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Original Communications.

A DESCRIPTION OF THE PESTILENT CONDITION OF THE TORONTO LUNATIC ASYLUM IN 1853, AND THE MEANS ADOPTED TO REMOVE IT.

BY JOSEPH WORKMAN, M.D., LATE MEDICAL SUPERINTENDENT.

(Continued from our last.)

At the conclusion of my communication in the January number of the SANITARY JOURNAL, I stated that "much still remained to be done before the establishment, within and without, could be regarded as a comfortable and safe residence." The eclipsing nuisance of the basement cesspool had hitherto thrown into the shade a number of minor, though very deleterious, sanitary evils. I shall restrict my present observations to but a few of these.

The presence of a laundry in the basement of any dwelling is a most objectionable arrangement. When I state that the dimensions of the primitive asylum laundry were less than would be deemed adequate for the purpose in any third rate hotel—that the drain from it, receiving the hot, dirty suds, had to run some fifty yards before reaching that escape from the building which it *should* have had, but had not, it will hardly be doubted that I regarded the continuance of such a source of atmospheric pollution within the house as an evil flagrantly calling for early removal. The steam and heated air exhaling from the wash-tubs, were largely diffused over the entire basement story, and upwards to the wards, according as the wind

currents directed them. A portion ascended through so-called ventilating flues, having 4 inch mouths, to the attick, where a zinc 10 or 12 inch duct, of *uniform* calibre, received them, in company with all the similar flues from every part of the four stories of the building, numbering in all some hundreds. The uniform zinc duct emptied, or was supposed to empty, its foul air into a large round tower, which was surmounted by a costly and very heavy copper cowl, topped by a wind vane, whose duty it was to turn the cowl so as always to oblige it to keep the mouth to leeward. I have seen these cowls (there was one in each wing of the building,) as often gaping to windward as to leeward. In calm weather the whole apparatus was a nullity. In high winds it very frequently acted as a back-driver.

Without this delusional contrivance, the other arrangements for preventing the escape of foul air were quite sufficient; for when it is considered that the 10 inch zinc duct in the attic was to receive and carry onward to the round chimney, the air ascending to it through a multitude of ascending flues, whose aggregate area was twenty-fold greater than its own, it must be pretty obvious that a very unpropitious jamming took place, under even the most favorable circumstances. The flues from the lowest story were about 36 feet in length; those from the top or fourth story were not 18 inches, whilst those from the second and third stories were of intermediate length. All ran up side by side in fours associated. The most heated air was, of course, sent up from the furnace rooms, the laundry, and the kitchens. The velocity of the air in the ducts from these parts would be so much greater than that in any of the others, as to impel their delivered contents forward in monopolising precedence, and thus to prevent the entrance of other cooler air from the shorter flues. Not only was this a constant fact, but still worse, the over-cram of air from the longer flues releived itself by downward escape through the shortest ones into the apartments of the uppermost story, as I scores of times demonstrated, by holding lighted candles, or other current tests, at the mouths of the latter. Here, surely, was a most ingenious contrivance for providing unfortunate lunatics and their attendants with salubrious air! And yet all these and numerous other worse than childish contrivances were presided over, and sanctioned, if not devised, by a sapient body styled the *Building Committee.*

In addition to the sources of contamination already instanced, was one of which every visitor passing through the halls was nauseously cognizant. In even small private resi-

dences, the water closet, if not properly constructed and carefully attended to, never fails to become offensive, and too often harmful. Those of the asylum were supremely offensive, and doubtless also harmful. It may be supposed that I proceeded with the requisite improvements and alterations in the objectionable arrangements now pointed out, with the same promptitude and speed as in the purification of the basement; but the unsophisticated reader, who has never become practically acquainted with red tape complications, nor has had his thinking machinery countervailed by one of those ponderosities called a Board of Directors, must slacken his pace and wait for the advent of the angel, who has to come down to the pool. Such an angel had come to the asylum in August 1853, in the person of one of the new Board of Directors. I invited this body to an ocular and nasal inspection of the huge cess-pool. A piece of the basement floor, in the east corridor, was cut out. One of the innocents peered into the abyss. The uprising stench so overpowered him that he had to be helped away in a demoralised state. The result was, so pressing a report to Government, that instructions, authorising me to proceed with the requisite works for removal of the nuisance with as much speed as possible, were issued. I did so, and carried out the work without the assistance or encumbrance of either a directing architect, or any of my newly appointed governors; the former had not yet been invented, and the latter had no desire to re-enter the building before completion of the cleansing process.

A second angel came two or three years later. He was a *Head* angel, and he brought with him Samuel, who happened to be chairman of the Asylum Board. The water-closets, notwithstanding my many entreaties for their improvement, still continued in their odoriferous elegance. Incredible as the indecency may appear, the bath-room and water-closets of each ward were in one small compartment. I walked into one of these, and was followed by the head angel and Samuel. The former speedily pulled out his handkerchief, and with it shielded his olfactories, exclaiming, "Mr. M. this nuisance is intolerable; it must be attended to." It was attended to accordingly. The floors which were all rotten were renewed. The bath was removed to a more suitable and separate room. The new floors of both were, contrary to my advice, sheeted over with tinned copper, at much cost. The architect, who was now appointed, failed to appreciate the strong affinity between copper and ammonia, and the Directors were not deeply read in chemistry.

The closet-pans and traps were arranged on a new and very simple plan of downward ventilation, which, when properly attended to, has proved most satisfactory. As I regard this system of the very highest value, not merely in large public institutions, but also in all private residences, I deem it advisable to give the following brief explanation of it.

No matter how expensively or handsomely any water-closet may be constructed, unless it is provided with an efficient means of ventilation downwards through the pan, offensive smells will frequently be felt in the apartment. If instead of the foul air finding escape upwards out of the pan, it be carried away in another direction, and a constant flow of fresh air into the pan be secured, no disagreeable smell will ever be felt: on the contrary such an arrangement becomes an efficient ventilating agency, not merely as regards this apartment, but also in relation to others adjacent.

In the first place, a sufficient iron trap, with inlet not less than 4 inches, is to be inserted between the pan and the soil pipe connecting with the sewer. The latter should be perfectly airtight, and should never be conducted for any distance inside the basement of the house. The trap should be placed low enough to allow the surface of its contained water to stand 1½ or 2 feet below the bottom of the pan, with which it is connected by a 4 inch down pipe. In this pipe 6 or 8 inches above the water level, is a circular opening of 3 or 4 in diameter, for reception of an air pipe, which is to be carried to the nearest constantly acting chimney. This proximity to the requisite draft can always be secured in primary construction, by locating the closet, in private houses, contigious to the kitchen chimney. In my own present residence, I have adopted this plan. The air pipe, of galvanised iron, is only of 2in. diameter, and in all only 16 or 17 feet in length, with two elbows. It enters the kitchen chimney just under the ceiling. No smell has ever been perceived in the closet, nor in fact ever can be perceived, for the downward draft is at all times strong, and whether water be let on or neglected, is, so far as mere atmospheric purity is concerned, a matter of indifference. Were this plan of water-closet construction universal, our water commissioners would find no occasion for issuing threatening notices to their customers, to prevent waste of water, in this service: a short air-pipe is of course preferable to a long one. but if the chimney draft is strong, the pipe may be of almost any length. The water-closets of the Orillia Asylum were at a distance of at least 100 feet from the chimney stack of the kitchen, laundry, and boiler-house. The air-pipes were

carried from the closets directly to the outside of the house, and downward and onward to the chimney. The downward ventilation was perfect.

In the Toronto Asylum, though there was no scarcity of chimneys with constant powerful draft, they were on the wrong side of the house, and at a considerable distance from the water-closets. Besides as each W. C. shaft contained seven seats, it was deemed unadvisable to throw upon any of the ordinary chimneys so large a requirement as the carrying off of all the foul air of these conveniences. A fire-proof chamber, with a furnace resembling a baker's oven, was constructed in the attick, immediately over the W. C. shaft. This furnace is fed with air coming exclusively from the W. C. pans, through a galvanised iron tube, which commences small at the lowest closet, and is increased in size at each story upwards, where it receives accessions. Reaching the furnace room it gives off at right angles two flues. A large one entering the furnace above the fire, and a smaller below it. On closing the iron feeding door, very little air besides that supplied by these tubes enters the furnace. The draft power is proportionate to the heat, and when this is duly kept up the closet ventilation is satisfactory, but, of course not otherwise.

