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ON THE WATER SUPPLY.

Next to a supply of pure air, in importance as regards health, is an abundant supply of pure water.

Water may be regarded as the second essential of life, and it is of the utmost importance from a sanitary point of view that every dwelling be provided with a wholesome and full supply. The ancients, thousands of years ago, well knew that a supply of pure water was essential to health, and they were vastly more particular in providing it than the people of the present day. Hippocrates must have known the value of it, and also of the best localities in which to obtain it, or, as it is said, 'upon the aspect of its sources as well as upon its elevation.'

The chief medical officer of the medical department of the Privy Council, Mr. Simon, in his annual report, 1869, stated that, 'The doctrine, in general terms, that a vast influence is exercised over the health of communities by the quality of the water which they consume, is one which as far back in literature as any reference to such questions could be expected to exist, may be seen to have universal medical consent in its favour; and during long ages of history, the common instincts of mankind were even purer and stronger than undeveloped science. Of the many invaluable additions and improvements which medical knowledge has received within the last quarter of a century, scarcely any can, in my opinion, be compared for present practical importance to the discoveries which have given scientific exactitude to parts of the above stated general doctrine, and have enabled us definitely to connect the epidemic spread of bowel infections in this country with the existence of certain faults of water-supply. Not only is it now certain that the faulty public water-supply of a town may be the essential cause of the most terrible epidemic *outbreaks* of cholera, typhoid fever, dysentery, and other allied disorders; but even doubts are

widely entertained whether these diseases, or some of them, can possibly attain very *general* prevalence in a town except where the faulty water supply develops them.'

It is now generally believed that all supplies of water are from the rainfall; a portion of the rain percolating the earth and forming subterranean stores. Rain water, when collected in the open country, or even in cities, after rain has fallen for a little time and purified the air, is the purest water that Nature supplies.

Water does not in itself change in character, but being a powerful solvent, it is rendered noxious as it dissolves, and becomes the vehicle of, poisonous matters. These consist for the most part of excrement and refuse from the habitations and works of men, which it meets with as it washes over or traverses the earth. In cities more attention is now being given to the necessity of providing a pure water supply. But in the smaller towns, villages, and even isolated farm dwellings, little or no care is taken with this view; wells are sunk utterly regardless of locality, further than concerns *quantity* of water and convenience to dwellings. And there can be no doubt that in all these much ill health arises from the use of impure water.

The quantity of water in the earth, depends largely upon the physical outline and geological character of the district. In some strata the amount will be proportionate to the volume or thickness of the beds; others will hold indefinite quantities proportionate to the number and size of the crevices and fissures which traverse them. Water so held will not pass indifferently in any direction, but must flow in the irregular channels presented by these crevices and fissures. Water held in store in the earth does not, as a rule, maintain a horizontal level, but its surface presents considerable fall at certain points corresponding to points of discharge of springs.

As stated by Baldwin Latham, C. E., F. C. S., &c., last year at the meeting of the British Association—'The fall of the water line having been established, it is not difficult to perceive that, where a considerable difference in surface level of subterranean water is discernible, this water must be moving in the direction of its outfall or natural vent. Water level, therefore, in subterranean strata, means the line drawn from the highest point at which it accumulates to the lowest point, or point of vent. Most geological strata, in a natural state, may be considered to be full to the level of the sea; beyond this there is an extensive store of water above this level rising in many districts to a considerable altitude. The inclined surface of this water is the measure of resistance to the movement of the water in its passage, or in other words, it is the measure of the element of friction and molecular attraction which interferes with the free discharge of the water, so that the water is retained in its subterranean reservoirs and but slowly delivered from them, the rapidity of the discharge of this underground water depending on the porosity of the strata, and the size and extent of the ducts which convey it to its natural point of outfall.'

Subterranean currents of water obey the same laws with reference to their flow as streams which move on the earth's surface; and artificial works may interfere with, alter or reverse their flow. In classic times the movement of water beneath the surface of the earth appears to have been known. We are told that Pompey suffered very much, and his army of course, at Petra, in the war between he and Cæsar, as 'they could get no water on the rock, and when he attempted to sink wells, Cæsar so perverted the water-courses that the wells gave no water. Cæsar tells us that he dammed up the streams, making little lakes to hold it, so that it should not trickle down in its underground courses to the comfort of his enemies.'

Mr. Baldwin Latham records that in the year 1870 he was called upon by the Croydon Local Board, to inquire into the state of health of the inhabitants of a cluster of 69 houses situated in the hamlet of Wallington, near to the sewage irrigation works of the Croydon Local Board. He then reported, that in all the houses in which the cesspools were placed on the north of the habitation, they had been, so far as was known to the present inhabitants, entirely free from any zymotic disease, whilst in those with cesspools located in other aspects, the tenants had suffered at different times from various kinds of zymotic disease. At that time he attributed it to the effect of the prevailing winds wafting any miasms in the direction of these houses, but more careful investigation showed with respect to these houses, that the current of under-ground water was from south-east to north-west, and that the well and the cesspool were invariably on opposite sides of the house. In all cases in which the well was located, as respects the fall of the subterranean water, above the cesspool, the house had been invariably healthy, and in every case in which the cesspool was located above the water-supply, that house had so long as the water from the well was in use, never been long free from enteric fever; in fact the use of water from most of the wells so located had been prohibited by the medical gentlemen in attendance on the occupants of these houses.

He also refers to an outbreak of enteric fever which occurred in the parish of Coulsden. The inhabitants had previously suffered from outbreaks of this fever, and he found that in the case of all the occupants of all the houses affected with the disease, the cesspools were situated on the subterranean current above the well, so that polluting matter was naturally carried by the movement of the water into the well.

He says numerous other cases in different parts of the country have also been brought to his attention, which clearly show that, in many instances, if attention had been paid to the subterranean movement of the water, and the sites of the wells and cesspools exchanged, much disease and death would, in all probability, have been prevented. It is mentioned, that the plague at Constantinople particularly affected districts in which the burial-grounds stood above the places afflicted. In the seventh report of the State Board

of Health of Massachusetts, an example of drainage from a cemetery affecting health is given. The cemeteries of two villages in Italy were at the summit of a wooded hill, at a considerable distance from the houses. The spring from which water was obtained was at the foot of this hill, and ultimately the water became highly contaminated. A severe epidemic which recently visited these villages was ascribed to the use of this impure water. It was shown by Dr. Farr, with reference to the outbreaks of cholera in London, that as regards the relative intensity with which this disease visited various parts, nearly its whole force was expended on the lowest levels.

The burying places of a large proportion of the towns and villages of this country are situated in the most objectionable locality possible, as regards the water supply. *En passant* I may say, it is a lamentable matter that the location of the new Mount Pleasant Cemetery was chosen for that purpose. It is now almost in the suburbs of Yorkville, and in a few years, if the rapidity of growth of that village and of Toronto continues equal to that of the past few years, it will be in a very unsafe place both as regards well water and the surrounding air.

A well situated a few yards above a cemetery with regard to the flow of the water, says Latham 'May be perfectly safe, whereas one located below a cemetery on a direct line of flow, present experience shows that no reasonable distance can be said to be a safe limit.'

It must be observed that in all the above cases where cesspools and cemeteries are referred to as above or below the water-supply, *above* and *below* in all cases refer to the course of the flow of the subterranean water and not to the surface of the earth.

A careful hydro-geological survey alone can show positively the directions in which underground water moves. And it should be thoroughly borne in mind that, (again quoting from Baldwin Latham) 'as a rule, water under ground follows the inclination of the surface of the district, *but there are exceptions to this rule*. There are also circumstances which may modify the flow of water, such, for example, as the abstraction of a large volume of water at a particular point by pumping from a well, which well would become the centre for a drainage area extending, in all probability, to a considerable distance from the well, or in some flat districts the elevation of the water line of a river in time of flood, may reverse the direction of flow of the underground water, unless, as in the case in some wells which are known to be tidal, the volume of water flowing to the river is very large. It is scarcely possible in a town where there are so many points for pollution, to so locate a surface well as not to be affected by some of them. The use of the water from surface wells located within a town ought, therefore, to be prohibited for domestic purposes.'

As was stated by Dr. Ellis, in his lecture before the members of the Canadian Institute, in February last, in reference to the water

supplies of Toronto, the packed soil of the roadways might, in some instances, prevent underground water flowing in its more natural course toward the bay, and force it back into the nearest well. In the discussion which followed the lecture here referred to, the question was asked, can water flow or percolate as it were up hill? There can not be a doubt that water, after dissolving, and loading itself with, organic impurities at some cesspool or privy vault, may percolate into a well the mouth of which at the surface of the ground is higher than the surface at the cesspool or vault. Some think the wise precaution of 'banking up' around the mouth of a well prevents the entrance of foul water; entirely ignoring possible underground currents, probably of too free a nature to permit of much benefit from the filtering process in the soil.

It is to be hoped that some measures may soon be adopted for preventing the use of the water of wells, especially in the more densely populated parts of cities, and especially of this the metropolis of Ontario. If such measures were adopted, and also adopted the Goux or Rochdale system of disposal of excrement, the sickness and death-rate would be so reduced as to save probably twice the cost of carrying out the measures.

E. P.

NOTES AND EXTRACTS ON DISINFECTION.

RECENT PAPERS BY MEDICAL HEALTH OFFICERS ON THEORETICAL AND PRACTICAL ASPECTS OF DISINFECTION.

The subject of disinfection is not very well understood by the people generally. It must be distinctly understood and remembered that disinfectants are merely *aids* in preventing the spread of infectious diseases, and they must not be relied on too far. As commonly practiced, aerial disinfection in sick rooms is of little use, and indeed may lead to much harm on account of the false feeling of security to which it may give rise. Abundance of fresh air is perhaps the best disinfectant. Dr. Kelly, Medical Officer of Health, W. Sussex says the best are the ancient elements: Earth, Air, Fire and Water.

At a recent meeting (April 20, 1877) of the Association of Medical Officers of Health, Great Britain, two interesting papers were read on this subject of which we give below a synopsis: from the *Medical Times & Gazette*, May 12, 1877:

ON SOME THEORETICAL ASPECTS OF DISINFECTION, Dr. E. B. Baxter read a paper. He said:—Authors still employ the term "disinfection" to denote three fundamental dissimilar operations—viz., the destruction of specific contagia, the arrest of putrefaction, and the neutralization of gaseous effluvia from organic matters in a state of decomposition, which are often offensive to the sense of smell, and always injurious to health. The term "disinfectant" should be restricted to "agents capable of so modifying the contagium of a communicable disease, during its transit from a sick to a healthy indivi-

dual, as to deprive it of its specific power of infecting the latter." By allowing disinfectant, antiseptic, and chemo-cathartic operations to be confounded with one another, we help to perpetuate a wrong notion of the evidence on which the value of a true disinfectant should be based. The author criticised the experiments and resulting conclusion of Dr. Calvert, that carbolic and cresylic acids are the "only true antiseptics" as also those of Dr. Joseph Holt on the action of carbolic acid in arresting the progress of an epidemic of yellow fever. Of the two kinds of evidence thus, exemplified, one is legitimate so far as it goes—the evidence derived from epidemics. No visitation of cholera takes place without our being assured, on authority above suspicion, that the fatality of the disease was arrested by the systematic adoption of some particular method of treatment. Many are the fallacies incidental to the determination of the value of therapeutic interference with disease, those that beset our path when we try to ascertain the value of disinfectant measures in checking the spread of an epidemic are more numerous still. Were it possible, in any single case, to exclude all other possible checks to the extension of a communicable disease, then the evidence in favour of the disinfectant employed would not be merely admissible but conclusive. By an antiseptic we understand an agent capable of preventing the occurrence of putrefaction. Cold, far from being a disinfectant, is probably an excellent preservative of infective products—*e.g.*, frozen vaccine lymph. To isolate the contagium of any communicable disease—to obtain it in a state of purity—is utterly impracticable. Indeed, it is only a few diseases of the communicable class that localise their contagion in such a fashion as to enable us to obtain material of whose infective quality we can feel sure. The difficulties in the way of applying any direct test of disinfectant power become well-nigh insuperable. It is still an open question whether typhus always springs from pre-existing typhus, or whether it may not arise *de novo* from overcrowding. Till we know far more than we do now about contagia it must remain impossible to investigate their relation to disinfectants. Dr. Baxter did not doubt that they all of them "bred true." An ideally perfect fulfillment of the task of disinfection might rid the world of these infective diseases altogether. In his experiments the contagia employed were vaccine, the virus of glanders, and that of infective inflammation, which strictly speaking, is not a specific virus at all. Five disinfectant agents were examined in relation to some or all of these infectant products—*viz.*, dry heat, carbolic acid, potassic permanganate, sulphur dioxide, and chlorine. Dr. Baxter alluded to the experiments of other authorities. He endorsed two points established by Dr. Hiller, *viz.*—(1) That vaccine lymph is robbed of its infective power by exposure to a temperature of 100° C. for ten minutes; (2) that its effective power is not abolished by carbolic acid until the proportion of the latter in the mixture amounts to 2 per cent. Broadly speaking, the conclusions of Drs. Vacher and Braidwood, in reference to carbolic acid, potassic

