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PRACTICAL HYGIENE.

THIRD PAPER.

AIR IN ITS RELATIONS TO HEALTH.

SECTION IV.

AIR VITIATED BY SEWAGE AND OTHER EXCREMENTAL MATTERS.

THE EFFLUVIA FROM SEWERS, PRIVY VAULTS, CESS-POOLS, and all accumulations of excremental or other decomposing organic matters, consist of a number of gasses and vapors, amongst which are carbonic acid, sulphuretted and light carburetted hydrogen, nitrogen ammonium sulphide, and foetid organic vapors. The organic vapors are usually in large proportion. The amount of gasses and vapors, and the proportion of these to each other, emanating from sewage, must vary greatly, according to the degree of dilution of the sewage, its temperature, the rapidity of its outflow, and, especially, the ventilation of the sewers; and again, according to what passes into them—whether only or chiefly human excrement, or also the washings of the streets, the refuse of certain trades, &c. It appears from analyses made by various experimenters, that oxygen is diminished, and carbonic acid is greatly increased, and that sulphuretted hydrogen and ammonium sulphide exist only in minute quantities.

From Dr. Letheby's experiments it appears that sewage, containing 128.8 grs. of organic matter per gallon, and excluded from air, gave out, during a period of nine weeks, 1.2 cubic inches of gas per gallon per hour. The gas consisted of 73.833 per cent. of

marsh gas, 15.899 of carbonic acid, 10.187 of nitrogen, 0.081 of sulphuretted hydrogen. When atmospheric air is freely admitted, Dr. Letheby appears to think that the chief gases are carbonic acid and nitrogen. When oxidation is impeded, however, marsh gas may be formed in abundance. According to Dr. Letheby's observations, the gases evolved in the London (Eng.) sewers in 1866, were frequently fired by the candles of the sewer men, and were found to contain 88.45 per cent. of marsh gas; the formation of which he thinks was favored by the carbolic acid used in the sewers. Dr. Angus Smith's experiments are confirmatory of those of Dr. Letheby's. In London sewers of good construction, at the present time, the air is much purer. Sewer air (in some sewers in Reddington), examined by Dr. Russell, contained 20.7 parts per volume of oxygen, (very nearly as much as ordinary atmospheric air) 78.79 parts of nitrogen, and .51 parts of carbonic acid, per 100 parts. There was no sulphuretted hydrogen and but very little ammonia. On the other hand again, Parent-Duchatelet found the air of a choked sewer in Paris to contain only 13.79 per cent. of oxygen, and 2.99 per cent. of sulphuretted hydrogen. The old Parisian sewers (in 1829), in numerous analyses, contained not less than 17.4 per cent. of oxygen, 3.4 per cent. of carbonic acid, and 1.25 per cent. of sulphuretted hydrogen.

THE FOETED ORGANIC MATTERS OR VAPORS in sewage are however of much greater importance than the gases. The exact composition of these substances has not been determined, but they are carbo-ammoniacal,—compounds of carbon and ammonia. Milk and meat soon taint, and fungi grow rapidly, in air containing such effluvia. Sometimes these foetid substances are present in large proportion. Dr. Angus Smith found, for example, that the air of a house into which sewer air had found its way, destroyed twenty times as much potassiam permanganate as the same quantity of pure air. And again, 62 feet of the air of a cess-pool destroyed as much of the permanganate as 176,000 cubic feet of pure air.

THE EFFLUVIA FROM PRIVY VAULTS, and especially from the impervious cemented pits, is similar in composition to the effluvia from sewers. On account of the stagnant condition of the excreta, the air from these pest-places is highly impure, containing a large proportion of poisonous gases and organic vapors. It may be compared to that of obstructed or badly ventilated sewers; and it is

consequently more poisonous than that of most sewers. These vaults or pits are, at best, ventilated only by means of one small air shaft leading to the top of the privy, and when the lids are lifted from the seats within, the foul gases are actually forced up into the privy by the colder air rushing down this ventilating shaft, and are necessarily freely inhaled by those occupying the closet, and cannot but prove detrimental to health.

EMANATIONS FROM FECAL MATTERS ON THE GROUND and exposed freely to the air are rapidly diluted and disseminated, and they are hence quickly rendered less noxious and hurtful than sewage effluvia; and probably, as Parkes says, in proportion to the degree of dilution. When there are accumulations of fecal matter in small, close backyards, and such like places, the same effects are produced as by sewer air. When fecal matters are used for manure, and are speedily mixed with earth, the effluvia given off are soon deodorized and absorbed by the earth, and bad effects are seldom produced. Instances are on record, however, in which disease appeared to have been produced by manure spread upon fields.

The unknown SPECIFIC CONTAGIUMS of certain contagious diseases are evidently sometimes present in the air of sewers and privy vaults; especially the contagiums of typhoid fever and cholera. The specific poison of yellow fever, too, it appears, may be present; and it seems possible that those of other diseases, such as scarlet fever, diphtheria, and small-pox, may also exist in such air.

The above gases from decomposing excrement will, according to Oesterlen and Hennezel, PASS THROUGH STONE WALLS; and they will undoubtedly corrode and PERFORATE ZINC AND LEAD PIPES, in course of time. It has been found that zinc rhones on the eaves of buildings have been corroded completely through in a couple of years by the action of the air from sewers and soil pipes passing up the ventilating tube and striking on the under part of them. Though lead is probably less readily acted upon than zinc, it is with it only a question of time. Lead traps and pipes from water closets, sinks, baths, &c., are all subject to the action of such gases, but as the traps are a bar to the passage of the gases, the pipes near them are more exposed to corroding action, and are therefore most likely to give out first, and permit gases to escape through them. Hence the importance of thorough ventilation and the free dilution of these gases in soil pipes.

THE EFFECTS UPON THE BODY of air rendered impure by the gases and effluvia from sewers, cess-pools, and such like places, are sometimes sudden and of the most serious character ; as when the proportion of impurities is large. ' Cases of asphyxia from sulphuretted hydrogen, sulphide of ammonia, carbonic acid, and nitrogen (or possibly rapid poisoning from organic vapors) occasionally occur both in sewers and from the opening of cesspools. In a case at Clapham, the clearing out of a privy produced in twenty-three children violent vomiting and purging, headache, and great prostration, and convulsive twitchings of the muscles. Two died in twenty-four hours.'

All the hands employed in a winding room at a mill in Preston were suddenly seized with alarming illness. It was at first supposed that the illness was caused by the dye used for coloring yarns, but it was soon discovered that the air of the apartment was contaminated with poisonous gases issuing from a drain which emptied itself in an adjoining water course. The drain had become blocked and the sewage had accumulated and become stagnant. Several of those who were attacked died, and others were seriously ill for some time.

Parkes writes as follows in reference to the effects of effluvia from sewers, drains, &c. : after referring to some fatal cases, he says, ' these are instances of mephitic poisoning in an intense degree ; but when men have breathed the air of a newly opened drain in much smaller amounts, marked effects are sometimes produced ; languor and loss of appetite are followed by vomiting, diarrhœa, colic, and prostration. The effluvia which have produced these symptoms are usually thus arising from a drain which has been blocked for some time. When the air of sewers penetrates into houses, and especially into the bed-rooms, it certainly causes a greatly impaired state of health, especially in children. They lose appetite, become pale and languid, and suffer from diarrhœa ; older persons suffer from headaches, malaise, and feverishness ; there is often some degree of anæmia, and it is clear that the process of aëration of the blood is not perfectly carried on.

In some cases I have known decided febrile attacks lasting three or four days, and attended with great headache and anorexia. Houses into which there has been a continued escape of sewer air have been so notoriously unhealthy, that no persons would live in them, and this has not been only from the prevalence of fever, but from other diseases. Dr. Marston, R.A., in his excellent paper on

the Fever of Malta, tells us that when typhoid fever broke out at the Fort of Lascaris, from the opening of a drain, other affections were simultaneously developed, viz., 'diarrhoea, dysentery, slight pyrexial disorders, and diseases of the primary assimilative organs.' A close examination and analysis of the affections produced by the inhalation of sewer air, would probably much enlarge this list; and the class of affections resulting from this cause, to which it may be difficult to assign a nosological name, will be found, I believe, to be essentially connected with derangement of the digestive rather than with the pulmonary system.

The air of sewers passing into houses aggravates most decidedly the severity of all the exanthemata—erysipelas, hospital gangrene, and puerperal fever (Rigby); and it has probably an injurious effect on all diseases.

Two special diseases have been supposed to arise from the air of sewers and fecal emanations, viz., diarrhoea and typhoid (enteric) fever.

With regard to the production of DIARRHOEA from fecal emanations, it would seem that the autumnal diarrhoea of this country is intimately connected with temperature, and usually commences when the thermometer is persistently above 60°, and when there is, at the time, a scarcity of rain-fall. It is worst in the badly-sewered districts, and is least in well-drained districts, and in wet years. It has been checked in London by a heavy fall of rain. All those points seem to connect it with fecal emanations reaching a certain rapidity of evolution in consequence of high temperature, deficient rain, and perhaps relative dryness of the atmosphere. At the same time, there is a connection between this disease and impure water. It may own a double origin, and in a dry season both causes may be in operation.

That ENTERIC FEVER may arise from the effluvia from sewers is a doctrine very generally admitted in this country, and is supported by strong evidence. There are several cases on record in which this fever has constantly prevailed in houses exposed to sewage emanations, either from bad sewers or from want of them, and in which proper sewerage has completely removed the fever. Many of these cases occurred before the water-carriage of typhoid was recognised, but yet the connection between the sewage emanation and the fever seem undoubted.

This evidence is supported by cases in which the opening of a drain has given rise to decided typhoid fever, as well as to a very fatal disease (probably severe typhoid), in which coma is a marked symptom. So also in some instances (Windsor and Worthing) the spread of enteric fever has evidently been owing to the conveyance of effluvia into houses by the agency of unventilated sewers. In a case mentioned to me by a friend, an outbreak of enteric fever in a training-school was localised in certain parts of the school (whereas the drinking water was common to all), and was traced to imperfection of traps in those parts of the house which were affected. In this case the drains led down to a large tank at some distance, and at a much lower level, and the smell of the effluvia was so slight that at first it was not believed that the drains could be out of order.

These two classes of fact seem decidedly to show a casual connection between the effluvia from sewers and excreta and enteric fever, and they are supported by the statistical evidence which proves that the prevalence of typhoid fever stands in a close relation to the imperfection with which sewage matters are removed. The army statistics give excellent instances of this, and the evidence produced by Dr. Buchanan of the prevalence of typhoid fever before and after sewerage of a town is to the same effect.

(To be continued.)

DR. BRAHMER'S MODEL SANITARIUM FOR THE TREATMENT
OF PHTHISICAL PATIENTS IN GOERBERSDORF.

BY P. H. KRETZSCHMAR, M.D., (FROM "THE PROCEEDINGS.")

The following extract on this most fatal of all diseases, though somewhat without the province of this journal, will prove useful as well as interesting :

Dr. Brehmer is the author of a well known work on "Chronic Pulmonary Consumption and Tuberculosis, and its Treatment." As long as twenty-five years ago he spoke of "the elevated regions" as the proper place for consumptives to live in, and published his new theory about the small size of the heart being an important factor in the etiology of phthisis. Since, he has at many occasions and under most unfavorable conditions, defended his ideas about the *curative* influence of living in high altitudes in cases of phthisis.

Although opposed by most of the German authorities, he undertook to demonstrate the truth of his assertions by actual experiments,

and established the sanitarium at Goerbersdorf about twenty years ago. Of course, as Brehmer says, neither the reduced atmospheric pressure nor the rarefied and pure air alone, should be regarded as *specifics* for the cure of consumption, and it is indeed a mistake, frequently made by practitioners to send phthisical patients to some place situated within the region of more or less perfect immunity from phthisis, and then to allow them to take care of themselves according to their own judgments. The proper management of each individual case, the judicious administration of nutritious food, stimulants, and, if necessary, of drugs, together with a constant and abundant supply of pure air under reduced atmospheric pressure, have, in Brehmer's hands, during a period of over twenty years, proved to be the best means for the treatment of phthisis in its different varieties and in all its stages. The merits of the influence of high altitudes on consumption have been discussed extensively: I simply intend to bring before the members of the Society a reliable description of that institution where all the factors, "high altitude," together with "careful medical supervision" and "good common sense management" are found almost to perfection.

Goerbersdorf is located in Silesia, in the district of Breslau, near the Bohemian border. The village lies in a valley, 1,900 feet above the level of the sea—not 1,720 feet, as has been stated until very lately. The valley is longer than broad. The mountains which surround it, many of which are almost 3,000 feet high, do not seem to crowd upon it, they simply protect it from the unfavorable influences of sudden changes of temperature, great storms, etc. The sanitarium itself is erected on an open space amidst a large pine forest. The exhalations of the pine trees contain considerable of the vapors of oil of turpentine, and they are continuously causing the presence of a large amount of ozone in the air. Whatever the real therapeutical value of ozone may be, its presence certainly has a great influence on tissue changes or secondary assimilation, and thereby it helps to bring about an improved state of nutrition. It is for this reason that ozone takes a prominent position among the remedial agents for the cure of consumption. The temperature of Goerbersdorf is moderately cool, not as changeable as that of many other health resorts. Great differences between the mid-day's heat and the evening's coolness affect consumptives more unfavorably than other patients. It is the frequent and sudden change of tem-

perature which interferes much with the good results otherwise obtained in some of the more southern places. The meteorological observations made in Goerbersdorf during the last five years show, that the five summer months—May, June, July, August and September, together 153 days—are made up of 100 to 103 clear and bright days, 20 to 23 cloudy ones, about 28 with changeable weather, and only 14 rainy days.

The following favorable conditions make Goerbersdorf a desirable place for consumptives to live in : I. The location within the region for immunity from phthisis. II. The moderately cool climate and its stability. III. The pure air, being exceptionally rich in ozone. IV. The purity of the water, its remarkable freedom from all mineral substances. V. The gradually rising plateau and the beautiful parks, which offer an excellent opportunity for judicious exercise of the pulmonary organs. VI. The shade and the exhalations of the neighboring pine tree forests.