Had the same system been followed in the new wings, these buildings would have been almost faultless, but as I have before stated "a most wayward and serious blunder was made by the architect, and the plumber who did the work of the water-closets," the consequences of which have already been serious in a sanitary view, and will yet be so in a financial relation, as it will cost ten times as much to remedy the evil as it would to have primarily avoided it.

Ostensibly to save a little outlay in construction, instead of giving to each pan its own trap and ventilating tube neither of these was introduced. The chimerical idea, that one ventilating tube, inserted into the common soil pipe, in the basement, above the lowest closet, would pull down the befouled air of the upper three, seems to have taken possession of the innovators—a little common sense, or a very little knowledge of pneumatics, might have admonished them that the air in a soil pipe, which was to receive the warm water of three baths and as many sinks, to say nothing of other fluids of the temperature of the human body, would be very reluctant to descend to the mouth of the ventilating tube; and that the latter would draw its supply from a lower and denser source. I venture the assertion that the ventilating flue derives its supply solely from the lowest pan. When large quanti-

ties of water are discharged from the baths, sinks, and closet pans, a corresponding quantity of soil pipe air is displaced, and it rushes upward, and finds escape through the pans, into the apartments; for as I have already stated, the pans are unprovided with traps. This is not mere theory; it is a too well established fact. I trust it will command the serious consideration of my successor, and that he will see the way more clearly than I did, to a practicable remedy, at a moderate cost.

PRACTICAL NOTES AND EXTRACTS ON HYGIENE.

Continued.

The Air—Ventilation—Temperature and Movement of Air.

In ventilation there are three special points requiring attention, viz.: A sufficient and constant supply of fresh, pure air; the proper temperature of the air; and the prevention of perceptible draughts. The sufficient or necessary amount of fresh air, and the necessary air-space, for each individual have been sufficiently dwelt upon. Before explaining the methods of moving the air in ventilating, it will be necessary to notice two or three other points, as the temperature and the size of inlets and outlets:

THE TEMPERATURE of houses, as a rule, "is kept too high," says Dr. De Chaumont, "and as this is usually accompanied with insufficient change of air, frequent catarrhs and colds in various forms are the consequences. For a sitting-room under ordinary circumstances, an uniform temperature of 60° Fahr. to 62° Fahr. (15° to 16° Cent.) is sufficient; for a sleeping-room even a lower temperature is admissible, as it is easy to supplement it by additional covering. This is especially the case in illness, where a free supply of fresh air is always desirable, even when it must be obtained at some sacrifice of temperature. At the same time, there are some cases, such as bronchitis, whooping-cough, and convalescence from exhausting diseases, where a moderate degree of warmth must be kept. Infants and aged persons also require a higher temperature than healthy adults, but in these cases much may be done with clothing. In a workroom a lower temperature even than 60° Fahr. is often desirable, and this applies both to manual labor and to head-work. It is here that the question of cubic space comes to be considered in a practical point of view, for of

course the expense of warming is increased by giving additional cubic space. On the other hand, ventilation of small spaces without draughts is extremely difficult and is generally practically given up in too many cases."

An *air current*, usually applied to ordinary temperatures, at the rate of 1½ ft. to 2 ft. per second, equal to walking in still air at the rate of 1 to 1½ miles per hour, is not perceived; 2½ to 3 ft. per second, however, equal to walking in still air 1¾ to 2 miles per hour, is distinctly perceptible; while 4 to 5 ft. per second, equal to walking 2¾ to 3½ miles per hour, gives rise to a positive draught. As a rule, therefore, the current in an air-space, or near its occupants, ought never to exceed two feet per second; though if the temperature of the current does not differ materially from that in the air space or room, a greater velocity may not be perceived, or be objectionable. At the point of entrance, the velocity of the air, according to the best authorities, should be kept at about 5 ft. per second. The best means of ascertaining the velocity of air currents is by the air-meter.

SIZE OF INLETS AND OUTLETS.—In order to preserve good hygienic conditions, it has been shown that 3,000 cubic feet of air per hour are necessary for each occupant of a room; and if the velocity of air at the inlet be kept at 5 ft. per second, it will be quite easy to calculate the necessary size of the inlet opening. An inlet of one square foot of area would then permit the entrance of 5 cubic feet of air per second, or 18,000 cubic feet per hour. This would be allowing the above supply, sufficient for 6 persons. A sectional area of 24 square inches would therefore be enough for one individual. It is usual to make a certain allowance for loss at the inlet by friction; but this point will be noticed further on.

Obviously, if this amount of air flows into a room or air-space, an equal bulk of air must find its way out, and an outlet opening, at least as large as the inlet must be provided. But as the air flowing out is usually warmer than that flowing in, and is consequently of greater bulk, it is stated by some that the outlets should be larger than the inlets, even to the disproportions of 10 to 9 or even 5 to 4. On this point, Parkes says: "As the average difference of temperature is only about 10° to 15° Fahr, in this country, the disproportion is much too great, as a cubic foot of air only expands to 1·020361 cubic feet with an increase of 10°. Even if the difference is 30° Fahr., a cubic foot of air only becomes 1·061 cubic feet, which is equal to an increase of about $\frac{1}{17}$th. The

difference is so slight that it may be neglected, and the inlets and outlets can be made of the same size."

The same author says, also: "It is desirable to make each individual inlet opening not larger than 48 to 60 square inches in area, or enough for two or three men; and to make the outlet not more than one square foot, or enough for six men. Distribution is more certain with these small openings."

MOVEMENT OF AIR.—Ventilation, as regards movement of air, is usually divided into natural and artificial; the latter consisting of methods for propulsion and extraction.

Natural Ventilation is accomplished by the movement of air arising through difference in temperature, and consequently in weight, of the air inside and outside an air-space; by the effects of winds; or by aspiration—the action of winds blowing across an opening and sucking out the air. The influence of the wind is very valuable in flushing an air space, but its action being so variable it cannot be depended upon; while it not unfrequently interferes with other methods of ventilation, and may require to be counteracted. The movement, however, consequent on difference in temperature is almost constant, and must, therefore, be mainly relied upon in natural ventilation. The method of calculating the quantity of air to be obtained in this way is called the formula of Montgolfier, and depends upon the following data:—

*1. The temperature of the external air.

2. The temperature of internal air, (or air of room).

3. The ratio of expansion of air by heat = 0·002 for one degree Fahrenheit.

4. The height of the column of internal air, from the floor of the room to the point of exit.

5. The rate at which a falling body is attracted by the force of gravity = 8.

6. The sectional area of the channel or aperture.

7. A variable coefficient for loss by friction, depending on the shape and size of the aperture or channel through which the air passes.

Nos. 3 and 5 are constant, and are 0·002 and 8 respectively.

"The difference of the temperature (1 and 2) is found by inspection of ordinary thermometers, and multiplied by nos. 3 and 4; the square root of the product is then taken and multiplied by nos. 5, 6, and 7; the result is the amount of air in cubic feet that enters and leaves the air in one second;

* Extract from a Paper on Ventilation by Dr. De Chaumont, Prof. of Military Hygiene. From the *Sanitary Record.*

multiplied by 3,600 we have the amount in one hour. For instance, suppose we have a room, the temperature of which is 62° Fahr., while the thermometer in the outer air marks 45° Fahr.; the difference here will be 17° Fahr. If now the height of the inner column of air to the top of the chimney be, say thirty feet, we shall have 17 x ·002 x 30 = 1·02. Now the square root of this would be 1·01, and this multiplied by 8 would give us 8.08, the velocity of air current in feet per second. If then the sectional area of the chimney be half a square foot, we have 8.08 x 0·5 = 4·04 cubic feet per second

Height of air column.	DIFFERENCE BETWEEN INTERNAL AND EXTERNAL TEMPERATURE.										
	5°	6°	8°	10°	12°	14°	16°	18°	20°	25°	30°
50	254	279	322	360	394	426	455	483	509	569	625
45	241	264	305	341	374	404	432	558	483	540	591
40	228	249	288	322	353	381	407	432	455	509	558
35	213	233	269	301	330	350	381	404	426	476	522
30	197	216	249	279	305	330	853	374	394	441	483
25	180	197	227	254	279	301	322	342	360	402	441
20	161	176	204	228	249	269	288	305	322	360	394
15	139	153	176	197	216	233	249	264	279	312	341
10	114	125	144	161	176	190	204	216	228	254	279

passing out of the chimney; but in most cases there is a loss of at least one-fourth by friction, so that the true amount will probably not exceed 3·03. We have now to multiply this by 3,600, or the uumber of seconds in an hour, and we have 10,908 cubic feet per hour passing out by the chimney, and of course as much fresh air coming in by some other channel. The table given above will show a few examples, the horizontal lines along the top and bottom giving the difference of temperatures outside and inside, and the perpendicular lines at the side the height of the internal column of air in feet. The number at the junction of any two lines gives the amount of air in cubic feet per minute for a sectional area of one square foot, one-fourth being deducted for friction.

