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CONSUMPTION—ITS CAUSES AND PREVENTION.

In the June number of the SANITARY JOURNAL an article was commenced under the above head in which it was shown that consumption is more fatal and costly than any other disease. It was proposed to consider its causes under three principal heads, namely: heredity, contagion, and personal habits and surroundings of life. The first named cause, that of heredity, was then considered: It was stated that so far as heredity is concerned, this is probably for the most part limited to a certain peculiar construction and configuration of body, and especially or largely to an imperfectly doveloped respiratory capacity—to proportionately small lungs; excepting in those cases in which infants are born with actual tuberculous matter in their system, transmitted from mothers suffering from the disease. Physicians generally, it appears, now regard the influence of heredity in the causation of consumption as of less consequence than it was formerly considered to be; though in so far as it relates to a contracted chest and hence imperfect respiratory capacity it is an important causative factor.

CONTAGION.

From the period of the earliest records in the history of medicine, the contagious nature of consumption has been believed in by physicians of the highest repute. Over two thousand years ago (400 B. C)., Hippocrates, the "father of medicine," believed in it. Aristottle (330 B. C)., wrote that the Greeks in his day believed in it; and he asks why consumption, "sore eyes" and itch are common to persons who associate with others suffering from these affections. Later (A. D. 180), Galen wrote that it is "dangerous to pass the whole day with a consumptive person." Coming down to much more recent periods, Morton, over two hundred years ago, wrote of consumption that "a contagious principle often propagates this disease, for, as I have often found by experience, an affected person may poison a bedfellow by a kind of miasm like that of a malignant fever." Riverius, about the same period of time, believed contagion to be the "chiefest" cause of consumption. "We may observe women to be affected by their husbands," he wrote, "and men by their wives, and all the children to die of the same, not only from infection of their parents seed, but from the company of him that was first infected."

The eminent Italian physician, Valsalva, a professor of Bologna, in the early part of last century, was himself predisposed to consumption, and avoided being present at dissections of the lungs of persons who had died of the disease. Valsalva's illustrious pupil, Morgagni, professor in the University of Padau, declared that he had never dared to make more than a few *post-mortem* examinations of persons who had died of this disease for fear of contracting it. A law once existed in Italy by which the proprietor

of a house in which a consumptive had died could claim payment for his furniture, which was burnt. It was often difficult there for a person supposed to be consumptive to obtain lodgings.

Over a century ago a reaction regarding belief in the contagiousness of consumption commenced to show itself. Eventually, in Northern Europe and America especially, doubt developed into general disbelief. In the warmer latitudes however the opinion favorable to contagion never lost its hold; and the reaction has probably paved the way to more rational and accurate views, based on modern scientific investigations, which will be generally accepted. Nearly half a century ago, Sir James Clark wrote that, "in the south of Europe the general opinion is in favor of contagion, in the north of Europe against it." Sir James did not himself believe the disease to be contagious, but he nevertheless considered that the practice of sleeping in the same bed, or even in the same room, with patients in the advanced stage of phthisis" to be "highly objectionable." Within a comparatively few years the belief that the disease is contagious has again become very general. The recent investigations of Kock have resulted in making belief in its contagiousness almost irresistable. If the bacilli are the cause of the disease, it can hardly be otherwise than contagious.

Dr. Wm. Budd, in an article on the nature and propagation of phthisis, (London *Lancet*, Oct. 12, 1867) takes strong ground in favor of contagion. He concludes that "tuberculosis is a true zymotic disease of specific nature, in the same sense as typhoid, scarlet fever, typhus, syphilis, etc., are; and that, like these diseases, tuberculosis never originates spontaneously, but is perpetuated solely by the law of continuous succession. The evidences of this he finds in,—(*a*) Considerations based on the pathology of phthisis, consisting in the evolution and multiplication in the organism of a specific, morbid matter, with a tendency to elimination, and casting off of the same, like zymotic diseases generally. (*b*) Actual instances in which there is evidence to show communication from one to another. (*c*) The geographical distribution of phthisis in past and present times, and especially its fatality now in countries which were entirely free from it when first discovered by Europeans. (*d*) Its greater prevalence in low levels and crowded communities, and entire absence, except by importation, at high levels—the same conditions which govern zymotic diseases. (*e*) Its high rate of prevalence in convents, harems, barracks, penitentiaries, etc., *i. e.*, in the same social conditions known to propagate zymotic diseases."

"As facts for his statement about geographical distribution (*c*), he adds that when the South Sea Islands were first discovered, there was no phthisis there; but that since the aborigines have come into contact with Europeans, the disease has become so wide-spread as to threaten their extermination. This is a striking contrast, only to be explained, he thinks, by the importation of a new and specific morbid germ.

"He further says that the late Dr. Rush, of Philadelphia, who made accurate inquiries, satisfied himself that there was no phthisis among the American Indians when America was discovered, whereas now it is very common and very fatal among them.

"Furthermore, in Africa, everywhere along the sea-board, where the blacks have come into constant and intimate relations with the whites, there has been a large mortality from the disease; but in the interior, where there has been only occasional contact with a few great travellers, the disease has not been found. Of this fact Dr. Livingston and other African travellers have given Dr. Budd positive assurance." ("Is consumption

contagious," &c., by H. C. Clapp, M. A., M. D., Boston.)

Dr. Bowditch, late chairman of the state board of health of Massachusetts, a number of years ago made some investigations relating to the cause of consumption, by sending a list of questions to prominent physicians in active practice in several of the states and in London and Germany (Fourth annual report of the state board of health, Mass, 1872). But of 210 physicians who sent replies to these questions, 28 did not feel able from various reasons to answer the question on contagion. Of the remainder, 110 answered in the affirmative; 45 in the negative; and 27 were doubtful. Dr. Bowditch himself writes: "May not the fact of the hitherto great prevalence of the opinion of the non-contagiousness of this disease among English and American practitioners, and our strong belief in the hereditary character of it, have led us all to ignore what may, after all, prove a potent cause.

Many of the physicians to whom the questions were sent, besides answering "yes" or "no" wrote something like the following: "I am a firm believer that consumption is a contagious disease, much more so than is generally believed. I have in my mind several cases where there was almost positive evidence of contagion." "In very many cases, I have the opinion, from my own observation, that consumption is communicable by contagion or infection." "I am more inclined than I was at one time to attach importance to the influence of contagion." "I am thoroughly convinced that phthisis is frequently caused by contagion, and deserves to be classed with typhoid fever in this respect. I have seen unmistakable evidence where a healthy wife contracted the disease from sleeping with her husband suffering from that disease, and *vice versa*.

In 1878, Dr. Holden of New Jersey, made some similar investigations. Out of 250 answers to a list of questions, 126 physicians answered "yes" in reply to the question on contagion, 73 of whom were emphatic, and gave cases in confirmation; 74 answered "no"; and 50 were doubtful or could not form an opinion.

Dr. Holden himself commenced practice with the idea that consumption was communicable only from parent to offspring, but at length wrote as follows: "I can enumerate at least a score of cases which have been watched with this very object in view and in which the result has been the same. Wives after husbands, husbands after wives, intimate companions and faithful nurses, who slept in the same bed, or wore the same clothing, have fallen victims. Of course, it is not to be intimated that all, or even a majority, can be affected by contagion any more than in those diseases now indisputably contagious. Malignant scarlet fever, diphtheria, and cerebro-spinal meningitis are braved by faithful nurses and friends, who escape in *more* than a majority of instances. To prove contagion now, is no easier than when [the non-contagiousness of] erysipelas had its defenders, and the records of the surgical wards of the hospitals of Paris, and Berlin, and London, had accumulated a fearful mortality ere the obdurate prejudices of the profession were awakened to a new belief."

Dr. H. C. Clapp of Boston, in his recent work ("Is consumption contagious" 1881), records the history of 25 cases, illustrative of the contagious nature of this disease, which he selected "from among those which can be found on record scattered through the annals of medical literatature." In the history of the 25 cases mention is made of 66 persons who became consumptive seemingly through contagion; 54 of whom were distinctly stated to be free from hereditary taint.

The above should be enough to convince the most sceptical, obdurate and

prejudiced that consumption is a disease communicable from one person to another—or that it is, in short, infectious, at least in a degree. Notwithstanding it all, however, and a great deal more, there are some doubtful ones who allow their doubts to be strengthened by negative evidence. The "Brompton Consumption Hospital" (London, Eng.) in particular is referred to as giving evidence of this sort against the contagion view. There, for many years, 200 beds have been constantly occupied by consumptive patients in various stages of the disease, and very few of the nurses or attendants have suffered from it. The fact is, such persons usually appear to be so constituted and habituated as to be particularly exempt from all infectious diseases. They know best how to preserve their general health and vigor. In the hospital doubtless the strictest hygienic rules are observed, as in regard to cleanliness, ventilation, disinfection etc. Evidence of this negative kind reminds one of the Hibernian who, when accused of stealing a pig, strongly protested his innocence in face of the evidence of three men who saw him steal the pig; and said he could bring "six men who didn't see" him steal it.

Every person does not "take" measles; many escape scarlet fever; and only a comparatively few suffer from typhoid fever. Of this fever, Prof. Liebermeister writes: "Physicians and nurses, who take care of such patients, are no more frequently attacked with the disease than are persons who have never seen such cases. Up to the year 1865, I have never seen in the hospitals which I visited (Griefswald, Berlin, Tubingen) a single hospital patient, physician, or nurse attacked with typhoid fever, although such cases are placed in the general wards. Other observers have had the same experience. According to Murchison, during a period of fourteen and a half years in the London Fever Hospital, 2,506 patients with typhoid fever were treated, and, during that time, only eight cases originated in the hospital."

Although until recently many believed that typhoid fever might be brought on by overwork, anxiety and other debilitating causes, the belief is now almost universal that nothing will give rise to it without the specific germs of the disease, which must have first entered the body, and that, hence, it is infectious.

Why it is that some diseases are much more infectious than others we cannot exactly explain; though a greater degree of vitality in some specific germs than in others would help to account for the difference. And, "why it is that susceptibility to the different contagious diseases differs in different persons no one has yet arisen to explain satisfactorily, but the fact still remains unquestioned. Measles, small-pox without vaccination, and whooping-cough claim as victims almost everybody; while, on the other hand, scarlet fever, less exorbitant in its demands, is satisfied with perhaps half as much. Hydrophobia lays its iron grasp, according to some authorities, on only five per cent of those bitten by the rabid animal, and even those anthorities who go to the other extreme do not claim more than fifty-five per cent. These diseases are indisputably contagious. Why this difference? We cloak our ignorance by saying that the susceptibility varies, which is merely another method of stating the fact that the poison finds food for its sustenance in one case which it is unable to obtain in another. An analogy we find in botany and agriculture. Some plants thrive on one soil, but refuse to grow on another."

(To be continued.)

BILLINGS says that "a very large part of the unpleasantness of this world is due to people who are not fond of social dinners."

PNEUMONIA—AN INFECTIOUS DISEASE.

Below is an abstract of a paper, by Professor Jurgensen, of Tubingen, on *True Pneumonia, Its Etiology, &c.*, from the *Medical Record's* report of the proceedings of the Third German Medical Congress, held at Berlin, April 21–23, 1884.

The author gave a history of the growth of our knowledge of croupous pneumonia, and showed how opinions as to its nature had changed, until now the belief exists that pneumonia is a general infectious disease, the lung inflammation being only symptomatic. Experimental pathology had recently given indirect comfirmation of this view. The speaker then took up the alleged exciting causes of the disease, and showed that the facts regarding these did not conflict with the infection theory. Cold has been alleged to be a cause. At one time it was even said: "Frigus unica pneumoniæ causa." Different authorities reported cold to be a cause in between two per cent. and twenty per cent. of the cases. Jurgensen had in ten years' observation found cold as a cause apparently in ten per cent., really in only 4.1 per cent. It might easily be thought that exposure will produce a catarrh rendering easy the access of the infectious organisms of pneumonia.