permanganate, sulphur dioxide, and chlorine, agree with those arrived at by himself. Then he referred to the indirect method of testing disinfectant power. A putrescible substance will not begin to putrefy so long as the access of septic microzymes is prevented; the degree of putrefactive change is proportionate to their number and reproductive activity. Lastly, the putrefactive process may be checked or arrested at any point by checking or arresting their multiplication. Any agent or condition that will prevent the growth and development of septic microzymes will prevent putrefaction, and is therefore an antiseptic. We have to distinguish between such agents—*e.g.*, cold—as stop the reproductive activity of microzymes (simple antiseptics), and such as deprive them of life (germicides). All germicides are necessarily antiseptic; but it by no means follows that all antiseptics are germicides. A moderately low temperature is effectively antiseptic, while the lowest temperatures hitherto obtained have failed to show germicide power. Carbolic acid is highly antiseptic in relatively small quantities; it does not become a trustworthy germicide till it is present in the proportion of at least two per cent. The frequent attempts made to employ antiseptics as a measure of disinfectant power have all ended in failure. But there does seem to be a relation between germicide and disinfectant action sufficiently close to enable us to use the one as an indirect test of the other. For instance, the contagium-particles and septic microzymes are both capable of lying dormant for long periods of time without forfeiting their specific properties; both multiply very rapidly when introduced into suitable media, and the multiplication of both is attended by a constant and characteristic train of physical and chemical changes in their environment; both appear to thrive in alkaline and to perish in acid media; both are destroyed by heat; both seem to enjoy complete immunity from the effects of extreme cold. The differences between the media through which the contagium-particles and the microzymes are respectively disseminated might have something to do with the difference in their susceptibility. The microzymes originally employed in experiment had all been bred in Cohn's solution—consisting of small quantities of ammonium tartrate, magnesium sulphate and potassic phosphate dissolved in distilled water. The liquid is perfectly neutral in reaction. The virulent liquids employed were mostly alkaline, charged with albuminous principles and saline ingredients. The more nearly the medium containing the infective particles was made to approach the type of pure water, the more easy became the task of disinfection; on the other hand, by suspending microzymes in albuminous and highly alkaline liquids they became less and less amenable to the influence of germicides. This drew attention to the paramount importance, as regards disinfection, of the media in which infection-particles are imbedded or suspended. The difficulty of annihilating the reproductive power of septic microzymes depends primarily on the medium in which they happen to be contained. Germicide power may be taken as a measure of disin-

fectant power, provided full allowance be made for the protective influence of media. Under certain conditions the germs of septic microzymes are less easily killed than any of the contagia hitherto subjected to investigation. We may be able dimly to perceive why particles surrounded by an envelope of dried albuminous matter, or scattered through a semi-solid mass, should be protected against the operation of heat or chlorine; but why they should resist heat better in an alkaline than a neutral liquid, why turnip infusion should differ in protective power from beef tea, and this again from an infusion of melon, or a solution containing peptones,—these are questions to which no answer can at present be suggested. The problem of the immediate future as regards disinfection must consist less in the search for new disinfectants than for improved methods of employing those we already have. Drinking-water and milk are media widely different in the degree of their protective power. He would not hesitate to drink contaminated water which had been well boiled, but to raise milk to the same temperature, would not be a sufficient safeguard. That minute particles are capable of being conveyed to a considerable distance through the air against the influence of gravity has been conclusively established by the ingenious experiments of Professor Frankland. The “intrinsic” resistance of contagia to destructive agencies is insignificant in comparison with that conferred upon them by their media, and their tendency to elude our efforts by becoming scattered. The success of our operations in any given case must depend on our knowledge (1) of the media to which the infective particles are contained; (2) of the laws that govern their dissemination and propagation. We have two agents that are at once cheap and effectual—heat and sulphurous acid.

ON THE PRACTICAL ASPECTS OF DISINFECTION. — Dr. Seaton next read a paper on this subject. He said:—Heat is the agent most to be relied on for the destruction of specific poisons. Sulphurous acid, chlorine, carbolic acid, and permanganate of potash are each endowed with true disinfecting properties when used in definite proportions. Aërial disinfection as commonly practised in the sick-room is useless or positively objectionable, owing to the false sense of security it is calculated to produce. Boiling is the safest way of dealing with linen which has become infected, and which requires disinfection before being sent to the wash. When boiling is impracticable, a solution of carbolic acid in the proportion of one to forty would appear the most efficacious. For the bowel and other discharges or secretions the choice would seem practically to rest between carbolic acid and permanganate. As regards these two the advantages and disadvantages appear to be equally balanced. Dilute freely the discharges, which in typhoid or cholera are already semi-fluid, so as to obtain a fluid more easily acted on. If carbolic acid be prescribed, let the vessel be charged with two ounces of Calvert's No. 4. After use add a quart of water and one ounce of the acid. The disinfection of bedding, carpets,

clothes, etc., can be done only by dry heat. 1. The temperature should at all times and in all parts of the chamber be within certain known limits; always ten or twelve degrees above 212° Fahr. 2. The temperature should be steadily maintained within the required limits for periods of time sufficient to ensure adequate penetration of heat into the interior of bad conductors, such as beds, &c. 3. The chamber should have a current of heated air passing through it, so as to favour penetration. In disinfection by heat we have two objects to accomplish, viz.—1, to insure the material being raised to a temperature that can be depended on; 2, to do this without singeing the goods. Penetration takes place much more easily when the article is dry—a horse-hair pillow with the normal amount of hygrometric moisture requires to be heated for eight hours. White wool, cotton, silk and paper may be heated to 250° Fahr. for three hours without apparent injury. A heat of 295° Fahr. continued for about three hours singes white wool (and less so grey), white cotton and white silk, white paper and linen, but does not injure their appearance materially. For penetration of heat into a bed an exposure of eight hours is required; 250° Fahr. is the best and safest maximum heat to use. It would appear from the samples exhibited by Dr. Seaton (1.) that good bed-covers, such as are used in hospitals bear at least six bakings without material change in aspect; (2) that a slight and gradually increasing brownish tinge, the result of many bakings, occurs, and after a time their appearance and strength are undoubtedly injured; (3) that blankets are less changed. One sample, which in the period of three years had been baked thirty times and washed as often, was only slightly changed in colour and none the worse in other respects than one of the same age that had only undergone the same number of washings. The bed-maker who has worked for the Nottingham Borough Disinfecting Institution for thirty years says that since the stoving began he had not used more material for covering beds than before. The injury caused by periodical stoving of bedding, etc., such as that described above does not amount to more than may be called fair wear and tear. At the Borough Disinfecting Station, besides bedding, etc., many articles of dress, some of delicate fabrics of considerable value, are stoved. In no instance has there been any damage to the articles. Dr. Seaton minutely described the construction and method of working the disinfecting chamber. The cost of working this establishment for a year has been £114, including £20 for gas, at 3s. per 1000 cubic feet, £13 for horse hire, and the rest (£81) for the time of the men employed. There can be no question that sulphurous acid is the best agent for the disinfection of the empty room. There are many occasions where the clothes of the medical attendant require disinfection, as, for instance, after visiting a group of small-pox or scarlet fever patients. Where the practitioner has been unfortunate enough to have a patient with puerperal fever under his care, the linen requires to be boiled and the other things baked before being worn again

at a labour. But it is to the hands that he must pay special attention, and it is here that the disinfecting properties of chlorine are particularly useful. The hands should be well soaked three or four times daily in chlorinated soda. If this is done for a week, baths used at the same time frequently, and the clothes disinfected, practice may be resumed without danger. Length of absence will not compensate for a neglect of these precautions, as the practitioner may communicate the disease after many months.

IN THE DEBATE following the reading of the papers. Dr. RANSOM, of Nottingham remarked that the question of disinfection must now be treated much on the same principle as that of entozoa. We used to talk vaguely of anthelmintics and vermifuges, but now we study the life-history of worms to find out the remedy required to rid the system of these organisms. So in the future we must ascertain what particular disinfectant will be required for each separate disease.

ON THE PREVENTION OF MEASLES.

BY "MUCOR," OF MELBOURNE, VICTORIA, (From *Med. Times and Gazette*, London Eng., April 28-77.)

IT appears to me that measles may be prevented amongst civilised communities by a very simple precaution. On the strength or inferences drawn from phenomena recorded by others, and from observations made by myself, I venture to say that every father of a family may at will preclude this disease from occurring in his house, and may also prevent its spreading through the family in the event of its accidental introduction into the house by an inmate. This proposition will no doubt appear hazardous, but I trust to show that it is not altogether unsound.

Obviously the first point to determine is the cause of measles; and it may surprise etiologists to be told that this problem of causation has virtually been solved these fourteen years. Yet I suspect it will have to be admitted eventually that such is the fact. In the July and October numbers of the *American Journal of Medical Sciences* for 1862, Dr. Salisbury published his views on this subject; and although these views, like some others of this original and splendid observer, have lain almost unheeded, I conceive they contain the true explanation of the causation, and suggest a ready mode for the prevention of measles. Let me therefore ask etiologists to reconsider the experiments of Dr. Salisbury carefully, and to re-examine his conclusion by the light of more recent knowledge and in view of a few facts to be presently adduced. For the convenience of those who may not have the *American Journal* at hand to refer to, I will epitomise the two papers in question. It is sufficient to say here that Dr. Salisbury details several phenomena connected with the occurrence of measles which led him to the inference that the efficient cause of the disease may be a mildew growing on straw, and

that he made certain experiments to verify the inference, and also to ascertain whether inoculation with straw fungi would throw any protection over the inoculated. He moistened some clean wheaten straw, placed it in a box in a warm place, and found it in twenty-four hours covered with a white mildew. With some of the spores and cells of this mildew he inoculated his own arm, and two days after had mild morbillous, or morbilloid, symptoms—coughing, sneezing, lachrymation, dry throat, blotches on the face and neck, slight fever, etc. At the end of the week he was free from all these symptoms, and he then inoculated himself as before, without other result than a slight watering of the eyes, which passed off in a day. Dr. Salisbury also inoculated his wife, who suffered less than himself, and had "scarcely any perceptible blotches, yet the other symptoms . . . were all present." Subsequently he inoculated some children with similar results, and under circumstances which appeared to show that the inoculation had a decided protective influence. Finally, he inoculated twenty-seven boys in the Ohio State Reform Institution at a time when measles were present. The fungi invariably caused a red blush round the point of inoculation, as well as slight catarrhal and febrile disturbances of a measly type. Of the twenty-seven boys, twenty-three did not take measles. The other four had the characteristic rash, and were in bed for a day or two. It seems doubtful, however, whether these boys contracted the disease in the ordinary way by exposure to the common cause, or whether the symptoms had been artificially induced by the straw mildew.

Although modern writers have rejected or ignored Dr. Salisbury's views of causation, I am not aware that anyone has challenged his description of the physical effects following the introduction of straw mildews into the human body. For my part, I accept his description unhesitatingly, not only because his papers bear the impress of sterling work, but because the local and general effects of the inoculation he describes are analogous to those which will sometimes ensue when mowers or reapers handle mildewed cereals. In warm climates, farm labourers employed in getting in crops occasionally find their wounds, sores, or abrasions red and swollen, and have such severe catarrh and fever that they are thrown out of work for several days. In New South Wales, indeed, this is so fully recognized as a risk in times of "rust" and "blight" in the corn, that harvest-men then regularly demand and obtain a higher wage. It is not unlikely that the English labourer suffers similarly from "take-all," or "smut," in exceptionally moist harvest seasons, although it may not have attracted special notice. Be this as it may, I consider it has been demonstrated by Dr. Salisbury that when certain straw mildews are inoculated in man they rapidly induce a train of symptoms closely resembling those of measles. . . .

If this mildew theory of causation be sound, it is a sequence that all cases of measles have hitherto originated, and will hereafter originate, from straw (or from allied forms of vegetable matter). As

regards the remote part, all that can be said is that the history of the disease brings out that countries in which cereals have not been grown have been free from indigenous measles, and discloses nothing which is incompatible with the theory; whilst as regards the immediate past, my impression is that if those who have had either ordinary or special opportunities for observing outbreaks, for the last ten or twenty years, will be at the pains of tracing back, they will find that damp and rotten straw may generally, if not invariably, be connected with the appearance and spread of measles. But if the evidence as to the past be obscure and incomplete, that to be obtained in the future should be clear and full. Any inquiry in this direction will be but rarely complicated by questions as to the actual source of infection: for I venture to suggest that measles are seldom communicated direct from body to body, although it is commonly taught that the affection is largely propagated in this way. They who investigate this matter should have regard to no source of error. A straw mildew will colonise itself on congenial substrates in its neighbourhood just as readily as when transplanted on to the living human substrate, and perhaps with greater facility. It will be borne in mind, therefore, that a mildew occurring on damp straw may quickly overrun other moist vegetable and animal substrates, and may thus convey infection (more or less modified toxically, perhaps, by the nature of these foreign soils) to some distance from the straw starting-point. From this and other cases occasional difficulties may intervene to prevent particular cases from being relegated to their precise sources. There must always be a proportion of cases where infective agents are concerned in which the infective processes are set up under conditions that are sometimes considered anomalous or erratic, because the appearance of the disease is inexplicable. Fewer instances will be met with in connexion with measles, however, than with most of the so-called zymotic diseases. Even a superficial investigation of outbreaks will, I conceive, enable the inquirer to connect measles with damp straw as surely as ague may be connected with marsh miasm.