"To find the amount per hour we have simply to multiply by 60, and if the sectional area of the opening be less or more than one square foot, we have also to multiply by the area stated as a decimal fraction of a foot. Thus, if we have a chimney, the sectional area of which is 65 square inches, we should put $\frac{65}{144} = 0{\cdot}45$ of a square foot. If now the height of our column of air from the floor of the room is 35 feet, and difference of temperature 12° Fahr., we take out from the table 330 (under 12° and opposite 35 feet) which we multiply by 60 to get the quantity in an hour, = 19,800 cubic

feet, and again by 0·45 = 8,910 cubic feet, the amount passing hourly through our chimney of 65 square inches sectional area. Of course this would be true for the individual case only; and to get the average amount of change of air in any room for a period we should require to determine the average temperatures outside and inside, which could be easily done by making repeated observations with an ordinary thermometer during a fixed period, and dividing the sums of the observations by the number of separate observations. . . . It may here be mentioned that the whole mass of air in a room is taken as homogenous, and that the height of the air-column is always taken to be from the *floor* of the room, wherever the outlet in the room may be. Thus the opening of the outlet in the room may be in the fire-place, near the ceiling, or at the floor; but the distance between the lower part of the column of air (that is, the floor of the room) and the point of delivery into the open air (the top of the chimney or ventilating tube whatsoever) remains unaltered. Nothing, therefore, can change this, except an actual lengthening or shortening of the chimney or ventilating tube; but where the opening in the room goes *straight* into the open air, without passing through a tube, then the height of the column of air is to be reckoned from the floor of the room to the opening.

"It is upon the above principles that the whole system of natural ventilation is based, all other questions being those of detail as to the form and size of openings, and their best mode of distribution in the inhabited air-space."

To be Continued.

ABSTRACT OF REPORT OF THE MICHIGAN STATE BOARD OF HEALTH.

BY DR. H. B. BAKER, SECRETARY.

The Michigan State Board of Health held its regular quarterly meeting at Lansing, Jan. 11, 1876.

Mr. Goodman reported having fulfilled his duty as a committee to prepare and read a paper on school hygiene at the meeting of the State Teachers' Association at Grand Rapids this winter. As committee to investigate the sanitary condition of common schools, he was authorised to expend $100 during the present year.

The secretary reported the work done in the office since the board last met. Blanks for the annual report of clerks of

local Boards of Health, for the reports of diseases dangerous to the public health and a circular of instructions were sent to the clerk of every city, village, and township Board of Health in the State, in all, 1,184. In response 404 reports have been received. These reports are each year becoming more numerous, complete, accurate, and satisfactory, and it is hoped and believed that all the information sought may and will be secured in this way. Circulars relative to water supply have been sent to 46 regular correspondents; 35 have replied, and 25 of these reports will appear in the printed report for 1875.

In October last a circular, together with a circular on water supply and a blank meteorological register, was sent to the editors of each of 270 periodicals in this State, and 25,000 four-page pamphlets on the "Treatment of the Drowned:" 5,800 circulars to school directors, and 5,800 circulars to school teachers also bearing on the "Treatmeut of the Drowned" have been issued and will soon be sent out.

There have been secured reliable meteorological observers at ten points within the State, and some in other States. Rain-gauges and test paper for ozone, prepared by Dr. Kedzie, have been distributed to the meteorological observers, and the necessary blanks for reports have also been furnished them.

A circular relative to prevailing diseases has been issued to all the correspondents, and replies are being received giving much valuable information.

Communication from the president of the Board of Health of Saginaw City, concerning water supply, was presented and placed on file. The use of bad water has been discontinued and better health is enjoyed.

A suggestion by Howard Daniels, clerk of the Board of Health at Morley, Mecosta County, that a law be passed requiring the election of a health officer by each township in the State, was referred to the committee on legislation.

Communications from Dr. Hull of Lansing, relative to the cause of St. Vitus' dance in public schools was referred to committee. Dr. Hull thinks that the gymnastics practised in the school-room, under certain conditions, become automatic. Dr. Baker added, as another factor, that school discipline often so constrains the natural movements as probably to conduce to the disease mentioned.

The board discussed the oil question, and it was resolved, that the almost entire absence of accidents from the use of

dangerous oils in this State during the past six months emphatically justifies the position and efforts of this board in procuring an efficient inspection of oils.

ARSENICAL POISONING.

The subtle and dangerous forms in which the poison of arsenic presents itself to its victims, require especial watchfulness on the part of the physician. Sometimes an obscure and inexplicible case is found to be diseased by some unthought-of exposure to arsenical vapors.

Take, for instance, wall-paper. That green paper often derives its hue from Paris green, is familiar even to non-professional persons. But, as Professor Cameron remarks, in the *Medical Press and Circular*, other shades and colours are now derived from arsenical pigments. He narrates the case of a family, all of whom manifested symptoms traceable to arsenical poisoning. The Professor examined the paper hangings. Out of seven kinds of paper, six were found to contain arsenic. No. 1, an olive-green paper, with deep green flowers and gold-like lines, contained an immense amount of arsenic in the two green colors and the gold. No. 2, a faint lavender-watered paper, contained arsenic in large amount. No. 3, a white paper with gray flowers, contained a very large, amount of arsenic. No. 4, a paper with red and green flowers on a gray ground, was highly arsenical. No. 5, a dark olive-coloured paper, with gilding, did not contain much arsenic. No. 6, a pale green and white paper, also contained only a small amount of arsenic, much less than was put on the lavender paper. The family had not suffered from the symptoms of arsenical poisoning until shortly after the house was papered with the above, and the symptoms disappeared shortly after they left the house preparatory to the removal of the paper.

The manner in which this poison acts on the system has lately received some additional light. Dr. H. Fleck has shown, in a series of interesting and important experiments, that there is arseniuretted hydrogen in the air of rooms the walls or the carpets of which are covered with Schweinfurth green. The dust of arsenic mechanically diffused in the air is therefore not the only cause of chronic arsenical poisoning. We must add the arseniuretted hydrogen gas evolved from the decomposition of the free arsenious acid existing in the green. The

experiments of Fleck prove that this gas is liberated under the joint action of organic matter and moist air, and its presence is, therefore, possible wherever free arsenious acid comes in contact with organic matter.

Quite recently it has been learned that a substance is used in artificial port wine, (which includes 99 per cent. of that stuff sold in this country) which is, in some cases, dangerous, especially when partaken of by the feeble, delicate and convalescent. It is an artificial colouring, which, Shuttleworth says, consists of a mixture of azalin and magenta red. The aniline colours, objectionable in themselves, are the more dangerous, because they not unfrequently contain arsenic. The adulteration is detected by shaking the suspected wine (and all cheap wines are to be suspected) with an equal volume of amylic alcohol (fusil oil). If the wine is genuine port, the amylic alcohol remains colorless; but if adulterated, it dissolves out the coloring matter, and itself appears of a purple-red color.

Of the forms in which the action of this poison may manifest itself, a baffling one is arsenical paralysis.

Dr. Scolosaboff, of Moscow, has had the opportunity of observing two cases of this rather rare disease. The paralysis affected the extremities exclusively, and was more marked at the part furthest from the heart. The cases were marked by (1) alterations of all kinds of sensibility; (2) extreme muscular atrophy, with loss or diminution of electro-muscular contractility, both faradic and galvanic; (3) alteration of the circulation and nutrition in the extremities, as proved by decrease of temperature, œdema, change of colour, etc.