It is a prevalent error, says Jurgensen, that pneumonia attacks by preference the strong and full-blooded. Among a population of all ages, three-fifths of the pneumonias occur in those between one and fourteen years, while twice as many occur after forty-five as between twenty and forty-four. Dittel found that the disease occurred in those previously weakened in eighteen per cent. of cases; Flint, of Danemark, in twenty-one per cent.; the author, in 29.3 per cent. Immermann, of Basel, recently comfirmed this view. The disease has some relation to the meteorological conditions, being increased when there is increased humidity of the soil (Keller) and when the atmospheric precipitates are above the mean. These facts might be explained by the theory of an organic poison.

Pneumonia is *a disease of dwelling-houses*, like typhoid. Jurgensen had seen pneumonia in a dwelling in Amberg., Sometime later the pneumonia cocci were found in the walls of the chamber. The disease occurred in epidemics, especially affecting single houses, or prisons, asylums, etc. The possibility of direct passage of the disease from one person to another cannot be denied, but the occurrence is rare. Flint, of Danemark, found some relation between earlier and later cases in two-thirds of his patients. The question of the unity or multiplicity of the pneumonia poison would soon be settled.

Clinically, the disease presents great diversity even in the same families and sick-rooms. This the author was inclined to explain by assuming a variation in the extent of the development of the infections poison. He belived that this poison circulating in the blood, affected with special inflammation or disturbance other organs than the lungs. He cited thirteen cases of pneumonia with acute nephritis in which the kidneys were found to contain the special cocci. He believed that these produced special disturbances of brain membranes or stomach or other organs. Their development gave rise to the irregular curve of pneumonia.

Clinically, the disease may be separated into three great groups: first those in which the general symptoms of infection, second, those in which heart symptoms, and third, those in which the lung symptoms, are prominent.

In reference to prevention, the discovery of the coccus and the knowledge that it is a house-plant is of importance...He pleaded for prophylactic therapy—preventive treatment, was doubtful of the ultimate value of bleeding, though it might temporarily relieve the heart. Finally, he announced the following

conclusions: first, true pneumonia is an infectious disease, usually but not uniformly localized in the lungs; second, exposure to cold is a rare cause. The feeble are more susceptible to it than the strong.

Herr Frankel, of Belin, continued the discussion, and took up the subject of the Micrococcus of Pneumonia. This coccus is distinguished from other by its gelatinous like capsule, which may surround two or more cocci. The capsules are not always present. The cocci are stained by a mixture of gentian-violet in water. Injected into rabbits they produce no uniform effect, in mice they cause pneumonia and pleurisy. In dogs, pneumonia is sometimes produced. The author found that variations in inoculation effects depended somewhat upon the cultures, which apparently had an effect of diminishing the virulence of the virus. There was also another encapsuled coccus found in the human mouth and which was the coccus of sputum-septicæmia. The author announced the following theses: 1. The coccus of pneumonia, which may be isolated by pure cultures from the human being, is inoculable in various animals. Rabbits either prove refractory or become affected with severe general disease, with special localization of the virus in the internal organs—this depending on the mode of culture. 2. Further experiments must determine upon what depends the varying virulence of the coccus. 3. The capsule of the cocci, as well as the "Nagelformige" growth of the pneumonia cultures, are not constant phenomena. 4. The capsules and the "nagelcultur" characterize other micro-organisms, and it cannot be said at present that the pneumonia cocci can be distinguished from them.

Herr Friedlander, of Berlin, said that the cocci of pneumonia were found in the blood during the disease. He had recently obtained the blood by wet-cups in six cases of croupous pneumonia, every precaution being taken to keep it pure. The blood thus obtained was cultivated for cocci. In one out of the five cases these developed and showed their characteristic action when inoculated. Friedlander thought the capsule and the growth in "nagelform" very characteristic, but not sufficient for a positive diagnosis. The whole life-history must be taken into account. This life-history appears to differ, and this may account for the various forms of pneumonia and only one has the coccus; or in the different forms the same coccus has a different life-history. The chief efforts must now be made to follow out the different changes in the growth of the organism.

Dr. Gerhardt, of Wurzburg, accepted Jurgensen's view of the infectiousness of the disease. He accepted also completely the view of the unity of the disease, and considered it a happy explanation that the various complications of meningitis, pleuritis, etc., were due to local manifestations of the virus.

Dr. Frantzel, of Berlin, argued against Jurgensen's view that pneumonia was a house disease, citing its occurrence in military hospitals, and its frequency after open-air festivals and exposures. He thought the coccus entered the blood through the lungs. He explained the hæmadogenous jaundice of pneumonia by the theory that the cocci attack the red blood cells.

Dr. Ruhile, of Bonn, contended that the view of the infectious nature of pneumonia was not so firmly established as its advocates assumed. It is necessary still to harmonize some of the known facts as to the etiology of pneumonia with the theory of a coccus. Besides, this coccus had not been found in all cases yet.

Dr. Rosenstein of Leyden, thought that "though croupous pneumonia may be an infectious disease in many cases, it is not in all."

ANNALS OF HYGIENE of Philadelphia, will commence in July, the publication of a series of monthly volumes, to be entitled, "The Annals of Hygiene." The price of each number, to contain 150 pp., will be fifty cents, or five dollars per year in advance. It is intended to make the work "a history of the world's progression hygiene."

PHYSICAL OR UNDERGROUND PURIFICATION.

The following is an abstract of a paper by B. W. Richardson, M. D., F. R. S. &c., from the Journal of the Society of Arts, in the *Sanitarian*:

In speaking, a few months ago, on one of the departments of physical purification, I seem to have startled the proprieties of many of the people by the assertion that absolute cleanliness—cleanliness of the body and mind, and all that belongs to them—is the beginning and the end of the sanitary design, and that such perfect cleanliness would wipe off all the diseases which cause at this time the leading mortalities. I do not withdraw from that statement a syllable, and I again place this subject of national purification first on the paper.

Into all the varied studies connected with this argument it were impossible to enter. It will be fittest to take two of the Augean stables which have to be cleansed.

Underground Purification. — The complete removal from our communities, day by day, of all their organic excreta, is still an unsolved difficulty, which, remaining unsolved, is a block to every step of perfect purification.

We are yet distracted with the debate ever going on between the advocates of the combined and the separate systems of drainage. Shall our organic excreta go with the storm-water into the river and sea, or shall the water go to the river and sea, the sewage to the land? Unlike our neighbors on the other side of the channel, we have agreed to give up the cesspool and to divide on two questions which they have not, seemingly, admitted, and one of which—that of disposal in running streams—they have long legally prohibited. But in giving up the cesspools, have we greatly advanced, so long as we pollute the running stream and lose the natural fertilizer of the land?

Looking back on all the controversy for the last thirty years, and reading back still farther, I feel we have not advanced. I do not think it would be wise to return to the most scientific system of cesspoolage, but I cannot conceive any next worse plan than the plan of passing the sewage with storm-water, even on the most scientific system, into running streams, and robbing the land of its greatest requirement for its fruitfulness. I submit, therefore, as a point to be argued out, that this society can never be soundly assisting sanitation until it assists none other mode for removal of excreta than the separate system.

In saying so much for the separate system I do not, however, wish to contend for the introduction of that system in the hard and unchanging line which some would fight for. I know quite well, from the inspections I have had to make, officially, of different towns and districts, that there are centres of population in which the separate plan, in its rigid application, is not suitable. A town may have no river into which its storm-water can run. A town may have a river but no land near to it which can be cultivated.

These conditions may affect details, while they need not affect the principle. For storm-water for which there is no natural outlet there is always the good resource at hand of storing it for domestic use. For sewage that cannot be utilized on land near to the community which yields it, there is always land not far away which is waiting for it. In these days there need never be necessity for any difficulty in the removal of sewage day by day from the largest centres of population, presuming always that it is not mixed and increased in volume by storm-water.

Closed sewage-tanks moveable by night train, closed sewage-tanks movable by steam-power on sewage canals and rivers, closed tanks movable by steam-power on the sea, could convey away all this

product for fertilization, and deposit it where it could administer its full benefits to the earth. Barren portions of our seacoast could, by these modifications of the separate system, be made the most fertile and beautiful of all tracts of vegetation.

To the engineer, when once a system were decided on and declared, these modes of transit and many improvements on them would occur. With the engineers it is not our special province to interfere. They exist to carry out what had been determined on, and when they know what the people want they will do what is wanted as surely as they will lay down, after the country had said they must, a new railway or a telegraph. We have but to declare the principle, and get it fixed, that every town in England must be cleansed of its organic excreta out and out, day by day, as certainly as it is supplied with the food that is brought into it, and the thing will be done.

Toward such perfection any powerful society, steadily and resolutely devoting itself, would soon be backed up by the common sense of people who require but a competent instructing authority in order to understand the subject accurately. The utter failure of the combined system as a permanent solution of the drainage difficulty, and as a mere transition from the cesspool to the method of removal, day by day, combined with immediate and fruitful utilization, is of itself becoming apparent with such swift conviction that it will come, whether assisted or not by our will and deed. But it were wise to hasten it, and it is one of those pressing practical things which we could hasten effectively if, irrespective of all interests but true ones, we laid ourselves out for the duty.

At the instance of Mr. Edwin Chadwick, whose name as a sanitarian is a name of the century, we did some time ago commence an inquiry here bearing upon the vital point now under consideration. We opened—or, more correctly speaking, reopened—the sewage question, and we discerned all at once, although our inquiries were entirely confined to limited areas of London, so much evil that we rather abruptly closed the evil up again as if we were frightened at it. It is all in vain; for sewage, like murder, will out, and we must once more proceed. What we did discover was, in truth, so serious that the wonder we labor under is, how London can be so healthy as it is. We found that London is still honeycombed with what are in fact, if not in name, cesspools, a fact we all practically recognize by the second-hand measures we take to meet the primary blunder.

From the window at which these remarks are written, I see that one of my neighbors, the owner of a large house in our square, has carried out of his house from the basement a three inch tube to above the level of the parapet, in order to deliver into the air any gases that may accumulate in the main drain of the residence.

It is not good for the air which I and many others have to live upon, that it should receive the foul air which rises from the decomposition of my neighbor's organic excreta; and if everybody's neighbors did it, it would be detected in some weathers, so that the process must be stopped as it was in a former day on a recommendation of the Royal College of Physicians. I do not, however, blame my neighbor for what he has done, because I have done it myself. It is a natural species of self-protection amongst those who know best how to protect themselves. My contention is, that the necessity for any such method is proof demonstrative of the rottenness of the primary system which causes the necessity, and which, keeping us foul beneath our houses, makes the air, at its best, foul also above them. My contention is that the decomposition from accumulations of sewage, which gives origin to the gases that are let out by thousands upon thousands of channels, by tubes from houses, by soil pipes within houses, by accidental openings and pores in all directions; by gullies in streets, by great outlets of sewage, ought never to have been generated at all, but

that the sewage, removed clean away hour by hour, many miles from the community, without having decomposed either above or below the living place, should never infect the place nor have any destination except the land which is calling for it and dies if its demands be not naturally supplied.

The moment we can, by the skill of our engineers, get our in and out going drainage system as good as our railway system, as true in its working, as continuous and automatic, the most important of all the basic sanitary reforms will have been introduced. Without any stretch of the imagination, volumes might be written on the affirmative side of this proposition. I must be content to put the negative side. I must declare on all heads of experience and observation, that until the basic reform is carried, there can be no sound sanitation at all. I have asked many times, sought many times, for so much as one instance in which the combined system—apart altogether from its loss and extravagance, which might be tolerated if its results were good—has proved a sanitary success. I cannot find one instance of the kind.

