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THE CANADA HEALTH JOURNAL.

(PUBLIC HYGIENE AND STATISTICS.)

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No. 3.

WINTER VENTILATION.

THE FORMULA OF MONTGOLFIER.

A constant supply of pure fresh air is of such vast importance to health, that the subject of ventilation—of changing breathed foul air for fresh pure air—cannot be too often referred to or treated upon.

During the warm summer weather the doors and windows of dwellings, schools, churches, etc. are usually more or less open, and permit a free circulation of air within for the use of the occupants, except that many are too much afraid of and exclude the night air; but as the weather becomes cold these places of ingress and egress for air are kept closed and the occupants breath again and again during the winter, air which has been already breathed. From this cause chiefly the death wave is swelled up in the spring, in March and April, from lung diseases, to its highest point in the year. The wonder indeed is, that so many live through the winter and spring with so little pure fresh air.

In the case of rooms or other places where grates or other open fire-places are used, a good deal of foul air is withdrawn through the chimney, and where there is no proper or special inlet, air, more or less fresh and pure, comes into the apartment through cracks and crevices and through the wall to make up for that which has been withdrawn. But it is better always to provide a special inlet for the pure air to enter. When there is

no special inlet, much of the air forced into the rooms to occupy the space vacated by the air passing up the chimney, comes by way of the cellar or basement, and hence through soil, usually more or less foul and bringing impurities with it.

Few foundations or basements of dwellings or any other buildings are so constructed as to prevent damp air coming into the cellar or under the first floor and extending up along the walls, whether these are of brick or wood, and getting into the rooms. The warm rooms give rise to a great suction force, and air is drawn in from the soil as well as from above ground. And it is well known that air coming through dark, damp cellars, or spaces under floors becomes at once dank and unwholesome.

It is better, therefore, in all circumstances where rooms are not warmed by a furnace in the basement and provided with special means of ventilation—that is, in all ordinary rooms, schools, churches, or any occupied apartments, to provide special inlets for pure air, and not to rely on the cracks and crevices, however good may be the provision for withdrawing the foul air.

As relates to the size of inlets and the amount of air which enters them, there are many enquiries. The quantity of air entering an inlet of a given size will depend on the difference in temperature, and consequently in weight, of the air

inside and outside the opening, and on the force and direction of the wind.

The movement consequent on difference in temperature is almost constant, and may be fully relied upon when it is not effected by wind.

The method of calculating the quantity of air which will pass out of a room through an opening connected with a flue leading to the top of the house, such as a chimney—and which quantity will of course enter the room through an inlet when one is provided, and by some other channel when no special inlet is provided—in consequence of a difference in temperature, is called the

FORMULA OF MONTGOLFIER.

This was given in extenso in Volume II. of the Sanitary Journal; but as many of the readers of this are not in possession of that volume, those who have it will pardon the reinsertion of it here in a less extended form.

The Formula depends upon the following data:—

1. The temperature of the external air.
2. The temperature of the internal air, (as the air of the room).
3. The ratio of expansion of air by heat = 0.002 for one degree, F.
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 co-efficient for loss by friction, depending on the shape and size of aperture or channel through which the air passes; in most cases there is a loss of one fourth.

Nos. 3 and 5 are constant, and are 0.002 and 8 respectively.

“The difference in the temperature (1 and 2) is found by an ordi-

nary thermometer, 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 room in one second; multiplied by 60 we have the amount in one minute.

Height of air column.	DIFFERENCE BETWEEN INTERNAL AND EXTERNAL TEMPERATURE.						
	5°	8°	12°	16°	20°	25°	30°
50	254	322	394	455	509	569	625
45	241	305	374	432	483	540	591
40	228	288	353	407	455	509	558
35	213	269	330	381	426	476	522
30	197	249	305	353	394	441	483
25	180	227	279	322	360	402	441
20	161	204	249	288	322	360	394
15	139	176	216	249	279	312	341
10	114	145	176	204	228	254	279

The above table shows a few examples; the horizontal lines along the top gives the difference in temperatures outside and inside, and the perpendicular lines at the left 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. For example, height of column of air, as in a chimney, from the floor, 45 feet; difference of temperature between internal and external air, 25 degrees: looking at the table we find opposite 45 (left hand column of figures) and under 25 (top row of figures) 540. That would be the amount per minute for an area of one square foot.

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.

The whole mass of air in a room is taken as homogenous, and 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.

"TAKING COLD." THE SKIN AND THE CLOTHING. (Concluded).

In the last number of the JOURNAL, I alluded to the large numbers who die every year in this country from inflammations, arising frequently from colds caused by neglecting to keep the skin in a healthy, vigorous condition by bathing and suitable clothing. I endeavored to point out the means by which colds might be avoided, chiefly by the proper care of the skin, and by appropriate clothing; and I intimated that I would in the next number say something about mistaken attempts to harden the system—over clothing, tight and unequal clothing, and making sudden changes in it.

Dr. Osgoode, in his "Health Primer," says, "there is a popular error that hardening will inure one to any degree of cold—to the most sudden changes of temperature. * * There are no words strong enough to characterize the folly of those parents who think it right to harden their children, by forcing them to face the cold insufficiently clad."

In reference to this, the "Herald of Health" very properly observes: "In what the author (Dr. Osgoode) here says, he seems to oppose hardening as an expedient to which none but cruel parents will resort. He does not give warning that there

is an opposite and more dangerous extreme. What then about hardening and softening? If you do not the one, can you avoid the other? What seems hard for one is quite easy to another, who is inured to it. The true question is, what degree of hardiness—the minimum and maximum, is consistent with the most robust health. It will, no doubt, be granted that both extremes are dangerous. To which are children most exposed? Hardening is the result of over-work and exposure to cold, one or both; softening the result of underwork and careful keeping in a warm atmosphere, one or both."