The world-wide reputation of Goerbersdorf depends, however, not so much on these natural gifts which exist also in numerous other places, but on Brehmer's peculiar ways of using them and other means to treat pulmonary difficulties. The doctor's method of managing consumptive patients is in most parts original with him. The principal features of it are :

I. The daily use of the cold douche, and the modified use of cold water in general. II. The extensive use of cows' and goats' milk. III. The regular administration of "Hungarian" wines. IV. The peculiar way of preparing the patients' food. V. The careful regulation of the patients' way of dressing, and their mode of living generally. VI. The constant and strict medical supervision of the patients.

Though no *one* of these natural gifts or peculiar regulations may have any decided favorable influence on the condition of a diseased lung, *collectively* they have proven to be of the greatest value.

The influence of altitudes on consumptives, the conditions necessary to constitute an *ideal* health resort for phthisical patients, and the natural advantages of one place over another, have been extensively discussed by excellent writers in this country and in Europe. Goerbersdorf has always been recognized as an excellent place.

The *peculiarities* of Brehmer's treatment deserve more than a passing notice.

The use of the *cold douche or shower bath* has been introduced into phthisis-therapy by Brehmer himself. It has proven to be a remedy of great value, not only in cases of consumption, but also in the acute form of catarrhal pneumonia. Its action is threefold. The shower bath possesses great *sedative powers* if applied for any considerable length of time, or at long intervals; as it is used in Goerbersdorf, it has, however, a *tonic* influence; it helps more than almost any other remedy in subduing the febrile symptoms of consumptives, and its application has, finally, a most remarkable influence on the respiratory movements. "If a stream of water is directed against the back of the head, over the region of the medulla oblongata, a spot soon will be found, the irrigation of which produces violent respiratory efforts." If it be admitted that the *diminished* expansions of the apices as compared with other parts of the lungs, favor the retention of secretions within the alveoli, it cannot be denied that forced respiratory movements will help to throw off these elements of danger. The influence of retained secretions on the lining membrane of the air vesicles, especially if there is any predisposition to pulmonary disease, is very detrimental; it is a frequent cause of many cases of catarrhal phthisis, and it is especially in those cases where the catarrhal origin of phthisis is apparent that the good effects of the cold douche are observed. Even Brehmer's opponents admit now, that the douche is one of the most reliable and most powerful remedies against night sweats. The temperature of the water is *always* cold, it is kept between 50° and 55° F. The douche is never given but once a day, and the time occupied is from five to forty-five seconds.

The stream of water, from one-third to one inch in thickness, is applied either in a horizontal direction, or, and more frequently, it is directed upon the patient from above. After the application of the douche—which, on account of its powerful action is in all instances given by the doctor himself, or by one of the medical gentlemen connected with the institution—the patient is handed over to the nurse and given a thorough rubbing down. In most cases, this procedure is followed by the administration of from one to two table-spoonfuls of good brandy, and moderate exercise in the open air.

Very debilitated patients cannot avail themselves of this powerful remedy; they are, however, subjected to the use of cold water in other forms, such as cold sponging, etc.

Milk, taken in large quantities and often through the day, is one of Brehmer's favored remedies ; he relies more upon its use, and that of good fresh butter, than upon kumiss or cod liver oil. In fact, neither cod liver oil nor kumiss have been used in Goerbersdorf lately. Not only pure cow's milk, but also goat's and ass's milk is used. Forty to fifty cows, the same number of goats, and half as many asses are kept at the farm connected with the institution, and are furnishing from 60,000 to 70,000 liters of milk annually. The patients take milk regularly four times daily ; it is generally given cold, sometimes luke warm.

Stimulants, in moderate doses, regularly administered and mostly given with the meals, are part of Brehmer's treatment. He claims for them, first, that they help to decrease the temperature, and act in this respect as anti-pyretics, and second, that they help to assimilate ordinary food, and more especially fatty matter of any kind. *Hungarian wines* are used almost exclusively, they are preferred on account of the larger quantity of phosphate of lime and magnesia which they contain. The wine is given at stated intervals, and in certain quantities, according to the direction of the attending physician.

The peculiar way of *preparing the patients' food*, and the regulation of the time for taking meals, is noteworthy. The bill of fare is made up daily by Dr. Brehmer himself, and due attention is paid to the consideration of the proper proportions between nitrogenous food and carbo-hydrates. Between 7 a.m. and 7 p.m. the patients take five meals. The dishes are prepared as rich as possible ; a prominent medical man said, "The food they receive swims in fat." It is to the administration of those large quantities of fat, fresh butter, pure milk, good wine, and the use of the cold douche, together with the abundant supply of purified air which the opponents of Brehmer's theory about the curative influence of high altitudes attribute his excellent—and undisputed—results in the treatment of phthisical patients.

The *regulations in regard to the patients' mode of living* are only few, but nevertheless important :—"Arise early and retire early ; spend as much time as possible in the open air ; take moderate exercise ; while walking, keep the mouth closed, breathe through the natural channel, the nose ; positively avoid any kind of excitement ; gentlemen are forbidden to smoke ; ladies are not allowed to wear corsets or long trains." A large park, full of beautiful plants, with

nically arranged paths and numerous resting places gives ample space for exercise. The patients read, write and play out doors; the windows of the large sleeping rooms are constantly kept open during the day time, and the majority of patients sleep with open windows. The evening and night air is not threatened as much in Goerbersdorf as it is in most parts of the world. On rainy days there are large and well ventilated reading and sitting rooms, and two large green-houses, where the patients pass their time.

It is one of Brehmer's leading principles—and an excellent one it is—not to treat phthisis pulmonalis as a disease, but to treat each patient individually, according to the peculiar pathological condition which he presents. In the management of his large institution, Dr. B. is assisted by three physicians; the patients are therefore constantly under medical supervision. They receive almost daily advice, as to the distance they should walk, the manner in which to exercise the muscles of respiration, the exact time they should rest, etc., etc.

The local treatment of disease of the air passages, and more especially of the larynx, is often resorted to. Several of Waldenberg's apparatus are kept, and used in appropriate cases, and inhalations of various substances are employed if indicated. Drugs are, generally speaking, not among B.'s favorites. Phosphates of lime and magnesia as well as the different preparations of hypo-phosphates are given in many instances. Narcotics and expectorants only in exceptional cases.

A few remarks about the results obtained in Goerbersdorf may be interesting. To place any confidence in, and to attach any value to, statistical reports of any kind, and more especially to those in regard to phthisical patients, it is first of all necessary to know something about the person who made these statistics. It is, in this case, as in many others, the informant has a personal interest in giving the most favorable reports. The character of Dr. B., however, is above reproach, and men like Felix v. Niemeyer, Prof. Seitz, Paul Niemeyer, Waldenburg, Kuntze, Juergensen, Ruble have repeatedly expressed their admiration for Brehmer. To reach a correct diagnosis as to the extension of the disease, the medical gentlemen connected with Goerbersdorf do not—as we all do—depend on physical exploration only, but they examine the sputa of the patient bi-weekly microscopically for elastic fibres. In this manner they can with the greatest amount

of certainty decide whether a given case belongs to the stage of infiltration (consolidation), or whether active destruction of lung tissue has commenced. The examinations made in seventy cases show that in many instances where the physical signs did not indicate the loss of any lung tissue, elastic fibres were found to be present in the expectorations of the patients, proving the existence of more extensive disease.

B. accepts three stages of phthisis ; the first stage is that of consolidation, the second is that of the destruction of parenchyma, and the third includes all cases of advanced destruction, with the well-known symptoms of hectic fever, great emaciation, and more or less collapse.

"Cured," as used in the following report, means in the first stage restitution to normal lung tissue, disappearance of all pathological symptoms and signs ; in the second stage, cicatrised cavities and permanent disappearance of elastic fibres in the expectorations ; in the third stage, freedom from hectic fever and from night-sweats, permanent stand-still of the local process, if possible, cicatrization of the existing cavities, and great improvement of the general health. "Almost cured" means a condition which closely resembles that of "cured." I shall, however, give such figures only which refer to "entire recoveries," and include cases which have been "almost cured" under the head of "benefited." During the last five years there were on an average annually 512 patients in Goerbersdorf, each one remaining somewhat over 90 days. Of these 91 per cent. were benefited, while 9 per cent. either remained in statu quo or grew worse. In 1874 the number of patients was 533. Of these were 250 in the first stage, remaining each 99½ days ; cured 59—26·8 per cent. 210 in the second stage, remaining each 95½ days ; cured 11—5 per cent. 103 in the third stage, remaining each 67½ days, cured 1—1 per cent.

In 1875 the number of patients was 575. Of these were 182 in the first stage, remaining each 93 days, cured 61—30 per cent. 187 in the second stage, averaging 105 days ; cured 17—9 per cent. Of 206 in the third stage 1 was cured.

In 1876 the number of patients was 512. Of these were 190 in the first stage, remaining each 97 days ; cured 63—33·15 per cent. 206 in the second stage, each 1000 days ; cured 9—4½ per cent. 116 in the third stage, each 70 days ; cured 1.

In 1877 No. of patients 457. Of these were 167 in the first stage, remaining each 86 days; cured 44—26·3 per cent. 163 in the second stage, each 103 days; cured 12—7·3 per cent. 127 in the third stage, each 81 days; cured 3—2·3 per cent.

CONCLUSIONS.—I. Phthisis in its different varieties and in all its stages has been cured repeatedly by a comparatively short residence and treatment at Georbersdorf.

II. The location of the sanitarium within the region for immunity from phthisis has probably a very favorable influence on the condition of the patients.

III. Brehmer's peculiar method of treating his patients is that of "common sense" and "good judgment."

IV. The advantages of a health resort like Goerbersdorf, gained by its location, is partly, at least, counteracted by the unfavorable influence which the presence of so many sick persons must necessarily have on each patient's mind.

V. Brehmer's method of treating his phthisical patients ought to be considered and adopted by the medical profession of this country.

INSTRUCTIONS FOR DISINFECTION.

The following circular was prepared for general distribution under the auspices of the National (U. S.) Board of Health.

In transmitting the report the Chairman, Prof. C. F. Chandler, Ph. D., remarks :

It has been the aim of the committee to prepare concise directions for disinfection, so simple and clear that they may be easily followed by any person of intelligence.

In the selection of disinfecting agents the aim has been, 1st to secure agents which can be relied upon to accomplish the work; 2nd, which can be procured in a state of comparative purity in every village in the United States; 3rd, so cheap that they can be used in adequate quantities.

It is extremely important that the people should be instructed with regard to disinfection. They must be taught that no reliance can be placed on disinfectants simply because they smell of chlorine or carbolic acid, or possess the color of permanganate, and that, in general, proprietary disinfectants with high sounding names are practically worthless, as they either have no value whatever, or if of

value, cost many times as much as they are worth, and cannot be used in sufficient quantity.

EXPLANATIONS.

Disinfection is the destruction of the poisons of infection and contagious diseases.

Deodorizers, or substances which destroy smells, are not necessarily disinfectants, and disinfectants do not necessarily have an odor.

Disinfection cannot compensate for want of cleanliness or of ventilation.

DISINFECTANTS TO BE EMPLOYED.

1. Roll Sulphur (brimstone) for fumigation.
2. Sulphate of iron (copperas) dissolved in water in the proportion of one and a half pounds to the gallon ; for soil, sewers, &c.
3. Sulphate of zinc and common salt, dissolved together in water in the proportion of four ounces sulphate and two ounces salt to the gallon ; for clothing, bed linen, &c.

NOTE.—Carbolic acid is not included in the above list for the following reasons : It is very difficult to determine the quality of the commercial article, and the purchaser can never be certain of securing it of proper strength ; it is expensive, when of good quality, and experience has shown that it must be employed in comparatively large quantities to be of any use ; it is liable by its strong odor to give a false sense of security.

II. HOW TO USE DISINFECTANTS.

1. *In the sick-room.*—The most available agents are fresh air and cleanliness. The clothing, towels, bed-linen, &c., should at once, on removal from the patient, be placed in a pail or tub of the zinc solution, boiling hot if possible, before removal from the room.

All discharges should either be received in vessels containing copperas solution, or, when this is impracticable, should be immediately covered with copperas solution. All vessels used about the patient should be cleansed with the same solution.

Unnecessary furniture—especially that which is stuffed—carpets and hangings, when possible, should be removed from the room at the outset ; otherwise, they should remain for subsequent fumigation and treatment.

2. *Fumigation* with sulphur is the only practicable method for disinfecting the house. For this purpose the rooms to be disinfected must be vacated. Heavy clothing, blankets, bedding, and

other articles which cannot be treated with zinc solution, should be opened and exposed during fumigation, as directed below. Close the rooms as tightly as possible, place the sulphur in iron pans supported upon bricks, set it on fire by hot coals or with the aid of a spoonful of alcohol, and allow the room to remain closed for twenty-four hours. For a room about ten feet square, at least two pounds of sulphur should be used ; for larger rooms proportionately increased quantities.

3. *Premises*.—Cellars, yards, stables, gutters, privies, cesspools, water-closets, drains, sewers, &c., should be frequently and liberally treated with copperas solution. The copperas solution is easily prepared by hanging a basket containing about sixty pounds of copperas in a barrel of water.

4. *Body and bed clothing, &c.*—It is *best* to burn all articles which have been in contact with persons sick with contagious or infectious diseases. Articles too valuable to be destroyed should be treated as follows :

(1.) Cotton, linen, flannels, blankets, &c., should be treated with the boiling-hot zinc solution, introducing piece by piece, securing thorough wetting, and boiling for at least half an hour.

(b.) Heavy woollen clothing, silks, furs, stuffed bed-covers, beds, and other articles which cannot be treated with the zinc solution, should be hung in the room during the fumigation, pockets being turned inside out and the whole garment thoroughly exposed. Afterward they should be hung in the open air, beaten and shaken. Pillows, beds, stuffed mattresses, upholstered furniture, &c., should be cut open, the contents spread out and thoroughly fumigated.. Carpets are best fumigated on the floor, but should afterward be removed to the open air and thoroughly beaten.

5. *The corpses* should be thoroughly washed with a zinc solution of double strength, then wrapped in a sheet with the zinc solution, and buried at once. Metallic, metallic-lined, or air-tight coffins should be used when possible, certainly when the body is to be transported for any considerable distance.—*N. B. H. Bulletin*.

A man whose clothes are saturated with stale tobacco, is not an agreeable visitor in a sick room. Nor is it reviving to a delicate organization to have stimulants applied through the physicians' breath.