As I may merely outline an argument here, perhaps the most concise shape in which to put it will be to assume a mildew causation of measles. This is admittedly a resort to the *petitio principii*, but it will be a convenient form for exposition. The reader can easily correct the conclusion. I therefore submit:—1. That in a dwelling free from straw (or the like vegetable fibre) measles will not occur *de novo*. 2. That the inmates of such a dwelling have immunity even in the centre of severe epidemics. 3. That if a patient be introduced into, and remain during the whole progress of the disease in such a dwelling, the probabilities are great that the other inmates will not be affected. (In such a case, however, the nature of the excreta-disposal system of the dwelling may determine whether or not the measles will be propagated.) 4. That the inmates of isolated dwellings, the bedrooms in which certain straw, may, under

seasonal conditions, become affected with measles which apparently occur *de novo*, as they cannot be traced to a previous case. 5. That where palliasses or straw mattresses are used in some only of the bedrooms of a dwelling, the inmates who sleep in, or who are exposed to, the atmosphere of such rooms may be attacked with measles, while those who sleep in the rooms free from straw may be, and frequently are, unaffected. 6. That when the straw in bedrooms is kept dry—whether by ventilation, by the sun's rays, or by artificial heat—the inmates of such rooms do not take measles when the disease is prevalent.

These propositions have been suggested chiefly by the papers of Dr. Salisbury and partly by data collected here. These latter are too numerous to give in detail, but I may briefly allude to a few cases in illustration. The Australian summer of 1874-75 was remarkably dull, cloudy, and moist. Shortly after this unusual weather set in, thousands of families in and around Melbourne were attacked with measles, and before long the whole colony was involved. The epidemic was more extensive, though not so fatal, as that in Fiji; still the mortality was such that it was publicly discussed whether national prayers should or should not be offered up for deliverance from the pestilence. I watched the progress of the epidemic, and took special pains to search into exceptional, strange, or irreconcilable phenomena connected with origin and propagation. The results are shortly as follows:—Every shade and variety of measles was represented, from the mildest *morbilli mitiores* to the most malignant *morbilli graviores*. At Richmond, a suburb of Melbourne, three children in one family, who were playing about one day, died the next from black measles. In the Ballarat district a virulent roseolous type prevailed. All classes were attacked without distinction, but the wealthier and cleaner orders suffered least. Numerous instances of relapses, or of second attacks, occurred in and around Melbourne. Several whole families were down a second time. Some diversity of opinion existed as to the precise nature of the latter affection. It was held by some to be a hybrid or spurious form of measles, but from all accounts it was ordinary measles modified somewhat by the previous attack. A lad of eighteen, the son of a leading physician, who had been twice before, in different years, affected with measles, was attacked for the third time in this epidemic, and very severely. Dr. B., his father, informed me that he had not observed any differentiation in the symptoms of the three attacks. Throughout the epidemic I could not discover any instance of measles in a dwelling from which damp straw had been excluded, but in every house where measles occurred the presence of damp straw in the bedrooms was easily made out. The case of Dr. B.'s son was peculiar in this latter respect. I learned from him that his son not only slept on a palliasse in a room with a southern aspect, but that the palliasse was placed upon, instead of under, the hair mattress, and that this reversal of the usual order of things had

obtained for years. As an illustration of exemption, I may mention that it was brought under my notice that in an hotel by the seaside, to which a number of children from the bush were taken by their parents, not one case of measles occurred throughout the summer, though the disorder was raging all around. On inquiry I soon ascertained that instead of the common palliasse each bed was supplied with a tick filled with material called "flock." Numerous instances of a part of a family only being affected came to my knowledge. In most of these instances I found either that the escapees had not slept on straw, or that, where they had, their bedrooms admitted the morning or mid-day sun freely. In one case a landlady of an inn in a village where several children had died was concerned about her only child, whose attack she expected daily, although the child had escaped for weeks after the local appearance of measles. Contrary to my first surmises, I learnt that this child slept on straw, and that her bedroom faced west; but I eventually elicited from the mother that, in view of the chance of infection from convalescent children taken to the inn, she had moved her child to a small room over a detached kitchen. The bed was close to the chimney, and the straw was thus kept dry. Groups of families in remote villages were attacked on the same day. A curious case was related to me by a medical friend. A boy turned a lot of musty canary-seed out of a box, and, shortly after playing with it on the floor, was seized with violent irritation of all the mucous surface of the air-passages, with coughing, sneezing, etc. This was followed by a rash over the forehead and face, and the boy passed through all the stages of a disorder which could not be distinguished from ordinary measles. Measles was not present in the neighbourhood at the time. Other cases of a similar nature, supposed to have been caused by bran, pollard, chaff, etc., came under notice, but they were more obscure, or closely associated with measles epidemics. They are referred to, however, as they point to injurious effects from mildews on other forms of vegetation than straw.

The Abbotsford Nunnery and Reformatory, containing between 200 and 300 females, more than one-half of them children, was remarkable on account of its perfect freedom from measles during the epidemic. Having obtained permission to inspect the dormitories, I found that the principal of these are long rooms, with windows unshaded by verandahs or Venetian blinds on three sides. The other minor sleeping apartments do not admit such a flood of sunlight, but they are all airy and sweet, and unusually light and bright for this country, where people, unfortunately for themselves and their children, exclude the sun from their bedrooms. All the beds in the institution were of straw; the blankets, etc., had been neatly folded up, leaving the ticks fully exposed. In every room the straw in these ticks rustled and cracked under the hand as only thoroughly dry straw will. This was no doubt partly due to a wholesome regulation mentioned by the Lady Superior, by which it is provided

that all the bedding shall be periodically removed from the dormitories and aired in the sun. It may be added that the immunity of the inmates of Abbotsford was not shared by those in kindred Catholic institutions, even though they were placed under similar excellent hygienic conditions except in the matter of sunlight.

An interesting and pregnant set of facts was supplied by the Kew and Varra Bend Lunatic Asylums, near Melbourne. One of these at the time of the outbreaks contained nearly 800, the other over 900 patients, including a number of idiot and epileptic boys and girls. At each Asylum resided families of children belonging to the medical officers, storekeepers, gardeners, and other officials. A few of these children at Kew were under the same roof with the lunatics, though in another part of the building, but the greater number lived in detached houses about the grounds. During the summer all the sane children, without exception, and some of the sane adults, were attacked with measles, but not one case occurred amongst either children or adults in the wards or cottages of the insane. The only possible cause I could discover for this sharply cut line between the sane and the insane was in the bedding. The general conditions affecting the two classes were the same, but all the lunatics except those on air, or water-beds had ticks filled with straw to lie on. These palliasses of the patients are not only exposed freely in the wards daily, and aired and dried in the sun as often as may be, but they are replenished with fresh straw once a fortnight. The staffs of the two Asylums, not having before them any obvious necessity for taking such measures in their own cases, followed the usual custom of the colony—kept their children's bedrooms cool and shady, and took no thought for the straw on which they lay. . . .

It is submitted that the foregoing facts strongly support the inference reached by Dr. Salisbury. All the evidence put together, however, is but negative, and that now given of course wants confirmation. On this point I would observe that any and every epidemiologist in any part of the world may readily test my observations by inquiring into the facts connected with the incidence of measles in his own country, or in his own locality. Whatever doubt or obscurity may cling to these and other cases in the past, existing and future outbreaks in England will enable the inquirer to clear up. I leave it, therefore, to others to elicit the truth in this matter, merely observing that the question raised involves questions of far larger and higher importance than the mere suppression of measles—although this of itself would be no small boon to some nations.

That there will be many objections to the simple view of the causation of measles here taken, I am aware. Most of these, probably, have occurred to me; but as I have found them easily surmountable, I need not enlarge this paper by referring to and meeting them. One difficulty, however, may present itself to the epidemiologist, which I feel called upon to refer to. It may be asked

how, if measles be caused principally by mildews on the straw of bedding, the natives of Fiji, a tropical island free from grain, should have suffered with such unexampled severity. I may premise that the Fijians live in cane huts, with high roofs and low entrances—the interior being dark. They lie on mats of grass, sedge, flax, or vegetable fibre of some kind, and the mats are mostly old and rotten. They are vegetable feeders, and the *debris* of their food is scattered about their huts. When the ex-King Cacobau and his son landed convalescent from measles from H. M. S. *Dido*, they returned to their own quarters near Levuka. Within three weeks most of the tribe about Cacobau were attacked with the disease, which flew like wild-fire all over the islands, and within four months over 40,000 natives died—a third of the population. It will be observed that this rapidity of extension shuts out the supposition of propagation by direct contagion; for it is patent that the contagium of measles passes from body to body with less efficiency than that of plague, or small-pox, or scarlet fever. Therefore, since this measles epidemic involved a greater number in a given time than the Great Plague, or than any known epidemic of small-pox or scarlet-fever, it is an inference that its propagation was not due to a *contagium vivum* transmitted from person to person. In fact, the rate of measles propagation here was such that it is not explicable except by the assumption of a cause common to certain areas. I suggest that when Cacobau and his son passed their excreta on the surface in the vicinity of their huts, the straw fungi contained in the excreta quickly reverted on exposure to the air to their original form. These parasites, modified by submergence in the fluids of the body, were no sooner released than they returned to their old shape of aerial mildews, and in this shape, under the favouring conditions of heat and moisture, rapidly overran every particle of available substrate. As there was abundance of decaying vegetable matter strewn about, the spores of the mildew soon found their way to the huts, and flourished on the sleeping-mats. Then, when the disease declared itself suddenly among the tribe living in close proximity to Cacobau, there was a panic and a flight. Every infected native who fled of course established an independent centre of infection by means of his excreta, from which other lines of infection radiated in a similar way.

It is sufficiently obvious that my view is that the most effectual way for civilised people to avoid measles is either to discard straw altogether from their bedrooms, or to air palliasses in the sun, or dry them by the fire. . . I may mention that when the extensive epidemic occurred in this colony I gave the easy method of averting the disease here indicated as much publicity as possible. The suggestion was, of course, generally disregarded. Some persons, however, although they may have thought the notion fanciful or speculative, had yet common sense enough to argue that the drying and airing of their children's beds was a wholesome proceeding

enough, and could at all events do no harm. They therefore took this precaution, and, in every instance in which I could learn the result, with the most complete success. To their own astonishment, their families enjoyed perfect immunity, whilst all their neighbours' children were down with the measles. That these instances of escape may not have been *propter hoc* is granted; still, they have their significance. In fine, all things considered, I venture to predict that twenty or thirty years hence no decently nurtured family will have the measles. It will be as shameful to get this "straw fever" as to catch the itch.

BIBLE HYGIENE, OR THE MOSAIC CODE OF SANITATION.

EXTRACTS FROM A LECTURE DELIVERED BEFORE THE JEWISH CLUB AND INSTITUTE, BY ERNEST HART ("SANITARY RECORD").—CONCLUDED.

Dietary Laws.—In respect to the dietary laws, a great variety of details are prescribed, some of which have no obvious sanitary relation, but apparently a purely religious or sacrificial object. Time will only allow me to touch briefly on this part of the subject.

It is one of the most modern of our laws of sanitary police in this country, to prohibit the consumption of the flesh of any animal which has died from disease. This modern sanitary regulation is also part of the wisdom of Moses.

From this prohibition to the establishment of a ritual regulation by which defects in a carcase indicative of mortal disease should be held to be a bar to its consumption as food, was but a short step, and the religious authorities fixed eighteen defects, which were alleged to have been pointed out by God to Moses, and which, if discovered at the examination of the slaughtered animal, were supposed to bring it under the category of impure food and to render it unlawful for food; inasmuch as they were deemed sure to cause its death within one year. These defects were perforated gullet, torn windpipe, perforated membranes of brain or ventricles of heart, broken spine or ligaments thereof, liver or lungs defective or injured, stomach, gall-bladder, or any abdominal viscera perforated, etc. . . .

The distinction between clean and unclean animals is repeatedly noted with impressive emphasis. The animals reckoned as clean, says Dr. Kalish, were the ox, sheep, goat, hart, roebuck, fallow deer, wild goat, bison, and chamois: cloven feet and chewing the cud being the criterion. Vegetarianism, we may note, finds no scriptural sanction. 'Every moving thing that lives shall belong to you for food; just as the green herb, I give you all things.'—Genesis ix. 3. All carnivorous birds were forbidden as well as those that fly by night, and amongst fish those without scales or fins were not allowed. Now, from the sanitary point of view, I have only to say as has been said by others, that while all the clean animals were good and wholesome and many of the unclean animals were unwholesome, some of the prohibited class do not appear to be open to any dietetic reproach. Such, for example, were the hare and the coney. In respect to the

pig, dietetic reasons are believed by some to be adequate to explain the abhorrence with which it is regarded. The Jews abstain from pork on account of the loathsome affection of leprosy by which they were once disgraced, and to which the pig is liable. We all know that this animal feeds on the filthiest refuse, and is especially liable to parasitic diseases which produce tapeworm and trichina in those who feed on it. Of the general wisdom of these dietetic laws no one can entertain a doubt. Temperance and sobriety were very strictly enjoined, and the Talmud abounds in dietetic rules, most of which, although very quaintly expressed, are still very generally applicable. For instance, 'Eat only when thou art hungry, and when thy pot boils over pour it out.'