The towns which depend on storm-water to flush and inundate their sewers are like the old mariners who depend on favorable weather for a favorable voyage. The day has passed for that, as it has for a system of sewerage which at all costs must be swept away.

ANTAGONIST OF ALCOHOL.—The kola nut of Guinea (the fruit of the sterculia acuminata, cola acuminata of Daniell) contains caffeine, to which is attributed the lessened desire for sleep and sense of physical well-being caused by the consumption of it; for which reasons it has long been valued throughout a large portion of Africa. It contains no tannin however. It has recently been discovered that when chewed, it antagonizes the effects of alcohol, and constant use of it is said to dissipate the desire, even in old drinkers.

THINGS SEEN AT THE INTERNATIONAL HEALTH EXHIBITION.

DWELLINGS.—Many models and plans of dwellings are scattered about in various parts of Exhibition. There is a joint exhibit of A. Wynter Blyth, Medical officer of Health for Marylebone, and Richard Greene, Medical Superintendent of Berrywood Asylum. It consists of models and plans for dealing with the poorest classes; and it is, it appears, the only exhibit which in any degree recognises the pressing need of providing for those who can only afford to pay low rents. The scheme consists in the construction of a block of buildings. Each family occupying one room, the sexes separated at night. There are arrangements for ventilation, personal cleanliness, washing linen, prevention of fire, escape from fire and provision for the infectious sick, &c.

How it is proposed to construct a single room for a familly may be gathered from the following brief description. The dimensions of any of the larger rooms are to be 20 feet long, 12 feet wide, and 8 fect high; Ventilation is provided for by means of Tobin's tubes and special gratings, besides the windows, doors, and fireplaces. There are trucks of sheet iron for coal, and cupboards for general domestic storage. In the construction of the bedsteads, three brick piers project from one of the walls of the room, and form recesses about 18 inches deep. In these recesses are placed iron bedsteads; the head of the bedsteads is cramped securely to the wall; about 14 inches from this head is a hinge joint, allowing the bedsteads to be easily folded up, the legs, &c., being so constructed as to facilitate this arrangement. The bedsteads, on being thus folded up close to the wall with its bedding, is covered and consealed by partitions; and the whole is so arranged that at night the partitions partially devide the room into hree compartments, whilst by day a visitor would see neither beds nor bedding, but a clear floor space

as in an ordinary sitting-room. There is a provision for the ventilation of the bedding thus placed out of sight; and by apertures into the lower edge of the partitions and not carrying them quite up to the ceiling the little compartments are at night well-ventilated. The basement is to be used as a laundry, and on the landing is a lavatory and sink for two families. At the top of the building, on the roof, is placed a small hospital, where women may be confined, or infectious diseases isolated.

ARTICLES OF CLOTHING admitted into the Health Exhibition claim either hygienic superiority or historical interest. Certain materials are said to conduce to health in preference to others, and these are exhibited and explained, whilst the form and constitution of different garments are the most prominent points which attract notice.

Dr. Jaeger, who has written a great deal on the advantages of woollen clothing, has his system well illustrated. He says that health is to be obtained only by clothing the body in wool, which when properly prepared and woven into suitable garments affords the maximun of protection from chill and damp with the minimum of impediment to the exhalations of the skin. Dr. Jaeger not only insists on clothing the body in wool, and discarding every other material, but he advises and supplies woollen bedding, even to sheets, of the finest kind. He says a sanitarily clothed person—viz., a person clothed entirely in wool, need have as little fear of draughts as of cold or wet and many safely sleep, so protected, with an open window at all seasons of the year. The particular feature of Dr. Jaeger's special woollen garments, is their delicate and soft texture; they feel like spun silk, and do not irritate the most delicate skin. Adherents to this principle of clothing, and many have adopted it, call themselves "woolleners." All these special garments of Dr. Jaeger's are of the natural brownish colour of the wool, and are neither bleached nor dyed; they are most agreeable to wear, though certain modifications in their form might reasonably be suggested to suit various figures and tastes. Many who do not feel bound to accept Dr. Jaeger's system in its entirety, yet acknowledge the great advantage of soft fine woollen under-clothing; and they have varieties of woven vests, combination suits, and flannels to choose from.

There are Indian gauze waistcoats, and all sorts of delicate woollen fabrics exhibited. There is a dress material which is said to rival Dr. Jaeger's wool in its excellence—the Nonpareil Velveteen, and which is in part absolutely manufactured on the spot. The operation of raising and cutting the pile on the fabric is accomplished by a young woman instead of a machine, the process being too delicate to admit of any but hand labour. The various forms of garments and devices for adapting them to the exigencies of riding or walking are too numerous to be described. Waterproofs having a sort of velvety smooth exterior, others in æsthetic colourings, and many which boast of weighing next to nothing are to be seen. Gossamer rubber garments which can be rolled up into the space of a few inches, and which are perfectly waterproof, have no offensive smell and never stick together or become soft and worthless, whatever the weather may be. Every article of attire that by any possibility can injure or compress any part of the human frame, is exhibited in an improved and hygienic condition. Straps, such as braces and garters, are superseded by other arrangements, and suggestions how to be "beautiful and strong" meet the feminine gaze at every stall. Hands, feet, necks, and heads are equally provided for; not only are the iniquities of tight, pointed high-heeled boots and shoes exposed, but digitated stockings with a little place for each toe, like gloves, appeal to many who suffer from the close contact of the

toes when encased in an unventilated leather boot. A member of the French Academy has said that "In a woman a corn or a bunion is a crime which cannot be expiated even by a life of torture." It is therefore necessary to begin early in life to wear truly hygienic foot coverings to avoid so terrible a punishment for ignorance or folly. Messrs. Dowie and Marshall, whose motto is "the path to health is the foot path," may claim to have led the way to reform in the matter of boots and shoes. The founder of the firm, Mr. James Dowie, more than sixty years ago commenced business with the determination that whatever shoes he made should be made to the feet. Since that time fashion has obtained all sorts of squeezing distortions for the foot, but Mr. Dowie has continued true to his original intention only to shape coverings for the feet as nature intended they should remain. For many years, this system of shoemaking has received the approval of enlightened members of the medical profession.

The children's shoes exhibited are excellent, and there can be no doubt that if these boots are to be worn at all, their use cannot be commenced too early in life. In all attempts to secure healthy and comfortable boots and shoes, it should be recollected that it is not sufficient they be roomy and large, but that they are made to suit the shape, character, and type of the individual foot.

FOODS—STERILISED SOUPS.—Messrs. Moir and Sons make a good display of their preserved foods. A tin of mutton which had been out to the Crimea and back and was over 30 years old, was opened, and found to be perfectly sweet and good. They have been for some time past preserving soups, fruits and vegetables in upright clear glass jars. The mouths are closed by corks and secured by hermetically sealed metallic caps. In this process, the preserved substances incur no risk of contamination by metals, and any putrefactive change is at once evident. "Since all animal broths are feebly acid and most fruits strongly acid, such a method of preservation is infinitely superior to that of preservation in tins, and from a health stand-point is unexceptionable. Looking over Messrs. Moir's attractive exhibit, the scientist is involuntarily reminded that the clear organic liquids of all kinds, arranged in the case, are so many sterilisations, and popularly exemplify the truth of one of the most important modern theories."

BISCUITS.—Old established biscuit firms are well represented, Messrs. Peak, Frean and Co. show the "Oswego," "Health," "Charm," "Wreath," "Milk," "Café," "Abernathy," and many other kinds. In their "Cocoa-Nut Biscuits," the delicate and easily-destroyed cocoa-nut flavour is fully preserved, and the white albumen seems to be a component part of the buiscuit. "The Water Biscuit," the texture of which is almost that of fine lace, and though of considerable surface, average in weight no more than five grains. In striking contrast to these are "Scott's Midlothian Biscuits," made of pure oatmeal, brittle and solid; on a packet of which a man could do a day's walking, cycling or shoothing.

DAIRIES. — In the exhibits of three large dairies we find the most modern mechanical appliances for the cooling of milk, for the separation of cream, and for the making of butter. There is a model of a farm constructed on the latest sanitary principles; and goat's milk from a goat farm at Dorking. Messrs. Welford have erected a bright attractive model dairy, and show a model of the excellent drainage carried out at their establishment. They have issued a printed circular lately to all farmers supplying them with milk, the effect of which will be that, instead of it being to the farmer's interest to conceal any infectious disease, whether in man or animal, on his farm, it will rather be to his interest to communicate the fact.

TEA. — Considerable prominence is given to teas cultivated in India. About 50 years ago in the virgin forests of Assam, the indigenous Indian tea plant

was first discovered, and in 1840 the Assam Company was founded, but for a number of years Indian teas were little known aud produced but in small quantities. Their cultivation has, however, been so developed that 240,000 acres of jungle have been cleared in various Indian districts, and the out-turn has grown from a million of pounds in 1864 to 60 millions of pounds in 1883, equal to one third of the whole consumption of the United Kingdom.

COFFEE.—The use of coffee has somewhat declined of late years, the reason doubtless being the unfair treatment the berry has received. It has been adulterated more than any other substance; mixed with all sorts of things; companies have been started with the avowed object of manufacturing and selling a substitute for coffee; and few people have known how to make an infusion, so as to bring out its virtue. Efforts are now made by the coffee planters and merchants to instruct the public in the Exhibition. There are model coffee-houses and stalls, and exhibits in which improved methods of roasting and preparing the coffee berry are to be seen in operation.

THE COCOAS shown in the Exhibition are "cocoa extracts," "cocoa powders," chocolate, and cocoa mixed with various substances and chocolate confectionery. There is on exhibition some cocoa and milk and chocolate and milk in hermetically sealed tins, the flavor of which was good.

THE KOLA NUT.—This is of a chocolate brown colour and about the size of a Brazil nut. It is the product of the *cola acuminata* and is a native of tropical Africa. It is said there is no article of produce which occupies so exalted a social and dietetic position with negro tribes; "it is among them a charm, a medicine and a food; the propitiatory offering to the living and the dead, to strangers and to gods." So far as known, its chemistry stands between cocoa and coffee, and its infusion makes an agreable and stimulating drink. It is reputed to be useful in diarrhœa, and to have the properties of allaying hunger and producing endurance of fatigue.

OF INFANT'S FOODS there is a great variety. Milk food, malted farinaceous foods, and soluble carbo-hydrates which have been digested, leaving nothing for the infant's stomach to do.

THE NATIONAL SCHOOL OF COOKERY have dining-rooms at the Exhibition, in which may be bought shilling dinners, and on certain days sixpenny dinners. The school has been in existence since 1874, and has done much useful work, its objects being—(1) To train and qualify persons to become Teachers of Cookery in Training Schools, and similar institutions. (2) To teach Cooking to any person desirous to learn. (3) To send Teachers of Cooking, with the necessary armamenta, to other places. The number of people who have been taught Cooking during the past ten years at the School amounts to 22,612.

FAITH CURES—HOPE, WILL AND PERSONAL MAGNETISM.