THE ETIOLOGY OF TYPHOID FEVER.

A good deal has been written in order to show the close connection between the origin of typhoid fever and decomposing human excreta, but the following letter, from the *Medical Times and Gazette*, which speaks for itself, gives the first intimation which we have seen that the fever may arise spontaneously in fecal matter, while it is yet in the intestines :

To the Editor of the *Medical Times and Gazette*.

SIR,—I shall be glad to assist in carrying out the suggestion made by Dr. Robert King in the latter part of the last paragraph of his lecture "On the Etiology of Typhoid Fever," in your issue of August 2, by stating the opinions I have formed during more than 20 years of practice.

For a long time I have been fully convinced of the spontaneous origin of typhoid fever. More than ten years ago, a letter appeared in the *Lancet*, very clearly enunciating that doctrine, followed by one from myself coinciding with the view; and subsequent observation has fully confirmed it.

The contaminated-water theory I do not believe in, and the contaminated-milk theory I believe to be equally fallacious. If it were possible for typhoid fever to be generated by either cause, whole districts would be depopulated, or rather never peopled. Ingenious theorists square their arguments very well, but they do not dovetail them with facts.

For fifteen out of twenty years, the inmates of my house drank contaminated water; and in August and September, when the water became low in the well, it was at times so bad we could not drink it; yet we had no typhoid fever—and, from what I can hear, there never had been any in this house. Theorists will, I have no doubt, advance something plausible in explanation; but the fact is significant, more particularly when it is taken into consideration how very often the same thing occurs. Milk, it strikes me, is quite likely to give rise to typhoid fever, but not by being contaminated with an imaginary modicum of impurity obtained second-hand from a cow drinking water from a dirty pond, or the milk-pans being washed in water tainted by the ooze from a drain or closet. When milk is taken into the stomach it is first, by the action of the gastric juice, curdled; the curd represents exactly so much cheese, and, if it is more than the gastric juice can redissolve, it passes undigested into

the intestines, where, if it does not pass on with the other refuse, it makes a lodgment at one end or the other of the colon, and frequently at both ends; it there decomposes, noxious gases are formed which saturate the intestinal secretions and irritate the intestines; this produces diarrhœa, and the small patchy abrasions which are, I venture to suggest, the points of absorption into the system of that poison from which typhoid fever arises. Other accumulations in the intestines will do the same thing, and the more prone they are to putrefaction or fermentation, the more likely they are to produce typhoid inoculation. How long accumulations will remain in the bowels is a subject for investigation—two, three, and four weeks I know, and I think longer.

There are, I believe, three ways in which typhoid fever is ordinarily generated and spread. First, by spontaneous generation in the manner just described, and supported by the casual cases met with in practice that are untraceable to any source, and also by the fact that the disease frequently occurs among wealthy people who live in luxury and are not exposed to any of its ordinarily supposed causes. Second, by infection. The spread of typhoid fever is too common an occurrence to admit of a doubt that it is infectious, but not virulently so. It spreads, I think, by the respiration of contaminated air, and moderate cleanliness and careful ventilation will prevent and arrest it. Third, by the respiration of air contaminated by the exhalations from decomposing sewage: fresh sewage I believe to be innocuous. When I first settled in this place, typhoid fever was always among us. Subsequently a system of drainage was adopted; and while the work was going on, I think it was in the summer of 1859, we had a great epidemic—fifty-eight bad cases there were in this village and in its immediate neighborhood. Since then we have been almost completely free. Six years passed before there was a case at all, then we had one here and there at intervals, but no spread of the disease at any time. Such an outburst under the circumstances narrated, followed by such a total subsidence of the disease, points, I think, in the direction indicated.

In typhoid fever the colon always contains offensive scybalæ, which are passed off before there is any marked mitigation of symptoms, in lumps, crumbs, or sediment of a dark or dirty leaden color or in fluid stools equally dark and offensive at first, becoming lighter and less foetid later on, and natural in convalescence. In relapse

the stools fall back to their original condition in a greater or less degree ; and in fatal cases the colon is never cleared. If when people find their bowels acting in an imperfect manner, the stools offensive, and at the same time passing offensive flatus—which, if without any known special cause to produce it, is a sure indication of there being decomposing refuse in the intestines,—they were to observe a strict abstinence for two or three weeks and keep their bowels gently free, this disease would be but little known. If, in fact, the two great virtues of temperance and cleanliness were observed—the former in reference to the great main-sewer of the body, the latter in reference to the sewers of the house : so that the former was not allowed to get obstructed with the refuse of superfluous feeding, and the latter were kept clear with proper flushings—typhoid fever would, I believe, be unknown ; and as an additional preventive, were we to take a hint given us by nature, and keep our sewers in dry seasons flushed as they are by rain in wet ones, we should have as little disease in the former as in the latter (of which the present summer is a marked example), and the use of stinking and expensive disinfectants would be obviated.

In thus stating the opinions I have formed relative to the causes and prevention of typhoid fever, I must add I have no sympathy with the cowardly and exaggerated fears of infectious disease at present so generally entertained. I do not believe in the virulence of infection of any kind—our knowledge of the subject is too limited to attempt to teach it,—neither do I believe in the poisoning influence of every solitary pigsty or garden closet—the good health generally enjoyed in farm-houses is a proof against that. The prevention of typhoid fever is, I believe, in our own hands : we must not look too high for things close by.

I am, &c.,

WM. ELLIOTT PORTER.

Lindfield, Sussex, September 30.

IT WAS A BEAUTIFUL CONCEIT of the physician's little daughter, whose father had induced her to take some quinine pills by representing them as humming birds' eggs. When the drug began to produce its characteristic effects on the ears, the child ran to the parent in great glee, saying that the eggs had hatched and that the little birds were singing in her ears.

DR. RICHARDSON ON SALUT-LAND.

(From the Medical Times and Gazette.)

The proceedings of this year's Congress of the Sanitary Institute was opened on Tuesday, at Croydon, by a luncheon held in the Town Hall; and in the evening the President of the Congress, Dr. B. W. Richardson, delivered his address. Everybody knows that Dr. Richardson is always worth hearing. It is certain that he will be neither dull nor commonplace; and though some may believe, and practise the belief, that science, whether sanitary or other, must be taught in hard and dry speeches bristling with facts and statistics, all are delighted when Dr. Richardson deals with the same sanitary science lighted up by a vivid and unrestrained imagination. He takes up a fact or two—or a supposed fact will serve—and builds up a prose poem (dare we say it?) that charms his listeners. Not long ago he presented the world with a picture of a veritable City of Health—Hygeiopolis—which is still we fear but a picture; and this year he held his audience for two hours by a word-picture of "Salut-land, an ideal of a healthy people." First, taking as reliable knowledge various estimates made as to the natural life of various animals; and as a law, the inference, from such quasi-knowledge, that the natural life of an animal extends to five times the number of years taken by the animal to arrive at maturity, he assumes by this 'law' that the natural life of man is one hundred years. 'His full age is an hundred years. This is the anatomical estimate of human life, the surest and by far the best of all that can be supplied, since it defines a law irrespective of and overriding all those accidental circumstances of social and physical storm and strife which may interfere, and, indeed, do interfere, with every estimate based on the career of life itself, as it is shown in the ephemera, by and through whom it is phenomenally demonstrated. We are led once again to the inevitable conclusion that man, even in this stage of his probation on the planet, is naturally destined to walk upon it, endowed with sensibilities of life and intelligence, for a period of one hundred years, and that until he realizes this destiny practically he is in value of physical life actually degraded far below his earth-mates, whom he designates the brute creation, and over whom he presumes to exercise his, to them, almighty will. The constant of human life is naturally one hundred years. But more remains. Because the ful-

ness of age is one hundred years it is not an essential that death shall immediately crown the advent of that fulness. To certain parts of the scheme of natural life there is a boundary. The period of maturity of development has its boundary of twenty years, when the body, as Flourens says, ceases to grow ; but if it ceases, in the ordinary sense of the term, to grow, it does not cease to increase : its nutrition improves and perfects for twenty years more at least, and then only has reached its completed physical condition. It should never from that period gain in weight, and for a long time it should not lose. It goes on now through a third period, which Flourens admirably calls the period of invigoration, during which all its parts become firmer, all its functions more certain, all its organization more perfect ; and this period covers thirty years. At seventy old age begins—the first old age, in which naturally the fruits of wisdom are most bountifully developed, and which lasts from fifteen years to twenty, to mellow down to a period of ripe old age, commencing at eighty-five years and lasting fifteen years more—*i.e.*, until the constant is attained. But even then a man ought not to die ! Though he has no longer reserve forces upon which to call, still his *vires in actu* may enable him to live for many years, so that it would be only justice, without anything like large generosity, to put the normal life of man at 120 years ! Then Dr. Richardson gave a picture of normal man living in cities of health. Where Salut-land—a horrible name !—is to be situated, we have not discovered. But its largest cities will not be very large, and every sanitary need will be rigorously cared for. Five separate houses to an acre of land, and five persons to a dwelling-house, will be the densest population allowed. No large families are, somehow, of course, to be permitted ! The people are to be frugiverous ; but harmless animals of the most beautiful kind are to wander freely in magnificent parks and glades. Every tameable animal will be there, and all animals will be objects of singular and affectionate interest ; though some animals may indeed be made useful. Their fleeces will be used for clothing, milk for food, and some, especially elephants, will be made to work. All the inhabitants—men and women—will be consummate riders. The roads will be always smooth and dry, and velocipedes will be largely used ; while travelling through the air and travelling on the floors of the great seas will be brought to perfection. There will be no soldiers, and no lawyers, no politicians, and no paid physicians or surgeons ;

and of course no paupers. But there will be marvellous painters and marvellous architects; and the settlers of Salut-land will have been made familiar in their own land with the elementary truths relating to public health. The women will all dress becomingly and hygienically, and the children will be singing instead of shrieking in the street. There will be no kings, or princes, or permanent magistrates. But science will be sovereign, and the head of all the sciences will be the science of health, which 'includes all the rest.' We regret that our space will not now allow us to give Dr. Richardson's poem at length; but we must admit that he insinuates here and there many a piece of sound practical sanitary instruction; and we may add that this wonderful people, in their wonderful land, are not to be found till the year 2050.

DEATHS FROM ENTERING A CESSPOOL.

During the month of May four deaths occurred which deserve special notice, having been caused by an accident of unusual occurrence, and it is therefore proper that the particulars be preserved in the records of this department. They resulted from entering a cesspool, and the facts elicited by the coroner's inquest went to prove that death was caused, not by suffocation or absence of pure air alone, but by poisonous gases generated therein.

It had not been opened for a number of months, and the gases had become so concentrated as to prove fatal in a few seconds. The cesspool was nine feet deep, eight feet long, and four feet wide. It was planked all around, also covered with planking over which were eight inches of dirt. It was separated from the privy-vault by about four feet of bank, but connected with it by a log through which was a two-inch hole. This hole has been closed up for some time, so that the cesspool was cut off from all connection with the outer air except at a small opening where the waste water was poured in. There was, therefore, no ventilation. The vault, on the contrary, was tolerably well ventilated, having a good sized and tall chimney, and in other respects in a fair sanitary condition. The cesspool was used by two or three families, and contained eight or nine inches of water. The vault had become pretty well filled with water from recent rains.

On the evening of May 27th, Christoff Guise, who resided at 22 Grove street, the scene of the accident, decided to open the hole

between the cesspool and the vault for the purpose of letting off the surplus water from the latter. He removed one of the planks from the top, making an opening about four and a half feet long by fifteen inches wide. Through this he put down a ladder, on which he descended into the cesspool. He drew out the plug which was in the hole leading to the vault, whereupon, according to the man's statement, there was a rush of gas ; that this made him dizzy, so that he could not ascend the ladder, although he attempted to do so, and called for help. He experienced great roaring in his ears, became unconscious, and knew nothing more till he found himself in bed. In the meantime, a man by the name of Williams came to his rescue. He descended and raised Guise up, so that two men at the top were able to pull him out. They then turned to help Williams, but just in time to see him fall backward from the ladder apparently dead. Another man then went down, but ere he could accomplish anything he fell dead. A fourth man also went immediately into the cesspool, but met with the same fate.

These three men lay in this hole from half to three quarters of an hour, when some one volunteered to go in to get them out. The opening was enlarged so as to measure 4 1-2 by 3 feet. A rope was put around him and he brought out one man at a time, and then descended the fourth time to make certain that there was no other body remaining in the pool. This man accomplished this without experiencing any serious effects, although it was with great difficulty that he could breathe while in the hole.

Christoff Guise, who was the first who went in, and who was rescued before life was extinct, survived about forty hours, and died with symptoms similar to those indicative of a typhoid condition.

From a careful study of the facts it is reasonable to conclude that the vault had little or nothing to do with these sad results ; but that the cesspool contained the poisonous gas, and that the liquid and mud, upon being disturbed, also gave off the sewer gases with which they were saturated. That these gases had become very concentrated is proven by the quickness with which they produced death ; moreover, the stench could be recognized two hundred yards distant.

These gases probably consisted of sulphuretted hydrogen, with the addition of sulphide of ammonium ; the former being the one which, it is believed, produced the fatal result.

There are several points in connection with this affair which it is well to remember: 1. It demonstrates how poisonous a cesspool or sewer may become by being sealed up, and hence the great necessity of proper ventilation for affording escape to gases as they are generated. 2. It shows that not only receptacles of night soil may produce destructive gases, but that accumulations of waste water and material from the kitchen and other parts of the house may also evolve equally dangerous products. This is acknowledged by sanitarians, but a large number of the people seem to think that it is a matter of little consequence how dirty water is disposed of. 3. It should make the men whose business it is to clean filth receptacles exercise due caution lest they fall victims to the same kind of poison. It is well to bear in mind the following remarks: "A mere feculent odor is not necessarily injurious, nor is there much danger to be apprehended from sewers where the supply of water is liberal. Previously to emptying cesspools, privies, sewers, and the like, they should be well stirred up, as otherwise the escape of noxious vapors may take place as soon as the removal of soil commences. It is not enough to find that a candle will burn in the atmosphere of a cesspool, because even then it may be dangerously charged. Further (and this is also true in the case of vaults), they should, before entry, be freely exposed to the air, an active combustion set up, and cholrine generated in them for two or three days before the men are allowed to enter."—*From Report of Health Department, Cleveland, O.*

A MINISTRY OF HEALTH.