Biostatic Results of the Mosaic Law.—This very crude and imperfect review of the sanitary laws of Moses would be pointless, I fear, if I did not very briefly endeavour to place before you in conclusion a short outline of the biostatic peculiarities which may be traced to the observance of the Mosaic law. I find for this some excellent material in a paper published by Dr. John Stockton Hough in the *New York Medical Record*, 1873.

It appears that Jews marry at a younger age than other members of modern communities, and in early marriages of 100 persons only twenty-nine Christian men were under thirty, while thirty-seven Jewish men were under thirty; only fifty-four Christian women were under thirty, while sixty-seven Jewish women were under thirty.

One of the most marked and unvarying physical peculiarities of the Jewish race is the much larger proportion of boys among the births than among Christians in the same places, living under the same circumstances. I have collected with much care from various sources the following facts, and brought them together in a tabular form, as seen below. The author then gives an elaborate table, by which he shows that, whilst the average excess of male births amongst general populations amounts to $6\frac{1}{2}$ per cent., that of the Jews amounts to nearly 18 per cent. The average excess of males born in England during the last 15 years, is only, however 4 per cent. . .

The Jews present a remarkable immunity from intermittent fevers, from cholera, and other filth diseases; from convulsions and tabes mesenterica of children, and from phlegmasia of the respiratory organs.

Tschudi, in speaking of the plague of 1346, says that this malady did not effect the Jews of any country. Fracastor mentions the fact, that the Jews escaped completely the epidemic of typhus in 1505. Rau mentions the same immunity from typhus at Limacque in 1824. Ramazzini insisted on the immunity of the Jews from the intermittent fevers observed at Rome, 1691. Dagner says the Jews escaped in 1736, the epidemic of dysentery of Nimègue. M. Eisenmann insists on the extreme rarity of croup in Jewish children.

According to Dr. Stallard's work on 'London Pauperism,' Jewish children have no hereditary syphilis and scarcely any scrofula. Their greater tenacity of life is therefore not only due to better maternal

care and nursing, but to the inheritance of a better physical constitution than the Christian child.

Levy says that the mean average duration of life among the Jews, exceeds that among the Christians by about five years.

Dr. Stallard in his work on 'London Pauperism,' says that the mortality among Jewish children from one to five years is only 10 per cent., while among the Christians it is 17 per cent. The average duration of the life of the Christian in London is 37 years—of the Jew 49 years. The mean duration of life in the general population in London in the 37 years 1840-76 was 41 years.

In Germany the excess in favour of the Jews as regards the mean average appears to be eleven years.

In France the mean mortality amongst Christians is 36 years 11 months, amongst Jews 48 years 9 months. In the first 8 years of life, of 100 children of Jews 12·9 die; of 100 children of Christians 24·1 die. Among 100 Christians, 38·1 attain to 50 years, and 54 among the Jews; 13·4 Christians attain to 70 years, while 27·4 Jews attain the same age. One quarter of Christians attain only 6 years 11 months, and one quarter of all Jews 28 years 3 months. The Jews in England and Wales appear to be increasing in recent years. The proportion of Jewish to total marriages in the five years 1841-1845 was only 1·2 per 1,000, whereas in the five years 1871-5 it had increased to 2·3 per 1,000.

It is also found from statistical information that suicide is much less common among the Jews than among other religionists. Crimes are of much less frequent occurrence amongst the Jews than amongst other nations, and illegitimate children are much less frequent amongst them; chastity amongst Jewesses being more prevalent than with other nations. Judged by the proportion of illegitimate children they are three times as chaste as the women of the races amongst whom they live.

Still births appear to be less prevalent among the Jews than among other nations, and according to Levy the Jews lose fewer children than other religionists.

Besides the physical causes of longevity already mentioned, there are others which may have weight in this direction. Among them the fact of Jews being obliged to keep two Sundays in a week, besides Jewish, Christian, and political holidays, or two out of every seven days being lost to business, gives them by necessity about twice as many days of leisure as Christians. They do not engage in mining, mechanics, and other hazardous occupations. The biblical and traditional prohibition of certain aliments is favourable to longevity. The fifth and last summary of causes to which M. Legoyt attributes the greater mean average duration of life of this people, is that family feeling is more developed in them than in Christians, thereby ensuring to their children and their aged and infirm parents a more active solicitude; to the new-born the mothers nursing; to the poor a more efficacious assistance. Their charity is unequalled; their morality is demonstrated by judiciary statistics; firmness and serenity of spirit are the most marked traits of their character, and proceed from a

profound faith, and an unalterable confidence in Providence. They rarely use alcoholic liquors to excess. Their religious customs enforce cleanliness, both personal and in their dwellings; and two families are never found inhabiting the same apartment.

On the other side, among the conditions unfavourable to longevity we may mention their almost universal habit of residence in large cities, and the rarity of their engagement in agricultural pursuits. This, however, is the result of the persecuting legislation of past ages. The Jews of the Bible and of Palestine were essentially a pastoral and a warlike race.

The Jews have always taken every precaution to preserve the life of every individual born, to such an extent that the Mosaic laws prescribe stringent measures, even in the construction of their houses, requiring 'balustrades about the roofs to keep the children from falling from them.'

Thus in reviewing the sanitary code of Moses we have seen a system of laws which operate to prevent those fertile sources of zymotic disease which are to be found in the pollution of air, soil and water, and which prescribe effectual isolation of infectious diseases and rigorous methods of disinfection. We have seen that they include regulations admirably adapted to preserve personal cleanliness, dietetic care and sobriety. If anyone should possess the sound mind in a sound body it is the Israelite who follows the Mosaic law, and the Talmudic tradition. We hear much, and possibly we think much of the remarkable ethnic historic spectacle presented by the Jews alone amongst the nations. They have floated down the tide of Time subjected to many storms, buffeted by waves of crushing oppression and exterminating cruelty. They have been imprisoned in the close dark and unwholesome ghettos of continental cities; massacred by Asiatics and by Europeans, burnt by priests, tortured by soldiers, and subject to all the conditions of physical degradation which theological hatred and interested cruelty could devise. Their physical vitality, their pride and energy of race, their ethnic characters, and their intellectual force appear to be unimpaired. Speaking only of that aspect of Judaism at which we are looking to-night, I feel entitled to say that the ordinances established by Moses for the physical guidance of the people whom he led out of bondage, were such as in themselves do much to explain this enduring vitality and this proud persistence of physical and mental energy. Laws which enjoin and customs which preserve cleanliness, sobriety, chastity, and family affection, afford to any race excellent preliminary pledges of permanence amongst the nations. Given a race of high organization, such as the Hebrew or Semitic people, a lawgiver who foresaw and prescribed conditions which ensured a large excess of male births, and who imposed upon his people an unsurpassed and as yet unrivalled code of sanitary and moral law sealed by the most solemn religious sanctions, and we have all those elements of moral, intellectual and physical power which are the birth-right and the privilege of the Jews of to-day, and which it is their solemn duty to use, so that they shall at least not lessen the greatness of their inheritance.

RESTRICTION AND PREVENTION OF SCARLET FEVER.

FROM A DOCUMENT ISSUED BY THE MICHIGAN STATE BOARD OF HEALTH FOR PUBLIC DISTRIBUTION.

Scarlet Fever is now believed to be one of the most contagious diseases. It is sometimes called 'Scarlatina,' 'Scarlet Rash,' etc. One attack usually prevents subsequent attacks. The greatest number of deaths from this disease are of children under ten years of age. Adult persons do sometimes have the disease. Scarlet Fever is believed to arise from a special contagium or poison which may be conveyed, to persons previously unaffected, by personal contact, by infected clothing or paper rags, or by any of the discharges from the body of a person affected with the disease.

The discharges from the throat, nose, and mouth are considered extremely dangerous, but those from the skin, eyes, ears, kidneys and bowels, are also dangerous, and remain so for a considerable time.

Filth, all forms of uncleanness, and neglect of ventilation increase the danger of spreading the disease.

Communication—It is believed that the disease may be communicated by a person recovering therefrom so long as the usual subsequent scaling or peeling of the skin continues, which sometimes is not completed before the lapse of seventy or eighty days, although usually completed sooner.

The interval of time which may elapse after exposure to the contagium of scarlet fever and during which a susceptible person so exposed may expect to be taken sick with the disease, varies from one to fourteen days.

Separation of the sick from the well. Whenever a child has sore throat and fever, and especially when this is accompanied by a rash on the body, the child should be immediately isolated as completely as possible from other members of the household, and from other persons, until a physician has seen it and determined whether it has scarlet fever. All persons known to be sick with this disease should be promptly and thoroughly isolated from the public.

That this is of more importance than in the case of small-pox is indicated by the fact of the much greater number of cases of sickness and of deaths from scarlet fever,—a disease in which there is no such prevention known as vaccination.

The room into which one sick with this disease is placed should previously be cleared of all needless clothing, carpets, drapery, and other materials likely to harbor the poison of the disease, except such articles as are essential to the well-being of the patient. The sick room may have no carpet, or only pieces which can afterwards be destroyed. Provision should be made for the introduction of a liberal supply of fresh air and the continual change of the air of the room without sensible currents or drafts.

Pocket-handkerchiefs, that need to be saved, should not be used by the patient; small pieces of rag should be substituted therefor, and after being once used should be immediately burned.

Soiled bed and body linen should be placed in vessels of water containing chlorinated soda, chlorinated lime, or other disinfectant before removal from the sick room. For this purpose chlorinated soda is the neatest, and most convenient because it can be used with soap, but it is apt to lose its disinfecting properties by age. Chlorinated lime if used too freely may destroy articles of clothing with which it comes in contact, but if properly used it is the safest as a disinfectant.

The discharges from the patient should all be received into vessels containing chlorinated lime (commonly called 'chloride of lime,') sulphate of iron, or some other known disinfectant, and the same buried at once, and not by any means be thrown into a running stream, nor into a cesspool, or water closet, except after having been thoroughly disinfected. All vessels should be kept scrupulously clean and disinfected.

Perfect cleanliness of nurses and attendants should be enjoined and secured. As the hands of nurses of necessity become frequently contaminated by the poison of the disease, a good supply of towels and two basins—one containing solution of chlorinated soda (Labaracque's solution) chlorinated lime or other disinfecting solution, and another for plain soap and water, should be always at hand and freely used.

Persons who are attending upon children or other persons suffering from Scarlet Fever, and also the members of the patient's family, should not mingle with other people nor permit the entrance of children into their house.

Funerals of those dying from Scarlet Fever should be strictly private and the corpse not exposed to view. To avoid mistakes, notices of such deaths in the papers should state that the deceased died of Scarlet Fever.

All persons recovering from Scarlet Fever should be considered dangerous, and therefore should not attend school, church, or any public assembly, or use any public conveyance, so long as any scaling or peeling of the skin, soreness of the eyes or air passages, or symptoms of dropsy remain. No person recovering from Scarlet Fever should thus endanger the public health nor appear in public until after having taken four times, at intervals of two days, a thorough bath. This cleansing, however, should be deferred until the physician in charge considers it prudent. After recovery from Scarlet Fever, no person should appear in public wearing the same clothing worn while sick with or recovering from this disease, except such clothing has been thoroughly disinfected by some such method as herein specified.

Gaseous disinfection, or fumigation, can only be completely and entirely effectual in the absence of living persons, as fumes strong enough for the purpose are destructive of human life. This need not deter from doing so much as is possible, without injury to sick persons, for the purification of the air of rooms occupied by them,—a

liberal supply of pure air should be secured ; but after the sick have recovered, the room, furniture, and other contents not to be destroyed, should be thoroughly exposed for several hours to strong fumes of chlorine gas or to fumigation by burning sulphur ; or the paper on the walls, if any, removed and burnt, the furniture scrubbed or polished, and the room thoroughly scrubbed and whitewashed.

When a room and contents are to be disinfected, all articles therein should be spread out so as to expose the greatest amount of surface to the action of the disinfectant, and all openings to the room should be closed.

To generate Chlorine, take peroxide of manganese (to be obtained at any drug store), place in an earthen dish and add one pound of hydrochloric acid (sometimes called muratic acid), to each four ounces of the peroxide of manganese. Care should be taken not to inhale the gas. After being certain that continuous evolution of chlorine has been secured, leave the room and close the door of exit. The bleaching properties of chlorine may destroy the color of colored goods exposed to it, but as a disinfectant it is one of the best.

To generate Sulphurous Acid gas, put live coals on top of ashes in a metallic pan, and place on the coals sulphur in powder or fragments. A convenient way is to place the coals and sulphur on a heated stove plate or cover turned bottom upward in a pan half filled with ashes. To disinfect 100 cubic feet of air requires the thorough combustion of about one and one-half ounces of sulphur.

Rooms should be kept closed and subjected to the action of the disinfecting gas for six or eight hours, and afterwards thoroughly aired by opening doors and windows.

Heat as a disinfectant.—It is believed that heat sufficient to be disinfectant for this disease may be secured without destroying ordinary articles of clothing, say at 240° to 256° F. In cities and villages it may be practicable for the local boards of health to provide a central disinfecting oven or room where a large amount of material may be carried, in a closed conveyance, from houses where the disease has prevailed, and, after disinfection by heat under the direction of some competent officer of the board, returned in another conveyance to the owners. For certain articles, this may well supplement the gaseous disinfectant at private houses, which cannot in every case be conveniently and thoroughly applied to all articles.