It has been remarked that gangrene of the extremities has been seen in similar cases to those recorded by our Russian *confrere.* Arsenical paralysis resembles in some respects that caused by lead, while in others it is not unlike poisoning by ergot.—*Med. and Surg. Reporter, Philadelphia..*

INSECTICIDE.—According to the *Industrie Blatter* of Berlin the use of wild rosemary *(Ledum palustre)* is recommended as a substitute for the well-known Persian powder. This plant whether fresh or dry, will kill lice, bed-bugs, fleas, moths, beetles, and their larvæ, the maggots, and blue-bottles, and probably other insects. It is also the best remedy for musquito-bites, and the bites of all other insects. A little of the tincture of the plant applied to the bite not only relieves the intolerable itching, but also relieves the pain. If the tincture be mixed with glycerine and rubbed on the skin it will drive the musquitoes away.—*Sanit. Rec.*

PREVENTIVE MEDICINE.

Extract from a Valedictory Lecture by Prof. ELLINWOOD, PACIFIC MED. COL., San Francisco. (*Pacific Medical and Surgical Journal*,) JAN. '76.

There is great need, in my judgment, for the family physician's council in every household, whether there is actual sickness there or not, as alarming as this declaration may seem to some of my hearers. People should get over the expectation of a nauseous dose every time a physician is called. They should know that advice is more valuable than medicine, if taken in time to avoid the necessity of medicine. People should employ doctors to keep them fortified against disease: to instruct them as to the diet best adapted to their peculiar wants and vocations; to supervise the ventilation and heating of their houses, the clothing of their persons, and finally, if they would realize the most they are capable of, the physician's counsel should be frequently had as to the use or abuse, the wear or waste, of their physical and mental powers. How few there are in the whole community competent to judge for themselves in these matters!

Every school should have its medical director, whose skilled eye would detect the overworked or overtaxed pupil, and he should have the authority to say, take less study; or, play for a month, and return only when your powers are recuperated, so that you can profitably pursue your studies. Within my observation many valuable lives have been lost to the world and to themselves, by the pernicious and ill-advised mode of life at school.

Such catastrophes might be avoided by an intelligent medical director of the school, who should examine and thoroughly study the capabilities of every pupil entering there, and adapt the curriculum to the organization or physical constitution of the pupil. And many who enter there now should be advised and guided into other walks in life, where their powers might be developed into something of good and joy to themselves and for the world's advancement.

Such a medical director is more important to a school than any one branch of education there taught. To dispense sanitary science practically, to regulate the hours of labor and prescribe the kind best adapted to the healthful development and progress of each individual pupil, is more important to the man in after years than all the mathematics he gets at school.

Factories, workshops, mines, and other associations of men should have one skilled in *preventive medicine* to guide them into ways of health, and enable them to do what they have to do with the least derangement of the physiological workings of their organs. Such an appointment would work a great good to both employer and the employed.

I hope that our audience has been interested with the thought that the physicians have not only the ambition to cure disease, but to prevent it; that the physician's highest aim is the increase of human power in the advancement of human happiness and longevity.

BACTERIA AND SEPTICÆMIA.—In an elaborate experimental paper (*New York Medical Record*), Dr. T. E. Satterthwaite arrives at the following conclusions:

1. Bacteria are certain vegetable organisms which belong probably to the algæ; they are found abundantly in nature, but chiefly where there is moisture.

2. They exist in the body in health, covering the mucous membranes from the moutfi to the anus, and sometimes appear to penetrate a certain distance into the system, without causing symptoms of disease.

3. They also exist in putrefying fluids, and in various disease-processes, occuring in hot and cold abscesses, in the blebs of erysipelas, and in simple blisters.

4. It is doubtful whether the virulent principle of infective diseases is albuminous.

5. This principle does not reside in the perfectly clear fluid that passes through porous clay. In putrid infectious fluids this appears to be certain. The poison is rendered less virulent by repeated filtrations through common filter-paper.

6. The virulent principle may be boiled for hours, filtered numbers of times in the ordinary way, boiled with alcohol, and again filtered and dried, and yet the watery extract of such a dry residue will produce septic symptoms. It is therefore soluble, or at least suspended, in water.

7. The liquid which is thus poisonous may be clear to the eye, but contains granules under the miscroscope.

8. These granules have not produced bacteria in a number of instances when they were placed in a suitable condition to do so.

9. We cannot, therefore, feel that satisfactory evidence has been brought to show that, in any of the diseases or processes enumerated, minute organisms are the sole and sufficient causes of disease.—*Med. Times, Phila.*

BAD EFFECT OF BEER-DRINKING.—The worst results from accidents in the London Hospitals are said to be draymen. Though they are apparently models of health and strength, yet, if one of them receives a serious injury, it is nearly always necessary to amputate, in order to give him the most distant chance of life. The draymen have the unlimited privilege of the brewery cellar. Sir Ashley Cooper was once called to a drayman, who was a powerful, fresh-colored, healthy-looking man, and had suffered an injury in his finger, from a small splinter of a stave. The wound, though trifling, suppurated. He opened the small abscess with his lancet. He found, on retiring, he had left his lancet. Returning for it, he found the man in a dying condition. The man died in a short time. Dr. Gordon says, "The moment beer-drinkers are attacked with acute diseases, they are not able to bear depletion, and die." Dr. Edwards says of beer-drinkers, "Their diseases are always of a dangerous character, and in case of accident, they can never undergo even the most trifling operation with the security of the temperate. They most invariably die under it." Dr. Buchan says, "Malt liquors render the blood sizy and unfit for circulation: hence proceeds obstructions and inflammation of the lungs. There are few great beer-drinkers who are not phthisical, brought on by the glutinous and indigestible nature of ale and porter. * * * These liquors inflame the blood and tear the tender vessels of the lungs to pieces." Dr. Maxson says, "Intoxicating drinks, whether taken in the form of fermented or distilled liquors, are a very frequent predisposing cause of disease." The Hospitals of New York show an equally unfavorable record of the intemperate, and private practitioners everywhere have the same experience.—*Sanitarian.*

WEATHER.—There is a wide-spread popular feeling that warm winters are more apt to breed sickness than are cold ones. The old English proverb, "A green Christmas makes a fat church-yard," is evidence that this belief came to this country with the Mayflower and the hosts of winged ships and grimy steamers which have been its lineal descendants. The experience of most of our readers, we think, has shown the fallacy of this popular feeling; warm winters, like cool summers, making light the professional purse and heavy the hearts of those who are immediately dependent upon their professional income. This individual experience is well borne out by the statistics of the English Registrar-General. In England the cold winter of 1874–75 embraced two distinct

periods of low temperature,—one before, the other after Christmas. The first of these lasted about five weeks. During this period there were in London 9871 deaths, against 6967 in the five preceding weeks of mild weather; making an excess of 2904, or 42 per cent. The effect of the cold upon different ages was quite different. The rate of mortality due to the excess of deaths produced by cold was 2·2 per 1000 between 20 and 49; 9·4 between 40 and 60; 46.9 between 60 and 80, and 218·3 at 80 years and upwards. The cold mortality therefore increased about eight per cent. for each year of age over twenty years, and doubled every nine years. The significance of these figures is much enhanced by the fact that calculations based upon the intensely cold spell of six weeks in 1855 give practically the same result. The larger portion of this excess was from disease of the respiratory organs, but the increased mortality was far from being confined to such affections. Much of it was, no doubt, due to the hurrying of chronic cases to the end; but, deducting this, there is still a resultant of acute disorders produced directly by the low temperature. Of course, the greatest excess of increase was among those who could not protect themselves from the cold.—*Phil. Med. Times.*

AN IMPERIAL BOARD OF HEALTH has been established in Germany. Its principle object will be to collect reliable statistics in sanitary matters, though there are hints that the new board will be a sort of sanitary court of appeal, to which the distinct administrative boards or provincial governments will have to refer for sanitary advice and decision, so that immediate action would have to be taken after its judgment. The name of Dr. Struck, Prince Bismark's body physician, has been put forward as the future president of this new board, which is to be placed under the immediate control of the Chancellor.—*Med. and Surg. Rept.*

PREVENTION.—Dr. L. C. Butler, of Essex, President of the Vermont Medical Society, purposes to make a special study of the fevers of the State, more particularly typhoid fever, and the lung diseases, especially consumption, with a view to discovering means for their prevention, as well as treatment. For this purpose he invites the cooperation of the profession of the State in replying to a circular which he will soon issue. The results of this study will be embodied in such form as to be of value and interest to the profession, and to the people generally.—*Med. and Surg. Rept.*

ACCORDING to Dumas there are two distinct kinds of ferments: those which, like yeast, are capable of self-reproduction, and

those which, like disastase and synaptase, are without this property. It has been observed by Muntz that ferments of the former class are neutralized by chloroform; not so those of the latter class.—*Pop. Sci. Monthly.*

VACCINATION.—In the Foundling Hospital, St. Petersburg, where most of the public vaccination is carried on, calf lymph has been used side by side with human lymph for the last five or six years. It is equally protective, and failures in primary operations have, by care and perseverance, been reduced as low as two per cent.