The address of Dr. B. W. Richardson on 'A Ministry of Health' has attracted a good deal of attention. The *Detroit Lancet* extracts from, and comments upon, it as follows:—

While advocating the formation of a ministry of health, he says that from his great experience and observations, he concludes: (1) Nothing has done so much in forwarding the great progress witnessed in sanitary matters during the last quarter of a century as the perfect freedom of action that has been permitted. (2) Nothing more disastrous could now occur than the interposition of a central authority that should attempt to enforce the wisest with a subpoena to attend even to its rules on the community by serving it health. As an illus-

tration of these propositions, he instances the career of the Registrar-General of Births, Deaths and Marriages during the past forty years. 'When, in another century, the history of English sanitation comes to be written, the historian will find in the returns of the Registrar-General the kernel of sanitary science in England during the past forty years. Each week the daily papers publish from those returns an abstract at which all England glances, and on which all thoughtful England speculates in relation to health. By that record towns are put on their mettle to compete for the best health, in a manner which no mandate from a central government office charged with power to enforce could ever produce. By that record every sanitary improvement is tested and shown at its true value, so that the masses of the people are directly influenced by it. The Registrar-General is a judge, not a ruler. He merely puts the case; the jury rules; and if in many instances its rulings may be poor and faulty; it is in the right direction, and, what is above all price of computation, it day by day improves. * * * From these returns mortalities have been extracted and causes of mortalities specially traced. From them the dark regions of disease in the land have been discovered, mapped out and demonstrated at a glance, as counties and towns are demonstrated. From them, influences of seasons on diseases are made manifest. From them the relation of occupations to the duration of life of the occupied has been deduced. From them the relation of birth to death has been wrought out with a precision which Arbuthnot and Halley, with all their prescience, could hardly have dreamed of.'

The Ministry of Health, in view of such facts, it would be wise to establish, would occupy the place of teacher and student. In addition to its superintendent, he would have it include a statistician, a physician, a factory surgeon or physician, a chemist, a veterinarian and a sanitary architect and engineer. The value of such an organized department of government would be simply incalculable. In the United States a somewhat analogous purpose is sought to be accomplished by the National Board of Health. Let it daily investigate and daily report in all the papers of the land the results of its investigations into the conditions affecting the well-being of the people, and we would have a sanitary influence of incalculable power for good. One more quotation from the address on 'Learning and Health' must suffice for our present purpose: 'In a city like Lon-

don the children of the poorer people—the children that play in the open streets and round the squares—are constantly found to present the best specimens of health in the whole child community. If these children are well fed at home and have moderately comfortable beds, and are not put to work for hours too long, they are singularly healthy, in many instances even though they be denizens of courts, mews and alleys. It is true that numbers of them inherit sad constitutional diseases; it is true that numbers of them exhibit deformities of the skeleton, owing to the circumstance that during their infancy they were not properly fed with food that will yield bone-forming structure. Still, amongst them are the ruddiest and healthiest of the town communities. They owe their health to the free and out-door life. The children of the middle classes in large cities specially suffer from too close work at books, and educational labor generally. They are usually very pale, muscularly feeble, and depressed in mind. They grow up irresolute, and yield by far the greatest number of those who fill up the death-roll of pulmonary consumption.' Among the cardinal defects of education in boyhood and girlhood are over-work, lack of skill or care in detecting the capability of the learner, and the system of forcing the mind into needless competitions by which animal passions are made to feed the intellect with desire, and so to work its ruin. The wide study of these lectures by both the profession and the laity would greatly advance the interests of both by stimulating thought and action respecting the most vital subjects that can engage the human mind.

SIR WILLIAM JENNER ON THE TREATMENT OF TYPHOID FEVER.

It is without the province of this JOURNAL to discuss the treatment of disease, but we feel constrained to quote a few of Sir Wm. Jenner's remarks on the treatment of typhoid fever, at a meeting of the Midland Medical Society, held recently at Birmingham. As the *Medical Times and Gazette*, after congratulating the Society upon its good fortune in having persuaded Sir William to speak in public on this subject, says:—With an experience almost unrivalled, and a clinical acumen rarely at fault, it would be strange if the ideas gradually, so to speak, crystallised in the brain of a man like Sir William Jenner were not worth sharing. New theories are often useful, sometimes

valuable, but the pith and power of the man are to be measured, not by these, except in so far as they have been founded on such solid grounds as those embodied in the experience of the lecturer. Sir William Jenner remarked that he had never known a case of typhoid fever cut short by any remedial agent. He said typhoid fever could not be cured, but more lives might be saved by judicious treatment and more lives lost by the improper treatment of typhoid fever than any other acute disease. In a very large proportion of cases no other treatment was really required from beginning to end than rest in bed, quietude, fresh air, pure water, and regulated diet, although most cases were benefited by a little wine in the third and fourth weeks. If medicinal, in addition to hygienic, treatment were required, it was because special symptoms, by their severity, tended directly or indirectly to give an unfavourable course to the disease. Often, grave symptoms passed away spontaneously, although no special treatment was prescribed for their removal. When drugs were required to hold in check a special symptom, their use should be discontinued when the gravity of the symptom for which they were prescribed had subsided. Alcohol, because of its influence on the nervous system, was of the greatest value in typhoid fever, but should only be given for the purpose of attaining a definite object. Its effect should be watched, and the dose so regulated as to attain the desired effect from the smallest quantity possible. His experience led him to believe that the man would be the most successful in treating typhoid fever who watched its progress not only with the most skilled and intelligent, but also with the most constant care, and gave unceasing attention to little things; and who, when prescribing an active remedy, weighed with the greatest accuracy the good intended to be effected against the evil the prescription might inflict. While admitting without reserve that heroic remedies fearlessly and judiciously applied would save life when less potent means were useless, the physician whose experience reached over many years would, on looking back, discover that year by year he had seen fewer cases require heroic remedies, and more cases in which the unaided power of nature alone sufficed to effect a cure; that year by year he had learned to regard with greater diffidence his own powers, and to trust with greater confidence in those of nature. We trust there is no medical work published which will not give publicity to Sir William's remarks on this important subject.

SUB-EARTH VENTILATION.

J. Wilkinson, C.E., in the *Med. & Surg. Reporter*, Oct. 1879, gives the results of his observations upon this plan of ventilation since 1874: (1) An unlimited volume of atmospheric air may be perpetually supplied to a building or any number of apartments, at a uniform temperature of about 50° Fah. This is done through a properly arranged duct placed at a proper depth below the surface of the earth, say about twelve feet, and about three hundred and fifty feet in length, and with a transverse section in proportion to the volume of air to be transmitted in a given time, moving at the rate of about one hundred linear feet per minute. (2) The air passed through a subterranean duct is found to be peculiarly affected hygrometrically. Carefully conducted experiments in the use of reliable instruments, have demonstrated the following facts: Where the ducts are laid in the virgin soil of rural districts, and they are constructed with an earth bottom, as I construct them, (and if the soil of the bottom of the trench in which the duct is to be constructed is other than clay, it is surfaced with it a few inches in depth), the air from such ducts is superlatively pure; in fact, it is rarely found in nature of an equal degree of purity. These ducts are found to possess the quality of alternately absorbing from and giving off moisture to air passed through them, by which an equable hygrometric condition in the air is maintained. It has been found that when the exterior atmosphere is saturated with moisture, or is at the dew-point, air, while being cooled in its passage through the duct, is deprived of its moisture so as to show a difference of from four to five degrees between the wet and dry bulb thermometers of the psychrometer, the dry bulb showing 61° in an insulated apartment, and the wet bulb 57°. This experiment was made when the exterior atmosphere was 65°, and the wet bulb thermometer showed 65°, indicating that the air was charged to its fullest capacity with moisture. Again, when the external air was 80°, and there were several degrees difference between the wet and dry bulbs, indicating extreme dryness of the air, the relative difference of four to five degrees was maintained in the building, as indicated by the psychrometer. These two results, obtained with reliable instruments, under such opposite hygrometric conditions of the atmosphere, prove the positive ability of the subterranean air duct to produce and maintain in the air it supplies an equable hygrometric

condition,—an essential factor among the numerous hygienic requirements of a hospital. (3) Another remarkable characteristic of this system is the established fact that by passing air through an earth duct, artistically arranged, an electrical condition which often obtains during the warm season, which precipitates ferments and produces premature acidification in milk, so dense that it mechanically prevents cream from rising, occasioning a loss of millions of dollars annually, is entirely averted.

THE VALUE OF VITAL STATISTICS, AND OF SUCH KNOWLEDGE AS MAY BE OBTAINED FROM THEM.

When will the mass of the people learn to appreciate the value and importance of complete returns of vital statistics. In Great Britain all thoughtful people look for and examine, and speculate upon, the returns as published weekly, quarterly and yearly. Why should not we in Canada learn from their experience to place a just value upon such returns, and endeavour, to have them perfect. The following extracts we take from a statistical report by the able Secretary of the Michigan State Board of Health.

This plea for the attention of the people to this subject of vital statistics and the cause of death is made in perfect and sincere belief that the subject is of far greater importance than is generally believed, that the people may profitably give up many of their studies and much of their reading on subjects usually thought to be important, and devote more of their time and energies to searching out the causes of death and to removing them from the surroundings of their friends and neighbors, that their lives may thereby be made more certain, perfect, and prolonged.

It seems evident that the object of obtaining any kind of knowledge is that our lives may be more certain, perfect, complete and pleasant ; knowledge tends directly and immediately to render it possible for us to live, whereas without it we might cease to exist ; other knowledge tends indirectly or remotely to render our lives more certain and more perfect ; and some to render it possible for us to live longer than we should without it. Scientific studies are valuable chiefly because we have come to know that sooner or later knowledge of all such facts as science collects and classifies tends to increase man's control over nature, and to render his life more certain, perfect and complete. Among the sciences some are not so immediately and practically ap-

plicable to the preservation of life as are others, but are valuable as studies of the truths of nature which are known to be ultimately valuable as truths ; while some of the sciences deal with subjects of vital and immediate importance in their application ; such, for instance, as biology, of which the most ignorant must know something, or they would lose their lives immediately. Some of the most striking facts in biology are soon learned, as that certain animals, including human beings, lose their lives when kept under water, that certain mutilations cause death, and that death may result from falling a great distance. There are numerous other facts which, to those who have given special attention to such studies, are almost as plain as the ones just mentioned, but which to the great mass of mankind are unknown and consequently not acted upon. It is a function of the State Board of Health to disseminate such facts among the people. Among the leading students in biology and sanitary science, it is well understood, however, that the knowledge in their possession, even though so far in advance of that of the people, is small compared with that which awaits their further researches ; but their further progress is extremely difficult until the people come up somewhere near their leaders in this direction. This is so because a large proportion of the facts relating to the diseases and deaths must be obtained from the people, and for the general and successful collection of vital statistics, which can only be secured when legislators come to appreciate the importance of the subject, and to understand what facts are needed for such research, or will consent to give force to the demands of experts in such special studies ; then, after a good law is secured, the people who contribute the statements or facts concerning the deaths, etc., must have sufficient appreciation of the subject to be willing to give the necessary attention to it and to properly understand and answer the questions provided in the law.

Under present circumstances, the last and what should be the best end of life is, for a large proportion even of the intelligent classes of people, embittered by ill-health that might have been prevented by acting upon such knowledge as is in the possession of our leaders in this field ; and the means for its prevention would not have detracted from, but would have added to the enjoyment of earlier life. Again, under present circumstances, children borne to us to cheer and care for us in our old age, and to uphold thereafter the family name, are cut off in their infancy,—that children will live is extremely uncertain.

And yet the causes of this great mortality among our children are many of them known to the leading hygienists, and may be known to the people, if they will only study the subject. And the impulse for such study should arise when the assurance is given by those who do study the subject that the deaths are known to be in great part preventable.

“Such demonstrations as those to which we have referred were not possible until the system of registration of population and mortal diseases became a part of the established law of civilized communities. Political economists and statesmen had seen the waste of life, and philanthropists had seen the suffering, but in the absence of vital statistics no one could prove what many intelligent minds perceived. At the present day we stand face to face with facts of the deepest interest, showing the comparative duration of life in different communities, the causes of deaths, the influences of soil, of climate, of race, of inheritance, of occupation, of contagion, of putridity.”

REQUIREMENTS FOR THE DRAINAGE OF EVERY HOUSE.

From the Sanitary Engineer, Sept. 1879.

In the light of present knowledge, the following seems to us the essential requirements for the drainage of every house. Time and further experience may suggest other features or modifications of these. *We invite our readers to criticise or ask for more detailed explanation of any section not fully understood or concurred in.*

*Every house drain should have an inlet for fresh air entering at a point inside the main trap, and carried to a convenient location *out-of-doors*, not too near windows.

A trap should be placed on every main drain TO DISCONNECT the house from the sewer or cesspool. In places liable to unusual pressure from the sewer it should be a double trap, with vent from between the two traps, running up full size above the roof; or, where the pressure from sewer is only occasional and the rigor of climate will permit, this vent may be carried to the sidewalk or area, at a safe distance from windows. If the first trap is forced, the gas can gain easier exit through this pipe than through the second.

*This pipe will relieve the smaller house traps from pressure occasioned by a descending column of water that would otherwise be likely to force the seals of these traps. The air drawn through this inlet to the lower part of the drainage system assists the circulation within the drains, and is essential to ensure the diffusion of the gases generated within them.

Every vertical soil or waste pipe should be extended at least full size through the roof.

No traps should be placed at the foot of vertical soil pipes to impede circulation.

Traps should be placed under all sinks, basins, baths, wash trays, water closets, etc., and as near to these fixtures as practicable.

*All traps under fixtures, wherever practicable, should be separately ventilated in order to guard against syphonage. Such vent pipes should not branch into a soil pipe below where any drainage enters it. In some cases it is preferable to carry it to outer air independently.

Rain water leaders should not be used as soil pipes, and when connected with house drains they should be made of cast iron in preference to galvanized sheet iron or tin, there being less liability of corrosion. Joints should be gas and water-tight, to preclude possibility of drain air entering open windows.

No safe waste should connect with any drain, but it should be carried down independently to a point where its discharge would indicate the existence of a leak or any overflow above.