In clothing, as in everything else, I believe, without exception, there is nothing like the "happy medium."

Probably the most pernicious practice of all in regard to clothing is that of overclothing parts of the body, and allowing other parts to be insufficiently covered, which is an almost universal practice in the case of young children, and too common amongst women.

The object of clothing in cold weather is to prevent the escape from the body of the animal heat generated in the body. Heat is generated in all parts of the organism, but a little more in some parts than in others—more in the brain, muscles and liver, and it is distributed and the temperature of the body equalized by the circulating blood. Uniformity of temperature and of the circulation of the blood is one of the first essentials of health.

Heat is being continually given off from the entire surface of the body. Too little clothing permits the too rapid escape of the heat, whether from the whole body or only from parts of it, as the extremities, and the skin and parts beneath become cold, and the little blood-vessels in and beneath the

skin contract and get smaller, as everything does when cold, and will not contain the normal quantity of blood; while the inner organs are, at the same time, forced to contain more than the normal quantity of blood: colds, congestions and inflammations follow as a consequence. On the other hand, over-clothing leads to accumulation of heat, and to relaxation, distention and debility of the vessels of the skin and other tissues, and when confined to parts of the body, the vessels in these parts become relaxed, distended, or congested with blood, and hence, the body is rendered more susceptible of cold, and less able to resist sudden changes in the weather.

Now, when some portions of the body are over clothed and other portions almost bare, it is easy for anyone to understand how impossible it is for the temperature and circulation to be as uniform as they should be, or for the functions of the body to be well and harmoniously performed; and when they are not thus performed, then there is disease. So that it does not seem possible for any one habitually clothed in this way to be well.

Just enough clothing should be worn to keep the skin on the extremities, even the hands and feet, comfortably warm, or, at least, to prevent these parts feeling cold. More than this tends to relax and debilitate the tissues of the skin, and predisposes to colds; less, chills the blood, and is, at best, unsafe.

A little careful attention will soon enable one to judge how much clothing is needed to meet the requirements indicated. And health and life are of such value that it is worth giving the necessary attention, especially in the case of children. It is decidedly better to wear extra clothing than to live in and breathe, as in rooms, an atmosphere with a temperature above 65°, F.

Every one knows that during exercise less clothing is needed, and indeed ought to be worn, as it is bad to be warm while exercising in any way; but few take the precaution to put on extra clothing, a shawl or coat, as soon as the exercise is over, as should be done.

Many a death is caused by inflammation arising from a cold contracted by getting chilled, even slightly chilled sometimes, after having been warmed by exercise, either at work or play.

Sudden and great changes in the quantity of the clothing worn should be specially avoided; changes from thick to thin garments, especially under garments, should be made gradually, and better in the morning, when the vital powers are most vigorous. It is not wise to wear, as some do, only the same amount of clothing in severely cold weather which is worn in moderate weather, on the whole, or even on only a part of the body. It is better to increase, or lessen the quantity to meet the changes in the weather.

In conclusion, light clothing is best. Warmth is better attained by several layers of lighter, loose fitting garments than by fewer layers of heavier and thicker clothes; as more air is then retained in the clothes; and air being the best non-conductor of heat, promotes warmth. Weighty clothing is often a source of discomfort, and weight does not necessarily promote warmth.

DRAINAGE AND SEWERAGE OF TOWNS.

The fourth Annual Congress of the Sanitary Institute of Great Britain was opened at Exeter on Tuesday, September 21st. Earl Fortescue, the president, in the course of his address, after reviewing the course of sanitary legislation

since 1848, said: My late gifted friend, Mr. F. O. Ward, an active but too little heeded member of the last Commission of Sewers, when protesting against the intercepting along with the sewage proper all the rainfall descending on the surface of the metropolis, and at great cost pumping much of it into the Thames below London, tersely set forth the right principle in words which deserve to become proverbial: "The rainfall to the river; the sewage to the soil."

The governing body at Paris has recognized this truth, and in accordance with a most able and exhaustive report from M. Millet, their chief engineer, has been for some little time acting on it in the plains of Genevilliers, so as not only, as I have seen on the spot, to purify the great volume of sewer water already conducted thither as the precursor of much more, but also at the same time to fertilise with it a large tract of market garden, which filters it on its way to its final discharge, clear and bright, into the Seine. I am told that Berlin also will before long surpass London in its sanitary arrangements, in water supply at constant pressure, in its hydrants, in its house drainage and street sewerage, and in the profitable use, instead of the noxious deposit, of the sewage.

The undiminished—indeed, for more than a decade, the slightly increased—mortality of the metropolis, after the great sums expended upon house drains and sewers in it since 1854, affords melancholy proof, apart from the testimony of our noses, that many of these new house drains and sewers have not been constructed upon the self-cleansing principle successfully adopted years ago, at very moderate cost, in many provincial towns, with large reductions, when their water supply was good also, in their previous mor-

tality and sickness. The mortality in Dover, for instance, was brought down to 14 per 1,000; in Croydon and Bedford it has been brought down to two-thirds of their previous rate; in all with corresponding reduction in the amount of sickness. Mr. Rawlinson, C.B., of the Local Government Board, has planned and superintended the execution of some of these successful provincial works of sewage, house drainage, and water supply.

All experience has confirmed the truth of the principle laid down as long ago as 1842 by Mr. Chadwick, that the best planned sewers and house-drains of the most approved form and best materials, without an adequate and constant supply of water, would become in dry weather merely elongated retorts for the generation and diffusion of noxious gases; that, on the other hand, a large water-supply without good drains and sewers would render the site of most towns unwholesomely damp, and of some quite marshy; that, in the case of the poorer dwellings, intermittent water supply, from however pure a source, means contaminated supply, owing to its stagnation in foul cisterns and decaying waterbutts, rendering it hopelessly unpalatable to drink; that, therefore, both good sewers and good water-supply are alike requisite; that each is indispensable to the other's satisfactory action; and that no town could be considered in a proper sanitary state while either was grossly defective.