IT IS STATED by Galton that in England country boys, of fourteen years, average an inch and a quarter more in height, and seven pounds more in weight, than city boys of the same age, as shown by the examination of a large number of boys in country and city schools.—*Ibid.*

PROF. S. P. SHARPLES, of Boston, has drawn up tables showing the range of difference between different specimens of pure milk as regards the amount of solid matter they contain. The highest precentage of solid matter is 19.68, the lowest 9.3.

PREVENTION OF SEWER GAS POISONING.—The following extract from a paper read before the American Public Health Association, Nov. 1875, by F. Hambleton, C.E., of Baltimore, U.S., we heartily endorse and recommend to those who will use water closets instead of the dry earth closets. "To prevent sewer gas from getting into the house through water-closets or drains, their connection with the house should be entirely severed. In the case of the closet it must be thoroughly cut off from any connection with any room which opens directly into the house, or is so connected therewith as to participate in the reduction of atmospheric tension due to artificial heating and ventilation. This can be accomplished by so arranging the door of the closets that it shall open into the free air, only the approach to its door being through a latticed gallery or porch, as short as you like, from the door of the house to the door of the closet. The result of this would be that the closets would always have the nominal atmospheric pressure in them, whether the house had or not and consequently there would be no drawing of gas into them through defective and unsealed traps, and such gas as might find its way into them by pressure or otherwise would find its way out again through a suitable ventilator, extending above the roof of the dwelling.'

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INFECTION AND CONTAGION.

There are several ways in which contagious elements may be introduced into the human system. The portals are the lungs, the stomach, the skin. By other ways occasionally, probably, poisons may find ingress, but they are so exceptional as to require no particular notice. Of the ways mentioned doubtless the lungs constitute the most frequent avenue by which zymotic poison finds its way into the system. Constant breathing is necessary for continued life; and every individual must inhale, no matter how impure the air. But the poison is often so subtile as to escape the notice of the senses. In entering the air cells, the air comes into close contiguity to the blood which passes through the lungs for the purpose of aeration; and it may, and often does as it receives the oxygen, have imparted to it the most deleterious elements.

Occasionally, perhaps more frequently than is supposed, the stomach becomes the gate through which the seeds of disease are conveyed to soil suitable for their growth and development. Not alone may the poison be carried by food and water and other fluids; but the air may be the vehicle by which it is taken into the mouth where it is lodged upon the mucous surface. In time the fluid of the mouth becomes contaminated, and is then swallowed. By these various carriers the elements of contagion may possibly be introduced into the stomach. It does not always follow, however, that the poison thus gains a foot-hold in the system. Ere the poisonous organic matter is absorbed it may be so decomposed as to render it innocous, or, being carried to the liver by the portal vein, it may be brought away again in a discharge of bile. Sometimes though, the liver is inadequate to accomplish this, and in failing,

becomes diseased; or the bile secreted may be so abnormal and irritating as it flows along the intestine, as to set up diseased action especially in the small glands which stud the mucous membrane. It is in this way, and with these characteristics that genuine typhoid fever takes hold of the system; although other poisons may doubtless give rise to a condition closely resembling true typhoid or enteric fever. That infection may be acquired through the skin is most likely; but the two portals referred to are so much easier passed that the comparatively impervious skin rarely can be regarded as the door of entrance.

Having considered the modes of access of infection to the human system, we will revert to the subject of the nature of contagion and infection. We stated in our last issue that "contagion might spread by degraded organisms possessing the characteristics of animal life, by invisible vegetable parasites, and by inanimate matter in the form of gases or molecules suspended in the air." The air, like the water, is populated by countless living organisms invisible to the unaided eye. The microscope reveals in a single drop of water a large number and variety of animated beings. In like manner every inch of air is peopled by numbers of living organisms, where they live, grow, develope, decay, propagate, and die. There is also floating in the air unseen, the seeds and vestiges of vegetable life. At the same time there is inanimate matter of various origin, with different gases from time to time suspended in the atmosphere. Here then is a vast world which we see not, in which is enacted the same great struggle for existence which we witness in animated nature on the earth. Now we may safely suppose that each time the lungs expand in the operation of breathing these air germs, and this inanimate matter, and the gases that may be present in the atmosphere, all rush into the air cells, crowding into every available place, and thronging the walls, seeking, as it were, a place for admission to the system. As a general thing these elements of the air are innocous, and pass in and out of the human lungs without harm to the body. Or perhaps the fluid supplied to the mucus membrane is endowed with properties by which all material

coming in contact with it is usually rendered inert or incapable of evil.

The material suspended in the air, animate and inanimate, doubtless varies very much. It may be characterized by pure or impure properties. The organisms are, like visible animal life, subject to disease, to degeneration, to death. They require food for growth and development and procreation. If the food by which they live is pure, we may infer they will be pure; but if they feed upon putrefying material they will be not only destitute of their natural qualities, but will become highly deleterious—poisonous. Having undergone important changes, through eating bad food, they are polluted. And now if the air which they inhabit finds its way into the lungs, they possess a fatal power to infect the human system. They are no longer harmless as they throng the tiny air cells and lodge upon the delicate cell wall.

Again, the inanimate matter in the air may be quite inert and incapable of evil in any case; or, it may be like palpable dead flesh, which when dried is perfectly sweet; but which by the addition of moisture and moderate heat becomes a putrefying substance. Even a very small quantity of this taken into the lungs may be sufficient to effect harm; but when it is in a concentrated state it may carry death to the blood which meets it in the lungs. Thus we see that invisible lifeless organic matter floating in the air, may, by the aid of moisture and heat, which causes putrefying decomposition, become a poisonous food to low organisms, whereby they are enabled to work evil in the lungs, or this putrefying material may directly act as a poison upon the blood in the lungs. Organic matter in the air while in a desiccated state is harmless. Heat and moisture will however soon change it into a poisonous material. These conditions—this heat and this moisture—are supplied within the air tubes and cells. Hence it is that one cannot with impunity continue to breathe atoms of organic matter which may rapidly decompose. But the necessary heat and moisture may be obtained without the air entering the lungs. On a hot wet day the same changes may be taking place on a large scale in the open air, so that if breathed it vitiates the blood.

INFANT MORTALITY.

Six hundred and thirty deaths of children, less than one year old, in the city of Toronto in one year, 1875; or about 9 per 1,000 of population. Such is the record of the cemeteries of this city, as noticed in the SANITARY JOURNAL of last month. Last year was not an exceptional year; and it is not probable that Toronto is an exceptionally unhealthy city. It is certainly appalling that considerably over one-third of the total number of deaths were of infants, infants at the breast, for but few comparatively are weaned at this age. It is certainly enough to awaken enquiry as to the cause of this destruction of infantile life, and to give rise to the question, cannot something be done to prevent such destruction?

The immediate causes of death as given in the records are not of course satisfactory or reliable, and it is impossible from them to judge anything like accurately regarding the more remote causes or conditions. But as the principal causes appear to have been "debility," diarrhœa, and convulsions, it may be safely assumed that in improper food and foul air were the chief factors which gave rise to them. There is not much overcrowding in Toronto, nor indeed in any of the cities of Ontario; though there are innumerable collections of filth in city and country, from which emanate poisonous gases that extinguish the life of numerous little children. Nevertheless, we are firmly convinced that to improper diet, bad nourishment, much more than to any other cause, must be attributed this sad waste of early human life. Give infants sufficient of the mother's milk of good quality, and pure air to breathe, keep the skin in good condition by frequent bathing, and the body warm by suitable clothing, and only a very small proportion of them will die.