No waste from a refrigerator should be connected with a drain.

Unless the water supply is ample, so that it will rise to every part of a building, ensuring at all times the proper flushing of fixtures and traps, a cistern should be provided into which the water will rise at night, or into which it may be pumped. Said cistern should be large enough to hold an ample daily supply, be kept clean, covered, and properly ventilated. The overflow pipe from it should *never* be run into any drain *under any circumstances*. The supply for drinking-water should not be drawn from it, but from a direct supply, *i. e.* direct from the street main.

Water closets should not be supplied directly from street pressure or by a pipe from which branches are taken for drinking-water. Where the valve closets are preferred to those that are supplied from a small cistern immediately over them, then the supply should be taken to a storage tank, from which it can be conveyed to the valves on the closets, thereby ensuring an equable pressure and securing more reliability in their working.

*The extension of soil pipe full size through the roof is not a certain protection against syphonage of traps branching into it, and no protection when traps are on a horizontal pipe a distance from the vertical soil pipe.

All drain pipes within a house should be of *metal* in preference to stoneware, owing to the liability of the latter to crack, and the difficulty of keeping the joints tight. It is best to run them along the cellar wall or ceiling with a good incline. They should *never* be hidden underground, as then leaks will not be perceptible. In some places it is common to paint pipes white so that any leakage will show itself to the most careless observer.

All drains should be kept at all times free from deposit ; and if this cannot be effected without flushing, special flushing arrangements should be provided so as to effectually remove all foul matter from the house drains to the public sewers.

All drains should be laid in a straight line, with proper falls, and should be carefully jointed and made water-tight. No right-angled junction should be allowed, except in the case of a drain discharging into a vertical shaft.

No drain should be constructed so as to pass under a dwelling house, except where absolutely necessary ; and then it should be constructed of cast iron pipes, with lead caulked joints laid so as to be readily accessible for inspection, and ventilated at each end.

Whenever dampness of sight exists, it should be remedied by laying sub-soil drains, which should not pass directly to the sewer, but should have a suitable break or disconnection.

Water supply and drain pipes should be concentrated as much as possible, and not scattered about a building. Horizontal pipes are objectionable.

Plumbing fixtures should not be hidden behind walls and partitions where their condition is never apparent. They ought properly to be open to view and so situated that any leak would be readily detected. It is also well to have a plan of the plumbing of each house for the tenants' or owner's convenience and guidance in any emergency.

In planning house drains they should be got outside the walls of the house as quickly as possible, so that there may be few joints of pipe, and the smallest chance of leakage from defects or accidents ; taking proper precautions in locating to guard against freezing.

RADCLIFFE, when young, had twenty remedies for every disease ; when old, he had twenty diseases for which he had not a single remedy.

CORPULENCE.

Corpulence or obesity is, there can be no doubt one of the most widely spread of the minor troubles to which the human race is subject, and as such worthy of the most careful attention on the part of hygienists and therapeutists. Until within a very few years it was universally taught that the great sources of fat within the human body were the fatty and hydro-carbonaceous elements of the food; and, although it was admitted that the albuminates might, under certain circumstances, give rise to fat, this was put forward rather as a doubtful hypothesis than an admitted fact. The recent labors of physiologists have cast no little doubt upon the old views, and the last writer on the subject of corpulence (Immermann, who contributes article to Ziemssen's 'Encyclopædia') throws over the old views entirely, and adheres absolutely to the doctrines put forward by modern physiologists. It is now held that fat is formed principally from the albuminous elements of the food just as the fat in fatty degeneration of the tissues, is derived from the organised albumen of those tissues. The albuminates eaten with the food are used in part for the nutrition of the albuminous tissues, and the surplus which is not so used undergoes continued processes of metamorphosis and oxidation, and appear among the excretions in the form of urea, uric acid, carbonic acid, and water. If, however, the albumen taken in with the food be in excess of the requirements, or if obstacles stand in the way of its proper oxidation within the body, then a great part is deposited in the form of fat, instead of being burnt up into carbonic acid and water. It is hardly necessary for us to repeat, in this place, the various arguments, physiological and chemical, which have been put forward in support of this view. It must be sufficient to state that they appear tolerably conclusive, and place the albumen source of fat upon a basis which seems to us to be fairly secure.

The value of the other varieties of food in determining obesity depends, it would seem, mainly on their doing away with the necessity of the ultimate oxidation of the non-nitrogenous products of the metamorphosis of the albuminates, and so enabling them to take the form of fat and settle in the tissues, instead of making their escape by the lungs in a more volatile state of being. The formation of fat from albuminates would appear to be greatly favored by this incomplete combustion, and when fats and hydrocarbons are taken with

the food as well as albuminates, the former, as regards a dividend of oxygen, are in the position of preference shareholders, and until their claims for oxygen are satisfied, the non-nitrogenous products of the decomposition of the albuminates get a scant supply, and must be content to remain in a condition of penultimate metamorphosis.

From this it will be manifest that, apart from diet, a deficiency in the supply of oxygen favors obesity. This is evident, whether the deficiency be due to sedentary occupation or to a want of red blood-corpuscles to carry the oxygen to the tissues. On the other hand, a good supply of oxygen, which is favored by rich blood and healthy exercise in the open air, favors the complete combustion of the food and diminishes the tendency to obesity.

It is generally admitted that animal fats are capable of forming fat within the body, but according to recent views, it is extremely doubtful whether hydrocarbons are capable of a similar transformation. We cannot in this place give the various physiological arguments which seem to support this revolutionary view, but must be content with stating that it is commonly accepted that the hydrocarbons of the diet lead indirectly, and not directly, to obesity.

Although these statements, which come to us with such high authority, change completely the chemical view of corpulence, yet, as a practical disease requiring to be combated by therapeutic measures, it stands precisely where it did. Whether the albuminates or the hydrocarbons be the immediate source of the fat, it is evident that by cutting off the latter from the diet we stand the best chance of attaining a diminution of the superabundant adipose tissue. By permitting the patient to consume a fair proportion of albuminates, we keep his tissues well nourished, prevent anæmia, and encourage that activity of function which is the greatest enemy of undue corpulence; while by cutting off the hydrocarbons we necessitate a thorough combustion of the albuminates, which thus form water and carbonic acid in the place of adipose matter.

The observations of Brillat Savarin on obesity, made more than fifty years ago, are marked by all his well-known acuteness, and his hints to the obese leave nothing to be desired. He insists on three things—(1) Discretion in eating; (2) moderation in sleeping; and (3) exercise on foot or on horseback; but at the same time he remarks that his knowledge of human nature tells him that the self-indulgent mortals to whom he preaches will turn a deaf ear to all his good advice. Brillat Savarin's 'antiobesique' diet consisted in ex-

cluding farinaceous articles, such as Italian pastes, rice, potatoes, macaroni, and white bread. In addition, he was most particular not to allow eggs, as if his observent eye had foreseen what physiological chemistry has just told us. He replaced the greatest number of farinaceous articles by toast and rye bread, of which latter he astutely observes, people are certain not to eat too much. To allow a sufficient interval between meals, and always to rise from a meal with appetite, were amongst the precepts which he thought it right to give. These were the precepts of Savarin in 1825; they were the precepts of Immermann in 1878.—*London Lancet*.

THE PHYSIOLOGY OF RECREATION.

The last of the excellent drawing-room series of lectures organized by the National Health Society was delivered at Mayfair, on the 10th inst., by Mr. George Romanes. The lecturer took the useful and novel subject of 'The Physiology of Recreation.' He said that under the conditions of life recreation was a most important thing, and should be understood. No doubt people would always be compelled to take recreation and profit by it, whether they understood its science or philosophy or not, but an intelligent understanding of abstract principles and their practical application would ensure more use and less abuse of the thing that was thus intelligently understood. Let them begin by an understanding what recreation was. It was nothing other than a renovation of their vital energies. Recreation ought to be, not a pastime entered on for the sake of the pleasure and amusement it afforded, but an act of duty. Many things fell within the name that did not come within this definition. Considering the physiology of the question, he asked, why should some pursuits have a recreative character and others not? Rowing, which was recreation to the student, was serious work for the bargeman, and they would never find the gardener, like the master, digging for digging's sake. The historian read science for recreation, and the man of science read the historian for the same purpose. A London tradesman might spend a beneficial holiday at Brighton, and a Brighton shopkeeper a beneficial holiday in London. The only principle that would serve to explain the recreative quality in all cases was what he might call the physiological necessity for frequent change of functional activity, and the consequent physiological value of the kind and seasons of such activity. The tissues and organs of

the body required periods of rest to alternate with periods of activity, and what was true of each part of the body was true of the body as a whole. There might be local exhaustion, or general exhaustion. There might be local restoration, as resting an exhausted arm not able to lift a weight ; or there might be a general restoration, as in the effects of sleep. Part of the body being exhausted, and the whole of the body not so far exhausted as to require sleep, recreation was affording local sleep to the exhausted part by transferring the activity from it to some other part. The term 'recreation' was thus singularly happy, pointing to the rebuilding up, reforming, or recreation of organs and tissues which had become partly exhausted by work. In this sense sleep was universal recreation. It would be seen, then, why in recreation there must be a variety. So the student found recreation in rowing, to give the brain time to recuperate, and the historian and the man of science got recreation because each required different functions for their pursuits. Dealing next with the practical aspects of the question, the lecturer said the emotions were a great influence. It must ever be remembered that the influence of all others most detrimental to recreation was the absence of agreeable emotions or the presence of painful ones. There was little use in taking so-called constitutional exercise at stated times if the mind at these times was emotionally colourless, or, still worse, if it was jaded by anxiety and care. Recreation of good quality should stimulate cheerful emotions and vigorous consciousness. The most recreative form of recreation for those whose labour was not of a bodily kind was muscular exercise. Ladies, much more than any other class of the community, had fallen into the habit of neglecting exercise. Among ladies there was no one source of disease more prevalent than this neglect. He contrasted the life of a lady in town with that of a country girl with her bloom of health, and said he should like to see this matter of recreation more attended to in girls' school. He spoke against imprisoning children during playtime, to deprive them of recreation, as something worse than cruel. At the close a vote of thanks was accorded to the lecturer.—*Sanit. Rec.*

DRINKING BLOOD.—Fresh blood (*National Med. Review*) has been often drunk in the Abattoirs as a remedy in debility, etc. Its value is doubtful. According to Dr. J. Jeannel, it is difficult of digestion, slow of assimilation, imparts a fetid odor to the faces, and is in every way inferior to rare or raw beef, or beef tea.

IN REGARD TO STATE BOARDS OF HEALTH, the following facts deserve to be better known : After thirty years of effort by the medical profession, Massachusetts, in 1869, legislated into existence the first State Board of Health and Vital Statistics organized in the United States. This prolonged effort was no doubt used in conciliating that legal maxim which declares that "no law can successfully precede its public sanction," and serves to explain, at least in part, the preëminent success of this board. However, the Governor did exercise, in the choice of members of the board, an amount of discretion very unusual to politicians when acting in medical matters ; and the legislature, beginning with an experimental appropriation of \$3,000 for the first year, has rapidly trebled it. The acknowledged superiority of this board is sufficiently proved by this fact, among many others, that it did at once recognize that the greatest obstacle to sanitary progress was popular ignorance, and therefore that its primary duty was to teach the people. Hence, it at once organized a corps of reliable correspondents throughout the State ; it solicits reports from, and issues circulars of information to, all the doctors, preachers, teachers, county and State officials, newspapers and journals in Massachusetts ; and, in addition, it issues and freely distributes more than 10,000 copies of the most valuable annual health report ever published in this country. Thus, by enlightening the public, it has gained its favor, and has thereby increased its own power and the bounty of the legislature. So great is this power that it triumphed over a financial combination of fifty slaughter-houses, and converted these health and life-destroying nuisances into sanitary blessings ; it made war in Boston on the pestilence-breeding "houses of the poor," and thus so alarmed the politicians, who loving their country much, love votes, even of the sick pauper, more, that the board summoned to its support a mass meeting of the people, and was sustained.—*D. Chaille on State Med. at meeting of Am. Med. Assoc. from Sanitarian.*

CONTAGION OF PHTHISIS.—The repeated observation that perfectly healthy girls from perfectly healthy families, after long nursing of a phthysical patient, becomes phthysical themselves and rapidly perish, led Dr. Tappeiner, of Meran, involuntarily more and more to the belief in the contagiousness of phthysis, especially to its infection by inhalation of sputa diffused in pulverised form in the air of a chamber inhabited by a phthysical patient. In order to determine this question experimentally, he kept animals in a space or chamber in the air of which phthysical sputa in fine particles was suspended. The sputa from patients with cavities in the lungs was rubbed up in a mortar and put into an atomizer whence it was diffused into the chamber. In the experiments, 1—4 the animals inhaled the air twice a day ; for an hour at a time ; in the experiments 5—8, the animals breathed the air but once a day for an hour, and were then put into the open air. In the last three experiments the animals breathed the sputum

air in a rough board chamber which was freely open for ventilation. Dogs alone were used, because these animals are affected with phthisis only extremely rarely. Full liberty of motion was permitted while in the chambers of observation. In all cases miliary tuberculosis developed in the lungs, proven by post-mortem examination. The symptoms began on the third week from the day of the first inhalation. The quantity of sputum inhaled was in some cases very small, as in the last three experiments, but one gramme was atomized, and as most of all sputum is water it may be seen how minute a quantity suffices to induce the disease. *Per contra*, the author caused other animals to inhale other substances. Limburg cheese, calves' brains, etc., and in no case was tuberculosis developed. The author concludes from his studies and experiments that the inhalation of particles of tuberculous sputa engenders tuberculosis in dogs without exception.—*Cin. Lan. and Clin.*