THE SEWERAGE OF MEMPHIS.

This is the title of an elaborate paper by Mr. G. E. Waring, jun., of Newport, Rhode Island, and read at the Congress by Mr. Rogers Field. Memphis is a city of about 40,000 inhabitants, and its area, including its immediate occupied

suburbs, is about four square miles. The city had been visited by such a constant succession of epidemics, that when, in 1878, over 5,000 deaths from yellow fever were registered in ten weeks, it was seriously contemplated removing the city as a plague-spot from the face of the earth. An inquiry revealed a total absence of all decent sanitary conditions. Mr. Waring closed the cess-pools, and drained the city on what he believed to be a new principle, but which, the president reminded the meeting, had been advocated by that veteran sanitarian, Mr. Chadwick, as far back as 1848. This plan is that of small pipes, absolutely water-tight, kept generally full, and flushed daily. The object aimed at is simply to secure the complete and speedy removal of all foul sewage through pipes absolutely tight as to their joints; true as to gradients, and laid on generous curves; to secure the most complete ventilation possible; to cause the least possible disturbance of the flow at the numerous inlets; and to give every pipe an effective daily flushing. A new form of house connection or branch piece was adopted. The most striking departure from ordinary custom and prescription is the entire absence of man-holes and lamp-holes, and the utter disregard of the alignment of the sewer, so far as the question of examination or cleansing is concerned. Mr. Waring trusted to the open inlets for ventilation, and to daily or half-daily flushing for cleansing. Should a sewer at any time become obstructed, the obstruction would manifest itself at the lowest house connection above the point of stoppage, and the stoppage would have to be removed by digging down and opening the sewer itself. This would, of course, cost more than to withdraw the obstructing substance

at a man-hole; but no single instance of stoppage has yet occurred, and he is confident that the interest on the cost of man-holes and lamp-holes would be enormously greater than that of the occasional openings that may become necessary. These sewers have no projections or rough points to collect foreign substances; nothing can get into them except through pipes of materially smaller diameter than their own; and each sewer, with its branches, is swept from end to end at least daily, by a large volume of water rapidly discharged from a Field's flush-tank. There are now about 120 of these flush-tanks in constant operation, and when the work is completed the number will be increased to over 150. The discharging capacity of each tank is over 100 gallons. The ordinance concerning private works, connections, flushing, etc., will, it is believed, render it impossible for foul matter to lodge in any part of the house drainage or sewerage system. The sub-soil drains do not deliver into the sewers, but find their outlet directly into the bayou and its branches. The authorities of the city are already ascribing their present unprecedented low death-rate and almost entire immunity from malarial diseases to the execution of these works.

WOMAN AS A SANITARY REFORMER.

At the congress of the Sanitary Institute of Great Britain, above referred to, Dr. B. W. Richardson delivered an address on woman as sanitarian, in the course of which he said: It is in those million centres we call the home that sanitary science must have its true birth. It is from those centres the river of health must rise. I press this office for the prevention of disease on womankind, not simply

because they can carry it out, but because it is an office which man never can carry out; and because the whole work of prevention waits and waits until the woman takes it up and makes it her's. The man is abroad, the disease threatens the home, and the woman is at the threatened spot. Who is to stop it at the door, the man or the woman? The house is her citadel. A woman should master physiology so far as to understand the general construction of the human body. She should be rendered fully conversant with the different changes of food that are required. She should be taught the relationship which solid foods hold to liquid food or drinks. She should be told what drinks are foods; and she should specially understand what are the particular foods required for the young during the periods of active growth. If women only knew what foods were requisite to feed the skeleton or bony framework of the living body while that skeleton is in the course of growth, and if she would act upon her knowledge, as she almost certainly would if she possessed it, there would hardly be one deformed child left in the land in one or two generations. Rickets, with all its attendant miseries of bowed legs, crooked spines, and humped backs, would pass away as if by the spell of an invisible enchantress. After the understanding of the digestive system, the woman should learn the principal facts relating to the general functions of the body, and she would require to find out how most effectively she can maintain, in the varying seasons, an even and equable temperature. She would aim to consider in what way she could keep the air of the house free of that most objectionable of mischiefs, dust. She would demand to have marked for her on a map or

plan the precise position of every drain-pipe in the establishment, and would insist, with intelligent skill, on having every drain kept systematically clean. She would learn enough of the chemistry of water to enable her to determine with facility whether a water was wholesome and drinkable; and she would have a sufficient amount of skill to direct how an impure water might be purified and made safe for her or her's to drink, and use for all domestic requirements. She would see to it that damp had no place in any apartment. That she would acquire a thorough knowledge of the best art of cookery; a good knowledge in choosing foods in season; that she would find out what foods are most suitable for persons of different age and constitution; and she would distribute food with well balanced hand, neither feeding over-indulgently or parsimoniously. But she would be better able than anyone else to put to the test the experience whether it is good or necessary to go to the living animal creation at all for human food. Women should know the correct names and characters of the more common diseases, and they should know, by sight, the every-day contagious or communicable diseases. All the best known methods of preventing disease should be at their fingers' ends, and the rule of the sick-room should be their faithful care. The woman should know everything about registering the temperature of the sick room and degree of humidity; the mode of ventilation; the different special methods of feeding, washing, and changing the sick; the most efficient means of disinfecting, and of removing or destroying the poisons of the communicable diseases. How, in this way, the woman could help the physician, none but the physician can understand. Women