Though too many infants are fed on prepared foods, more or less objectionable, or perhaps on impure cows milk, which give rise to much intestinal derangement, much the largest proportion of them receive their nourishment direct from the mother, especially during the first eight

or ten months, and there is much reason to fear, a good deal of evidence indeed to show, that to this source, too, of their nutriment we must look for the cause of a large proportion of the deaths of young children. If this source is defective, the results are obvious enough. Without healthy mothers we cannot have healthy children, capable of resisting the many causes of disease to which they must necessarily be exposed.

It is a common practice, and doubtless a good one, when practicable, to send from the city to the country in the summer children suffering from gastro-intestinal disorders. Yet it has been found that in many cases, by substituting more suitable food, as the milk of a healthy mother, without the benefit of country air, recovery is not unfrequently rapid and perfect.

The fact that 112 of the 630, nearly 18 per cent, were still born, supports the conclusion, that in the pregnant mother, lies a prolific source of disease in the child. As we have before observed in the SANITARY JOURNAL, we must awaken mothers to the necessity of giving heed to the health of their little ones while yet unborn.

Mothers are fond of their offspring, and except in a few rare cases, would only through ignorance do anything that would be likely to injure them; but probably as many as nine mothers in every ten are utterly ignorant of the simplest principles of health. During the latter months of pregnancy and in the period of lactation they subject themselves, through ignorance, sometimes through fancied necessity, to all sorts of conditions most injurious to the frail life of which they are the only natural guardian; conditions to which the lower brood animals would never at such periods be permitted to be exposed by their owners. They are over-worked and over-heated. Their diet is defective, often absolutely unfitted for the complete nourishment of the offspring. The effects of diet upon the mammary secretion are well known. Medicines may be administered to a suckling through the mother. Strong emotions, fits of anger, etc., so change the character of the milk as to give rise to violent symptoms in the infant. Sir Astley

Cooper says the milk "may acquire an actually poisonous character under the influence of violent excitement."

Now how is this state of matter to be remedied? How are the lives of these thousands of innocent victims—for they are but victims of the mother's ignorance—to be preserved and prolonged to their natural period? Public Health laws cannot well be applied here. Here are to be found causes of human suffering and death which cannot be removed by ordinary legislation. Here individual hygiene must be depended upon. Mothers must be properly educated in such matters; taught the laws of health and the importance of bringing them into constant practice. In what way can this instruction be given? Are we only to teach the present race of female school-children and wait for good results until they grow up to be mothers, loosing in the mean time over a third of the infants before the end of the first year of life, and a half before the end of the fifth year, or shall the mother's of to-day be taught? Wilson says: "The fundamental principles of personal and domestic hygiene, must become matters of intelligent conviction amongst all classes, and especially amongst the upper and middle, that they may help those of the lower who are unable to help themselves." In all cities and towns there are ladies with leisure and inclination to give more or less attention to noble works of charity. We see the effects of this constantly; monuments of such noble efforts standing here and there in most cities. Cannot this tendency to noble charitable work be turned into a new channel, one hitherto unfrequented, almost unthought of, that of instructing and educating the ignorant mother's in the art of preserving the health and life of their born and unborn infants. A Ladies Sanitary Association might be formed in every city and town. These might have branches, say one in every parish. House to house visitation, weekly or monthly, might be made by either voluntary or paid visitors, sufficiently educated in the subject; as in missionary or bible reading work. The visitors becoming familiar with the families, could give with good effect advice and instruction in personal and domestic hygiene—the great want of thousands of mothers. We may ask, "who will go forth into

this vast unoccupied field of Christian charity, and at the fire-side of the humblest family teach the simple art of healthy living?" We believe that no other work is of such vast importance. It is said that in the few cases where the sending out of sanitary missionaries has been tried, the saving of the lives of nursery children has been over 75 per cent. as compared with previous death rates. Is not this a sufficient stimulus for action?

THE WARM BATH.

The virtues of the warm bath as a restorative have been so highly extolled by many writers that it is somewhat strange it is not in more general use. Apparently there has been a good deal of misconception as to its nature and effects, both as regards is hygienic effects, and as a therapeutic; and this too with members of the medical profession as well as with the public generally. One cause of this has probably been the confounding of the warm with the hot bath. That it is relaxing and debiliating, and renders the bather susceptible to cold, are prevalent ideas regarding it, though they are evidently false ones.

The ancients dedicated their warm baths and springs, never their cold ones, to Hercules. The warm bath is repeatedly referred to by Homer as a means of refreshing and restoring the weary traveller. It is said too, that, when "Ulysses, after his return to Ithaca, found his father Laertes reduced to great weakness, he advised him to use warm bathing, and to encourage him, told him he had seen one whose case was exactly similar to his, worn down and emaciated with age, who, by the use of warm baths, very quickly recovered his appetite and rest. He likewise adds, that its efficacy in such cases was well known, and that it was a common custom among old men." (*Odyss* xxiv.) It was believed to have a wonderful effect in retarding the approaches of old age, and it was hinted by Bacon, that the tradition of Æson being restored to youth by the medicated cauldron of Medea, was an allegorical represen-

tation of the effects of the warm bath. Dr. Darwin says, " to those who are past the meridian of life, and have dry skins, and begin to be emaciated, the warm bath, for half-an-hour twice a week, I believe to be eminently serviceable in retarding the advances of age."

Count Rumford, an eminent laborer in the cause of hygiene bears witness to the invigorating effects of the warm bath, and says, from his own individual experience it " never was followed by that distressing languor which always succeeds to an artificial increase of circulation and momentory flow of spirits which are produced by stimulating medicines." In his travels in Abyssinia, Bruce says, " Some persons may tell me that the heat of the bath must weaken and enervate, but I can assure them that the reverse is the case." When he felt an almost intolerable inward heat, and was exhausted almost to faintness, he says a warm bath soon made him feel as invigorated as on rising from bed in the morning.

As to its giving rise to a susceptibility to cold, Count Rumford declares he always found himself less susceptible to cold after the bath than before it. And Dr. Bell in his work on Baths, says, " during the many winters in which I have used the warm bath, so far from my liability to catch cold having been increased by it, I have actually suffered less than heretofore, in this way." It has been said, and justly, that there is no more reason to dread catching cold after a warm bath, than on going from a highly heated room into the cold frosty air.

The proper temperature of the warm bath is from 95° to 97° F. This says Dr. Bell, " will be called warm both by the Laplander and the intertropical African. It will be grateful to their feelings and sooth them nearly alike. It is precisely that degree of external stimulation or, less theoretically speaking, that amount of impression, which is most congenial with the wants of the nervous system. It is alike removed from enfeebling depression and perturbating excitement, and it places the animal economy in a state of quietude most favorable to a correct balance of all its functions."

The best time for the warm bath is when the stomach is empty ; as before breakfast or dinner, or on retiring to bed in

the evening. After the labors of the day are over, appears to be a most appropriate time for it. The period of time in the bath may vary from a quarter of an hour to two hours.

We propose entering more fully into the nature and effects of this bath on other occasions.

Annotations.

REMARKABLE OUTBREAK OF TYPHOID.