SMOKING AGAINST FOG AND DAMP.—The smoker fortifying himself against fog and damp with a cheerful glow of a cigar in front of his face and the fragrant incense beguiling his nostrils, is apt to forget that nicotine is a potent depressant of the heart's action. We do not assert that it even commonly acts as such when used in moderation, or that a good cigar is to be despised. We have no sympathy with prejudices against wine or tobacco, used under proper restriction as to the time and amount of the consumption. A mild and sound stimulant with meals, and a cigar when the mood and the circumstances are propitious, are not only to be tolerated, but approved. Meanwhile, it is desirable that these things should be used with an intelligent appreciation of their effects, and it is beyond question that one of the most formidable effects of tobacco is its influence on the heart's action. Now it is upon the integrity of this function the heat of the body depends, and nothing could be more shortsighted than to weaken or hamper the central organ of the circulation at a time when it is especially necessary that its work should be performed with due celerity and completeness. In warm weather a cigar exercises a cooling influence by lowering the heart's action. In the cold season it may—we do not say it will—possibly depress, and so increase the mischief it is sought to mend. Fogs and cold vapor tend to reduce the oxygenated properties of the air taken into the lungs, besides exercising a specific influence on those delicate organs. Tobacco-smoke may warm the air; it is scarcely possible that it can affect its quality or render it innocuous. There is, however, a peril that it may depress the circulation. Hence the need of moderation and care.—*London Lancet.*

SCARLET FEVER AND MILK.—In his Annual Report for 1878 on the Dorking rural district, Mr. E. L. Jacob chronicles the following interesting facts:—In the middle of the year there was a small, but alarming outbreak of scarlet fever at High Ashurst, which is partly in

the Dorking union, and partly in the Reigate rural sanitary district. The first case appeared in a very mild and scarcely recognized form, on May 26th, in the family of G. J., a farm-labourer, some of whose children had lately had it in another part of the country, and had recently returned home. On May 29th, an infant next door took it, from contact with G. J.'s sick child. Between June 1st and 7th, there were fifteen cases in three other distant houses, the inmates of which had not had any communication with the infected houses or persons. They were all supplied with milk, however, from a private dairy, at which G. J. was cowman. He did not himself have the fever, and the milk was not taken into his cottage, but he had continued milking the cows during his child's illness. On the whole, it seemed probable that the specific poison of the disease had thus found its way into the milk, and had given rise to the earliest cases in these three houses. It was noticed that several families escaped which consumed only the scalded skim-milk from this dairy. On June 11th, a young man was attacked in a fifth house. He was a lodger, whose landlady went out nursing infected children during the day, and probably carried the infection home in her clothes at night. On July 18th, a child took it in a sixth house, into which it was apparently introduced by some lodgers, who had arrived from one of the infected houses on the 8th. Altogether, there were 20 cases in seven houses with two deaths, in that locality.

PREVENTION AND CURE.—At the unveiling recently of the McDowell monument, in Danville, Ky., the venerable Dr. Samuel Gross, addressing the young men of the Kentucky Medical Society, said :—“The great question of the day is, not this operation or that—not ovariectomy, or a hip joint amputation, which has reflected so much glory upon Kentucky medicine—but preventive medicine, the hygiene of our persons, our dwellings, our streets—in a word, our surroundings, whatever and wherever they may be, whether in city, town, hamlet, or country, and the establishment of efficient town and State boards of health, through whose agency we shall be the better able to prevent the origin and fatal effects of what are known as the zymotic diseases, which carry so much woe and sorrow into our families, and often sweep like a hurricane over the earth, destroying millions of human lives in an incredibly short time. The day has arrived when the people must be roused to a deeper and more earnest sense of the people's welfare, and suitable measures adopted for the protection as well as for the better development of their physical, moral, and intellectual powers. This is the great problem of the day, the question which you, as representatives of the rising generation of physicians, should urge, in season and out of season, upon the attention of your fellow citizens—the question which, above and beyond all others, should engage your most serious thoughts, and elicit your most earnest co-operation.

Annotations.

THE WORK OF THE MICHIGAN STATE BOARD OF HEALTH, AND THE SECRETARY'S REPORT.

As showing what the State Board of Health is doing for the people of Michigan, and the value and contents of the reports. We give the following from the *Sanitary Record*, London, Eng.

The sixth annual report of the Secretary of the Michigan State Board of Health affords a good example of State Medicine and its administration as it is carried out by our American cousins. The State Board of Health corresponds in some measure to the Medical Department of the Local Government Board, only all its members are not necessarily medical men, but its functions are 'advisory and not mandatory.' The office of public prosecutor in sanitary matters appears to be left to the 'supervisors' of each township, who in turn are to make use of the 'prosecuting attorney' as advocate in their suits. As sanitary advisors, the State Board, through its indefatigable secretary, seems to have put itself in communication with every township and its health officer in the State, reminding them of their broad duties, and demanding, as it appears, to have the legal right with certain returns and information as to births, deaths, and marriages, and as to the prevalence of diseases dangerous to the public health. In addition to this, the State Board diffuses general and special sanitary information from time to time as occasion offers or requires.

In some matters Michigan is ahead of England; for instance, 'whenever any householder shall know that any person within his family is taken sick with the small-pox, or any other disease dangerous to the public health, he shall immediately give notice thereof to the Board of Health or to the health officer of the township in which he resides'—for neglect there is a heavy penalty. The same duty devolves on all physicians.

Health officers are required by the State to forward to the State Board of Health an annual report. This report is not tabular, as our reports are, but running on with form, and concludes with an abstract of the proceedings of the local board of health. The tabular form is to be preferred, and we would suggest to Dr. Baker, the secretary, that the forms, with a little amplification, in vogue at

Whitehall, might be advantageously followed. Then we might also suggest that Whitehall might in turn enlarge its record of diseases, so as to admit at least cancer.

Leaving the purely statistical portion of the report, many of the appended special reports it contains are of the highest interest and importance, and to some of these we will briefly call attention. One reporting health officer attributes a case of typhoid fever directly emanating from an imperfect drain. Another records a case of death 'attributed to the use of water contaminated by leakage from a slop-stone.' Another records 'an instance of apparent communication of typhoid fever by the poison of one sick with it.

A report on dangerous illuminating oils is full of 'kerosine horrors,' but it appears that the vigilance of the board is beginning to bear good fruit. There is a special report on lead poisoning from the use of tinned, glazed, and enamelled ware, from which it seems that some of the best-looking domestic utensils often contain much lead, and even arsenic, in a form which is very liable to be taken up by the food cooked in them. One curious report deals with the question of 'cancer not caused by tomatoes.' It appears that there is a popular belief in America that tomatoes produce cancer. This delusion the paper referred to labours to dispel.

Considerable prominence is given to an abstract of a paper read at the American Social Science Association, in which Dr. Bartholow combats the idea that sewer gases can cause specific diseases. The belief that they can do so is branded as 'pseudo-scientific.' Dr. Kedzie, the president of the State Board, combats Dr. Bartholow's views. From a report on the opium habit in Michigan, it is evident that opium-eating is very prevalent in America, and that the so-called antidotes are themselves banes rather than antidotes. On diphtheria there is a highly important report, the gist of which is that there is strong evidence to connect the causation of diphtheria with the unsanitary condition of ordinary cellars, privies, wells, cesspools, etc., and that the weight of evidence is strongly in favour of the contagious nature of the disease.

There is a valuable paper on 'Climate and Topography,' and another section deals with the 'Principal Meteorological Conditions in Michigan during 1877.' These records remind us of a somewhat similar series which are published yearly by the Salford Health Department, and which are, we believe, the joint publication of Mr. Mackereth and the medical officer of health. Salford and Michigan

should exchange reports, for both authorities are evidently travelling towards the same goal, and running on parallel road.

Space will not allow further remarks, but it is impossible to overrate the importance and interest of these American State Medicine Reports, or to exaggerate the interest and usefulness of their contents. Nothing seems to escape notice, for while one Report deals with the office of coroner (a report by-the-by we commend to our legislators at this present moment), another deals with the preservation of the teeth.

NEWSPAPER CURES.

BY W. J. CHENWORTH, (*in Herald of Health*).

While physicians are making strenuous efforts to protect the lives, and the health of the people, by elevating the standard of medical education, not a few persons persistently evince by their actions, that they believe disease can be recognized without study and safely prescribed for without knowledge. This is shown by the fact that persons, otherwise intelligent, in cases of dangerous sickness, sometimes rely on prescriptions found in newspapers, which profess to cure diseases which such persons have, or suppose they have. It is not uncommon to find proposed cures for erysipelas, diphtheria, typhoid fever, or other nervous disease. And I recently saw a recipe for the cure of small-pox and of scarlet fever, coupled with a recommendation to the legislature to compel doctors to administer it in these diseases. It may have been a practical joke by some wit 'who neither feared God nor regarded man,' but there are many persons who will try the remedy.

I will call attention to but a few of the many reasons which should influence us in refusing such advice :

1. To find out *what is the matter*, is, in apparently the plainest cases, sometimes extremely difficult. Every sore throat is not diphtheria, every rash is not scarlet fever, every diarrhœa is not evidence of typhoid fever ; and even when a disease is unmistakable, there may exist complications of a serious nature which will require skill to detect, and which, if not detected, will cause death. If a practical doctor, who has devoted years of tireless industry to the study, cannot always detect the nature of the disease he is called to treat, how much less can he whose knowledge has been gained by casual experience at long intervals. Symptoms do not have the

same significance to the medically uneducated, as to the physician ; to the one a sick stomach may indicate merely disordered digestion while, to the other, it may point to serious disease of the kidneys or of the brain ; and so of multitudes of other disorders which affect one organ, while another is the sufferer.

2. Many remedies, harmless in themselves, become dangerous, if taken at the time that others are used. To illustrate, if an invalid has been duped into taking one of the numerous sarsaparillas, and takes while using it, a preparation containing mercury, the chances are that he will be poisoned by the chemical union of the iodide of potash (the basis of the so-called sarsaparilla) with the mercury. Or if, after taking a blue mass pill or a dose of calomel, he chances to fancy a coughing syrup containing the muriate of ammonia, an equally unfortunate result may follow. Many an unaccountable death has occurred from commingling two innocent remedies in the stomach.

3. In treating, what are supposed to be, simple diseases, incalculable mischief may result from innocent remedies. If laudanum, or any preparation containing opium, be given to relieve a cough, and the disease causing the trouble prove to be capillary bronchitis, serious consequences may follow. Nothing is more common than for an ordinary colic to precede a two weeks 'spell of fever,' because an overloaded stomach was ignored, and the person dosed for the *pain* which it produced.

This may serve to direct attention to an important subject connected with sanitary reform.

THE PAY TO PHYSICIANS FOR REGISTRATION OR CERTIFICATE OF DEATHS.

A good many medical practitioners, it appears, think the profession should be paid for certificates of death for registration. Physicians, it is too true, are poorly enough paid, and the time will probably come when they will be remunerated for this work. But the work of collecting vital statistics is only just fairly commencing, and there are not a few who think such work involves unnecessary expenses upon the country, and we trust the profession will not press for pay for the above service at present. The following from a medical exchange shows the feeling in reference to this among the profession in the west :—

The proposition of the West Chicago Medical Society, that the medical profession of the State should unite in an effort to induce the legislature to so change the law requiring physicians to make reports of births and deaths, as to allow them compensation for such returns, was submitted to the State society at its late meeting. After a spirited but short discussion, it was laid on the table. We notice that it met the same fate in the Central District Medical Association, at its late session in Rock Island, Iowa.

There can be no doubt that these Chicago brethren are right in claiming that the physician should be paid for the extra labor and annoyance imposed upon him by the State law requiring him to make these reports. But all that the medical profession has done in the way of securing sanitary legislation and sanitary reforms, looks toward the *prevention of disease*, and to the sordid mind, would appear to be in opposition to the physician's pecuniary interest, since the greater the amount of sickness the better his business. Philanthropy and public spirit out of the question, and the doctor would be opposed to all measures promoting the public health. As common citizens and money gatherers simply, if they made no opposition to such measures, they could not be expected to manifest such interest in their favor.

But for the true physician there is much more than money in the achievements of sanitary science, and the results of sanitary labor. There are better health and longer and happier, and more useful lives for his fellow-men, and for posterity; and if, as a consequence of such measures, he should really gather less money, he has nevertheless a greater reward in supporting them gratuitously, in the consciousness of having done what he could for mankind.

The medical profession instead of holding back, and discouraging all efforts to prevent disease, has always led the van and been foremost in the good work. Like the Great Physician of Galilee, they have "gone about doing good" without reward, and seemingly in *opposition* to their own pecuniary interests. What they have done in this and other countries if paid for, as other labor is paid for, would amount to millions. No finer illustration of disinterested benevolence can be produced from the pages of history, if we except that of the Great Master Physician, than this donation of labor and sympathy to the cause of humanity.

It is not quite the thing then, at this stage of the work to become selfish and closefisted—to stand upon personal rights, and to demand

pay for services comparatively easy, but which are important, not to say essential to the success of the great work. The Central District Medical Society, and the Illinois State Society thought so, and refused to co-operate.

OVER WORKED HEARTS.

In view of the mania which prevails for excelling in contests of physical endurance and civil service 'reform,' we (*National Medical Review*) reproduce the opinion of one of England's ablest physicians on this question. We do not expect, however, to decrease the number of casualties incident to overtaxation of mind and body, respectively, in schools, and government departments, or in gymnasiums, rowing, sparring, walking, base-ball, cricket, or other of the so-called manly, and of late, womanly arts. If we had the slightest idea that anything we could say would tend to decrease the regular crop of broken fingers, bunged eyes, sprained joints, and lame backs, or interrupt the annual exhibit of diseases of the heart, and other organs necessarily in time involved, we would hesitate, on the ground that some members of the profession might think we were interfering with their business, but experience shows that advice, even when as good as the following, seldom does much good, inasmuch as no one takes it to himself, but concedes it would be just the thing for his neighbor.