should understand the little appreciated law of temperaments. The sanguine child, ruddy and red, with blue eyes, red hair, strong muscle, quick movements, restless limb, she may set to study at books, while she curbs exercise, with no fear that books will kill, for it will outlive any book. The bilious child, with dark eyes, dark skin, black hair, stolid expression, thoughtful brow, she will not set to the study of books as the work of life; for books may kill; physical exercise may save; but will never be carried voluntarily to injury. The nervous child, with fair skin, light hair, blue eye, quick but feeble movement, timid glance, yet, perhaps, unbounded ambition, she will spirit gently, will balance between physical and mental labour, will apporportion excess of neither, and will never urge unduly to any effort. The lymphatic child, large of body, pale, with grey or blue eyes, brown hair, shambling step, watery lip, and slow determination, she will rouse to action both physical and mental, with the full assurance that neither effort will do anything but good. She should study also emotional contagion with special care, and on one emotion, that of fear, she should keep the most watchful observation, because she will discover it to be the most common and disastrous of all contagions. She will never excite it for a moment by story of superstition or dread. Finally, in physical psychological training there would stand out for contemplation, and action founded upon it, one more subject; that marvel of the marvellous in living phenomena, heredity of type and action, extending to health, and extending, alas! to disease in its deepest foundations. She should stand to resist, with her persuasive might, that process which I have elsewhere called the

intermarriage of disease. She will tell her sisters what that terrible process means. She will tell that diseased heredity united in marriage means the continuance of the heredity, as certainly as that two and two make four; that madness, consumption, cancer, scrofula, yes, and certain of the contagious diseases too, may be perpetuated from the altar; and that the first responsibilities of parents towards the offspring they expect, ought to be, not how to provide for wealth and position over which they have no control, but that preliminary healthy parentage which is the foundation of health, and without which position and wealth are shadowy legacies indeed. These I set before this Congress as the heads of the educational programme for our modern woman in her sphere of life and duty.

ON THE LIMITATION OF INFECTIOUS DISEASES.

The following extracts on the above subject are from a lengthy article in the *Sanitary Record*, London, Eng., by the Rev. J.H. Timins, M.A., F.G.S. &c. Though trained nurses are not yet plentiful in Canada, the extracts may be read and put into practice to a great extent, and with great profit, by physicians; while all heads of families should make themselves familiar with them.

Through the efforts of Dr. T. Mack, of St. Catharines, who has established a school in that city for the training of women in the art of nursing, good nurses will it is hoped soon be more plentiful in the Dominion.

Mr. Timins refers to his treatise on 'Artificial Disinfection,' published by Messrs. Churchill in 1878, in which he gave full particulars of the results which had been attained

by it in the eradication of small-pox, scarlet fever, and diphtheria, in numerous outbreaks of those diseases which had occurred, in four successive years, in ten sanitary districts in Kent. In several hundred cases, sometimes under the most unfavourable sanitary conditions, and frequently without any means of isolating the infected, all the outbreaks of those diseases were encountered and controlled, without a single instance of even partial failure, by an efficient system of disinfection, judiciously and perseveringly carried out by nurses specially trained and instructed for the work.

The suppression of scarlet fever, he says, by a systematic course of disinfection, was shown to be practicable, by Dr. Budd, nearly thirty years ago. In his pamphlet on the subject, he justly observed that 'the one thing to aim at is to annihilate the contagia on their very issue from the body, and before the patient leaves the sick room; and to prevent the minute particles, which are the carriers of the poison, from taking wing until they can be disinfected *in situ*'. The disinfectants on which he chiefly relied were the chlorides, the sulphate, and the perchloride of iron, the permanganate of potass, and camphorated oil for the skin. The rules laid down by Dr. Budd have formed the basis of all subsequent instructions for the prevention of the spread of infectious diseases, and little of any real value has been added to them.

Mr. Timins in the year 1875 made arrangements for carrying out the work of disinfection through the agency of trained nurses, with the following rules:—To visit every infected house two or three times a day for the first fortnight, and daily, at least, afterwards, for a period of six weeks in small-pox or typhus fever, and for eight weeks in scarlet

fever or diphtheria, from the first commencement of the disease. To destroy all contagia by the immediate and complete disinfection of everything which may issue from, or may have been in contact with the bodies of the sick; and to disinfect the floor and furniture of the sick rooms, and all drains and closets which may have been used by any infected person. To cause disinfectants, of the proper strength, to be placed in pans to receive all handkerchiefs, towels, and bed and body linen, which may have been used by the sick person, immediately on their removal from his bed or person; to see that a pint of the disinfecting solution be placed in every chamber vessel before it be used by any infected person; to protect beds from being soiled, by using waterproof sheeting, which must be often changed and cleansed, first with the disinfectant, and afterwards with cold water. If the patient be subject to cough, to place a yard of calico over the bed clothes, and change and disinfect it night and morning; and to protect the pillow by placing pieces of calico under the cheek when necessary. In scarlet fever, or small-pox, to collect and burn any dried matter or skin which may fall off, and see that the patient be washed or sponged with disinfecting soap or lotion. To use heated iron spoon for vaporizing, or spry producer for dispersing, suitable deodorants and disinfectants in the sick room, when necessary. To fumigate the sick room, with the usual precautions, as soon as the patient can leave it. In the event of death, to prepare the body for interment, using sufficient means of disinfection to protect the inmates of the house, and attendants at the funeral from all risk of infection. To disinfect all public elementary schools attended by children from within the infect-

ed district, if allowed by the managers to do so, and fumigate the children's caps and cloaks in the lobbies.