Dr. Thursfield, health officer, Shropshire, gives in the *Sanitary Record* for Dec. 17, the history of a singular outbreak of typhoid disease. He says, "It has recently been my duty to investigate an outbreak which has appeared to me not only most remarkable, and on some points, so far as my experience and reading go, unique, but which I consider certainly worth recording, as giving definite and absolutely indisputable evidence, with reference to certain important points connected with the study of the disease under consideration. About the middle of September last, a shooting-party of seven, met by appointment for a day's sport. Within a month afterwards four of the party were attacked with typhoid fever, and of the remaining three two suffered from diarrhœa, only one escaping entirely. With the exception of two who were staying in the same house they all resided in different houses widely apart from one another, and having absolutely no conditions in common. During the day of the shooting the only influences the party were subjected to in common were those of being exposed to the same miasmata, if any, and of taking the same food and drink. The four cases of typhoid fever which were all severe (two ending fatally), were treated in different parts of the country by seven different medical men, who all agreed in declaring them true typhoid fever. . . The two cases of diarrhœa were tolerably severe. . . The four cases of typhoid fever sickened exactly eighteen days after the shooting. The writer observes, as the party had never all met before the morning of the shooting, and never all met after that day, it is certain that the infection was received during the time they were together. The meeting and luncheon were in the open air, not near any house or nuisance of any kind; the country shot over was most healthy in every respect, they did not enter any dwelling, nor did any of the party drink any water, there was no case of typhoid fever nearer than three

miles. The evidence, he says, as to the conditions to which the party were exposed is most complete and entirely to be relied upon. Two circumstances connected with the origin of the fever are specially noticed: After the shooting, the party entered a game house, quite clean and free from nuisance, and when entered, was quite sweet; but after the unpacking of a game bag, in which nine hares had been carried for two hours on a hot day, the house became filled with a "most offensive, foul, and unusual odor;" and to this the most intelligent of the sufferers attributed their attack. The other circumstance was this: Two large bottles, in which beer and perry for the luncheon of the party were carried, had been washed with water "contaminated at all times, and at this particular time liable to be mixed with specific typhoid excreta." This water however had been heated to a temperature that would cogulate albumen; it was not used for drinking purposes but only for "cleansing"(?) The only one of the seven who escaped, was the gentleman from whose house the luncheon (and the bottles it appears) was taken. This brings up an unsettled point connected with the etiology of typhoid. Can constant exposure to typhoid poison diminish the risk of being affected by it? There is certainly evidence to show that men employed to work in sewers, enjoy marked immunity from disease attributed to sewer emanations. Dr. Thursfield naturally concludes, in accordance with our present knowledge, that the poison in the above outbreak was introduced with the water used for washing the vessels.

Dr. B. W. Richardson, F.R.S., &c., questions the propriety of alluminating alcohol in the treatment of acute hæmorrhage, after labor, etc., (*Lancet*, Jan. 26.) He mentions a number of cases in his own practice in which he has substituted, with most satisfactory results, warm milk or milk and water. He now uses this substitute in every such case, and is "satisfied that the new treatment is safest and soundest."

Proposed new Method for Warming City Houses.—A writer, L.B., in the *Sanitarian*, suggests that entire blocks of houses be supplied with warm pure air, and also warm water, by means of a central low-pressure boiler; dispensing with all stoves, heaters, furnaces, etc., in the houses. He thinks the total abscence of dust and ashes, the reduced expense for medical attendance, and the saving on insurance, carpets, furniture, etc., would pay amply for such an establishment.

ERRATA.—At page 60, second paragraph, second line, for "allu-minating," read "administering." At page 61, in "Ottawa Health Report," in the sixth line from bottom, after "marked manner," read "the slaughter houses in the city are condemned,"; "the doctor," &c. In next paragraph, fifth and sixth lines, instead of "tubes of lines," read "tubes lined," &c.

THE OTTAWA HEALTH REPORT.—The Annual Report of Dr. J. P. Lynn, Medical Health Officer, City of Ottawa, for 1875, has just been received. It shows that small-pox prevailed rather alarmingly during the first 7 months of the year; but the epidemic was finally arrested in July. There are 124 cases reported; 43 died, 81 recovered; 51 were vaccinated, 73 not vaccinated. "The greatest number of persons attacked, says Dr. Lynn, were those who had not been previously vaccinnated and it is from persons of this class that the death list is mainly recruited. Although some of those who died had marks somewhat indistinct of this necessary operation, I cannot recall a single instance of death where signs of successful vaccination were clearly shown." The doctor speaks well of the bright, airy Public School rooms of the city, and of the sanitary arrangements in general of the various school buildings. He strongly recommends a regular system of scavenging, and says the important work of inspecting yards and premises has been steadily maintained throughout the year, and their condition continues to improve in a marked manner; the doctor stating that the previous year he had to report the occurrence of typhoid fever, in their immediate vicinity, and several cases had occurred during the present year, 1875 He urges. the establishment of a public abattoir; and also that a proper system of registration be established.

N. STEVENSON, M.R.C.S.E., &c., in a communication to a January number of the London *Lancet*, mentions a plan for ventilating which he thinks near perfection. It is a simple modification of the much discussed Tobin system, and consists in the air being obliged to pass through two parallel tubes of lines with common "house flannel," by which the air is almost perfectly filtered, and the fog, smoke, etc., is removed; while the sound produced by the rush of air is completely deadened.

IN LONDON, the greater, the estimated population averages nearly 45 persons to an acre, while in Scotland the area is equal to nearly six acres to each person; and yet according to the last quarterly returns, the annual death-rate during the three months ending September last, was in London 21.5 and in the whole of Scotland 20.7. This shows little against life in the metropolis as regards the death-rate. It is not so much the city, as the condition of the city, which makes life shorter than in the country.

MR. CARLYLE, it is said, has joined the Anti-vivisection society, because, he says, as a rule he prefers the lower animals to men, and disapproves therefore of inflicting pain on the former in the interests of the latter.

SCHOOL HYGIENE.—At a recent meeting of the Rhode Island Medical Society, the following resolutions were passed: First—Injury to pupils at school, while in the schoolroom, is mainly due to deficient ventilation, unequal heating, long confinement to one, often abnormal, position, and mental excitement not necessarily connected with effectual study.—Second—Two short sessions daily are better than a single long one.—Third—In sessions of three hours at least two recesses should be allowed, one of them to be devoted to light gymnastics.—Fourth—Study at home should not be required of pupils under twelve years of age, nor of older ones except under judicious limitations.—Fifth—The half-time system is desirable in localities where the children are engaged in steady industrial occupations.—Sixth—That among the most prominent causes of ill-health among pupils while attending school, we must recognize the following:—Attending balls and parties, sitting up late at nights, eating improper food, drinking tea and coffee, and especially reading works of fiction.

DIAGNOSIS AND VITAL STATISTICS.—It is greatly to be regretted that at the last meeting of the Ontario Medical Council there was a tendency, or we believe it was finally decided, to drop from the subjects of examination the essential one of diagnosis. In the practice of medicine, the importance of this branch of the science can hardly be overestimated, while in the collection of vital statistics, as touching the causes of death, it is absolutely of the first importance, if the returns are not to be not only useless but misleading and mischevious. In the absurdly unsatisfactory and erroneous returns of causes, such as debility, dropsy, worm fever, and 'general break up,' there is indeed a grim sort of "entertainment," as an exchange puts it, which is made grimmer still by the reflection that if the treatment was as vague as the diagnosis 'the debt of nature' was paid before it was due. We trust as there has been an improvement in the law respecting vital statistics, that this branch will receive the attention it demands, and that medical men will be as correct and definite as possible in aiding in the returns.

IN INVESTIGATING the cause of a late severe and remarkable epidemic of typhoid at Croydon, Eng., it was found that a huge waste-pipe from the water tower of the waterworks had direct communication with the sewer. The greatest facility was thereby afforded for ærating the water supply with sewer gas previous to delivery.

THE EXAMINATION PAPERS for the qualification in State Medicine, Dublin University, are given in the *Sanitary Record*. They are under the following heads:—Vital Statistics, Hygiene, Meterology, State Medicine, law and Engineering. We should be glad to be able to give the questions, as they would be interesting to our medical readers, but our space is too limited.

A WRITER IN THE JOURNAL OF PHARMACY recommends the use of plain rectified spirits, or raw corn whiskey, when patients require alcoholic stimulants, rather than run the unnecessary risk of inculcating in them a taste for fragrant French Brandy or Bombon, &c. Besides, the former are much less experience, a consideration in the case of poor patients.

SANITARY VIGOUR.—It was recently reported, says the *Sanitary Record*, to the Portsmouth Town Council by the medical officer and the engineer that sixteen small habitations had been built in defiance of the by-laws upon a site which had been for years a common receptacle for sewage refuse; whereupon, after discussion, a resolution was passed that notice be given to the builder requiring him to pull down the houses.