Dr. Richardson, of London, says: 'No organ in the body is so liable to be over-worked as the heart. When every other part of the body sleeps, it keeps on its perpetual motion. Every increased effort or action demands from the heart more force. A man runs to catch a train and his heart beats audibly. He drinks wine, and his blood rushes through its reservoir faster than ever was intended by nature. His pulse rises after each course of dinner. A telegram arrives, and his heart knocks at his side. And when any one of these 'excitements' is over, he is conscious of a correspondent depression, a sinking or emptiness, as it is called. The healthy action of all the members of our frame depends upon the supply of blood received from this central fountain. When the heart's action is arrested, the stomach, which requires from it a large supply of blood, becomes enfeebled. The brain also waiting for the blood, is inactive. The heart is a very willing member, but if it be made to fetch and carry incessantly; if it be put upon, as the unselfish member of a family often is, it undergoes a disorganization which is equivalent to its rupture. And this disorganization begins too often nowadays in the

hearts of very young children. Parents know that if their sons are to succeed at any of those competitive examinations which have now become so exigent, high pressure is employed. Hence young persons are stimulated to overwork by rewards and punishments. The sight of a clever boy who is being trained for competition is truly a sad one. *The precocious coached up children are never well. Their mental excitement keeps up a flush, which, like the excitement caused by strong drink in older children, looks like health, but has no relation to it; in a word, the intemperance of education is overstraining and breaking their young hearts. If in the school room some hearts are broken from mental strain, in the play ground and in the gymnasium others succumb to physical strain. 'It is no object of mine,' says Dr. Richardson, 'to underrate the advantages of physical exercise for the young; but I can scarcely overrate the dangers of those fierce competitive exercises which the world in general seems determined to applaud. I had the opportunity once in my life of living near a great trainer, himself being a champion rower. He was a patient of mine, suffering from the very form of induced heart disease of which I am now speaking, and he gave me ample means of studying the conditions of many of those whom he trained both for running and rowing. I found occasion certainly to admire the physique to which his trained men were brought; the strength of muscle they attained; the force of their heart; but the admiration was qualified by the stern fact of the results.' But, indeed, it is not by overwork so much as by worry and anxiety that our hearts are disorganized. 'Laborious mental exercise is healthy, unless it be made anxious by necessary or unnecessary difficulties. Regular mental labor is best carried on by introducing into it some variety. Business and professional men wear out their hearts by acquiring habits of express train haste which a little attention to method would render unnecessary.'

AMERICAN PORK.—In reference to American pork, the *London Lancet* (July, '79) says, that such a large quantity of it is now imported into this country, and sold at such low prices, that consumers will do wisely to exercise some care in thoroughly cooking the article in order to counteract the possible danger of trichinæ. There is considerable "western" pork also used in Canada. The results of recent experiments by two qualified microscopists on pork sent to the Chicago market, show that about 8 per cent. of the pigs may be

considered to be infected with the disease, the number of worms varying from 35,000 to 13,000 to the cubic inch of muscle. One of the experts, Dr. Belfield, is convinced of the innocuousness of small numbers of the worms, and experimented *in corpore vili*, himself swallowing twelve live trichinæ. We are glad to learn that this enthusiastic gentleman "has not experienced an unpleasant symptom to date." As regards the relative value of the different substances used for the destruction of the worm, it was found after several trials, that the most efficacious agent was sulphurous acid. A very little acid mixed with the brine in which the pork is preserved or pickled was sufficient to kill all the trichinæ without damaging the pork. Dr. Vacher writes to the above-named journal as follows:—"Trichinæ in pork can usually be seen without the aid of a magnifier, the flesh being distinctly speckled. The white specks come out clearly if a thin section of muscle be treated for a short time with liquor potassæ and water (1 to 8), as recommended by Dr. Parkes. When the capsule is dense, the same author suggests the addition of a drop or two of weak hydrochloric acid. To see the coiled-up worm itself all that is necessary is a good pocket lens. These little nematodes, although they find their way to almost every organ of the body, do not grow or become encapsuled in any other tissue than that of the muscles. They are not like the cestodes enshrined between the fibres, but in the fibres. The muscles are swelled in consequence of the deposition of plastic material round each of the trichinæ, and the formation of the capsule. The cellular tissue is œdematous. The lungs are sometimes observed to be inflamed."

SUNSHINE AND HEALTH.—There was a higher death-rate than usual in London during the first two or three months of this year and the *Medical Times and Gazette* hints strongly as follows, that it may have been owing to lack of sunshine :

If, as there is no reason to doubt, an average amount of sunshine is necessary for vigorous health, it is not difficult to understand that the increased rate of mortality recorded during the past three months owes something to the almost entire absence of the sun's rays during the time we are accustomed to look for their warmth-giving and cheering presence. Such an uninterrupted period of dull, dark days as that recently experienced may be said to be quite exceptional. For the week ending December 28 last the duration of registered bright sunshine in the period was 3.6 hours, although the sun was

above the horizon during 54.2 hours. The recorded duration of sunshine was only, therefore, equal to 7 per cent. of its possible duration. For the week ending January 4 last the registered amount of sunshine was 4.7 hours out of 55 hours during which the sun was above the horizon, which is equal to 9 per cent. of possible duration. Again, in the week ending January 18 last, only 4.8 hours of sunshine appear recorded out of 57.9 hours' duration, which is equal to 8 per cent. But the climax would seem to have been reached in the week ending the 1st of the present month, Feb. '79, for during that period no sunshine whatever was recorded, although the sun was above the horizon for the increased period of 62.5 hours. During the whole of the year 1878 the number of hours of bright sunshine registered at the Royal Observatory, Greenwich, was only 1250, or 28 per cent. of its possible duration, the sun having been above the horizon for a total period of 4454 hours.

STIMULANTS AND REST.—Dr. Jackson, in the *Quarterly Journal of Inebriety*, says: "I regard the refusal to take proper physical rest, when tired from labor, as one of the most important and powerful in inducing a love for, and an indulgence in, the use of ardent spirits. Men work till they get so tired that they cannot wait to feel sensibly rested by processes of change going on in their systems from suspension of labor. They either want to work more hours than they are able to do; or when they have done as much as they feel themselves at liberty to do, they are so tired that they cannot rest. They get rest, therefore, in artificial ways, by resorting to eating and drinking. Some get rested by drinking tea, others by drinking coffee, others by chewing and smoking tobacco; but the great majority of tired people in this country—and the larger share of our people are tired—drink ardent spirits in some or other of its forms or preparations. They fall back on stimulants instead of the intrinsic vitalities of their bodies. They therefore are lifted up into false conditions. Accepting these as true, they keep on working till they become so functionally impaired as to induce positive inability to work longer, or they become so constitutionally depreciated as to be smitten with incurable disease."

MORAL EFFECTS OF DIET.—Dr. Bock, of Leipsic, writes as follows on the moral effect of different articles of food and drink. (*Quarterly Jour. of Inebriety*;) The nervousness and peevishness of our times are chiefly attributable to tea and coffee: the digestive

organs of confirmed coffee-drinkers are in a state of chronic derangement, which reacts on the brain, producing fretful and lachrymose moods. Fine ladies addicted to strong coffee have a characteristic temper, which I might describe as a mania for acting the persecuted saint. Chocolate is neutral in its psychic effects, and is really the most harmless of our fashionable drinks. The snappish, petulant humor of the Chinese can certainly be ascribed to their immoderate fondness for tea. Beer is brutalizing, wine impassions, whisky infuriates, but eventually unmans. "Alcoholic drinks combined with a flesh and fat diet totally subjugate the moral man, unless their influence be counteracted by violent exercise. But with sedentary habits they produce those unhappy flesh sponges which may be studied in metropolitan bachelor-halls, but better yet in wealthy convents. The soul that may still linger in a fat Austrian abbot is functional to his body only as salt is to pork—in preventing imminent putrefaction."

IN REGARD TO STATE BOARDS OF HEALTH, the following facts deserve to be better known: After thirty years of effort by the medical profession, Massachusetts, in 1869, legislated into existence the first State Board of Health and Vital Statistics organized in the United States. This prolonged effort was no doubt used in conciliating that legal maxim which declares that 'no law can successfully precede its public sanction,' and serves to explain, at least in part, the preëminent success of this board. However, the Governor did exercise, in the choice of members of the board, an amount of discretion very unusual to politicians when acting in medical matters; and the legislature, beginning with an experimental appropriation of \$3,080 for the first year, has rapidly trebled it. The acknowledged superiority of this board is sufficiently proved by this fact, among many others, that it did at once recognize that the greatest obstacle to sanitary progress was popular ignorance, and therefore that its primary duty was to teach the people. Hence it at once organized a corps of reliable correspondents throughout the State; it solicits reports from, and issues circulars of information to, all the doctors, preachers, teachers, county and State officials, newspapers and journals in Massachusetts; and, in addition, it issues and freely distributes 10,000 copies of the most valuable annual health report ever published in this country. Thus, by enlightening the public, it has gained its favor, and has thereby its own power and the bounty

of the legislature. So great is this power that it triumphed over a financial combination of fifty slaughter-houses, and converted these health and life-destroying nuisances into sanitary blessings; it made war in Boston on the pestilence breeding 'houses of the poor,' and thus so alarmed the politicians, who, loving their country much, love votes, even of the sick pauper, more, that the board summoned to its support a mass meeting of the people, and was sustained.--Dr. Chaille, on State Medicine, at a meeting of the American Medical Association, from *Sanitarian*.

ADVICE TO PROFESSIONAL MEN.

To professional men (*Scientific American*), men of business, and, indeed, all who are engaged in pursuits requiring more or less severe mental work, coupled with more or less confinement, exercise is, of course, the *conditio sine qua non* of the recreation to be recommended. The fact is so obvious (says a writer in the *Nineteenth Century*) that I need not dwell upon it further than to make one remark. This is to warn all such persons that feelings are no safe guide as to the amount of muscular exercise that is requisite for maintaining full and sustained health. By habitual neglect of sufficient exercise, the system may, and does, accommodate itself to such neglect; so that not only may the desire for exercise cease to be a fair measure of its need, but positive exhaustion may attend a much less amount of exercise than is necessary to long continuance of sound health. However strong and well, therefore, a man may feel notwithstanding his neglect of exercise, he ought to remember that he is playing a most dangerous game, and that sooner or later his sin will find him out—either in the form of dyspepsia, liver, kidney, or other disease, which so surely creep upon the offender against nature's laws of health. According to Dr. Parkes the amount of exercise that a healthy man ought to take without fatigue is at the least that which is required for raising 150 foot-tons per diem. This, in mere walking, would, in the case of a man of ordinary weight, be represented by a walk of between eight and nine miles along level ground, or one mile up a tolerably steep hill, but it is desirable that the requisite amount of exercise should be obtained without throwing all the work upon one set of muscles. For this reason walking ought to be varied with rowing, riding, active games, and, where practicable, hunting or shooting, which, to those who are fond of sport, constitute the most perfect form of recreative exercise.

MACROBIOTICS AND EUBANICS.

The *Evening Post* (says the *Scientific American*) makes a translation from a portion of an interesting little book in the German language published at Bonn, from the pen of Dr. Wilhelm Schmœle, well known in this country as a physician of eminent acquirements, which is likely to attract a good deal of attention. The work is entitled 'Macrobotics and Eubanics'—Macrobotics being the art of prolonging life, and Eubanics being the art of walking well.

Dr. Schmœle explains, in that part of the book which relates to Microbotics, the germinal and progressive phenomena of human life from birth to death, and the organic and chemical nature of vital processes, seeking to discover inductively what physicians call the 'indications' for treatment with a view to the checking of decay after middle life, when, as we all know, there is a constantly increasing excess of demand over supply in the matter of vitality. Dr. Schmœle is convinced that in addition to the influence of hygienic living, specific means may be profitably employed in checking this decline of vitality, postponing death from vital exhaustion, and especially adding vigor and efficiency to body and mind in advanced age. In common with physicians generally he holds that the infirmities of age come earlier and are greater than need be, and his effort has been to find in observed facts the reason and the remedy for this. He regards the free use of citric acid, in the form of lemon juice, and of lactic acid in the form of sour milk of every kind, as the remedies most plainly called for by the facts scientifically considered.

In considering the effect of certain abnormal influences in increasing the rapidity of decay, the author suggests some of the principles of a broader theory of diagnosis and treatment which it is his purpose to expound more fully to the profession in a future work, if life is spared to him.

In that part of the present treatise which relates to Eubanics a strong plea is made for systematic walking as a means of maintaining health. The abundance and the convenience of our means of transportation, the author believes, bring to modern life a serious danger in this respect. Unless we walk upon principle and in consequence of a conviction of the necessity of walking, we are liable to abandon the practice almost wholly in our haste and our self-indulgence. The author is convinced that there is danger here of

serious race deterioration, and he very earnestly pleads for caution. Going further he seeks to remove the principal obstacle to the general practice of walking, namely its tendency to produce fatigue and to repel lovers of physical ease; he finds in certain rhythmic principles a means of learning to walk with the least possible fatigue, giving to the exercise something of the charm that dancing possesses. The system, which is fully explained in the book, is founded upon a study of the principles involved in dancing, and especially in the German waltz, which, as is well known, a good dancer may continue without fatigue much longer than most persons can walk with comfort, stepping with anything like equal rapidity.

THE INCREASE IN LUNACY.—Dr. Lush, the President of the Medico-Psychological Association, (*Sanitary Record*), in the course of an address recently delivered to the members, drew attention to a marked increase of late years in lunacy. In the first report of the Commissioners in Lunacy they state that in June 1846 there were in England and Wales 23,000 persons of unsound mind. The population then was about 17,000,000, now it is 25,000,000, and it is estimated that on the 1st of January, 1879, there were 70,823 persons in England and Wales who needed the protection of the Lunacy Laws. It appears, therefore, that while the population has increased at the rate of 45 per cent., the number of lunatics in detention has risen at the rate of 250 per cent. Assuming that another 33 years will yield similar results, accommodation will have to be provided in 1912 for nearly a quarter of a million of insane or imbecile persons in England and Wales. The true solution of the difficulty, he thought, is to be sought—1, in increased family responsibility; 2, in educating the popular belief in the gravity of the disease itself; 3, in further State interference where possible; 4, in increased efforts to make the lot of insane persons under detention as little irksome as is consistent with safety and the conditions of their malady. Beyond these, he feared, not much can be done or hoped for; less ought not to be required; and if, instead, a callous indifference continues to prevail as to the extent of insanity, grave and calamitous results, to be discovered only when too late to be repaired, must follow a neglect of the accepted teachings of medical science and experience.

BACTERIA.—Dr. Arthur Downes and Mr. T. P. Blunt presented to the Royal Society (England) the result of some very interesting observations on the effect of light upon bacteria and other organisms. The experiments were carried out in great detail, and their record is too lengthy to be given in full. The deductions to be drawn may be summed up as follows: 1. Light is inimical to the development of bacteria and the microscopic fungi associated with putrefaction and decay, its action on the latter organisms being apparently less rapid than upon the former. 2. Under favorable conditions it wholly prevents that development, but under less favorable ones it may only retard. 3. The preservative quality of light, as might be expected, is most powerful in the direct solar rays, but can be demonstrated to exist in ordinary diffused daylight. 4. So far as the investigation has gone, it would appear that it is chiefly, but perhaps not entirely, associated with the actinic rays of the spectrum. 5. The fitness of a cultivative fluid to act as a nidus is not impaired by insulation. 6. The germs originally present in such a liquid may be wholly destroyed, and a putrescible fluid perfectly preserved by the unaided action of light.—*Exchange*.