Is this age of prevalent disbelief to be diversified by a return to miracles? Who is there who would not desire it? It would greatly strengthen the christian faith and cause. But we fear that it is not, and believe, in common with most believers, that the age of genuine miracles has passed. Doubtless the miraculous cures reported from time to time in Canada and elsewhere, from the laying on of hands and pilgrimages to certain places with prayer, are accomplished through agencies well known to the medical profession. But these agencies, known to the medical profession, and presently to be noticed, are not employed to that extent which they might be, and with profit. We have no sympathy with those who distrust the results accomplished through the influence of faith and prayer. Doubtless "the fervent prayer of the righteous man availeth much"; and those engaged in the work of healing by faith and prayer, if not simply by the laying on of hands, are doing a good work quite irrespective of theological considerations, so long as the work is done with honesty of purpose and is not carried so far as to give rise to danger that the enthusiasm aroused

may degenerate into something like delirium, followed by the injurious influences of religious over-excitement. We desire merely to bring before the readers of the JOURNAL the physiological aspect of cures of the kind referred to, and to indicate the possibility that the influences brought into use therein might be exercised more frequently and more generally than they are.

It appears that the cures are, for the most part, if not wholly, of those cases which are of a neurotic or hysterical character, curable by a strong mental impression of some kind. They are cases of paralysis, of useless joints, of nervous pains of various sorts and such like. And it appears to be a necessary preliminary that all who seek to be cured in this way shall have faith, that is, an absolute conviction that the means are adequate to the end. If firm faith be wanting, the effort at cure will fail.

As an illustration of the difficulties encountered by medical charlatans in real organic diseases, who cure by the laying on of hands and such like proceedings, it is recorded that there was in Massachusetts a 'doctor' who cured by prayer, without fees, but who had nevertheless amassed wealth. To him a lady with real valvular heart-disease repaired, full of faith that his intercession in her behalf must succeed. On learning the nature of her case, he gravely shook his head, and said, "in his experience, the Lord rarely interfered in such cases." On the other hand, it is related that Sir Humphrey Davy once, when only Mr. Davy, had an experience which may serve to illustrate the nature of healing by faith. He was employed by Dr. Beddoes, "who had an extravagant theory of the curative power of oxygen, to administer the gas to certain patients. Amongst those who came to be treated was a paralytic. Before beginning the inhalation, Davy placed a thermometer under the patient's tongue, to record his temperature. The man was much impressed with this, and declared with great enthusiasm that he was already much relieved. Seeing the extraordinary influence of the man's imagination, Davy did nothing more than gravely place the thermometer under his tongue, from day to day, and in a short time he was reported cured."

Hope is said to be "the anchor of the soul," and unquestionably it is a most valuable mental characteristic which not only makes life brighter and happier but often prolongs life. On this we cannot do better than quote the words of a recent medical exchange, as follows: But little touched upon, hope as a remedy against disease is, if wisely and judiciously employed, one of the most valuable and useful means that the physician can employ. Call it what we may, and reason about as we please, no man of experience will for an instant question that imagination, the prejudices, the mental condition, the conviction of the patient, in many cases, exerts a most powerful and a most real influence upon the progress and termination of diseased conditions. Has it not happened to every one of our readers (it repeatedly has to us) to discover accidentally, so to speak, a condition of chronic disease, which has evidently been present for years, and yet the patient has maintained fairly good health, and is, at the time of the discovery, in no immediate apparent danger; yet when told that he is afflicted with an incurable disease that may carry him off in a few days, or that he may live for months, immediately wilts, like the sensitive plants when touched, and dies in a day or two? Again, do we not all know of cases of chronic disease, in persons with a happy, hopeful, contented disposition, disease that we felt sure would soon prove fatal? And yet we see them go on day after day and year after year enjoying apparently good health. Of course we are familiar with and thoroughly recognize the fact that

worry, that mental anxiety, is diametrically opposed to good health and long life; and in this fact we recognize the explanation of the influence of depressing opinions and advice: for if we tell a man with a nervous temperament that he *may* die in a few days, from that moment all peace and contentment vanishes from his life, while anxiety, worry, and unrest take possession of his whole being. The practical point to be deduced from these reflections is that it will redound not only to the patient's advantage, but also to professional reputation, to make it a rule always to take the most hopeful view that is possible of the patient's condition, especially when the man or woman is one of the "nervous, worrying kind," and always to remember that "hope kept alive" is the great secret of success among quacks. Let us steal their thunder."

The will is another powerful factor not only in conquering disease but in preventing it. By an effort of the will a 'cold' or chill may be prevented and a cough sometimes subdued. By it pains from simple causes have been overcome and, it is reliably recorded, threatened epileptic attacks warded off and prevented. This as relates to the will of the individual who would prevent a cold or subdue a cough or a pain. But there is another way or form in which the will may be exercised: it is that in which the will of one individual influences another. This has been called personal magnetism.

On the subject of personal magnetism the Editor of the N. Y. *Medical Times* writes in this wise: "We have seen a young man so cool, plausible, and self-reliant, so magnetic and persuasive in his character that his statements are taken without proof, draw from the pockets of statesmen, financiers, and business men, supposed to be prudent and far-sighted, millions of money for investment in government contracts which had no existence, except in the brain of the schemer, and which his investors do not even insist upon seeing." "What we have seen here going on in a large scale is seen every day in public and private life on a smaller scale, in the personal influence of one individual over another or over many others, in which real knowledge of facts play but a small part. A persuasive manner, an air of honesty and sincerity, a cool and calm statement given with all the assurance of positive knowledge upon matters about which you are supposed to be perfectly familiar, is likely to inspire confidence and trust. It is said of an eminent statesmen, who was very desirous of hearing a popular speaker present the cause of a great charity, and fearing the effect upon him, left all his money at home. Before the service was over he was so completely magnetized that when the collection was taken up he requested a friend at his elbow to loan him some money. But the matter-of-fact Quaker replied, 'No, Benjamain, I will not loan thee. Thy judgement is at fault, aud thee will regret it tomorrow.'

"The personal presence of the physician, his air of profound wisdom, his positive assertions, his cool and self-reliant manner in making his statement, has more to do with some men's success than any superior knowledge they may have of their profession. All this is very well, especially if back of it is positive skill and actual knowledge; for sooner or later there may come a time when both will be required, and without which the illusion will be dispelled. Personal magnestism is the open sesame to the heart and confidence, and when combined with honesty, judgement, and sound practical knowledge, is not only sure to win confidence, but to deserve and retain success."

Above then we have briefly referred to influences which if properly and legitimately exercised might be of great value not only in curing disease but in

warding off and preventing sickness. A little more study of them on the part of the physician would doubtless be productive of benefit alike to himself and his patients; while there are no better preventives of disease even after exposure to causes than a hopeful mind and a strong will.

SULPHUR FUMES AS A DISINFECTANT.

From the most remote periods of time sulphur fumes (sulphurous acid), produced by the burning of sulphur, have been used for the purposes of disinfecting. "The practical value of disinfecting agents is being subjected to the crucial test of experiments in Paris, in anticipation of an invasion of cholera in that city, the test being the actual effect produced on living microbes. M. Pasteur and his colleagues have ascertained that the fumes of sulphurous acid destroy the vitality of the microbes; and thus they have demonstrated what was formerly a hypothesis, but a hypothesis with the smallest possible element of uncertainty."

In Paris recently, according to the *Times*, in the Glasgow Sanitary Journal, experiments in disinfecting rooms was continued for a week, and the hospital was a general rendez vous for Paris hygienists. Two systems were under discussion — the use of the liquid sulphurous anhydride, and the simple burning of sulphur. "At first the sulphur would not burn, and the acid, though it told on the litmus test papers, did not kill the microbes which M. Pasteur had left in the room. Now, however, by pouring a little alcohol over the sulphur, it has been made to burn very successfully, and by using a larger quantity of the disinfectant, whether in a liquid or a solid state, the microbes were killed." Of two rooms disinfected, each measured 98 cubic mètres, and two kilos. of sulphur had to be burnt in one room before the living organisms left in the room were destroyed. This is about the same proportion which experience in England has proved to be necessary; but not quite so much as is recommended usually on this continent, namely: 1 lb. of sulphur to each 1000 cubic feet of space. The syphons of sulphurous anhydride used in the second room were equivalent to the two kilos. of sulphur burnt. A hole was drilled in the door, through which an india-rubber tube was passed, and the liquid, which was under a pressure of from two to three atmospheres, was squirted from a syphon through the door into a basin, where it takes about two hours to evaporate. In this form the sulphurous acid gas seems to pierce more readily thick bedding and clothing.

A disinfecting service was being organized throughout Paris. It was proposed to appoint 100 medical officers. They are to be in constant telegraphic communication with the police, and will be sent to examine every doubtful case of illness, and to report on its true nature. If it be proved to be cholera, then the medical officer must personally supervise the measures taken to prevent the spread of the disease. To assist in this work twenty companies of disinfectors will be formed, each consisting of three men, having with them a horse and cart. The vehicle is required to carry a wooden tub, in which all foulness is to be immersed in a solution of sulphate of copper, or chloride of zinc, together with a ladder for use in affixing paper to the windows, &c., a paste-pot, and whatever else is required to render the room air-tight.

Dr. Dujardin-Beaumetz set men to work to disinfect the two rooms in which the experiments were to be conducted. "In order to burn the sulphur, they placed an iron plate on the floor and covered it with bricks and sand. A hollow was scooped out in the sand, which was filled with sulphur, the disinfectant being ignited with alcohol. M. Pasteur had brought a square fire-clay box pierced with holes, which stood on four legs in the centre of an earthenware tray. This stove could be placed on a table, and the heavier fumes of the sulphur falling to the floor, are less likely to put it out. From the

outside, looking through the window, a crowd of distinguished persons watched the sulphur burn in both these contrivances, and observed the litmus papers suspended in different parts of the room as they gradually turned red under the influence of the acid fumes. On questioning the men who, for the first time had attempted to disinfect a room, they showed a decided preference for burning sulphur. Its action is less rapid, and they need not leave the room till after the process has begun, which is convenient in case they should forget anything, and they are not sorry to linger a while, so as to be fumigated themselves." Further experiments will be directed to the economizing of time in disinfecting a room, in order that the room may not be shut up for so long a time.

CHEESE—CAN IT BE RENDERED MORE DIGESTIBLE?

In an editorial on "the dietetics of cheese" the *British Medical Journal* recently discussed this question. The claim is made (*Jour. of Am. Med. Assoc.*), consistent with general observation, that twenty pounds of cheese contains as much ntirogenous matter as sixty pounds of meat, and the reason assigned why it has not met with more general approbation is that it is not so easily digested. Then we are told that the reason why it is not easily digested is 'because the salts of the milk were left in the whey when cheese was made with rennet. These, especially potash, were most necessary to assist digestion, and food which did not contain them should not be taken alone. Reasoning upon these two scientific truths, he had made a number of experiments as to various ways in which cheese might be made digestible. Casein itself was not indigestible, because it was taken with advantage by infants, and in milk there were two salts which were necessary to nutriment and easy digestion. His aim in the experiments he had performed, was to bring these constituents together, and see what nourishing and palatable foods could be made from them. By putting a sixth of an ounce of bicarbonate of potash with a pound of scraped cheese, and adding to them a small quantity of milk, he found them to dissolve and assume a liquid form. He used double Gloucester cheese in this instance, and the experiment was most successful. With American cheese it was not; and from this fact he was led to presume that double Gloucester cheese was made with rennet, as it ought to be, while the American cheese was not."