In carrying out the work of disinfection, it must be carefully borne in mind that it is never really necessary to cause pain or inconvenience to the sick in providing for the safety of others. Therefore, all disinfectants must be avoided which may cause nausea, or irritation to the respiratory organs of the patient. As a rule, carbolic acid, if used with proper care and discrimination, is the best. It is just sufficiently volatile to purify the air of the sick room, and to neutralize the noxious gases generated in it, which would prove injurious to the patient as well as to the attendants. I have very rarely found Calvert's No. 3 or No. 4 objectionable, and No. 2 has always been acceptable. If this more expensive quality is necessary to be used in the sick room, the nurse will know how to use it economically, and to use the less expensive qualities where the patient cannot be annoyed by it. There are, however, certain constitutions, and certain forms of disorder for which carbolic acid ought not to be used. And wherever the nurse may find that this is really the case, she must do the best she can with Burnett's fluid, and the permanganate of potass; using some means of fumigation for the purification of the air of the sick room; such, for instance, as camphor and acetic acid, vaporized. But no reliance must be placed on any disinfectant of which the disinfection value has not been accurately determined by experiment, nor unless it be used in the proportions which have been demonstrated to be sufficient for the neutralization of the infective matters which proceed from the sick.

ON HOG CHOLERA.

This is a subject which is attracting a good deal of attention in the Western States, and on account of its possible communication to man, is of much interest to Canadians.

At the last meeting of the State Board of Health, Michigan, Dr. H. B. Baker, secretary of the Board, was directed to investigate the hog cholera now prevailing in the southwestern part of that State, and to find, if possible, any relation between that disease and any sickness in the human family. The statements given below are extracts from the conclusions arrived at by Dr. Baker, from a collation and comparison of facts obtained; from *Lansing Republican*, Nov. 18, 1880.

It has been ascertained that the disease could be communicated to mice, sheep, and chickens, and from each of these back again to the swine, although the disease affected sheep but slightly. Dr. Baker has found evidence in his recent investigations that it may also be communicated to rats, dogs, lambs, colts, and cats.

The term "cholera" is a misnomer, except as it conveys an idea of a communicable disease. Contagious typhoid pneumonia would more nearly represent the nature of the disease, but both those terms would probably be misleading unless the mode of communication of the disease is understood, which is by inoculation or by taking the specific virus into the body with the food.

The symptoms described in various places varied greatly, but are all easily explained when the nature of the disease is understood. The specific virus circulates through the body wherever the blood goes, and very rapidly reproduces itself. It tends to clog up the smaller blood-vessels throughout the body, and especially in any weak or injured

place; therefore the symptoms necessarily differ widely, but the lungs almost uniformly suffer, becoming clogged up in nodules or by entire lobes, in many instances causing death in this manner. Another part of the body next most constantly affected is the large intestine and small intestine near it. Where the glands on the inside of the intestine are enlarged and sometimes ulcerated and inflamed, the adjacent lymphatic glands are enlarged, and the stomach is sometimes inflamed. In one case Dr. Baker noticed enlarged spleen, and the liver had a peculiar purplish appearance. Others have found similar appearances.

From this description it is easily realized that there is not much hope in medicine being able to eradicate the disease. On the contrary it is productive of much mischief, as the attempt to keep the animal alive only tends to increase the cause of the disease.

The disease is not generally recognized by the people. They say, when the cats have a disease which appeared to Dr. Baker the same, that it is consumption. When the dogs had it it was "dog distemper;" when the colts had it it was "epizootic;" and when the lambs had it, as they did in some places, they attributed it to feeding on clover, or called it "grub in the head." The disease is probably spread very largely by mice, rats, and cats, which die and lie around unobserved and to which chickens and hogs have access.

The question which Dr. Baker was especially requested to investigate, whether this disease is

COMMUNICABLE TO MAN,

is attended with much difficulty, because in the neighborhoods where it exists the people are very much afraid, and avoid contact with the

disease or eating the meat. One reason prompting this investigation was that sickness, and in one case death, was attributed to eating sugar-cured ham in which careful search proved the absence of trichina. It has been found that the poison of the disease is somewhat easily destroyed, but whether, meat from animals that have died of this disease, is capable of conveying the disease to human beings who eat it as it is ordinarily prepared, is a question of very great importance, but one upon which conclusive evidence cannot yet be obtained.

Dr. Baker found one place where the first animals known to be sick were two cats. The next were the chickens, which died very rapidly, and the next was the man of the house, whose symptoms, as described, were not very different from those of the animals. The next were the hogs, not all of which were dead at the time of the doctor's visit. One was killed, and a post mortem revealed hog cholera, every point being verified under the doctor's eyes. At the time of this visit a son, the only male member of the family remaining, was sick. Whether his sickness bore any relation to the other disease it will be impossible to say, if he lives. Should he die, post mortem might determine the point.

OPIUM—ALCOHOL—TEA.

The following interesting extracts on opium, alcohol and tea, are from the *Medical Times and Gazette*, (London, E.) of Nov. 6th, 1880.

After referring to the Opium traffic with China, the *Gazette* says: We have been specially induced to make some observations on the subject by a paper from the pen of Deputy Surgeon-General J. W. Moore, who has in two successive numbers of *Indian Medical Gazette*

written on opium and the opium traffic. His object is to show that the moderate use of opium is not more deleterious than the moderate use of alcohol, that its excessive use or abuse should rightly be compared with the excessive use of alcohol, and that the pictures of the two should go side by side; that the effects of the excessive use of opium should not be taken as constituting a true likeness of what it produces when used in moderation, and that so used it is often beneficial.