Whenever a case of this disease occurs in a locality, prompt and vigorous action should be taken for the restriction of the disease, by early isolation of those sick with the disease, and by the destruction or disinfection of all articles likely to be infected.

Plain and distinct notices should be placed upon the premises or house in which there is a person sick with Scarlet Fever, and no child that has not had the disease should be allowed to enter, or to associate with persons who do enter such house or room.

All clothing, carpets, curtains, furniture, and other substances that are to be destroyed, should be dealt with in a way to avoid convey-

ing the poison to any person in the process ; they should not be simply thrown away, or into some stream or body of water ; and if burned should be completely burned and not simply heated or dealt with in a way to diffuse the poison of the disease.

All such infected substances, which are not destroyed, should be thoroughly boiled, subjected to a dry heat of 250° F. in a closed room or disinfecting oven, or be thoroughly exposed to fumes of chlorine or of burning sulphur. Books and furs that have been used or handled by those convalescing from this disease are particularly liable to convey the poison to children who have never had the disease. Great care should be used to thoroughly disinfect any such articles that are not destroyed ; and caution should be exercised before allowing children who have not had Scarlet Fever to handle any such articles that have been used by persons liable to communicate the disease.

Fresh air.—Although not so active for the destruction of the contagium as is chlorine or sulphurous acid gas, pure air, in liberal amount, is a very useful and important agent for the dilution and destruction of the poison of the disease ; it should be employed freely ; but with this as with other procedures for the safety of the unaffected, great care should be taken not to increase the danger to those already sick from any cause, who are usually endangered by exposure to drafts of cold air, and this is especially true of persons convalescing from Scarlet Fever.

PROFESSOR TYNDALL ON THE CAUSES OF DISEASE.

Dr. Corfield delivered a somewhat lengthy course of lectures at the Society of Arts during last winter, for the purpose of educating the masses on the subjects of air, water, infection, disinfection, the spread of infectious diseases and their prevention, and the course proved to be immensely popular.

At the end of the series the chair was occupied by Prof. Tyndall. Referring to the cause of diseases, he said he had made it plain that contagion consisted of definite particles sometimes floating in gas, or in the air, or in the liquid which we drank ; and that, like organic seeds in the soil, they multiplied themselves indefinitely in suitable media, the great probability being that these disease-producing particles were living things. A close study of the subject, extending now over two years, enabled him to agree entirely with the lecturer in the parallelism throughout which he had declared to exist between the phenomena of these disease-poisons and the phenomena of ordinary putrefaction. Take the case of flies communicating diseases from one person to another, that was exactly paralleled by phenomena in putrefaction. Thus he had chopped up a beefsteak, steeped it in water, raised the temperature a little above the temperature of the blood, poured off the water, filtered it, and got a perfect-

ly clear liquid ; but that placed in a bottle and exposed to the air, began to get more and more turbid, and that turbid liquid, under the microscope, was soon found to be swarming with living organisms. By heating this perfectly clear beef tea, it would be sterilised, everything being killed which was capable of producing those little organisms which produced the turbidity ; or by keeping it perfectly stopped from the air, and from coming in contact with any floating particles, it might be preserved for years. He had now some sterilised beef tea of this sort, which had been preserved for eighteen months, in a state of perfect transparency, but if a fly dipped its foot into an adjacent vessel containing some of the turbid fluid, and then into the transparent fluid, that contact would be sufficient to infect the sterilised liquid—just as a surgeon dipped the point of a lancet into vaccine lymph to vaccinate, and in forty-eight hours the clear liquid would be swarming with these living organisms. In this, as in the case of contagious disease, there was a period of incubation. In proof of what the lecturer had stated that here the contagion of these communicable diseases was not gaseous or liquid, but solid particles, he would describe an experiment he had only made a few weeks since. Eighteen months since he had a place prepared from which all floating particles of dust were removed, and in it he placed a number of vessels containing animal and vegetable refuse, and also two or three vessels containing perfectly clear beef tea and mutton broth, as transparent as water, in which the infective particles have been killed by heat. Although all these vessels had stood during that time side by side there had been no communication of contagion from one to the other, the beef-tea and mutton-broth remaining as transparent as when put in, though the other vessels emitted the most noisome stench ; but if a bubble was caused in one of the putrefying masses by blowing into it, and that rose to the surface and burst, and the spray of the bubble was allowed to fall on the transparent beef-tea or mutton-broth, in forty-eight hours they became as bad as their neighbours. It was not, therefore, sewer gas which did the mischief, but the particles which were driven up and scattered by the sewer gas. Referring to another point on which the lecturer had insisted—viz., that there was no power of spontaneous generation of the germs or contagion of diseases, Professor Tyndall said that, though at present great names were opposed to that view, he would venture to predict that ten years hence there would be very few great names opposed to the lecturer on that matter. With regard to the power of disease poisons to be generated in decomposing animal matter, he would say that for the last twenty-one years he had been in the habit of visiting the upper Alpine valleys where, amongst the Swiss chalets, there was the most abominable decomposition going on from day to day, and exceedingly bad smells ; but there these contagious diseases were entirely unknown. If, however, a person suffering from typhoid fever were transported there it would spread like wild-fire, from this infected focus, and the disease would pass through the entire

population. It might be taken, therefore, that any of these special diseases required its special germ or seed for its production, just as you required a grape seed to produce a vine. He entirely agreed with all that the lecturer had stated as to these diseases "breeding true," for they never found the virus of small-pox producing typhoid, or *vice versa*. The subject was one of the most important which could engage the attention of the scientific physician, for in the whole range of medical art and science there was not a subject of equal importance. But in applying to daily practice this question of infectious diseases the scientific physician must not stand alone, he ought to be aided by the sympathy of an enlightened public. Here, in England, we did not like to be pressed into good behaviour by external influence, and if anything was to come in the way of really great sanitary improvement, it would be from the people themselves. Hence, in a people who were jealous of Government interference, it was of primary importance that they should be properly instructed; and he did not exaggerate in the slightest degree in declaring that solemn, sound, and healthy instruction had been imparted to them in the lecture to which they had just listened.—*Medical Press and Circular*.

ABSTRACT OF A SKETCH OF THE RECENT EPIDEMIC OF TYPHOID FEVER IN PARIS.

BY DR. BOURDON, MEDECIN DE L'HOPITAL DE LA CHARITIE MEMBRE DE L'ACADEMIE DE MEDICINE.—(*Lancet*).

I desire to place before the readers of the *Lancet* a brief account of the epidemic of typhoid fever with which Paris is at the present time affected. This disease as is well known, is epidemic in our capital, and an exacerbation takes place every year during the summer and autumn. This year, however, the disease has spread considerably, and has attained the dimensions of an epidemic; for, in the second quarter of the year, the total number of typhoid patients in the hospitals of Paris amounted only to 169, with a mortality of 20 per cent., whilst in the third quarter the number of those affected rose to 714—that is to say, was more than quadrupled, and the mortality reached the enormous proportion of 39 per cent.

If we investigate the atmospheric conditions, which might be regarded as constituting the causes of this epidemic, it will be found that in the months antecedent to the outbreak the rainfall was below the average proper to this period of the year—that there had been, in fact, a great drought. The temperature rose as usual, and remained moderate for some time. On the 9th of June, however, it suddenly increased, and continued excessively high till the 17th August. On the 18th of August it fell considerably, and the rains began. In September the draught had passed away; 69 millimetres (2.76 inches) of rain fell.

The exacerbation of the disease distinctly coincided with the dryness and heat, and we may notice that the paroxysm is marked much more by the excess of the mortality than by the number of patients. It diminished with the cessation of heat and dryness. The most severe cases occurred in August. The number of cases continued to augment subsequently to this period, but the relative mortality underwent a sudden reduction.

Etiology.—The first question, then, is—Are we to regard these exceptional atmospheric conditions as the cause of the epidemic. No doubt can be entertained that the lowering of the level of water in the subsoil exposed a whole series of putrid foci, and that the excessively high temperature was well adapted to induce fermentation, and at the same time to favor the diffusion of the effluvia produced, by causing an unusual amount of evaporation. May we not then attribute to the miasmata, so developed, the leading part in the genesis of the typhoid fever.

Whatsoever may have been the influence of this cause on the outbreak of the disease in August, the epidemic, which had diminished during September and the beginning of October, burst forth with renewed intensity towards the middle of this month, and continued to rage till November; so that the mortality, which had fallen to 163 in October, rose to 929 in November.

In regard to individual causes, we find the same predisposing causes as in other epidemics of typhoid fever: in the first instance, old age and youth; imperfect acclimatisation; then all debilitating causes, unfavourable hygienic conditions, grief, violent emotions, the exhaustion following delivery, and especially consequent upon lactation; and lastly, contagion, of which several examples could be cited. It is remarkable that this epidemic, notwithstanding its gravity, was only very rarely observed in those who had been previously attacked. Relapses, on the contrary, were frequent.

In the prognosis of the disease the employment of the thermometer has proved of extreme value. Thus when the temperature taken in the axilla rose above 104° F. (40° C.) in the evening, and did not fall or fell but little in the morning, the state of the patient was very serious. Yet several cases of recovery occurred under the use of cold sponging or baths, in cases where the temperature rose to 105.8° F. (41° C.) in the evening, and fell one or two degrees centigrade in the morning.

In the cases where relapses occurred, and which were in the most instances due to solid food having been given at too early a period or in too large a quantity, a return to the former *treatment* was usually successful.

It only remains to mention an accident I have observed on several occasions, and which bears on the subject of alimentation. Towards the close of the disease, or during the period of convalescence, I have seen some subjects suffer from vomiting, and reject not only all solid food, but the lightest food and even beef tea. In all these cases I

have been able to re-establish the digestive functions by restricting the patient to an exclusively milk diet, with a fair proportion of lime-water for those that suffered from diarrhoea, and a solution of bicarbonate of soda for those who were constipated.

[The treatment was seemingly for the most part that most common in France, and which is here called *expectant*, and which indeed might properly be termed hygienic.—ED. S. J.]

DIET AND EXERCISE.

It has been a subject of dispute among physiologists whether muscular force is produced by the oxidation or combustion of the muscular substance itself, or whether muscular tissues merely serves as a sort of furnace where the alimentary matters are burnt or oxidised, and thus produce force. In reference to this, and to the late experiments by Dr. Pavy on the pedestrians, Weston and Perkins, the *Doctor* practically observes: "The bearing of the question on the subject of diet is evident. If during exercise the muscular tissue undergoes rapid destruction, it is plain that the food most suitable for ingestion during prolonged muscular effort is that whose composition is as nearly as possible identical with that of the muscles—*i.e.* the food should be largely nitrogenous. If, on the other hand, the muscles are not themselves used up, but only serve as the site of other tissue-changes, which other tissue-changes are the source of the force set free in this case, it is equally evident that the food need not necessarily be nitrogenous, but may be of any nature adequate to go through the metamorphoses required; *i.e.* it may be non-nitrogenous, and be chiefly composed of hydro-carbonaceous substances. If the muscular tissue is disintegrated, the nitrogen contained in it must be eliminated in some other form or other; for modern physiology teaches that waste matters are not allowed to remain in the organism, but are given off through some channel. The only channels through which it can pass are the skin, lungs, alimentary canal, and kidneys. It does not appear that any appreciable amount passes out by the skin and lungs. That passing out through the intestinal canal is derived from the unabsorbed intestinal juices and undigested food; it has, therefore, no relation to tissue destruction. The urine is, therefore, the only channel 'through which the exit of nitrogen arising from the metamorphosis of nitrogenous matter can take place.' Most of the nitrogen in the urine is in the form of urea, and the way in which experimenters have endeavoured to settle the question is by measuring the amount of urea contained in the urine passed during rest and exercise respectively?

Fick and Wislicenus were, it appears, the first to make satisfactory experiments on this subject. 'They ascended, fasting, one of the high mountains of the Bernese Alps, measuring carefully the quantity of urea eliminated by the kidneys during and after the ascent. In the

case of one of them, the labour developed by this ascent may be represented by 184,287 killogrammètres; yet no increase in the urea was observed, either during or after this very severe muscular exercise. We see, thus, that the muscle (as the source of labour or heat) consumes only hydrocarbons and fats, and not albumoids.' Voit, Drs. E. Smith, Parkes, and Austin Flint, jun., have also experimented on the subject; and all, except the last-mentioned have arrived at conclusions substantially the same as those of Fick and Wislicenus. Dr. Pavy has recently published in the *Lancet* the results of the investigations made by him on Weston and Perkins, during their pedestrian performances at the Agricultural Hall, and also agree in the main with the latter. The '*Doctor*' sums up his conclusions and observes: 'He arrived at the conclusion that the force obtainable from the nitrogenous matter disintegrated is totally inadequate to supply the power for the work done,' and that 'even allowing a large margin for error in calculation, it is utterly impossible that the force produced could have been produced by oxidation of muscular tissue.' And 'we may remark that Dr. Pavy says that Dr. Flint has adopted a wrong method of calculation, by which the results obtained appear widely different to Dr. Pavy. Dr. Pavy has, however, verified many of his own determinations of urea by actual combustion analyses of the quantity of nitrogen. Dr. Pavy's results certainly appear trustworthy to us, while Dr. Flint's figures certainly offer a fair field for criticism, and his inaccuracy detracts considerably from any force his argument may have.'