In American factories the milk is curdled with rennet, but it is a peculiarity of the American factory system of cheese making that the curd is permitted to remain in the whey till the latter is distinctly sour. "This greatly impairs the solubility and digestibility of the curd and cured cheese, by dissolving out more or less, according to the acidity, of the mineral matters of the curd, and carrying them off in the whey. But by far the greater part of the salts thus dissolved out consist of phosphates which are first converted into phosphoric acid, and lactates of the various bases, and then held in solution in the whey. The advantage which the manufacturer obtains from this procedure is a firm, solid cheese in a shorter time, and the disadvantage is felt by the consumer both in the inefficient assimilation, and in the development of dyspepsia and constipation with their associated evils, moral and physical. This, however, reacts with justice on the manufacturer, and diminishes the sale of an article that might otherwise be in much greater demand." Prof. Anold, of Rochester, N. Y., in his evidence before the Select Committee of the House of Commons here in Ottawa, said: "It is rare indeed that any one can partake at all freely of such cheese (referring to the sour whey system), without soon suffering from its notorious tendency to constipation, and a general disturbance of the whole system. These effects are so uniform and frequent that

people very naturally suspect they are the legitimate consequences of eating any cheese. This, however, is not so. It is only the effect of imperfect manufacturer and curing. When properly made and cured, cheese is as healthy as other food, and can be as freely used by the average citizen, and even by invalids with impunity."

It is most desirable that this question be studied and that this valuable food be so made as to be as readily digested as bread or beef as it probably can be made to be.

DRY HOUSES vs. DAMP HOUSES.

At a convention in Michigan Prof. R. C. Kedzei gave the following facts illustrative of the importance of selecting dry locations for dwelling houses.

Two brothers in Vermont, of strong and vigorous stock, and giving equal promise of a long and active life, married wives corresponding in promise of future activity. They had both chosen the healthiest of all callings—farming. One of the brothers built his house in an open and sunny spot where the soil and subsoil were dry; shade trees and embowering plants had a hard time of it, but the cellar was dry enough for a powder magazine. The house in all its parts was free from every trace of dampness and mould; there was a crisp and elastic feel in the air of the dwelling; the farmer and all his family had that vigorous elasticity that reminds one of the spring and strength of steel; health and sprightly vigor were the rule, and sickness the rare exception. The farmer and his wife, though past threescore, have yet the look and vigor of middle life.

The other brother built his house in a beautiful shady nook, where the trees seemed to stretch their protecting arms in benediction over the modest home. Springs fed by the neighboring hills burst forth near his house, and others by his barns; his yard was always green in driest time, for the life blood of the hills seemed to burst out all about him in springs and tiny rivulets. But the ground was always wet, the cellar never dry, the walls of the room often had a clammy feel, the clothes mildewed in the closets, and the bread moulded in the pantry. For a time their vigor enabled them to bear up against these depressing influences; children were born of apparent vigor and promise, but these, one by one, passed away under the touch of diphtheria, croup, and pneumonia; the mother went into a decline and died of consumption before her fiftieth birthday, and the father still lives, but is tortured and crippled by rheumatism.

RELATIONS OF THE MEDICAL PROFESSION TO THE PUBLIC.

In a paper on the relations of the medical profession to the public, read at the meeting of the Canada Medical Association in Montreal, in the last week in August, Dr. Playter, Editor of this JOURNAL, favored the plan of physicians attending patients and families by the year, or in some such way, in order that the physician might advise more in regard to the prevention of sickness—the condition of dwellings and their surroundings the water supply and all things relating to health, both general and individual. He said, "almost the whole teaching of the schools, and, naturally following, of the profession, was on 'cure'—cure which, was common place and upon which quacks lived and flourished, and the physician was associated in the minds of the people, as a rule, only with cure. Hence it seemed to the people that work done by physicians in preventing sickness was rather outside their recognized professional duties, and ought therefore to be a gratuitous work, a work of brotherly love." He suggested that, if medical practitioners would give their patients to understand that an important part of their professional duty is that of prevent-

ing sickness, the public would in a little time naturally learn to pay for services or advice rendered on behalf of prevention; for which indeed they could afford to pay vastly better than for cure after sickness had come.

In his paper, Dr. Playter referred to the great influence that might be exerted by the medical profession, especially if united. The profession he said is doubtless destined to exert an enormous influence on the future of the race. "The special and peculiar study of physicians is *man*," and "with the view to alter and improve his future." There is, he said, "a growing recognition of the high value of life, and with this grows the desire to defend and prolong it, and hence, the profession which makes the prevention of sickness and the prolongation of life its special object must increase in influence and become more and more cherished as time passes." At the London Hospital Medical School, some years ago, he said, Mr. Gladstone delivered an address in which he referred to the increasing influence of medical men. Mr. Gladstone said, "looking to the future, that in proportion as man's enjoyment increases so will his sufferings, and the necessity for help to relieve those sufferings. It was thirty years since he delivered an address at the Middlesex Hospital, he then ventured to say that the importance of the medical profession, which at that time had grown so largely, would still grow in *increasing proportion*. Looking back across the intervening years, he could say that his anticipations had been fully realized. The public began to comprehend that the medical profession laid no claim to what he might call cabalistic methods, that was to say, it did not depend upon formulæ, but relied upon experience, endeavored to teach the truth, and followed the laws of common sense. That profession presented a future of the highest interest and he believed it would, most probably, in that future, gain increased influence in greater proportion than other professions would. The legal profession, for example, possessed now no larger social influence that they enjoyed fifty or one hundred years ago. But with the medical profession, as pointed out above, the development of disease and the physical habits of life tended to widen its sphere and increase its influence."

Dr. Bessey, of Montreal, and others present agreed with Dr. Playter's views.

Dr. Protheroe Smith, of London, England, said that he was present at the London Hospital Medical School when Mr. Gladstone made the remarks quoted by Dr. Playter. He said that after a practice of many years his patients had learned to pay him for advice in the way indicated by the doctor. With his well-to-do patients, he was in the habit of calling from time to time, as he thought necessary, and advising them in regard to hygeian matters, and they fully recognized and appreciated these services and were quite satisfied to pay for the same.

Dr. McMillan, of Hull, thought physicians should be retained by families to give advice in general on sanitary matters, and receive extra fees for such duties. As regards the working classes, in the cities in England they had formed clubs, and by paying a small subscription each, retained the services of medical men on whom they could call at any moment. The fact that a working man knew he had a physician thus at call would induce him to apply for aid at the first symptoms of disease, and thus prevent a great deal of mysery and suffering.

"Don't put in no muskeeter nettie' for me," said Aunt Hannah. "I don't want to breathe no stained air."

It rains alike on the just and unjust—on the just mainly because the unjust have borrowed their umbrellas.

MORTALITY STATISTICS OF MARRIED LIFE AT DIFFERENT AGES.—In an address to young men, Dr. W. Pratt, of London, gives the following facts (*Detroit Lancet*): In the male sex, from twenty-five to thirty years of age, one thousand married men furnish six deaths; one thousand bachelors furnish ten deaths; one thousand widowers furnish twenty-two deaths. If, however, the marriage be contracted before twenty it is found that the mortality is seven times greater than among the unmarried. In the female sex the same facts hold true. Marriage under twenty increases the death rate seven fold, while marriage after twenty one greatly diminishes the mortality. Young married people from eighteen to twenty die as rapidly as old people from sixty to seventy. Thus it appears that marriage after twenty-one makes life healthier as well as purer. Marriage after thirty years greatly increases the mortality of females in childbed. But in spite of all this, people will marry without any reference to reason or sound physiological laws. The majority will measurably follow the physiological law from simple instinct, and the rest will make a shipwreck of life.

THE NEW SCIENCE.—In his annual address before the graduating class of Rush Medical College, Dr. B idge referred to sanitary science as a new revelation. Most of its facts and laws are the fruit of years that living men remember. He continued: "It has reduced the danger of death from certain diseases; with it alone certain diseases formerly thought dangerous are self-limited and without danger, and it has caused the average amount of life to increase in length. Through organized effort in society it has lessened the ravages of epidemics in many cases, and awarded them off in others. Never before did it enter so intimately and so thoroughly into the daily practice of the doctor as it does now." It is devoutly to be wished, an exchange, says that every physician in the country might read and appreciate the statements.

Leading Articles.

THE MILK SUPPLY.

Milk has now become such a commonly used, necessary article of diet that the source and character of its supply is a matter of very great importance, and one which has received a good deal of attention in this JOURNAL. The chief sources of trouble to be guarded against are three: one, the adulteration and dilution of the milk with water; another, diseased cows; and a third, cases of infectious disease in the families or attendants of the dairy men or vendors of the milk. Others of less importance are, various other adulterants said to be added to milk, chiefly to give it "body" on being weakened with water, and other impurities from foul cattle byres and places in which the milk is kept. Very little adulteration it appears is practised in this country except that with water, and except in cases of feeding young infants with the milk, water adulteration is of comparatively little consequence.

The two great evils to be contended against are, first, the germs of infectious diseases from the human body, and, second, germs of infectious diseases from the cow supplying the milk. That milk has a peculiar property of readily absorbing odors — particles of odorous matter, is well known; and there is no doubt whatever that it will absorb contagiums of disease when exposed to them.

In a paper read at a late conference at the International Health Exhibition, on cow's milk as a vehicle of infectious and epidemic disease, by W. N. Thursfield, M. D., Medical Officer of Health to the Shropshire Combined Districts, the writer said, "making allowance for all doubtful cases, it may, I think, be accepted as an absolute fact that epidemics of typhoid fever and scarlet fever have been repeatedly disseminated by milk, and that there is very strong evidence that diphtheria has been so disseminated,

and instances have been adduced by most competent observers. Other infectious diseases have been alleged to have been so transmitted, but the cases are not so numerous, nor the evidence so clear."

In explanation of the mode in which milk becomes the vehicle of contagion, Dr. Thursfield said, in many cases contaminated water added to the milk had been regarded as the source. "Another explanation was that the milk may be a simple carrier of the disease in the same way that articles of clothing convey the germs of disease. Another, that milk itself may become specifically infected and serve as a nidus for the disease germs, in other words, may itself catch the disease. Certainly milk is specially calculated by its composition to act as a cultivation-fluid for germs proper to the human body, though it is difficult to believe that it would readily so act at the ordinary temperature. Another suggestion was that milk epidemics may be explained on the theory that the disease is the expression in the human subject of some apparently different disease in the animal."

On the other side of the Atlantic there have been numerous outbreaks of typhoid fever from the use of milk infected by persons suffering from the disease at the farms or the dairies, and a number of outbreaks of scarlet fever arising in the same way have been recorded. In the July number of this JOURNAL reference was made to an outbreak of an epidemic of typhoid fever at Port Jarvis, New York, which was traced to the milk supply. There had been cases of typhoid fever at the dairy farm supplying the milk. How many outbreaks of such diseases we may have had in Canada, if any, there is no means of knowing. If not any, certainly we are very liable to such outbreaks at any time.

According to the last report of the Ontario Agricultural College and Experimental Farm, the extent to which consumption exists "amongst the better breeds of cattle in this country is alarming." There can be no reasonable doubt whatever that this disease may be conveyed to the human body through the milk, as well as through the flesh, of the diseased cow; and there can be no reasonable doubt that cows suffering from the disease, in an advanced stage, are used for supplying milk for milk dealers. We have no desire to alarm the public, but these are facts that cannot be overlooked. It is surely high time that some measures were adopted for supervising the milk supply in cities and towns.

It is the opinion of many that milk should be supplied to urban populations only by companies who possess sufficient capital to have their dairies, cow houses, and workmen's houses on proper sanitary principles, and who, if they buy milk, can regulate the farms from which their supply is derived.

It is most desirable that in the interests of the public, the various provincial governments, with whom it appears the matter rests, should take up this question of milk inspection, an inspection for which this JOURNAL has long contended; or that some member of the Legislature in each province should bring in a measure for regulating the milk supply.

SANITARY HOUSE-WARMING—FIRE ON THE HEARTH.

The time is now near at hand when our readers will be forced to prepare for "house warming" in earnest, and many will be considering how they can best warm their rooms in accordance with health and economy. Too many, it is to be feared, will let considerations of cost have most influence, while with a few, costs will be made, so far as possible, subservient to health. As sickness is a most costly thing, it should ever be remembered and acted upon by heads of families that, in adopting that plan of warming which will prove most conducive to health, regardless of all reasonable costs, they will be adopting the most economical plan.

