Opens with a frontispiece illustration by W. St. John Harper, of "The Gilded Boy," a true story of a Florentine pageant in 1492. Indeed, the romance of history forms a prominent feature of this number. In the "Historic Girls" series E. S. Brooks tells the story of the girlhood of "Zenobia of Palmyra," as based on information recently brought to light by Eastern scholars, which is timely, in so far as it shows a prototype of the events of to-day—a mighty European power humbled and held at bay by the Arabs of many centuries ago. There is a sketch of Bach, which forms the first of a series of brief biographies, by Agatha Tunis, of the great musicians "From Bach to Wagner." Lieut. Schwatka tells, in "Children of the Col," of some of the popular games of the Eskimo; while Charles Barnard, in "The Boys' Club," relates how some little New York savages, that have been caught and tamed, amuse themselves in a fine club-house. "Among the Law-makers" contains an amusing chapter on the pranks of the Senate-pages, appropriate to the month ushered in by April Fool's Day; and J. T. Trowbridge's serial, "His One Fault," goes brightly on. There is a beautiful double-page picture called "Easter Morning;" the story of mining camp pussy, entitled "The Conscientious Cat;" and "Who's Afraid in the Dark?" with a full-page picture. What will greatly interest many readers is the announcement of the names

of the winners in the prize-story contest for girls. The number is an excellent one.

THE POPULAR SCIENCE MONTHLY for May just to hand is full of articles rich in thought, and information on living questions of the day. The first paper, "Our Recent Debts to Vivisection," by William W. Keen, M.D., is a graphic account of the benefits that have been conferred upon humanity during the last quarter of a century, by means of experiments on animals. There are no strained constructions in the argument, and the numerous examples given can not be easily explained away. The second article, by Prof. W. K. Brooks, is a highly significant answer to the very interesting question that intelligent people have long been asking, "Can man be modified by Selection?" Dr. Max von Pettenkofer's valuable and timely papers on "Cholera." The present installment of "The Chemistry of Cookery" is devoted to vegetarianism, which Dr. Williams commends on rather novel grounds. "The Nervous System and Consciousness," by Prof. W. R. Benedict, illustrated, is a good paper. There is also an article by Prof. Tyndall, describing the patient labor, the ingenious methods, and the grand results of "Pasteur's Researches in Germ-Life;" and a very readable and instructive article, treating of the antiquity of man, under the title of "A Very Old Master," with twenty pages of "Literary Notices and Popular Miscellany" on a variety of subjects.

THE INDEX MEDICUS, we are pleased to learn, will be continued by Mr. George S. Davis, of Detroit, and on the same general plan as hitherto. The first issue will contain the references, to the literature of January, February and March, after which it will appear monthly, as formerly. It is to be hoped that the profession will more fully sustain the editors and publishers in this undertaking. The publication is a most valuable one.

LATE NUMBERS OF HARPER'S WEEKLY contain some admirable illustrations. In one, a full-page illustration, we are given "General Grant's Illness—a consultation"—the old General in a cushioned chair surrounded by the four physicians, Drs. Douglas, Sands, Shady and Barker—very life like and suggestive. Another, full-page to, "A Jolly Lot"—a copy of a painting by J. G. Brown, N.A., representing a group of nine street boys, very life like and natural indeed, and representing a variety of faces worthy of study. The large number of portraits given of men of repute are highly interesting. A funny and very suggestive picture represents President Cleveland throwing the Rome, N.Y., Postmaster out of the window. The President holding him up by the back of the collar and breeches. Both the *Weekly* and *Bazar* provide a large fund of highly entertaining and instructive reading.

THE THREE FIRST VOLUMES, for this year, of Wood's admirable series of Monthly Medical Works have just been received. We shall endeavour to examine them before our next issue of the journal.

RENEWAL OF BRAIN CELLS.—According to the novel computation of a German physiologist, who has been calculating the aggregate cell forces of the human brain, the cerebral mass is composed of at least 300,000,000 of nerve cells, each an independent body, organism, and microscopic brain, so far as concerns its vital relations, but subordinated to a higher purpose in relation to the function of the organ; each living a separate life individually, though socially subject to a higher law of function. The life term of a nerve cell he estimates to be about sixty days; so that 5,000,000 die every day, about 200,000 every hour, and nearly 3,500 every minute, to be succeeded by an equal number of progeny, while once in every sixty days a man has a totally new brain.

DR. BAYRISCH, a distinguished naturalist, (*Ottawa Citizen*) has been investigating the origin of the masses of gum collecting on the limbs of certain kinds of trees, notably the plum and apricot. He finds that the exudation is due to a disease produced by the presence of parasitic fungi, and when healthy trees are inoculated with the gum thus produced they speedily contract the disorder, which is highly contagious. The disease is disseminated by the drying of the gum by oxidation and its circulation by the wind.

THE LARGEST OF THEIR KIND—The largest ocean in the world is the Pacific; river, the Amazon; gulf, Mexico; cape, Horn; lake, Superior; bay, Bengal; island, Australia; city, London; public building, St. Peter's, Rome; hotel, Palace, San Francisco; steamship, "Great Eastern;" desert, Sahara; theater, Grand Opera House, Paris; state, Texas; highest mountain, Mt. Everest, Hindostan, Asia; sound, Long Island; railroad, Union Pacific and Central Pacific; canal, Grand Canal, China; bridge, that over the Tay at Dundee, Scotland; railroad depot, St. Pancras, London; largest room in the world under single roof, military one, St. Petersburg.

THE SOURCES OF PETROLEUM, says the *American Inventor*, are found in almost every part of the globe, and the use of the article would seem well nigh coeval with civilization. There is a spring in one of the Ionian islands, which has yielded petroleum more than 2,000 years. The city of Genoa was formerly lighted by oil from the wells of Armenia, on the banks of the Zavo. In Persia, also, near the Caspian Sea, at Baku, numerous springs of petroleum have been known from the earliest time; and those of Rangoon, on the Irrawaddy, are said to have yielded, before the general introduction of petroleum, some 400,000 hogsheads of oil a year.