BOARDS OF HEALTH.—Gov. Hartranft, of Pennsylvania, says in his last message, January, 1877:—'The conviction is steadily growing among intelligent men, and especially physicians, that a State Board of Health is necessary to the health and happiness of our people. Many epidemics can be prevented and contagious diseases sensibly confined or mitigated, by the observance of a few sanitary precautions which are now ignorantly or willfully neglected. It is our duty as legislators to secure the lives and health and happiness of our people by all the means that the knowledge and ingenuity of the age place within our reach. A State Board of Health, having general supervision over local boards, investigating systematically and scientifically, and disseminating correct information, would inculcate proper habits among the people, and enable intelligent and salutary laws to be framed for the preservation of life and health.'

"When quacks, as quacks, may by good luck, to be sure,
Blunder out at haphazard a desperate cure,
In the prints of to-day, with due pomp and parade,
Case, patient, and doctor are amply displayed.
All this is quite fair—and no mortal can blame it—
If they save a man's life, they've a right to proclaim it;
But there's reason to think they might save more lives still,
Did they publish a list of the numbers they kill."

MICROCOCCI AND BACTERIA ON THE WALLS OF HOSPITAL WARDS.—Lately, M. Nepveu, head of the laboratory at La Pitié, has presented an account of his researches in this direction to the Biological Society. A square metre of one of the surgical wards [walls] having been washed for the first time in two years, the liquid pressed from the sponge was carefully examined immediately afterwards. It was found to contain micrococci in great numbers (fifty or sixty in the field of the microscope), some microbacteria, a small number of epithelial cells, some pus globules and red globules, and some irregular black masses and ovoid bodies of an unknown nature. Every precaution was taken to prevent error, the sponge being new, and previously washed in distilled water. These facts give some idea of the elements constituting what has been called "nosocomial poison," and enable us to see how the germs of a great number of diseases exist in the air of hospitals, and render them liable to become centres of infection. Although in a lesser degree, the same conditions may prevail in civil practice, especially in winter, when patients are long confined to beds surrounded by curtains and insufficiently ventilated.—*Union Med.*, April 14-77.

RELATIONS OF LIGHT AND HEAT TO CLOTHING.—Dr. Krieger, a German scientist, has been making some interesting experiments on this question, some of the results of which we give. It was observed that, taking the amount of heat absorbed by a white covering as 100, the amount absorbed by a fabric of a pale straw-color was 102; dark yellow, 140; light green, 155; dark green, 168; Turkish red, 195; light blue, 198; black, 208. These results were obtained when the heat was received directly from a luminous source; as a flame or the sun. In the shade, the differences noticed disappear. It was also ascertained that the color of the clothing does not affect radiation in any marked degree. It will be seen at once that it is quite important to have a proper regard to color in making a selection of clothing at any season of the year.—*Health Reformer*.

CHOREA AND THE EXPECTANT TREATMENT.—Drs. Gray and Tuckwell (*London Lancet*) say that they have treated without medicine, thirty-eight cases of chorea. Their success was, at least, equal to the treatment by medicine. The average duration of their cases was nine weeks and six days, or exactly the average of See's one hundred and seventeen cases treated with various medicines. They state that they are inclined to rely on isolation, a good nurse, a large crib, well padded and walled in with pillows, plenty of nutritious food without stimulants, until more conclusive evidence can be adduced that the disease is favorably influenced in the slightest degree.—*Detroit Rev. of Med.*

THE PRACTICAL foundation of culture and virtue is food, good and abundant. A family half starved or improperly fed for a few generations, cannot produce vigorous brains. Whatever vigor they have goes to the reproductive organs.—*Med. & Surg. Reporter*.

"WHAT LIGHT TO USE?"—This is a question of daily concern with housekeepers, and it is extremely difficult to answer in a way which in the long run proves satisfactory. Gas is undoubtedly injurious to health of body and perfection of sight. The carbonised and sulphuretted atmosphere prevailing in rooms wherein gas is consumed—or more accurately half burnt—cannot fail to affect the throat and air-passages unfavourably, even if the mischief goes no further, which we fear too often happens. It is possible that the prevalence of pulmonary affections in the last half-century may be in some way connected with the extended use of gas in large workshops, places of public resort, and private houses. The vitiated air has also an irritating effect on the surface of the eye, if not on the organ itself. Most of the substitutes for gas for use in lamps are either dangerous, difficult of manipulation, uncleanly, or emit a disagreeable odour during combustion. Candles give a light intolerable after the use of gas, unless employed in numbers to great and costly for domestic purposes. What is to be done? Science has not yet furnished us with a cheap and practicable magnesium or electric light. The latter will probably be the light of the future. Would it not be worth while for inventors to concentrate their ingenuity on this last-mentioned agent of illumination, with a view to devise some method by which it might be applied in a diminutive form to the purpose of lighting apartments of small dimensions? It can scarcely be impossible that a luminous point of moderate size, capable of diffusion by properly adjusted reflectors, should be obtained without either excessive cost or insuperable difficulty. We fancy the apparent impracticability of the fact of ingenuity required is in great part due to the fact that the problem has not yet been attempted at close quarters, and on a modest scale.—*Lancet*, London, Eng., April 14-77.

WOMEN'S DRESS.

To the Editor of the SANITARY JOURNAL.

DEAR SIR,—I have observed that you have endeavoured in your JOURNAL on several occasions to direct attention to the necessity that exists for reform in women's dress. If anything a wife and mother could say in it, with your permission, would be of any use, aid in any way or degree in attracting attention toward or action in this matter, I should be very glad indeed. For it is one of the most important in the whole scope of personal hygiene, or indeed of public health, for it very materially affects not only the mothers of the present generation but the children of future ones.

I observed in the JOURNAL of March, 1876, a brief extract of an address delivered at a large meeting of ladies in a town in Finland, convened for the purpose of forming a society for opposing extravagance in dress. It reads so beautiful and is so suggestive, it might I think appear again in the JOURNAL with profit. Could not

such a society be formed as well in Canada as in Finland, as well in Toronto as in Ihveskyla.

While there may be and are in this country, as in others, many 'slaves of fashion,' there are many sensible wives and mothers, who if they could once be brought to a sense and knowledge of the injury to health, present and future, of many of the present fashions, would heartily join in a movement if once set on foot, say for organizing a society, for general reform in dress; which would I am greatly inclined to believe be sustained.

I could not advocate an inelegant or a dowdy dress, but it is not necessary to distort the figure in order to dress elegantly. Is the small disproportioned life crushing waist beautiful; or is a woman graceful when tilted forward on high-heeled boots, with hips thrown back to maintain her equilibrium; or with hands in a muff and shoulders forced forward onto the walls of the chest, impeding the action of the lungs; or with one hand behind supporting her mud bedraggled skirts, and the opposite shoulder 'leading off' in advance. Surely such is, as Dr. Washington Atlee said last year, in a most eloquent and instructive address before the Medical Society of Pennsylvania, and published in the SANITARY JOURNAL of June last, such is 'a caricature, a burlesque on female beauty!'

I will not, sir, attempt to even enumerate the many ways in which our present fashions injure the health of mothers and children, but prefer to leave that for you to do, and I trust you will frequently do so, and enlarge too upon them; and also that many women as well as men in this fair country will read your valuable JOURNAL. But I should like to briefly refer to two or three points in connection with this important subject for the consideration of all concerned.

The fashions of the present age affect and injure the figure and beauty of woman, of which she should be justly proud. They effect directly the health, which is of greater moment; then, a woman who is not healthy cannot long be beautiful, however lovely she may be when in health. And lastly, there is the great evil of expense. Surely a woman may dress neatly, beautifully, and even elegantly, without such great expense as some incur whose means will not admit of it without more or less seriously affecting the comforts and health of the family circle. I know those who spend so much time in making showy dresses that the comforts of husband and family are neglected, and themselves over taxed and rendered miserable. And these are those wives who spend so much money on dress as to seriously embarrass their husbands financially.

Oh! let us hope for the time when all good women shall be most content, as they will be most healthy and happy.

'Vail'd in a simple robe, their best attire,
Beyond the pomp of dress.'

Sincerely yours,

A WIFE AND MOTHER.

Toronto, May 1877.

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COURT-ROOMS AND JUDGES.

Next in importance, probably, to the ventilation of public schools, is the ventilation of the court-rooms of Canada. The *Lancet* of April 21 comments strongly on the ill-ventilated court-rooms of London, and says 'the measures needed are two—more judges and better courts.' 'The injury inflicted on judges, of all ranks, by compelling them to sit in ill-ventilated courts many hours daily is a subject for serious consideration. It is strange the matter, although frequently mentioned, has not yet attracted the attention it demands. There is something humiliating in the reflection that the evil has not long since been remedied.' The necessity for better court-rooms must certainly be equally great in Canada, it can hardly be greater there, and the remarks of the *Lancet* are as applicable to this country as if they had been intended for it. The rooms in which many Division Courts are held throughout the country, are, to use a common-place expression 'a disgrace to civilization,' and those of the higher courts in Toronto are but little better. The judges, with all those in attendance, must suffer much from the effects of foul air. There can hardly be a doubt that the comparatively early death of the late lamented Judge Duggan was hastened if not wholly caused by the foul air of the court-room. If any other causes operated, chief of them was overwork. We have heard him complain of both these causes. We cannot speak as regards the overwork of the judges in general. Doubtless the mental effort demanded to take in and consider separately and collectively all the points involved in an intricate case and to sum up and pass conscientious judgment, is very great, and hence over mental work is not uncommon among them. But we should like to be heard in reference to the foul air usually breathed by them, and which is enough to excuse errors in judgment should they ever make any. A court-room stands in a different relation to the public to that of a church or public hall; while in the

latter the people congregate together for only an hour or two on each occasion, one sitting of a court often occupies many hours, and every minute of the prolonged sitting intensifies the foulness of the air. Many of those too, who occupy court-rooms, especially of the inferior courts, have not a reputation for over cleanliness of person, and the air in the room often becomes positively intolerable. While most others pass in and out of the room and get a few 'breaths' of fresh air, the judge sits still, and from his elevated position breathes the fouler stratas of the foul atmosphere of the room. Now although in one respect the lives of all men may be of equal value, to the commonwealth one life may be of much greater value than another. Judges are not made of common stuff, and no state can afford to have one leave prematurely the stage of life and action. Yet they are required to almost constantly expose themselves to one of the most potent factors of disease. It may be that it is not the special duty of the judges to call for or demand better court-rooms. But they suffer most and the instinct or sense of self-preservation ought to be enough to impel them to take some action. If it is not, or if they entertain objections to take decided action because it might seem to arise from selfishness on their part, the health of those over whom they for the time preside is entitled to deep consideration by them, and to some sort of action. As a class judges should have much influence in any matter, and if they would but exercise it in some form in order to secure good, well-ventilated court-rooms, they would be doing a good and gratuitous public service; for all classes are forced to be more or less in court, and now to suffer more or less from the bad construction of the rooms. Many of the judges of Ontario are readers, we have reason to believe, of this JOURNAL, and we should be glad to be able to influence them in the slightest degree toward some united move for a reform, decided and complete, in the matter of court-rooms and court-houses throughout the Dominion.

SLEEP AND HEALTH.

Wherever there exists a nervous system, there is found antagonistic to the activity of the organism, this periodical invigorator—'balmy sleep.' The exact nature and condition of this peculiar and inscrutable condition, philosophers and physiologists have in vain attempted to fathom. All organs of the body require rest; the brain cannot, any more than other organs, continue to act without ceasing, and

the suspension of its functional activity is essential to its nutritive repair. It being the direct instrument of the mind, in order that its remission from action—its rest, may be perfect, it appears as if all mental manifestations must entirely cease—at least we must cease to think.

Most parts of the body when they are overworked or deprived of rest have various means of relief, they may refuse to act, or they may be relieved to a certain extent by other organs. If the stomach be overworked, the appetite fails, and the task is probably no longer imposed, or if it is, the organ throws off its burden. The skin may relieve the overtaxed lungs, and the kidneys the overtaxed skin. But there does not appear to be any vicarious relief to the overwrought brain in man's organization; if over-worked or deprived of rest, it suffers alone until the excitement which want of rest produces is so increased by the debility which it causes that sleep becomes almost impossible. It is essential that the sleep be sound, or perfect, as well as plentiful. During painful and harrassing dreams, the emotional disturbance continues, and the individual awakens with a feeling of exhaustion, rather than of invigoration. The conditions for the most perfect rest and nutritive repair of this organ of the mind are, as it were, provided for in the arrangement of the earth in its relation to the sun. The time for action—the light of day, is succeeded by the silence and quietude of night, the best time, undoubtedly, for mental repose.

In this 'fast' age, of incessant action and competition, it can hardly be otherwise than that many suffer from the effects of want of sleep; suffer frequently unconscious of the cause. The active man of business, bent on wealth, permits his mind to dwell upon his affairs when he should be asleep; the professional man and the student, bent on 'rising,' permit or compel their studies and investigations to interfere with the necessary repose of mind and rest of brain; mothers and daughters allow domestic affairs, perhaps of a superfluous character, or society, to consume the hours which should be devoted to sleep; and school children even are so forced on with a *vis a fronte* or a *vis a tergo*—the prize or the rod, that plenty of rest of mind and sound refreshing repose is impossible.