The two most important points to consider in warming rooms are, the ventilation and the temperature — the frequent changing of the air in the rooms and the keeping of it at a suitable degree of heat. Into the reasons for attending first of all to these two particulars we need not enter here; indeed our readers are already sufficiently familiar with them. It is easy to warm an apartment, but to warm it uniformly by an inexpensive contrivance that at the same time insures an abundant supply of fresh air, is a desideratum that has not until recently been attained. The ordinary grate fire provides very good means of ventilation, but it is a most wasteful method of warming, as about nine-tenths of the heat, it is estimated, passes up and out through the chimney and is wholly wasted. In a climate like this of Canada, too, it is almost impossible to warm a room with a grate alone—without the use of a furnace or hall stove. The open or Franklin stove provides a more economical method of heating, yet on the whole it is but a poor substitute for the grate. Until within the last few years the whole civilised world seems to have been in a very backward state as regards the art of warming and ventilating dwellings. Russia it would seem has until recently excelled all other countries in this art; but the inventive genius of this continent has at lenght it appears surpassed all.

The most complete contrivance we believe that has yet been made for both warming and changing the air in apartments is the ventilating stove or fireplace known as the "fire on the hearth." We had heard these stoves very highly spoken of, and recently when in New York, where they are manufactured, we had the privelege of examining them. They combine the advantages of a stove to warm by radiation, a grate giving an open fire, and a chamber open below and above through which air ascends and is warmed. This stove is so constructed that an opening may be made in the floor under it, in connection with a duct leading to the outside of the house, for bringing in a constant supply of fresh air, which passes through the heater, is warmed and streams into the apartment. It has a drum above the fire, surrounded by a jacket, so arranged that the fresh air is brought into contact with greatly expanded surfaces, which absorb the maximum quantity of heat, and impart it rapidly to the inflowing currents, thus preventing over heating, and supplying the room with an invigorating atmosphere. Two distinct currents pass through the stove. One enters beneath the grate, ascends to the chamber above, and thence goes to the chimney, furnishing the draft. The other enters under the stove, becomes heated by contact with the hot surfaces, and rises through the jacket, thus compelling a constant circulation through the latter and throughout the room.

The stove is economical of fuel and easily managed. It is so constructed as to promote an active circulation of air in the apartment, and thus secure equalization of temperature. It may be set against a brick chimney, and the pipe carried within the chimney to the room above without showing in the room below. The stoves are also adapted for use in fireplaces under mantels, in the form of air warming grates and double heaters for warming rooms. They are made in a number of sizes, suitable for living rooms, halls, school-rooms, &c. At the Paris exhibition they attracted much attention, and a silver medal was awarded to the manufacturers.

Sir James Paget describes the pattern healthy man as "one who lives long and vigorously, who in every part of his life, wherever and whatever it may be, does the largest amount of the best work that he can, and when he dies leaves healthy offspring."

Matters Recent and Current.

COMPLAINTS OF NUISANCES. — In the daily papers of Ottawa, Montreal, Toronto and other places are often to be found communications complaining of nuisances in certain and various localities. Sometimes these may be necessary, but as a rule it would be much better for grieved individuals to make their complaints direct to the health officer or department. The people too should bear in mind that health officers in this country have only very limited powers and health departments too limited means. Let the people vote money more freely for health purposes and health officers will usually spend it judiciously and where most needed;—vote money enough and there will probably be little reason to complain.

PREVENTION IS BETTER THAN CURE, every body readily, cheerfully and usually with self satisfaction admits, but at least nine-tenths of the people will in practice sooner run the risk (and a great risk they run too) of paying out one hundred dollars for costs of sickness than spend five dollars, or even "one fifty", on the means of prevention. How is this? It must be a sort of hold-on-to-the-dollar cause—on the principle that "a bird in the hand is worth two in the bush"—keep the dollar in the pocket now if to do so costs ten or twenty before the year is out.

BEGIN IN TIME—NOW.—Last year, we ventured to predict that the cholera would not visit Canada before this year, if even it should come this year. The chances now appear to be that the disease will next year, probably early, reach this continent; where in truth there are for it many temptingly inviting fields. Many have been in trouble fearing inefficiency in the canadian quarantines. While doubtless an efficient quarantine at every sea-port is a necessary precaution, from our many exchanges we learn that the universal opinion amongst the most eminent and experienced practical sanitarians every where, in Great Britain and on the continent of Europe, is that other quarantines are "powerless," "useless," "mischievous," and "positively harmful" by directing attention from more useful measures; and that the one great, effectual and infallible preventive is absolute and perfect *cleanliness everywhere*, internal and external, of every *person* and *place*. As miss Nightingale puts it, to trust to quarantines and stopping intercourse would be "just as rational as to try to sweep back an incoming flood, instead of getting out of its way." There must be no half nor three quarter measures. Every spot must be freed from every trace of waste, decomposing matter of any and every sort. And there would be no great difficulty in carrying out these indications, if people would but set about it.

NOW IS THE TIME. Next spring may be too late. In every city, town, village, and farm there is soil and food for cholera germs, and in every such place in Canada let the "house be put in order" this fall. Remove to a safe distance and completely destroy every particle of excreta and decaying matter; close up and entirely do away with privy vaults and cess pits; disinfect and lime wash all out houses, closets, &c., where impurities have been; and *keep* every spot clean during the winter and spring by frequent removal and destruction—by burning, by disinfectants, and by mingling with coal ashes; and keep all sewers and drains so flushed that there shall be no deposits held in them. Do this, and with a pure water supply and a judicious diet, the cholera may be defied. It may come but it can do little or no harm.

BURNING KITCHEN REFUSE.—This subject is being discussed in the Toronto papers. Doubtless every sort of solid waste matter of the kitchen may be readily enough burned in an ordinary cooking range or stove, and with little or no inconvenience. It is a wasteful method of disposal, but where there is no provision for daily or frequent removal by cartage, it is better to burn all such matter than

to keep it for days in a decomposing state in a box or barrel in the yard or back lane. Except for the short season when there is a good deal of kitchen refuse and not much fuel burned, the best plan, repeatedly recommended in this JOURNAL, is to mix daily all the organic refuse of the kitchen as well as the ont closet excreta, with the coal ashes. The dry ashes constitute a good deodorant and prevent early decomposition, and the whole form a valuable manure.

SWALLOWING CAMELS.—It is well to find people exercised about the proper disposal of potatoe parings, cabbage leaves and the like, but it makes it a still greater marvel that they will rest content in the midst of thousands of old, old fashioned privy vaults, containing far more disgusting and dangerous matter —filth of the worst sort, kept decomposing and fermenting over and over again, for months and sometimes for years. Elsewhere in this number this disagreeable subject of privy vaults is refferred to, and we wish we could hope there never would be necessity for referring to it again.

THE WORST OF ALL filth, by far, is the human excrement in the privy vaults. No matter how perfect may be the removal or destruction of all other waste matters—of the kitchen, of the stable, of the slaughter-house, or of *every other* place, so long as the excreta of the body human is kept near the premises, as it usually is, in holes in the ground or elsewhere, there is not, nor can there be, any such thing as cleanliness. Though every thing else be removed the worst is there still. This is a most disagreeable subject, and it is too bad that in a civilized age like this it is necessary to have to refer to it so often as has been done in this Journal. But of all unsanitary transgressions, of all vile relics of heathen or of savage life (if it is such), this almost universal practice of keeping such filth on the premises, in pits or other receptacles, is the vilest. Of all direct causes of zymotic or bacterial disease in cities and towns—through contamination of air and water, this one of the ever present fermenting, seething human excrement is doubtless the most prolific. As a nidus, a soil, a food for the germs of cholera and typhoid fever especially, filth of this kind far surpasses in special adaptability any other. Language seems to fail to supply words sufficiently strong to condemn this unaccountable practice of keeping for months and years often, near the back door, the bodily excreta, which from its small bulk might be easily daily removed. When will men take a lesson from animals in this matter of their bodily waste, or follow the scriptural injunction given in the XXIII chapter, 12th, 13th, and 14th verses, of Deuteronomy.

CHOLERA PREVENTION.—At the meeting of the Association of Public Sanitary Inspectors, in August, inst., Mr. Chadwick, the President, pointed out how entirely the experience gained in this country during the epidemic of 1848-49 in reference to the mode of propagation of cholera had been verified by the outbreak at Toulon. If the Cholera did not come the labours of all the sanitary inpectors during the last few weeks would not by any means be thrown away. The practice of quarantine he denounced as useless and mischievous; effectual cleansing of persons and places being the only reliable preventive measures. In a leading London Medical exchange we find, "Sanitary cordons on land are a delusion and a snare, and quarantine in narrow seas is little better. The poison will be *smuygled* in;—no word so well expresses the mode of its introduction and the practical impossibility of excluding it." The real and only defence against cholera will be found in measures for the speedy and complete removal of excreta from the proximity of the houses, either by well made sewers or some form of pail system, and the supply of water from irreproachable sources." The recent report of the Local Government Board to Sir Charles Dilke once more emphasises the fact that "cholera derives all its epidemic destructiveness from filth, and especially from

excremental uncleanliness," and urges the necessity for the prompt romoval of all excremental products, and the most scrupulous care that the water supply shall be free from all pollution, and especially from *excremental* contamination.

MISS FLORENCE NIGHTINGALE considers it as proved that cholera is not communicable from person to person, but that it is a local epidemic disease, effecting localities, and depending on pollution of earth, air, water and buildings. Isolation of the sick, quarantine and cordons she believes powerless to check the disease, and that they may be possitively harmful by directing attention away from measures that might be useful. The lesson to be learnt, and the motto for every one is—"Set your house in order."

IN HIS CHOLERA REPORT to the Académie de Médicine, August 5th, inst., M. Strauss, who has been investigating at Toulon, says, if the comma bacillus were the cause of cholera, inasmuch as it only lived in the contents of the intestine, and, in rapid cases at any rate, did not invade to any appreciable degree the mucous membrance of the intestine, it must be admitted that in order to produce such rapid and intence effects as it did, it secreted a soluble ferment, a ptomaine, some poison which when absorbed provoked symptoms of cholera. We must than endeavour to extract from pure cultivations in which the bacillus had lived soluble poison which would reproduce in animals symptoms analogous to those observed in persons suffering from cholera.

AT THE SCHOOL HYGIENE CONFERENCE convened by the Natioual Health and Medical Societies of London, Eng., July 28th., 1884, Mr. Pridgin Teale said, examinations are powerful agents, capable of doing harm as well as good. That work for examination is essentialy work done under pressure and with anxiety, and is physically exhausting. That, whereas, in view of the physical well-being of the community, examinations ought to be as few as possible and at long intervals, they are being multiplied with a recklessness which can be explained only on the supposition that the physical and medical aspect of education has been entirely left out of consideration. That the element of competition greatly intensifies the physical strain of examinations; that a further aggravation of the physical strain is produced by the imperfection of examinations which test, and, by testing enforce in education a loading of the memory rather than a training of the faculties. That the multiplication of subjects to be studied for examination is a growing evil, and deserves condemnation both from a physical and educational point of view, and that the arrangements for higher education ingeniously provide a constantly increasing pressure upon the rising generation.

MR. BRUDENELL CARTER, who followed Mr. Teale, in the School Hygiene discussion, brought forward evidence to prove "that the long hours of confinement in what is too often a vitiated atmosphere, coupled with other ordinary conditions of school-work and discipline, exert a hurtful influence upon the physical development of the frame, especially upon the heart and lungs and upon the organs of vision, and that this influence is so considerable that it must already be regarded as a matter of national importance." He stated among other facts, that in one of the London Board-schools defective vision was found in one-fourth of the scholars.