DANGER OF RESPIRATION BY THE MOUTH.—John Catler wrote a little book with the title "Shut your Mouth." He insisted that many diseases were at least encouraged by breathing through the mouth. M. Guyes, of Amsterdam, (*Medical Times*) recently calls attention to evils which arise from respiration through the mouth, instead of through the natural passage, the nostrils. The olfactory sense, he says, causes impurities in the air to be recognized; the nasal walls render the air, as it enters, in a degree humid and less irritating; and they retain many of the solid particles suspended in the air, as proved by the quantity of dust often accumulated in the nostrils. Among those who habitually breathe through the mouth, pharyngeal disorders, chronic catarrh, &c., are very common, and are often transmitted to the eustachian tube and tympanum, producing deafness. A somewhat singular case in point is given in the London *Lancet*, by Dr. Charteris, in which, in a diabetic patient, great benefit, was received apparently by constantly breathing through the nostrils only. The theory seeming to be that it aided in restoring to the lungs their partially lost combustive power; enabling them to consume more sugar. It is undoubtedly highly important that every one should form the habit of breathing with the mouth closed, even during sleep.

THE ATTENTION of the reader may profitably be directed to the article on Preventive Medicine, in another page; especially to that part of it regarding "the expectation of a nauseous dose every time a physician is called," &c. The remarks are certainly most sensible.

IT IS STATED by Dr. Malherbe that sewing-silk is sometimes impregnated with acetate of lead, and that seamstresses are frequently poisoned by introducing such thread into the mouth.—*Ex.*

A NEW SOURCE OF POISON has been found in the coloring matter of the India-rubber toy balloons sold to children. The Sanitary Inspector of Glasgow has found that the yellow coloring material consists largely of cromate of lead, a highly poisonous substance.

TO CORRESPONDENTS.

CHLORINE.—According to M. A. Boillot, the bleaching power ascribed to chlorine is really due to ozone; and it is probable that its disinfecting power is due to ozone also. It appears that the chlorine seizes upon the hydrogen of water, forming hydrochloric acid, and the oxygen set free is transformed into ozone.

W. A. S.—Smell and taste do not give very positive indications as to the quality of water. If water is warmed, or distilled, the odor of fæcal matter is sometimes clearly perceptible to the sense of smell both in the distillate and residue. Bad tasting water should be rejected. Perfectly dissolved animal matter is frequently quite tasteless.

M. B.—We give the Reports of the Michigan State Board of Health from time to time in order that the people in Ontario may see what those in Michigan are doing in the matter of public health, that they may "go and do likewise."

R. W.—We will endeavor to answer your question in our next.

THE CANADIAN JOURNAL OF MEDICAL SCIENCE.—This is the title of a new monthly, published in Toronto, Dr. U. Ogden, editor, Dr. R. Zimmerman, corresponding editor. It consists largely of selections, seemingly judiciously made and of practical importance, with some reports of hospital practice, &c. We wish it success, and sincerely hope the profession in Canada may be able to liberally support the four medical journals now published in the Dominion.

AN EXPLANATION, ETC.—Some of our readers appear not to understand how it is that the price of the SANITARY JOURNAL is now $2 per annum whereas it was only $1 the first year. The reason of this is very simple. The first year it was published only every *second month*, now it is published *monthly*. A good many of our readers have now been receiving the JOURNAL considerably over a year, and have not paid us even an instalment on account. We trust we shall hear from many of these this month. Do not disappoint us, friends.

SUBSCRIPTIONS RECEIVED—since 31st December—from Hon. Justice Burton, two years, '75 and '76; Hon. W. H. Cochrane, '75; Drs. Allison, '76; R. T. Godfrey, '75; J. T. Small, '75; J. P. Brown, '75; Messrs. John Fiskin, '75 and '76; A. Fisher, '75 and '76; T. Scatchard, M.P., '75; Drs. Ledyard, '75; Lancaster, '75; Comfort, '76; D. S. Bowlby, '75; J. Nichol, '75; De La Hage, '75; H. Arnott, '76; J. S. Diamond; Messrs. W. K. Flesher, M.P., '75; J. Mason, '75; T. Ross. '75; Finance Dept., '75; T. Mulholland, '75; S. Cook, '75; D. Chisholm, '75; F. Bain, J. K. Macdonald, '75. J. M. Rosebrugh, '75; H. C. Burritt, '75.

PAMPHLETS, ETC., RECEIVED.

THE BATHS AND MINERAL SPRINGS OF WILDUNGA, Dr. Stœcker; translated from the German by C. Harrer, M.D., L.R.C.P., London.

CANADA POULTRY JOURNAL, H. M. Thomas & E. R. Grant, Editors: Brooklin, Ont. L. C. Thomas, Publisher.

EIGHTH ANNUAL REPORT of the Toronto Eye and Ear Infirmary. This institution is doing valuable work, and it is entitled to very liberal support from the public. The want of more suitable premises is deeply felt. They are evidently needed.

THE SANITARIAN, of New York, appears under new auspices, having incorporated the *Medico-Legal Journal* and its objects, and Medico-Legal Questions will occupy a prominent place in its columns. Terms $3 per annum.

THE FAMILY HEALTH ALMANAC, 1876; Published at the office of the *Health Reformer*, Battle Creek, Mich., U.S. It names an excellent code of Health.

THE POPULAR HEALTH ALMANAC, 1876, by F. Hoffman: New York, E. Steiger. This takes a strong position against Patent Medicines and Nostrums.

The above Almanacs present a neat appearance, and contain much valuable information on the subject of health, chiefly. They appear designed, especially the latter, to take the place of the vulgar and disgusting quack medicine almanacs, which have been for years flooding the country, and on this ground if on no other they should meet with a warm reception from the profession and druggists.

THE EARTH CLOSETS, as advertised in this journal—the Wakefield and Watrous—may now be obtained from Messrs. Cleverdon & Coombe, 35 Front Street East, Toronto.

THE ATTENTION OF PHYSICIANS and others is particularly directed to the advertisement on another page of the Turkish, Vapor, and other baths, Dr. Diamond, manager.

For $4, Vol. 1, neatly bound, and vol. 2, for the current year, will be sent, postage paid to any address.

THE LONDON AGENCY OF THE SANITARY JOURNAL is at the office of "*Public Health*," London, Eng., 9s. stg., per an., free of postage.

The SANITARY JOURNAL for 1876 will contain more reading matter than heretofore; the pages being lengthened and the spaces between the lines lessened, while all business matters connected with the Journal will be excluded as far as possible from the magazine proper.

THE PURPOSE OF THE SANITARY JOURNAL is to diffuse a knowledge of sanitary science—a knowledge of the causes of diseases and of the means of avoiding or removing these causes; to arouse public attention and the attention of the medical profession to the vast amount of preventable disease prevailing; to advocate Sanitary Legislation; to discuss, in short, all questions pertaining to public health, water supply, ventilation, drainage, food, clothing, bathing, exercise, &c., &c.

COMMENDATORY LETTERS TO THE EDITOR.

The following are copies of, and extracts from, a few of the many letters to the Editor, received from time to time, from medical men and others, regarding the SANITARY JOURNAL, unsolicited, of course, and, with two or three exceptions, the writers being personally quite unknown to the Editor:

TORONTO, December 7th, 1875.

DEAR DR. PLAYTER:— . . Please send me your receipt for the enclosed two dollars, for your valuable Journal. I wish all in the profession valued it as I do. . . .

Very truly, JOSEPH WORKMAN, M.D.
(Late Supt. Toronto Lunatic Asylum.)

BOWMANVILLE, June, 1875.

DEAR SIR:—I am much pleased with your Journal . . . I look upon it as one of the most useful periodicals with which I am acquainted, and especially to the medical practitioner, who wishes to keep pace with the advancements of science. Yours truly, W. ALLISON, M.D.
(Member Medical Council, Ont.)

GLANFORD, ONT., November 22nd, 1875.

DEAR SIR:—Enclosed you will find $2, to be applied to SANITARY JOURNAL. . . . . I think your journal is doing a good work, and that such a magazine was much needed in Ontario. Wishing it every success,

I remain, yours truly, ALEX. BETHUNE, M.D.
(Member Medical Council, Ontario.)

OAKVILLE, March 18th, 1875.

MY DEAR DOCTOR:—Enclosed please find one dollar for your really valuable Journal. . . . . Accept my best wishes for the success of your new enterprise. Yours faithfully, D. D. WRIGHT, M.D