There is much truth in all this, but neither is it the whole truth. We know that many substances, among which opium takes a prominent place, have the effect of enabling men to go through much fatigue and labour of the most depressing and exhausting kind, without for the time feeling its effects. Alcohol, too, has the same influence, but in a different degree; but there is probably an essential difference between the two processes. Opium, as we take it, has the effect, first of all, of quickening the circulation, but if taken by the uninitiated in more than the smallest appreciable quantity it dulls sensation and lowers all forms of vital activity. But if not carried too far, this condition is not incompatible with great and prolonged exertion, coupled with diminished or retarded tissue-change. But *ex nihilo nihil fit*, and opium is not food, so that, sooner or later, the bodily loss requires to be made up somehow. So, too, of alcohol, but in a different degree; the stimulant effects of alcohol are more marked than those of opium. By its action on the cutaneous capillaries, more immediately apparent than that of opium, it gives a sensation of heat, and may often do good by diverting blood from the portal system, especially in malarious regions; but, if it acts more

speedily than does opium, its effects sooner pass away, and the reaction being more sudden, is felt more acutely accordingly. Both are useful in their way, but their place and power are not identical. Moreover, if we mistake not, out of alcohol some force must be developed—all the alcohol which is consumed is certainly not eliminated as alcohol; and, if it undergoes any chemical change at all, the change must be of such a nature as to develop force in some form. In point of fact, the use, or rather the abuse, of the two would seem to necessitate different conditions. We can hardly imagine northern races, compelled by the rude necessity of life to maintain an active existence, taking to the excessive use of opium. But to races living under different conditions, especially those whose idea of eternal happiness is eternal stillness and rest, we can easily imagine that the use of opium in excess would be especially seductive. But here we tread on the ground already indicated. Between the use of opium as an aid and support during excessive and prolonged labour, and its abuse as a means of procuring a temporary and passing sample of the great rest promised to all true followers of Buddha, there is a great gulf—great, indeed, as that which exists between the use of alcohol as an aid to digestion and a grateful filip during hard, mental, or bodily labour, and its abuse by one who gets drunk for the sake of getting drunk, and to whom the form of alcohol is immaterial so long as the desired effect is attained.

There is, however, one point which we have never seen cleared up to our satisfaction. We know this—that men may go on all their lives taking their glass or two of wine every day, never desiring more, and never acquiring the habitual craving for alcohol. They miss

their daily allowance if withdrawn, just as they would miss anything else to which they are accustomed; but there is no craving, to be gratified at all hazards, as in the true alcoholic habit. How far is this true of opium? We have all read of those who, from some cause or other, had been inveigled into its use, and that thence the advance or retrogression to its abuse is sure and certain, however slow. Here, however, the drug has been taken for a definite purpose, to produce a given set of sensations or impressions; and to keep these up the quantity must from time to time be increased. But the point we want to ascertain is whether, when opium is taken as a substitute for food, or as a means of enabling the partaker to undergo unwonted fatigue, this quantity requires from time to time to be increased, or whether it remains the same throughout life; or whether such a use of opium ever gives rise to what is called the opium habit. But

TBA,

that panacea for all human ills, is no longer to escape the lash of the inquiring physician. Dr. Heath, of Newcastle, has been the last to raise up his voice against it. But it has long been a fact familiar to us that tea is a most fruitful source of dyspepsia, and not unfrequently one of the chief agents in producing the unhallowed craving for gin which tea totalers so strenuously denounce. Among the vast numbers of poor women who frequent the out-patient rooms of our London hospitals, we should not be far wrong in saying that two-thirds are suffering from dyspepsia. This dyspepsia almost invariably arises from two causes—the want of proper food, and the abuse of articles like tea, which stay the craving for food, but which aggravate the consequent condition

of the digestion. The terrible depression which thus results can only be remedied by stimulants of a different class, of which “gin neat,” or “gin and peppermint,” “gin and cloves,” etc., are the type, which in their turn only make matters worse; and so the unfortunates go on from day to day, till the true gin habit is strong upon them, and they can no longer do without it. Unlimited tea-drinking is not an unlimited blessing, even with the addition of duty-free beet-root sugar.

HOW THE PUBLIC HEALTH MAY BE PROMOTED.

BY C. A. LINDSLEY, M.D., HEALTH OFFICER OF NEW HAVEN.

The following excellent synopsis of the different ways in which the public health may be promoted we find in the “Herald of Health.”

Now, whereas it is quite evident that man has done very much for the preservation of his health and for extending the duration of his life, and since it is even more evident that a great deal yet remains to be done, and with even better results to be hoped for, let us next consider in what direction efforts can be made to secure the best sanitary conditions, and thereby a race of vigorous, long-lived, healthy and moral human beings.

The first [and this is very important—ED. C. H. F.], the continuous and never-ending effort should be the acquiring and diffusion among the people of that kind of practical knowledge which will instruct them in the means of preventing or removing the causes of disease and death; which will teach them how to live, to ensure to themselves the most vigorous, moral and physical health.

Among the more obvious ways in which the desired results may be promoted, are the following:

In providing such safeguards that the sick shall always be protected from the crafty designs of ignorant pretenders and uneducated and unauthorized practitioners of medicine, and in aiming to secure in the medical profession the highest standard of education, honor, and moral worth. In providing better security from the dangers and nostrums of quackery — which are far more costly than scientific medication, more fatal than the diseases they pretend to cure.

In providing for available instruction that suitable persons may be educated and trained for usefulness, as nurses for the sick, so that those afflicted with disease may, by judicious medication and skilful nursing be restored to health more speedily, and that a larger proportion of them may be wholly cured.

In providing an oversight and care for the poor and those who are obliged to live in tenement houses, that their health and lives are not exposed by unsanitary conditions which the tenants are powerless to avoid, but which it should be made the duties of landlords to correct.

In providing for the detection and more certain responsibility of those who from avaricious motives, by design or through deception, imperil human life or the health or safety of the community, as by the sale of unwholesome provisions, or of prepared foods, in which are elements known to be deleterious to health; also by the unsafe conditions of buildings in which the public are invited to assemble, or unsafe means of public conveyance, and by many other ways.