Is it not quite possible, even probable, that one prominent cause of the increase in insanity which is said to prevail, is want of sleep? Want of refreshing repose, Bucknill and Tuke believe to be the 'true origin of insanity dependant upon moral causes. Very frequently

when strong emotion leads to insanity, it causes in the first instance complete loss of sleep.' 'One of the most common effects is a degree of nervous irritability and peevishness which even the happiest self-discipline can scarcely control.'

As the evil effects of too little sleep develop and increase in the nervous structures, the functions of organic life become more or less disordered; digestion and assimilation are imperfectly performed, and the tone of all the organs gradually but surely decline. In short, general disordered health and a premature grave is the final result of persisting in depriving the brain of sufficient rest. No doubt, as an experienced medical man has observed, many die to get sleep.

Annotations.

INFANT FEEDING.

At the last meeting of the Surgical Society of Ireland on Friday, April 6th, 1877, Dr. FAUSSETT read a paper on Infant Feeding. After much experience he had found that cocoa, when pure and deprived of excess of fatty matter, may be safely relied upon as an admirable basis of infant food, cheap and easily prepared. The great advantages to be derived from its employment in the feeding of infants, especially of the poor, are obvious, for, besides its heat-producing, flesh-forming ingredients, it is cheap, simple and readily available. A teaspoonful, more or less, of a sound preparation of cocoa to half-a-pint of fluid, partly water and partly milk, even skimmed milk, when boiled for a minute or two, affords a wholesome meal to a hungry infant, and will *cæteris paribus* be thoroughly digested. Of course Dr. Faussett admitted that the best artificial substitute for human milk was cow's milk. Dr. McClintock said, we have, of late years, found in the condensed milk, particularly that which is prepared in Switzerland, an admirable article of food for young infants. This question of infant feeding was acquiring every year increased importance, and was attracting more close attention—partly through the increasing difficulty of obtaining wet-nurses in this country or in England, and partly also from the strong moral objection that had been started, and which was daily gaining ground, against the propriety and morality of employing wet nurses at all. He believed that, even with a *bona fide* article of food, say pure milk or Anglo-Swiss milk, he still thought that the elements of success depended mainly on the mode of giving it to the child. In the artificial rearing of a child there was a great deal of judgment required on the part of the nurse or parent, and really next in importance to the mere selection of the article of food that they were going

to give the child was the consideration of these concomitant circumstances—viz., the temperature of the food, the time of giving it, the mode in which it was given, whether by bottle, or a spoon, &c.

THE SEWAGE CONFERENCE.

The Second Annual Conference held recently on the Sewage and Health of Towns at the Society of Arts has been a very successful one, says the *Sanitary Record*. Dry, or so-called dry, systems of conservancy came first for discussion, and here the Goux system, which has been described in the *SANITARY JOURNAL*, was highly approved. A good number of gentlemen who were thoroughly and practically acquainted with its working details were singularly unanimous in awarding it the palm. The absence of all machinery and the cleanly decency afforded by the bird's-nest-like lining were strongly insisted upon. This testimony was all the more valuable as coming from the chairman and other members of the Halifax Health Committee, as well as from Mr. Haviland and Drs. Ainley, Syson, and other professional sanitarians. Mr. Alderman Taylor's Rochdale system also attracted a large amount of attention. The admirable mechanism with which the Rochdale system is carried out was admitted on all sides, the after manufacture and its results, chemical and economical being chiefly criticised and debated. The Goux and the Rochdale systems, so far as size and construction of closets and tubs, and mode of collection, are practically identical. In fact the Goux is father of the Rochdale system, save that at Rochdale the absorbent lining of the pails has been discarded and a liquid disinfectant used in its stead.

In discussing the various manufacturing processes, on the one side it was maintained that no known or tried process of manufacture could possibly pay, while on the other it was asserted that several did actually pay a fair trade profit. Professor Way most strongly insisted that excrement manures were generally too poor to pay for carriage, and that all attempts to concentrate were attended by loss of money or chemical value, or both.

House drainage and ventilation, and the best means of excluding sewer gas from dwellings, excited a good deal of attention, and the importance of a constant through current of fresh air, similar to that shown by illustration in the May number of this *JOURNAL*, was insisted upon.

Mr. Baldwin Latham gave some interesting details of a town he had just sewered on a new plan, and in which the first flush of storm-water only flows into the sewage culverts.

The conclusions of the Conference are summed up as follows:

1. Dry system of conservancy may be looked to as great helps in assisting to minimise the sewage difficulty.
2. What is known as the 'separate system' is the system which should be adopted wherever new sewers are constructed.
3. Existing water-closets as a rule—together with house-drains in

general—are, from their faulty construction, the means of introducing sewer-gas into dwellings.

4. All house and closet drains should be well ventilated and cut off from direct communication with the sewer.

5. That this disconnection and severance can be well effected at comparatively small cost.

6. That to ensure thorough ventilation a constant through draught is required, *i. e.*, a cowl-extractor and a fresh-air inlet.

CAPITAL PUNISHMENT.

This subject is briefly touched upon and capital punishment strongly opposed in a late number of the London *Lancet*. As the subject has been somewhat discussed lately in this country, some of the remarks of the *Lancet* may be interesting if not profitable to our readers. 'There can be no question, says the *Lancet*, that abolition of capital punishment would be the means of solving many of the points which prove a constantly recurring source of difficulty to those in whom is vested the administration of the criminal law. That it will be some day abolished there can be little doubt, but it does not seem quite clear whether or no that time has yet arrived. Has capital punishment any special deterring influence on intending murderers? Had it in the days gone by any deterring influence on sheep-stealers and forgers? Since its abolition for the latter crimes have sheep-stealing and forgery become more common? and, were it abolished for murder, would men be less respectful than at present in the matter of human life? All of these questions, we take it, must be answered in the negative. Then why continue in a practice against which all men's minds revolt? It is argued by some that capital punishment is wrongly named; that it is not to be regarded as a punishment, but merely as an act of justice, and that he who intentionally deprives another of his life must consider his own confiscated. . . . In the case of a life being confiscated to the State, it would be sounder policy for the State to *use* and not *destroy* the life thus confiscated. Capital 'punishment' differs from all other punishments in this—that all those who are in any way instrumental in inflicting it suffer very often only in a less degree than the offender. If these officials suffer mental anguish, what shall we say of the mental degradation of the hangman, who presumably suffers none? Is it fair to demand such a service of any fellow-creature, and is it right to ask any man to do that which no really right-minded man would willingly do? Education must ultimately deprive the State of this grim official.'

SCIENCE AND RELIGION.—The Hunterian Oration for 1877 at the Royal College of Surgeons, London, was delivered on the 13th ult., by Sir James Paget, the Prince of Wales being present. Sir James alluded to Hunter as one of those who thought over the great question, what is life? He, (Sir James,) believed that

science is not hostile to religion. He said, in conclusion : 'What is life, and whence is it derived? Is it anterior to the organisation? is it a power originative and constructive? Now I can not doubt that in the doctrine of the cor-relation of physical and vital forces we are nearer to the truth than we were in the Hunterian doctrine, which held that life is something alien and different from other forms or methods of activity ; but holding the cor-relation and mutual conversion of the forces does not determine the precedence of either the one or the other. If the vital and physical forces are mutually convertible either may have preceded the other ; the vital force may have preceded the physical, although life appeared late upon this planet, in any of the phenomena in which we can now study it.

. . . . Mental forces may have preceded physical ; mind may have existed before any of the properties of matter ; and therefore, in the view of science, the first essence may have been a Being willing and self-conscious, and the prime source of all the forces whose operations we now trace. I believe there is not anything in science to disprove such a belief as this ; but I doubt whether it be in science yet to determine an order of precedence amongst the forces. I cannot imagine anything before the natural force, except a supernatural will ; and a belief of this kind is held by untutored minds as if it were instinctive knowledge. For man seems naturally prone to believe that beyond all that there is in the world there must be a mind or minds in the likeness of which his own is created, and with which he is in some kind of personal relation. But science cannot yet reach to the proof of these things ; and, until it can reach to proof, science cannot rest and must not rest ; but the firm and self-guiding belief in a supernatural will and knowledge rests on the basis of the whole and manifold evidences of the Christian faith. This may seem often opposed to what we believe to be true in science. Then let us wait. Time—or if not time, eternity—will prove that science and the Christian theology are but two sides of truth. It will prove yet more, that both sides are as yet only known in part.'

UNINHABITABLE HOUSES.—A case of considerable importance from a sanitary point of view, and of interest to all who rent houses, was tried on April 27, before the Lord Chief Baron and Barons Pollock and Huddleston. (*Med. Times and Gaz.*) In May, 1875, a furnished house in Wilton-crescent was taken for a period of three months for the Dowager Countess of Winchelsea ; but when Lady Winchelsea came to take possession she was met by such a sensible though invisible, preoccupation of the premises by sewer-gases, that she felt compelled to retreat. The drains in the basement of the houses were so out of order that you could nose them, not as you went up the stairs only, but almost as you entered the house, and in the rooms on the upper storeys ; and Lady Winchelsea declined to risk health and life by sharing the tenancy of the house with the sewer gases. Dr. Corfield also inspected the house, and pronounced it unfit for habitation. The lessor directed repairs to be done, but

Lady. Winchelsea declined to complete the bargain, and an action was brought against her to recover the rent. The case was tried first in March, 1876: The jury found that the house was not in a habitable condition, and thereupon the judge directed a verdict for the defendant. The case was argued again before Barons Bramwell and Cleasby, but a rehearing was ordered before three judges. They, moved by good sense and good law, instead of by the ingenuity of counsel, unanimously decided in favour of the defendant. They held that there was a condition precedent, implied, that a house so let for immediate occupation should be reasonably fit for such occupation. It is to be hoped that her success will aid others in defending themselves, and teach them to be more alive to the dangers that may lie in wait for them in moving into fresh premises; and will also teach builders to look more closely into the sanitary condition of houses. There are houses in this city which upon trial would perhaps be held not 'reasonably' fit for habitation.

ADVANTAGE OF SANITARY ASSOCIATIONS.—Last winter a few citizens made several very vigorous and very unavailing attempts to form a Sanitary Association in Toronto, with a view of aiding the authorities in improving the sanitary condition of the city. As to what it might have accomplished, the following is illustrative. The Sanitary Association of Tottenham, Eng., has recently issued a special report on the health of that district, in which it is shown that although forty years ago, it was a decidedly healthy place, some fifteen years since, when the population began rapidly to increase, the Local Board became supine, neglecting to extend the area of the drainage and water-supply, supplementing the latter by land spring water drawn from highly manured land, and taking no notice of freshly established nuisances. As a natural consequence, the death-rate rose rapidly, and in 1870 it was 20 per cent. higher than formerly, while the death-rate from the seven principal zymotic diseases had nearly doubled. Typhoid fever became prevalent, and in 1873 was epidemic. The leading inhabitants, becoming alarmed, formed themselves into a Sanitary Association, its object being, "to watch over the sanitary condition of the parish, and to diffuse sound information on all matters connected therewith," since which time, according to the report, everything has improved, and Tottenham has once more recovered its reputation for salubrity.

NEW REMEDIES.—In reference to the constant multiplication of new 'remedies' and 'combinations' for the cure of disease, which we believe to be opposed to the interests of both the profession and the public, and have alluded to the matter on several occasions. Sir ASTLEY COOPER once told his students that he had made some original observations of great value on the effects of new remedies. His class at once listened with doubled attention. 'These effects, gentlemen,' the lecturer proceeded, 'are twofold; first that the physician who employs many new remedies does not cure his patients;

secondly, he soon has no patients to cure.' On the same subject the *Medical and Surgical Reporter* observes: Not a few young physicians prefer to use new agents, as they think it puts them in advance of their elders in the public estimation. This plan as a business move is doubtful; it is pretty sure success in curing patients will more surely follow the discreet use of old and tried articles of the materia medica, than by hastily grasping at novelties of which we do not and cannot know the exact workings.

DECLINE IN FEVER.—The *Lancet* says there is one remarkable feature in the mortality statistics of the year, which does, undoubtedly, afford satisfactory evidence of sanitary progress. The annual death-rate from fever, including typhus, enteric, and simple fevers, has steadily declined during the last seven years from 80 to 43 per 100,000 persons living; while in the preceding five years 1865-69 it had averaged 93. Thus, while aggregation to town centres and the pollution of rivers have increased at an almost unprecedented rate, the causation of typhus and enteric fever has become better understood and more successfully guarded against. This at least may be pointed to as a preliminary triumph of sanitation.

TO DISINFECT ROOMS.—Rooms which have been occupied by a person suffering from *infectious disease* should be disinfected. To effect this thoroughly, all crevices round windows and doors and the fireplace should be closed by pasting pieces of paper over them. Lumps of sulphur, say, one pound for every thousand cubic feet of space, should then be put into a metal dish, placed by means of tongs over a vessel of water, and this being set fire to, the doors should be closed, and the room allowed to remain without interference for three or four hours. After this the windows should be thrown open, and when the fumes have disappeared, all the woodwork and walls should be thoroughly washed with soft soap and water, to which *carbolic acid* has been added (one pint of the common liquid to three or four gallons of water), and the paper from the walls stripped off. In whitewashed rooms the walls should be scraped, and then washed with hot lime, to which *carbolic acid* has been added. Lastly, the windows should be left open for two or three days.