ON MALARIOUS INFECTION IN MAN, Professor Tommasi-Crudell, of Rome, read a paper at the recent meeting of the In ternational Medical Congress, at Copenbogen (August, inst). The human organism, he observed, presents different degrees of resistance to the action of malarial poisons. In some instances this degree is very high, and is hereditary in nations by a kind of natural selection. In the most civilized countries the conditions of life are opposed to the beneficent action of this natural selection. The specific ferment attacks the red blood

corpuscles and causes necrobiosis. These changes are characteristic and pathognomonic as a sign of infection. He demonstrated a series of microscopical specimens of red-blood corpuscles, taken from cases of malarial disease in the human subject. These had been stained with aniline. In each preparation the healthy blood corpuscles were to be seen unstained, the others containing one or more small coloured particles, which he believed to be the germs of a bacillus. In a specimen of a blood-vessel of the pia matter, the contained blood-cells were seen to present large numbers of these particles.

THE CANADA MEDICAL ASSOCIATION MEETING.—The late meeting of this association in Montreal was a most successful one. The public health work of the meeting was less than usual, and it is perhaps time this work were being left more in the hands of the people, in whose behalf it has been done, but who do not yet seem to take that interest in it which they should. The president, Dr. M. Sullivan, of Kingston, in his lengthy, practical and for the most part eloquent address, dwelt at much length upon public health matters. After referring to the forming of the association, its objects, &c., he drew attention to the marked difference between the mortality rate of Ontario and that of Quebec as shown by the last census report, due to the large mortality amongst young children. Ontario, he said, may be, no doubt is, only less guilty. "Some extraordinary causes of mortality amongst children must be in force. Think of the great number of deaths from small pox. It is a positive disgrace. If the people will not be educated to use proper means to prevent sickness and death, the law should command, and enforce its command. This is an age of commissions, when every contravention of political honesty is sifted. Let a commission investigate this, it demands it more than anything else, wipe out the disgrace, confer health on many and thus bring wealth to the country. We must remember, too, how much we injure ourselves by keeping foci of highly contagious diseases constantly on hand, ever ready to enlarge their baneful effects on the approach of exciting causes, and repel the tourist and settler from our shores. It reminds me also how necessary it is to have vital statistics constantly collected. How important they are for comfort, wellfare and advance of a people, will readily appear from what I have said. It is time that Canada had a bureau and I hope you may be called upon to pronounce for it." Dr. Osler, of Montreal, who was elected president for next year, read a paper on "Pneumonia as an infectious disease." He showed that according to experiments made by eminent men, the germs of the disease could be propagated, and afterwards an animal inoculated with them would exhibit the symptoms of the disease. He was not however fully convinced of the contagious character of pneumonia. Dr. Patterson, of Fredericton, gave a number of instances that had come under his notice, and in which the disease had proved infectious. The association was treated by the profession of Montreal as usual in a most liberal and sumptuous manner. Why not have the meetings always held in Montreal?

THE PUBLIC HEALTH REPORT of the P. H. committee of the Canada Medical Association, in the absence of the chairman of the committee, was read at the late meeting by the secretary. It stated that, the committee had had under consideration since December last the question of a Dominion Board of Health. Dr. Harding, of St. John, N. B., had drawn up a scheme which would be simple and inexpensive, and which was presented in the report. It was for forming a "Dominion Health Institute," chiefly for educating the people in health matters. The scheme, which we shall endeavor to give in detail on an other occasion, had been submitted to the members of the committee. Nine out of twelve had replied; none had dissented, and some had expressed their approval. On motion of Dr. Mullin, the report was referred back to the committee to be more fully considered.

THE QUARANTINE in connection with Grosse Isle is said, by a very good and disinterested authority, a resident of Quebec city, to be in a highly satisfactory condition.

THE PUBLIC HEALTH COMMITTEE of the Canada Medical Association appointed for this year are, Drs. Youmans, Grant, LaRocque, Botsford, Covernton, Playter, Harding, Robillard, Oldright, Parker, Bryce and Kittson. After the association meeting, many of the members of this committee, amongst whom were Drs. Covernton, Oldright and Playter, and also Dr. Worthington and others of the committee of last year, met to consider the question of a Dominion health bureau. The plan which had been sent in by the chairman of the committee of last year, (in his report) referred to above, and prepared by Dr. Harding, was discussed for some time, but it did not seem to meet the views of those present, and as no other plan was submitted no action whatever was taken.

CANADIAN SANITARY ASSOCIATION.—The annual meeting of this association formed last year at Kingston, was called for Tuesday evening, the 26th August, inst., in Montreal, but we understand there were not enough members present to form a quorum and that nothing was done. This seems somewhat strange, seeing that the secretary resides in that city and much the larger number of members too reside there, it appears, and also that quite a number of the medical members from outside Montreal were in the city at the time. The president of the association, Dr. Sweetland, of Ottawa, from a member of his family not being well, was unable to be present. It is to be regretted that a number of prominent sanitarians had been previously forced to withdraw their interest in the association.

THE CHAIRMAN of the Ontario Board of Health at its last meeting read a report on epidemics, in which he alluded to the absorptive powers of milk, and the dangers arising therefrom. He gave instances of outbreaks of typhoid fever and other infectious diseases which had been directly traceable to this source.

THE ONTARIO BOARD OF HEALTH have adopted certain regulations in reference to quarantines and isolation in relation to cholera. As soon as danger becomes imminent the Board will ask for a grant to be set apart by the government sufficient to enable the board to pay a medical executive officer in each town in the province, and to meet the expenses incurred in taking precautions against the spread of the epidemic.

PURE ANIMAL VACCINE, always fresh and reliable, propagated in direct and unbroken succession from the spontaneous cases of Cow Pox which occurred at Longue Pointe in November 1877, may be obtained from Dr. Bessie, Montreal. Dr. Bessie has bestowed much attention on the cultivation of pure vaccine, and in his National vaccine establishment has supplied a want in Canada. Such an enterprise is of national importance and one in which the government should take an interest.

APROPOS to the paper recently read at Montreal by the editor of this JOURNAL, relating to physicians being paid for advice on matters of hygiene, is the following from a recent number of the *Orillia Packet:* It is noticeable that among the most active members of Orillia's excellent Board of Health are three medical men, and at all times here physicians are foremost in adopting and advising sanitary precautions. It was lately said that the physician of the future will be employed to keep his patients well, rather than to restore them to health. But indeed the advance in medical science during the past twenty years has been so rapid that this is largely true of the physician of to-day, excepting that this most important part of his duties is entirely a labour of love. Few people have as yet been educated up to the point of recognizing the doctor's right to be compensated for teaching the public how to avoid disease.

TORONTO'S SANITARY STATE.—"W. C.", in *The Week*, writes, "There is urgent demand for placing the city in a proper condition with regard to filling up wells, construction of sewers on the streets, and drainage of private premises. "W. C." might well have added and for the closing up or abolishing of all privies. The re-

port of the Medical Health Officer shows that there are "4,396 premises without drainage, and 1,421 with defective drainage, 1,538 foul wells, 1,162 foul cisterns, 3,936 full privies. 1,996 foul privies (are there any privies that are not foul? we would ask), 2,444 unclean yards, and 512 places where no water at all was provided. "The evils in connection with the privies have been in many cases removed; but many remain. The want of drainage is a crying evil." After describing such a condition, "W. C." need hardly have informed the readers of *The Week* that "While the city remains in this condition it is far from being in a sanitary condition."

DR. ROBERT KOCH.

Dr. Koch is the chief of the German scientific commission appointed by the Government to make investigations into the cause of cholera and its manner of spreading, and for this purpose he was sent to Egypt, East India and France.

Dr. Koch is still a young man, apparently little over forty years old. He has always been a working student, and well deserving of the honors conferred upon him; honors from his own country as well as from the French Government.

From Dr. Koch's reports, which are of much value, the following description of the Cholera bacillus is obtained. The bacilli have distinguishing characteristics from other bacilli. They are always curved, comma-shaped, at times even semicircular. In the process of culture, two bacilli sometimes become attached together and assume an S-like form, or, when more than two are attached, the line is a wavy one. They are very active in motion. If linen, soiled with dejections from cholera patients, is kept in a moist condition for twenty-four hours, the bacilli are seen to have multiplied themselves in a most remarkable degree. Dr. Koch holds that they are transmissible only by human excrement or by objects soiled by it. Consequently the first precaution is, the proper disposal of all excreta and soiled linen. The bacilli are not found in any similar bowel disease. In cholera they are found to be confined to the bowel, appearing with the disease and increasing and diminishing with the fluctuation of the disease, as regards severity.

The cholera bacilli, sooner than any other, are destroyed by heat, even three hours heat serving to destroy every evidence of life.

CHOLERA IN ANIMALS.—If it be true as reported that animals inoculated by Drs. Reitsch and Ricati with cholera bacilli have died with symptoms resembling cholera, results which Koch had failed to obtain, it should settle the question as to the bacilli being the true cause of cholera.

THE FIFTH INTERNATIONAL CONGRESS of Hygiene was held at the Hague in the third week in August. Cholera claimed a large share of attention and the first section opened its proceedings with a discussion on this subject. Over-pressure in schools formed the subject of another debate, introduced by M. Huizinga, who denounced the modern system of education "as conducive to the passing of examinations perhaps, but not as leading to the acquirement of real knowledge." There was a debate on cremation, which aroused a considerable amount of interest.

Individual Hygiene.

THE LUNGS AND HOW TO PRESERVE AND STRENGTHEN THEM.— *Continued.*

In the last number of the JOURNAL, in the first part of the article on this subject, the following illustrations were inadvertently omitted. Consequently the last three paragraphs of that part, on the movements of the walls of the chest, will be more fully understood if read with the illustrations in view.

The quantity of air drawn into the lungs at each breath is small when compared with the quantity the lungs will hold. The lungs are not filled to their greatest capacity, nor nearly emptied, at each breath. The lungs of a full sized man will hold, when stretched to their utmost, about 300 cubic inches of air. But after an ordinary inspiration they actually contain only about 200 cubic inches, or about two-thirds of what may be drawn into them by a forced inspiration. Bear this in mind. Only one-eighth of this, on an average—25 cubic inches, is pumped in and out at each respiration. After an ordinary expiration, therefore, his lungs will contain 175 cubic inches. The one-eight of the usual air contents of the lungs, which is pumped in and out at every breath, is called tidal air, and that remaining after each ordinary expiration is called stationary air. There is then, observe, always a large amount of stationary air in the lungs. Gases diffuse and mix rapidly. The tidal air drawn into the lungs at each inspiration quickly mingles with the stationary air already in the lungs, and the few cubic inches of air almost immediately expelled by expiration is not the same that had been just drawn in by inspiration—the tidal air, but a mixture of tidal and stationary air.

The blood in the lungs, as it moves along in the capillaries, is thus constantly bathed with air, which is partly renewed and purified at every breath. As often as once every minute, it appears, all the blood in the body flows through the minute vessels in the lungs, giving off all the while, *to* the air in the lungs, carbonic acid, watery vapor, and other matters, which have greater affinity for air than for blood; and taking in all the while, *from* the air in the lungs, oxygen, which has a greater affinity for blood than for air. Blood just before it passes into the lungs is dark purple, and is called venous blood. It has been the round of the circulation—to all parts of the body, and has taken in a lot of waste matters, chiefly in the form of carbonic acid and watery vapor, the former making it dark in color; flowing to the heart, it is thence forced on to the lungs to be purified and oxidised. In passing through the lungs, giving off carbonic acid and water and taking in oxygen, it becomes of a bright red tint—arterial blood; and flowing back to the heart it is sent again to all parts of the body. If you could obtain some venous blood from the vessels just before it had entered the lungs and, in a seperate vessel, some arterial blood just after it had passed through the lungs, you would be surprised at the difference in color.