In providing for the effective protection of the whole community against the small-pox; by using all such safeguards respecting the vaccine virus and vaccination, that all prejudices may be disarmed

and every peril from the operation avoided.

In diffusing information among the people about the use of disinfectants and the means of escaping contagious diseases, and the importance in this connection of the utmost cleanliness of both person and surroundings.

In providing for the regulation, abatement, or suppression, as each case may require, of whatever acts, practices or pursuits are detrimental or dangerous to the public health.

In providing such systematic oversight of the cleanliness and purity of home-life as will surely protect the neighborhood from the noxious effluvia of pig-styes, garbage heaps, and other abominations.

In providing for the inspection, by competent sanitarians at all times, but especially during the prevalence of epidemics, of schools, churches, colleges, theatres, court rooms, asylums, hospitals, prisons, or any other places in which persons assemble together. With regard to their proper ventilation, warming, lighting, ground drainage, and whatever pertains to their hygienic conditions, in order that the damages to health and life, which in such places are so great and constant, may be reduced to the minimum.

In devising such regulations respecting the construction, furniture and care of horse cars, stage-coaches, and other public vehicles, that they may be, in the least degree possible, vehicles also of contagious diseases.

In providing good drainage about the homes of the people, and adjacent low-lands, and thus securing a dryer and purer air to breathe, which scientific investigations within the present generation have proved is capable of reducing the prevalence of that very fatal disease, consumption, 20 to 40 per

cent., not to speak of its favorable effect upon other diseases.

In providing an efficient system of sewers in the streets, and such proper connections with all buildings, public and private, that privy vaults and cess-pools shall henceforth be abolished, and filth, in any form, shall find no abiding place about our homes.

In providing as far as practicable for pure water, pure air, pure milk, and wholesome food, and also such tests, inspections and penalties as will most effectually prevent the wilful or malicious adulteration or pollution of these essentials of health and life.

In providing for the systematic and accurate registration, not only of all births, marriages, and deaths, but also of important particulars during the prevalence of epidemics, and also of the more important contagious diseases, and of sudden and peculiar causes of death, in order that an enlarged and enlightened knowledge may be acquired with reference to preventing or limiting such fatal results; and, furthermore, that such registration, by its inquisitive requirements, may be the means of exposing various forms of crime. That the bloody and deadly deeds of the abortionist and the murderous practices of child-killing and secret assassinations may be more open to detection, and that the frequent fatal results of quackery may be oftener brought to light.

GOURMANDS AND GOURMETS.

It may be worth while to point out, says *The Caterer*, how the *gourmet*, or the epicure, who eats to combine health with enjoyment, is superior to the *gourmand*, or glutton, who piles his plate with a pyramidal mass of edible substan-

ces, merely to gratify a large and debased appetite, without any thought as to how these incongruous elements are to be assimilated.

We read of Diogenes meeting a young gentleman on his way to a feast, taking him up in the street, and at once restoring him to his friends as one who was about to incur a great danger, had he not prevented him. But what would that amiable philosopher have said now-a-days, had he met the young man of the period on his way about half-past eight of a summer's evening to some such dinner as that described by the famous Mrs. Hog-gaty? "Everything in the most sumptuous style—soup top and bottom (white and brown), resumed by turbit and salmon, and immense bols of lobster sauce," and so on....

Men of good taste are so in all matters, and would no more tolerate or imitate the flashy, trashy *entrees* of the *parvenu's* table than they would the gilded hammer-cloths, gigantic armorial bearings, and the glittering harness of his equipage.

It has been well said that a healthy palate is the crown of a cool stomach. While the *gourmand* is snoring off the stupifying effects of the over-night's debauch, the *gourmet*, mindful that those who would enjoy the pleasures of the table must bring to it a healthy mind and body, is up and out betimes, not only perhaps to invigorate himself for the business of the day, but to pay the first visit to his butcher and fishmonger, and secure the usual advantages of the early bird. And here it may be remarked how completely we English place ourselves at the mercy of our trades-people. In France and other countries, madame, accompanied by her *bonne*, will be stirring at the first sound of the wheels of the

market carts clattering over the stones, "and in the way of bargain, mark you, will cavil on the ninth part of a hair." She sees that she gets her pound of flesh, and that her vegetables are fresh and of good quality. With few exceptions, a greengrocer's shop in this country is one of the most disappetizing interiors it is possible to conceive, and it is always difficult to discriminate to a nicety where the coals end and the cabbages begin. Is there any reason why the finest of our ladies should not exercise their superior intellects, and seek and carry off from Covent Garden the vegetable spoils freshly gathered, instead of allowing them to be again crushed and spoilt in a dirty cart on their way to the above-mentioned shop?

THE HUMAN FIGURE.

An exchange gives the following proportions of the human figure. Height, six times the length of the feet. Whether the form is slender or pomp, the rule holds good; any deviation from it is a departure from the highest beauty in proportion. The Greeks made all their statues according to this rule. The face from the highest point of the forehead, where the hair begins to the chin, is one-tenth of the whole stature. The hand, from the wrist to the end of the middle finger, is the same. From the top of the chest to the highest point of the forehead is a seventh. If the face, from the roots of the hair to the chin, be divided into three equal parts, the first division determines the place where the eyebrows meet, and the second the place of the nostrils. The height from the feet to the top of the head, is the distance between the extremity of the fingers when the arms are extended.

METHODS OF VACCINATION.