THE PORTABLE CABINET TURKISH BATH.—This new invention is like a piece of household furniture, when not in use, and can be prepared by the simple aid of a Duplex heating lamp, especially adapted for the purpose. In making use of it, it is necessary to keep the head outside, by which course of procedure the heat or vapour is distributed without the slightest inconvenience to respiration. We do not require in these days, says the *Sanitary Record*, to point out the many advantages of vapour baths, or how useful they are in eliminating effete matter from the system without in the least debilitating it. A bath of this description, for a moderate length of time, and a shower or spray bath afterwards, constitutes in the

opinion of nearly all medical men, one of the most exhilarating and bracing habits of life, and this combination is as great a luxury as it is a source of health. These and other forms of baths may be obtained at all hours at the Toronto Turkish and Vapor Baths Establishment, 233 Queen St., west.

ON COOKERY.—The *Lancet* says, surely cookery should be regarded as a branch of liberal education. In the highest family circles the wisdom of so treating it has been long recognised. Every girl should be inducted to the mystery of making the most of food, by preparing it for the table with the greatest skill and the least cost. It is no figure of speech to say that the value of food may be multiplied by its being properly cooked and combined. We cordially and warmly endorse the proposal that cookery shall be taught in Board-schools. The subject is so important that it might well be substituted for one of the more recondite topics of public enlightenment.

IN THE FIRST of his series of popular lectures on 'The Laws of Health' delivered during the early part of this year, by Professor Corfield, M. A., M. D., he explained that different diseases might be looked for at different periods of life, and counselled every one to endeavour to find out his weak point—if any such should exist from hereditary tendencies or otherwise—in order to guard against its being fixed upon by disease. Treating too at great length of the causes of infant mortality, he strongly urged upon mothers to nurse their own children.

LONGEVITY.—According to the last census, those returned as 'of independent means' included the largest proportion of any of aged persons. At the period of this census, the number of 'gentlewomen' was returned as 143,385, of whom 35,843 were sixty-five, and 24,036 seventy-five years old; in fact, 60,000 had entered on old age. Of 299,650 returned as dressmakers, only 1,167 had attained old age; while of 50,000 governesses, only 233 had entered on old age. It appears that, of any class of the whole community the English independent lady has the best average chance of longevity.

TO DESTROY FOUL ODORS arising from privy vaults or any offensive places, take two or three pounds (according to circumstances) of *sulphate of iron* (copperas or green vitrol) dissolved in a gallon of water, and throw into the place in quantities according to its necessities and repeat so long as offensive odors exist. It is very important to attend to this simple measure, especially during the warm season.

THE USE OF CHLOROFORM as an anæsthetic is forbidden in Bellevue Hospital, New York.

THE PHYSICIAN.—'Onward he steps; disease and death retire,
And murmuring demons hate him and admire.'

LANDLORDS AND MANSLAUGHTER.—An inquest was held not long ago in Pantonville, Eng., on the body of a boy, aged eleven years who, it was alleged, had died from enteric fever owing to the unsanitary condition of the house in which he resided. The Coroner said that if he were the Clerkenwell Medical Officer of Health, he should give an order at once to close the house altogether as a place unfit for human habitation. There was no doubt that this death was fairly attributable to unsanitary causes, and it was a question whether the *landlord had not laid himself open to a charge of manslaughter.* The jury returned a verdict of "Death from typhoid or enteric fever, caused by the unsanitary condition of the house in which the deceased had lived."

BACK DRAINAGE v. UNDER-HOUSE DRAINAGE.—This question came under discussion at a recent meeting of the Camberwell vestry, when, the vestry approved of back-drainage as compared with having drains under houses, when circumstances admit of the former system being carried out. Mr. Bailey could not understand any person advising the putting of a drain under a man's house when there was no necessity for it.

LAST WEEK IT WAS PLEADED, unsuccessfully however, at Glasgow, against a charge of selling diluted milk, that the cow that yielded it was suffering from 'water in the head.' On Tuesday a milk-dealer who was fined for selling butter milk adulterated with 30 per cent. of water, put forward as an explanation of the presence of the water that the bung had inadvertently been left out of the barrel during a heavy shower of rain.

THE YEAR 1876 was in Ireland the first for a considerable period in which the natural increase of population, or excess of births over deaths, was not more than counterbalanced by the number of emigrants. The births registered during the year amounted to 140,438, the deaths to 92,499. The estimated population in the middle of the year was 5,321,618.

IN BAVARIA, within the course of twelve months, 39,816 analyses of articles of food were made. Among the articles analysed were 4,727 samples of bread, 9,310 of beer, 9,782 of milk, and 14,506 of meat. Legal proceedings were taken against 272 retail tradesmen, the greater number of whom were convicted and severely punished.

THE *Health Reformer* says, a hot fomentation will do more to relieve the pain, tenderness, and swelling of a bruise than any other means. If the application is made with sufficient promptness after the injury, very little discoloration will occur, even in contusions of the eye.

INFANTS PARADISE.—In the village of Harbottle, Northumberland, no child has died during the last twenty years; a farmer and his three shepherds have between them forty-seven children, and during the past thirty years not a death has occurred in their families.

MANAGEMENT IN POISONING BY COAL GAS.—In a report by Dr. Gilbert Smith, on poisoning by coal gas, he says :—As to treatment we are still ignorant, except on a few obvious points. Exposure to fresh air and warmth to the surface is alone sufficient in many cases. Artificial respiration, where necessary, has been used with success. Cold effusions, to the head, ammonia rubbed over the chest, turpentine enema, have all been tried with varying results. Hot strong coffee has certainly seemed quickly beneficial, and poultice to the cardiac region has had at once a good effect.

So long as 800 years ago, in the time of Richard II., an ordinance was enacted forbidding the pollution of rivers, drains, &c. ; another in the reign of Edward II., against selling ‘muzzled swine-flesh,’ &c. ; and in the reign of Henry VI., Henry VII., and Elizabeth, for the inspection and cleansing of sewers, against the slaughtering of cattle in towns, and against the overcrowding of dwellings.

HAYDON, the grand historical painter, said :—‘The greatest curse to society is the delicate irritability of medical men. Many a wife, many a mother, many a child, and many a sweet girl, have been sacrificed from the apprehension of the relatives to offend the medical attendant by hinting at a wish for further advice. Never hesitate ; it is better to offend your medical man than risk a loss of life.’

AN increased prevalence of trichiniasis is, says *The Farmer*, noticed among swine in Saxony. An opinion long entertained that its extension was in a great measure due to rats is said to have been fully justified by recent investigations, which have shown the disease to be widely spread among this troublesome vermin.

THE FRENCH SOCIETY for Suppressing the Abuse of Tobacco has prepared a petition to be presented to Parliament, asking them to prohibit youths under sixteen from using the weed in public places. Better to have named *sixty* as the age.

AT the annual meeting of the Jewish Board of Guardians, the report of the medical officer showed the remarkable immunity of the Jewish poor, even in the most crowded and unhealthy neighbourhoods, from the small-pox epidemic.

A MAN from the Western frontier took a warm bath in Omaha the other day, and died within an hour. The coroner’s jury after a careful investigation, returned a verdict that ‘The deceased came to his death from to sudden and unnatural cleanliness.’

ACCORDING to Sir Jas. Wylie in the dark side of an extensive barrack at St. Petersburg the cases of disease have, for many years, been uniformly in the proportion of three to one to those on the side exposed to strong light.

THE LOCAL BOARD of Barnard Castle are discountenancing plans of all new buildings upon which are shown water-closets. They uniformly recommend earth closets.

VITAL STATISTICS—DEATH-RATE, &c.—We purpose in this and future numbers to give the death and birth rate of the cities in Canada, so far as can be ascertained, from the Registrar's returns and other sources, and shall make an effort to classify more or less. We hope to be able to make this department interesting and instructive; and to obtain information so far as possible as to the working and the advantages and disadvantages of the present system of registration.

The Registrar of one city writes, that a large number of deaths are not registered, because of the long distance some are from the office of Registration, and division offices are suggested. Another, the Hamilton Registrar, has no doubt he gets all deaths, as he gets a weekly return from the cemeteries, and compares; but does not get all births. The death rate of Hamilton seems low.

Below are the returns for the first quarter of 1877—ending 31st March, so far as known:—

TORONTO.—Deaths, 371; births, 514; marriages, 252. Deaths from inflammation and congestion of lungs and bronchitis, 67; consumption, 53; scarlet-fever and effects, 43; head and brain diseases, 23; heart disease, 10; old age, 7.

LONDON.—Deaths, 93, births, 132; marriages, 69. Infants under one year, 27; old age, 13; no epidemics. Division Registrar believes not 50 per cent. of deaths and births are registered.

OTTAWA.—Deaths, 37; births, 116; marriages, 71. Zymotics, 3; croup, 3; inflammation of lungs, 3.

KINGSTON.—Deaths, 48; births, 47; marriages, 29. Zymotics, 7; inflammation of lungs, 4; bronchitis, 5.

HAMILTON.—Deaths, 162; births, 265; marriages, 72.

Dr. Mapother defines Sanitary science as 'an application of the laws of physiology and general pathology to the maintenance of the health and life of communities, by the means of those agencies which are in common and constant use.'

THE ARTICLE on the Public Schools of Toronto, the Editor has not yet been able to complete; it will appear in next number—that on experience of an invalid has not come to hand as expected.

NOTICES OF BOOKS RECEIVED.

ON COUGHS, CONSUMPTION, AND DIET IN DISEASE. By Horace Dobell, M.D., F.R.M.C.S.; Consulting Physician to the Royal Hospital for Diseases of the Chest, etc., etc. Philadelphia, D. G. Brinton, 1877. Cloth. Illustrated. pp. 222. Price \$2.25.

Dr. Dobell is very favorably known in Great Britain for his various works on thoracic disease.

A valuable chapter is given on the diagnosis of *early* phthisis—how to recognize the disease in its incipency—often a vital point in saving the life of a patient.

Winter-cough, ear-cough, and post-nasal catarrh are discussed. Much stress is laid on early treatment and the *avoidance* of colds and coughs. His therapeutics is singularly clear and definite—a great relief after perusing the vague generalities of so many writers on practice. The third part is entitled "Some Principles of Diet in disease," and gives with brevity the principles and rules which should

govern our regulation of the food of the sick. A scheme is given of a model diet for a consumptive patient, and another for a diabetic patient; while the last chapter gives a number of recipes for nutritive enemata and dietetic preparations, which the author himself has designed and employed with success.

MOTHERS AND DAUGHTERS.-- Practical Studies for the Conservation of the Health of Girls; by T. S. Verdi, A.M., M.D. New York; J. B. Ford & Co.

This is a nice volume of nearly 300 pages, containing a great deal of valuable information. More of such works are a positive necessity, and we hope many editions of it may be required. 'Maternity: a treatise for Wives and Mothers,' by the same author, has passed through five editions. The lack of such works by respectable authors has been the means of bringing into use books of a greatly inferior order. The matter in this is treated under three heads: The Physiology of Women; Hygiene for Women; and Functional Irregularities and their Preventive Treatment.

In the preface the author says:—'Convinced of the truth that girls suffer from an ignorance of the principal functions of their sex; convinced that mothers and teachers, through a mistaken sense of delicacy, and often through ignorance as well, are lothe or unwilling to convey to a girl a knowledge so important to her well-being—not for the period of her girlhood only, but for the successive ones of womanhood and motherhood—we have devoted great care to the preparation of this volume, which while it may instruct, will not excite morbid fancies, and in which the parent and the teacher will find a safe monitor on a subject of so much moment to the health of girls under their guidance.'

THE QUARTERLY JOURNAL OF INEBRIETY—Published under the auspices of the American Association for the cure of Inebriates. \$3.00 per annum. Subscribers should address Dr. T. D. Crothers, Binghamton, New York.

We have received the three numbers of this new Journal, which contain articles on The Causes of the Increase of Inebriety—Duration, Mortality, and Prognosis of Inebriety—Inebriate Asylums and their management, &c., &c.

MAP OF THE OTTOMAN EMPIRE, the Russian Provinces on the Black Sea, and the Kingdom of Greece. Toronto, Hart & Rawlinson.

This in size is about 22 × 14 inches, neatly got up and coloured.

THE PHYSICAL, MORAL, AND SOCIAL EFFECTS OF ALCOHOLIC POISON, as a Beverage and as a Medicine; by J. H. Kellogg, M.D.—Office of 'Health Reformer,' Battle Creek, Mich., U. S.

This is a book of 125 pages, treating of the different parts of the alcoholic question indicated by the title. We cannot agree with all the author writes, but do, fully, with his implied doubts as to which is productive of the greatest amount of injury to the human family, alcohol or tobacco; and also that, we must stop making drunkards. Rather, perhaps, let us try and make men sober, and able to keep so. The cooling vegetable diet recommended would, no doubt, aid many in overcoming their inordinate taste for strong drinks.

FIRST ANNUAL REPORT OF THE STATE BOARD OF HEALTH OF WISCONSIN, for the year ending December 31st, 1876.

This is largely taken up with an account of the organization of the Board. There are good articles on Small-Pox and its Prophylaxis, on Sewerage and Drainage, on the Construction and Ventilation of Public Buildings, on Mental Hygiene, on food and Domestic Beverages, and on Registration,