The lungs therefore perform a double function. They take in the oxygen which the organism requires, and without which we cannot live many minutes; and they cast out a large amount of the worn out waste matters of the body, especially the products of combustion, which if retained in the blood would soon destroy life.

It is therefore easy to understand how very important it is for the lungs to be sufficiently developed to prevent the accumulation of these poisonous matters in the blood, and also to be capable of taking in abundance of oxygen for the wants of the system.

HOW THE LUNGS MAY BE DEVELOPED.

The size of the lungs may be increased by the exercise of frequent deep inspirations. The person, out of doors in a pure atmosphere if possible, should stand perfectly erect with the hands hanging down at the side or resting on the hips, and then gradually and slowly draw in air through the nostrils until the lungs are well distended and filled, hold the breath for a few seconds, and then gradually and slowly expel air until the lungs again assume their natural state in expiration. This should be done three or four times or even oftener in succession;

breathing naturally two or three times between each forced inspiration to rest as it were if desired. The exercise should

Fig. 4.

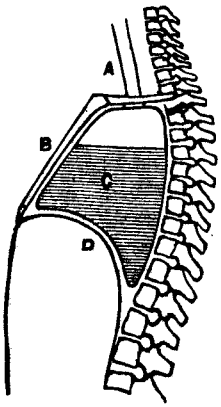
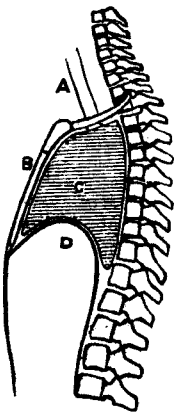


Fig. 5.



Walls of the chest dilated as in inspiration, and contracted as in expiration. A. trachea; B, breast bone; C, cavity of the chest: D, diaphragm.

be repeated two or three times a day. It is best to raise the arms a little from the side during the act of inspiration. After a little practice, the inspirations should be longer and the lungs expanded to their utmost capacity; and forced expirations, too, should be practiced, in order to expel as much air as possible from the lungs.

CAUTION.—Too much force must never be used, and at first especially care is needed in order not to strain the lungs nor even the walls of the chest. Later, much more force may be exercised. When too much force is exercised slight momentary blindness or dizziness may follow, but this would be only very transient.

Persons with very weak or diseased lungs or who have had any hæmoptysis (coughing or spitting of blood) must be exceedingly careful at first, and better first of all consult their physician. But the writer is convinced that any one not suffering from advanced lung disease may cautiously adopt the practice without risk and with great benefit.

Besides the above special exercise, moderate running, such as will not cause much difficulty of breathing nor "loss of breath," is a very useful practice; so likewise is walking up hill; or indeed any exercise which causes long deep inspirations. As a gymnastic exercise, that of hanging by the arms to a rope or pole, just so high as that the toes only can rest on the ground, and swinging the body around in a circling way and from side to side, is probaly of the greatest value.

The writer has known the circumference of the chest increased two or three inches in a few months' time by the judicious practice of such exercises as above described; and never knew the least harm whatever to result from the practice of any of them.

Seasonable Hints.

AVOID CHILLINESS.—Much care should be exercised at this season in order to prevent chilliness or taking a cold as the evenings and nights become colder. Put on an extra garment or move about more, or both, either indoors or out.

THE COOL SPONGE BATH followed by brisk rubbing, which should have been, if it were not, practiced during the warmer season, is an excellent preventive of colds. It may be taken either on getting out of bed in the morning or on going to bed at night.

THE TURKISH BATH.—That most excellent authority, the late Dr. Erasmus Wilson, F. R. S., &c., writes in his book on the Turkish bath: It has the property of hardening and fortifying the skin, so as to render it almost insusceptible to the influence of cold.

THE OPEN WINDOW practice of the summer should not be too readily abandoned. Keep the windows open, little or much, night and day so long as the weather is not too severe, getting gradually used to it as the weather gets gradually colder, the practice can do no possible harm.

A SUPPLY OF APPLES, good and sound, make a wholesome addition to the winters store of food. Though high in price this season they are cheaper than many other less wholesome foods. For young people who are usually "free eaters" they are, either baked or in a raw state, an excellent article of diet.

Questions and Answers.

W. B., HAMILTON.—Fine dry earth is the better deodorant and disinfectant, but coal ashes answer very well indeed. A little larger proportion in bulk is required of the latter.

J. A., M.D., TORONTO.—We learn from the *Sanitary News*, Chicago, from which the notice in the April number of the ordinary stove steam heater was taken, that "investigation fails to show it up," Nothing more of it is public at present.

Literary.

"Hooper's Vade Mecum," in two volumes, are the May and June numbers of Wood's admirable Library of Standard Medical Authors, revised from the tenth edition. In the last number of the Journal we briefly noticed the first volume, but did not do it full justice. This somewhat remarkable work has been the favorite text book of more physicians probably during the past fifty years than any other work. Revised and improved from time to time, it has always been, from its clear and reliable statements and theeasy and graceful style of the author, a favorite with physicians. The work is, undoubtedly, what it is intended to be, in the full sense of the term, a practical work: it aims at bringing together in a small compass, and in form easy of reference, "those items of information which the practitioner would wish to possess when he stands at the bedside or when he studies a case with a view to its treatment;" as "the first and most obvious requisite for a practitioner is to be able to recognize a disease when he sees it, to distinguish it from others that resemble it, and to foretell its probable course and termination.

The chapter on therapeutics is excellent, including diet, the situation and management of the sick room, bed, &c., and nursing; and the chapter on hygiene, private and public, is admirable. In this we find: "Among the habits of life which militate most against health, and tend to counter act the best medical treatment, the chief are sloth, luxury, dissipation, indulgence in the pleasures of the table, the abuse of spirituous liquors, opium, and tobacco, irregularity in the time of taking meals and rest, and want of personal cleanliness." It is a work every physician ought to have.

The Century Magazine for August, "The Midsummer Holiday number," is an unexceptionably good one and a literary treat. Besides a number of the "heavier" class of articles, such as "A Glance at British Wild Flowers," with a wealth of illustration,—"General Sam Housen,"—"Chinese Gordon," throwing much light upon the policy of this remarkable man,—and "On the Track of Ulysses." There are two novels commenced which promise to be good—"A new England Winter" and "A Problematic Character." The editor comes down heavily (perhaps not heavily enough) on "Business Gambling" and tells us that nothing but *unfair advantage* wins steadily in selling "long" or selling "short," or dealing in "futures." And in reference to political reform we are told that "it is being more generally perceived that the one fundamental reform of importance—without which the judgment of the country on any other question annot be arrived at—is the thorough, general, and permanent divorce of politics and patronage. This is the peoples reform, and through it alone may they hope to realize the aim of the Constitution, by the reënfranchisement of the voter."

The September Century is hardly a less valuable contribution. In it we find, amongst other good things, "The New Astronomy"—"Spots on the Sun,"—and a paper on that strange man, "Emile Littré." The story, "Dr. Sevier," which had been dull in June and July, becomes much more interesting. On "the rescue of Chinese Gordon" there is a very interesting "open letter" by R. E. Colston, Late Bey, general staff of the Egyptian army. On "The late Dr. Dorner and the 'New Theology' there is a good paper by Newman Smyth. He writes: "The cruelly groundless suspicion of "Dornerism" as a practically perilous influence among us is one of those misunderstandings and misrepresentations of the views of good men which are apt to arise, and to disappear, with theological panics. The wise are not alarmed or misled by them.... Dorner's work is not indeed a final word or completed task of theology; but his endeavor to carry all questions of doctrine up into the harmony of the principles of faith which are embodied in Christ—the real and authoritative revelation of God on earth—is in the line of the strongest and purest spiritual movement of our times, and indicates the hopeful way of further progress for theology. The so-called "new theology" can surpass the old only as it shall prove itself to be more thoroughly, practically and profoundly christian—more distinctively Christian in its informing principles of faith, and more broadly Christian in its transformation of life and society ...The biblical disclosures of the future life were given to us for present practical purposes; hence, they are necessarily partial and prophetic. A revelation for use by little children cannot be a full revelation....We stand, toward the New Testament prophecy of the world to come, in a position similar to that occupied by an Israelite of old to Isaiah's prophecy of the coming Messianic kingdom....Thus the New Testament teachings concerning the world to come, and particularly the few words of Christ which have come down to us, are of the nature of unfulfilled prophecy. There are some clear lines in them, definite so far as they go; there are truths of present urgent concern to us, warnings and hopes, which he who runs may read. But they are, like all prophecy, a broken and partial revelation. They do not contain one distinct, harmonious, finished picture. ....Only when the history of redemption shall have completed God's picture will all the lines of revelation be seen finished, and all its colors blended. A certain reserve and silence of faith, therefore, before this great unfulfilled Christian prophecy, is both humility and loyalty of faith."

In "The Week" of August 14th, "Bystander" draws attention to the lively controversy which had been going on about religion in the English Reviews between the agnostic, Mr. Herbert Spencer, the positivist, Mr. Harrison, and Sir Fitzjames Stephen, a sort of freethinker. "The result," writes "Bystander," "tends to show that perplexity is not confined to the Christian camp, and that, if we are forced to give up received beliefs, we are not likely at present to find certainty or repose elsewhere. Mr. Harrison pours scorn on Mr. Spencer's Religion of the Unknowable; Mr. Spencer pours scorn on Mr. Harrison's Religion of Humanity; Sir Fitzjames Stephen pours scorn on both. Mr. Herbert Spencer, who opened the discussion, evidently thought that he had mown down Christianity and all existing religious beliefs by one fell sweep of his philosophic scythe. Religion, he says, has its origin in dreams, which generate a belief in ghosts." Bystander distintly shows that for the dream and ghost hypothesis of the origin of religion there is not a particle of historic evidence, and says: "A more special Study of history, including the history of opinion, might perhaps make Mr. Spencer more philosophic and less acrimonious in his criticisms on Christianity."

In "The Week," on Hanlan's defeat and the report that he had sold the race, we find, "Manly sports are productive of much good, and when engaged in by gentlemen in a rational manner, are free from objection. But the moment they are made a business of by professionals, and are made the medium of betting, honour and they part company."...."Be the upshot what it may, his glory is departed, and the people who made a demi-god of a man of no calibre and questionable antecedents merely because he had the knack of using his knees better than other scullers he had met, may well profit by the lesson, and be more discriminating in conferring future honours."

PAMPHLETS RECEIVED.

Address, by the Rt. Rev. Hugh Miller Thompson, D. D., Assistant Bishop of Mississipi, A reprint from the Proceedings of the American Health Association by the State Board of Health of New Hampshire. This may be regarded as a bit of the Gospel of Health.

Prevention and Restriction of Cholera. Document issued by the Michigan State Board of Health, Dr. H. B. Bakers, Lansing, Mich, Secretary.

The Reciprocal Attitude of the medical profession and the community, by Alexander Hutchins, A. M. M. D., Brooklin, N. Y.

Common law citations relating to nuisances by Irving A. Watson, M. D., Concord, N. H; reprint from the Report of the State Board of Health.

Changes in new England population, by Nathan Allen, M. D., LL. D. Reprinted from *the Popular Science Monthly*, August, 1883.

The Prevention of disease, insanity, crime, and pauperism; a paper read before the Conference of Charities at Cincinnati by Nathan Allen, M. D.

Publisher's Notices.

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