BY THE CODE OF LAWS, approved in 1650 by the General Court of Connecticut as the laws of the Connecticut colonies, which remained in operation until 1686, and were nicknamed by the Americans as the "Blue Laws," it was ordered that no person under the age of twenty-one years, nor any other (however old) who had not already accustomed himself to the use of tobacco, should be permitted to smoke, or snuff, or chew, unless he brought a certificate from a *physician* that it was useful for his health. Anyone who smoked either in his own house or publicly in the streets was to be fined 6d. for each offence on the testimony of a single witness. It was ordered also that "such fines should be paid without gainsaying." This law remained in operation, so far as it applied to smoking in the public streets, until within living memory in the city of Boston and elsewhere, the fine for disobedience having been raised from sixpence to a dollar.

SUICIDES IN FRANCE.—The statistics of suicide in France, just issued (and which do not differ materially from those of former years) show that nearly six thousand persons committed suicide last year throughout France, which gives a percentage about double that of

England ; and of these Paris had far more than her legitimate proportion. The Parisian suicides stand to those of London, in respect of number, as seven or eight to one, distributed according to age. The most suicidal time of life is still between twenty-one and forty. Four men destroy themselves to one women. In proportion to the population, suicide is nearly twice as common in town as in the country. The ratio is higher among artisans than peasants ; and amongst the liberally educated classes, who work with the head, it is quite double what it is amongst those who work with the hand.—*Med. Times and Gazette.*

HOW A LIFE WAS SAVED.—The following shows the importance of a general knowledge on the treatment of those who have been accidentally injured so that life is endangered :—A leading surgeon at St. Mary's hospital reported that a few days ago a lad was brought in with his brachial artery completely severed, he having fallen through a glass roof. A policeman on duty had extemporised a tourniquet so successfully that the bleeding was completely arrested ; and when the temporary appliance was removed it recurred with such violence that the surgeon felt that he could say neither more nor less than that probably the skill and promptitude of the policeman had saved the lad's life. On enquiry it was found that the constable had been a pupil in one of the ambulance classes which have been in progress for more than a year among the Metropolitan Police, and in which the various members of the force have taken the warmest interest.

A PROSPECTIVE EPIDEMIC OF CHOLERA.—Health Commissioner Dr. Wolf, of Chicago, thinks that the cholera is coming this way, and will probably be here next year. He has been studying telegraphic dispatches, and finds that the disease is moving westward. The disease will, he thinks, be brought to New York by the shipping, and from that point will sweep the country. The monthly statistics received at his office show a large increase in the rate of mortality the world over. In Chicago the death-rate has gone above that of last season, although the atmospheric and general sanitary condition of the city has been excellent. The experience of Chicago has been duplicated in other cities. It has been in such times of extraordinarily heavy mortality that the cholera epidemic has come.

The indications are that next summer will be a very unhealthy one.—“*Cincinnati Lancet and Clinic.*”—*N. Y. Med. Rec.*

THE “DAILY TELEGRAPH” tells us that “A young man in Paris in cleaning out his pipe stem with a knitting needle, ran the point of the instrument into his finger. On the steel lay nicotine, and this, mingling with the blood which flies through the system, at the rate of about 12 inches a second, quickly spread in the arm, until it became necessary to amputate the limb in order to save the smoker.” Twelve inches a second is 60 feet a minute, and in all probability it took the surgeon at least five minutes to get ready for the operation. On this basis over 300 feet of arm must have been cut off in order to intercept the poison. The *Chemist and Druggist* reasons after this fashion, and concludes that the young man must have had a very long reach—one of the longest, if not *the* longest on record.—*Michigan Med. News.*

COMPULSORY NOTIFICATION OF INFECTIOUS DISEASES.—By the new Edinburgh Municipal and Police Act (1879), (*Med. Times and Gaz.*) the northern metropolis is added to the list of towns which have adopted the principle of the compulsory notification of all cases of infectious diseases. By the 208th clause of the Act, which came into operation on the 7th inst., all medical practitioners are required, under the penalty of a fine for omission of the duty, to report to the medical officer of health every case of infectious disease occurring in their practice, within twenty-four hours after such disease has been recognised. Printed forms stamped for postal transmission are supplied on application; and for this additional and responsible duty the practitioners are to receive 2s. 6d. for each case reported and found to be really one of an infectious disease.

SANITAS.—This new disinfectant is prepared as follows:—Russian turpentine and water are placed in huge earthenware jars, surrounded by hot water. Air is driven through the mixture in the jars continually for three hundred hours, the result being a decomposition of the turpentine, and the formation of a watery solution of the substance, to which Dr. Kingsett, the discoverer, has given the name of “Sanitas.” After evaporation, the substance, as sold in tin cans, is a light brown powder, of a pleasant taste and odor, and capable in a very remarkable degree of preventing or arresting putre-

factive changes. This new disinfectant has been in use for some time in England, and is highly spoken of. It is said to have a pleasant odor, is not poisonous, and does not injure clothing, furniture, etc. For household uses it would seem to be well adapted.

OF THE MILLION DOCTORS in the world, Dr. B. W. Richardson remarks : ' A world of a million dying earlier in life than other millions ; a million living in daily converse with pain and sorrow, yet not sorrowful ; a middle class million stretching out its hands to work for lowliest or highest born ; a million having little direct power in the nation, yet giving birth to new action, which becomes by development powerful, and inspires nobility of thought and life ; a million differently and diversely learned ; a million having by necessity of daily practice the deepest insights into the inner life ; a million brought to the love of mercy by the bare knowledge of the weakness of mankind, which calls for mercy.'

EFFECTS OF TOBACCO.—Dr. C. R. Drysdale (*Med. Press and Circular*) says that tobacco chewing and smoking are among the most prevalent causes of chronic diseases in the male sex. The digestive organs are often greatly impaired by the use of tobacco. The teeth are frequently blackened and the gums swollen in great smokers and chewers. Caries of the teeth is favored by the various acids (?) produced by the burning of tobacco and mingled with the saliva. Duskiness of the fauces and relaxed sore throat are far too prevalent among smokers. Dyspepsia, caused by nicotine, is so common as to be hardly worth referring to. Diarrhœa, or more frequently constipation, is induced by the use of tobacco in many instances. Few males have epithelioma of the lips who do not smoke.

A MAN was recently convicted of a petty theft before a police court. He had once been a prominent physician, and dated his downward course from the time that he cheated the publisher of his medical journal out of the subscription price. After that he said, he found that every piece of rascality came easy to him. The moral here needs not be pointed out, and we shudder for the future of some.

DR. STEVENSON MACADAM ON FILTERS.—In the Health Department of the Social Science Congress, on the 6th inst.. (*Med. Times and Gazette*) Dr. Stevenson Macadam read a paper on the danger of relying on domestice filters for the purification of water. Dr. Macadam declared that every filter, whether it be made with charcoal or any other material, soon becomes worse than useless. The intention of the filtering process is that all impurities shall be left in the filtering material. This goes on day after day, and “in the course of a short time the suspended material in the filter passes into a state of putrescence.” Dr. Macadam insisted upon the imperative necessity of taking every care that every filter is systematically, and at short intervals, subjected to a thorough cleansing.

CONTAGIOUSNESS OF DIPHTHERIA.—A serious and painful case of communication of disease is reported from Ellesmere. The children of Mr. Lawrence, of the Bridgewater Hotel, Ellesmere, were at Duddleston, and being thirsty, a glass of water was procured from a cottage, where, it subsequently transpired, a child was suffering from diphtheria, and one or more of the children drank it. Since then they have all been fatally attacked with the disease, and last week the sixth and last surviving child succumbed to it. The hotel has been closed, and workmen are thoroughly cleansing and disinfecting every part of it.

THE INFLUENCE of nasal respiration on the ear is illustrated by Mr. George Catlin in his “History of the North American Indians.” Among two million Indians he found not one who was deaf or breathed through the mouth, except three or four deaf mutes; and in the memory of the chiefs of 150 tribes, not one case of deafness could be remembered to have occurred. This is explained by the mother always closing the mouth of the child whenever it attempted to breathe through it.

A NEW SANITARY WEEKLY was not long ago started in New York. It was, but, it appears, is not. The *Michigan Medical News* says of it:—*Public Health* was the name of a sanitary weekly recently announced. It appeared, we think, two or three times (although we saw it but once) before this disease-infected world, when, although it had a formidable array of sanitarians on its title page who promised to stand up for it, death wrapped its dank, cold arms about it and drew it down. It hadn't sufficient sand in its make-up, and sugar (taffy) doesn't endure.

The "*Public Health*" magazine of London, England, after trying in various forms, and with more than one captain, to live and battle with disease, succumbed at last, and, seemingly, to rise no more.

Is it at all strange that this poor SANITARY JOURNAL has such struggles for dear life, and that too in this little province, which a periodical over the way insinuated was not much larger than the Saturday's "*Globe*."

Editorial.

COSTS OF SICKNESS AND DEATH.

A great deal has been said in this journal about the great expense of sickness and early deaths in Canada which might have been prevented. Everybody knows the cost of these, and that much of it might be avoided. About 12 per cent. on an average of all the deaths in this province every year are caused by consumption, by far the most fatal disease. This is now universally regarded as a preventable disease. Scores of medical men of Ontario, in their replies to the questions of the select committee of the House on public health during the session of the Legislature in 1878, stated that it might be prevented by proper attention to the laws of health. Diphtheria and typhoid fever are also very prevalent and fatal diseases in Ontario, and appear from statistical returns to be on the increase, and they are equally preventable diseases, undoubtedly. Yet in view of all this, and the prevalence of many other preventable and fatal diseases, the intelligent people of this province rest quietly, and positively do nothing to prevent any of the prevalent sickness and waste of life. To any one who gives the matter some thought does not this seem strange and unaccountable? Why do not the people rise up as one man and insist upon something being done by those in authority over us?

The following is an example of what may be accomplished by public health work: According to Dr. Parkes (our best authority), in twenty-five towns in England, examined a few years ago by Dr. Buchanan, it was found that cholera had been rendered practically harmless by complete systems of sewerage, for removal of excrement. In some of the towns the general death-rate had been lowered 20 over per cent., while in nine of them the death-rate from

typhoid fever had been diminished over 50 per cent., and in ten others from 33 to 50 per cent. Mr. Baldwin Latham, C.E., has given the following table, showing the great saving of life following the introduction of sewerage and pure water supply in twelve towns in England.

PLACE.	Population in 1861.	Average mortality per 1000 before construction of works.	Average mortality per 1000 since completion of works.	Saving of life, per cent.	Reduction of Typhoid Fever Rate per cent.	Reduction in Rate of Phthisis, per cent.
Banbury	10,238	23.4	20.5	12½	48	41
Cardiff	32,954	33.2	22.6	32	40	17
Croydon	30,229	23.7	18.6	22	63	17
Dover	23,108	22.6	20.9	7	36	20
Ely	7,847	23.9	20.5	14	56	47
Leicester	68,050	26.4	25.2	4½	48	32
Macclesfield	27,475	29.8	23.7	20	48	31
Merthyr	52,778	33.2	26.2	18	60	11
Newport	24,756	31.8	21.6	32	36	32
Rugby	7,818	19.1	18.6	2½	10	43
Salisbury	9,030	27.5	21.9	20	75	49
Warwick	10,570	22.7	21.0	7½	52	19

“ WANTED ”—A PROVINCIAL BOARD OF HEALTH.

We challenge any one to show that any other legislation (not even excepting that for new parliament buildings) is so much needed in this province at the present time as that having for its object the reduction of the sickness and mortality in it. It has long ago been shown in this journal, by calculations based on reliable estimates, that large sums of money—hundreds of thousands of dollars, might be saved to this province annually by reducing the sickness and death-rate by even 6 per cent.; or say by using such means as would reduce the death-rate from 17 per 1000 living to 16 per 1000. And double this at least might soon be done.

The first step toward improving the public health—or reducing the sickness and mortality in the province, is the establishing by the government of a central organized body, such as a Provincial Board; having for its duty the supervision of the public health. Such board should, by various means, educate the public in sanitary matters, make intelligent use of the vital statistics, and learn what special

laws should from time to time be enacted for the preservation of the public health.

In almost every other civilized country, such a board exists. It has been long in existence in England, Prussia, France, Austria, Russia, and other European countries, each have their "Imperial Board of Health;" nearly every one of the more important of the United States (some twenty-five of them) now have their "State Board of Health;" and all, we learn, are highly popular with the public, and are doing excellent work.

Such a board would be chiefly "honorary," and only actual expenses would be defrayed by the government or the province. The larger the sum appropriated for its use, of course, the more good it could accomplish in the way of educating the public in hygienic work, &c.

We trust that the thoughtful and intelligent people of this province will not rest satisfied or quietly permit another session of the legislature to pass without providing for some such central organized body to take cognizance of the health and life of the people.

SANITARY WORK.—As a sign of the times we learn that in different parts of Canada physicians are being solicited to give public lectures on health, not only in the cities and towns, but in the villages.

As an example of the efforts made to disseminate hygienic knowledge we observe the following in a report of a meeting of the North Huron "Teachers Association," in the "Clinton New Era." Dr. Campbell of Seaforth next came before the meeting, with a very practical lecture on "Laws of health." He thanked the teachers for the honor conferred upon him. He then proceeded to show the origin, growth, and modern development of hygienic laws and principles, from the dim realms of mythology, to the perfect and well-established modern science and art. The Dr. discussed the subject under the heads of Air, Light, Pure Water, Wholesome Food, Exercise, Bathing Cheerfulness, Rest, and Abstinence, and by his many practical anecdotes, made his remarks unusually interesting, and was frequently applauded."

We are justified in saying that this JOURNAL has been largely, if not solely instrumental in creating interest of this sort in sanitary work; though action in this way is not yet wide spread, we trust it will be so ere very long. The fruit is but just commencing to develope.