The Committee on Hygiene in the Medical Society of the County of Kings (Proceedings of Society, Oct., 1880) concludes an excellent discussion of the above subject as follows: (1) Vaccinate with only pure virus—animal or humanized—every child when possible before five months of age. (2) The value of vaccination is lessened by laps of time, so that re-vaccination is necessary between the tenth and fifteenth year. (3) It is wisdom to vaccinate before an epidemic occurs, before the public is excited, and when virus can be readily obtained. (4) Children should not be vaccinated during an eruption of teeth, the prevalence of an epidemic of diphtheria, in the hot weather if it can be avoided, or when there is any skin eruption. (5) The causes of "spurious vaccination in the Confederate army," as investigated by Prof. Joseph Jones, are interesting in this connection, viz: (1) Lowered vitality; scorbutic condition. (2) From abnormal lymph, from persons previously vaccinated or having eruptive diseases. (3) Scabs or lymph undergoing decomposition long carried about the person. (4) Mixing vaccine virus with that of true variola, as in persons having varioloid. (5) Virus from persons having erysipelas, pyæmia, gangrene and suppurating wounds. (6) Lymph scales, etc., from persons suffering from syphilis.

A LITTLE VILLAGE IN CANADA, according to the *New York Herald*, is keeping its carpenter busy at making coffins for the victims of diphtheria. A sanitary engineer would be more useful than the carpenter.

The *Scientific American* has been published for more than thirty-four years by MUNN & Co., 37 Park Row, N. Y., and has attained a larger weekly circulation than all similar papers published in the country; or not less than 50,000 copies a week for several months.

CONSUMPTION AND THE DIFFERENT OCCUPATIONS IN ONTARIO.

Among the many causes of disease and premature deaths are certain occupations. Frequently, however, it is less the occupation in itself which causes the disease than the concomitant unhygienic conditions.

From that most destructive of all diseases, consumption, the following occupations returned the largest number of deaths in Ontario during the three years 1877-78-79. The great difference between the percentage of deaths from this disease in some occupations and in others is very striking.

The average proportion of deaths from consumption for the whole Province, in all occupations, at all ages and in both sexes, for the three years, was about 11.5 per cent. of the total number of deaths registered from all causes.

Of farmers there were registered during the three years a total of 6,918 deaths from all causes. Of this number 916, or 13.2 per cent., were caused by consumption—one death from consumption in every 7.66 deaths from all causes.

Of laborers there were registered during the same period a total of 2,102 deaths from all causes. Of these 348, or 16.5 per cent., were caused by consumption—one death from this disease in about every six from all causes.

Of shoemakers there were 240 deaths from all causes during the three years, of which 40, or 16.6 per cent., were caused by consumption—one death from consumption in each six deaths from all causes.

Of carpenters, during the three years, there were registered a total of 409 deaths from all causes, of which 80, or 19.5 per cent., were from consumption—one death from consumption in every five deaths from all causes.

Of merchants, 342 deaths were registered from all causes. Eighty-seven of these, or 25.4 per cent., were caused by consumption—one death from consumption in less than every four from all causes.

Of servants, so registered, there were 278 deaths from all causes in the three years, and 84, or over 30 per cent., from consumption. In every 3.3 deaths from all causes one was caused by consumption.

Of teachers, 139 deaths were registered from all causes, 52 of which or 37.4 per cent., were from consumption; showing that nearly two out of every five deaths were caused by this disease among those engaged in this occupation.

Bookkeepers and clerks (classed together) show the highest proportionate rate of mortality from this disease of any of the occupations which are given, for the three years. Of 227 deaths from all causes amongst those engaged in these occupations, 91 were caused by consumption—over 40 per cent. Two deaths from this cause in every five deaths from all causes.

In 1877 the deaths of 22 "seamstresses" were recorded from all causes, 10 of whom, or over 45 per cent., died of consumption. In 1878 the records show that 19 stonecutters died from all causes, and 12 of these, or 63 per cent., died of this disease.

DEATHS FROM LUNG DISEASES IN ONTARIO.

FACTS AND FIGURES, CAUSES AND REMEDIES.

During the last four years, 1876 to 1880, inclusive, the deaths of 15,000 persons were registered as having died from lung disease of one kind or another, in the Province of Ontario. It is estimated that not more than about 66 per cent of all the deaths are registered. There were then not less probably than 22,000

deaths, at least, in Ontario, from lung diseases, in the four years named.

Of these there were registered 12,085 from consumption and inflammation of the lungs alone; 8,480 from consumption and 3,605 from inflammation of the lungs. Showing that about 18,000 deaths took place from these two principal diseases in the four years; the remainder died from bronchitis, congestion, and other "lung diseases," so registered. Less than one-tenth of those dying from consumption were under twenty years of age, and at least half of those dying from inflammation were over twenty years of age. So that over 9,000 registered deaths were of those who had reached maturity; while not less than 13,000 died from the two diseases, who had reached manhood and womanhood, and who had been sustained and provided for during the periods of childhood and youth. Ten thousand at least died during the prime of life. The sanitarian would ask, how many of these deaths, with their preceding weary days and months of sickness and suffering, might have been prevented?

It has been repeatedly shown in this JOURNAL that re-breathing breathed air, in bedrooms, schools, and elsewhere, from want of some provision for ventilating or changing the air, is now regarded by the best authorities as being the most common cause, if not the most efficient and primary cause, of not only consumption but of all lung diseases.

When does the largest proportion of deaths take place from these diseases? By far the largest proportion takes place in the spring—after the housing up in close unventilated rooms during the long winter. In March and April the death wave, especially as relates to adults, is swelled up to its highest point for the year, largely from these two diseases—consumption and inflammation of the lungs.

Breathing more or less foul, breathed air, in close rooms during the winter, irritates the lungs and poisons and impoverishes the blood, and with inattention to the condition of the skin, the powers of resistance are brought down to a minimum, and the chilly, but usually pure, blasts of spring—which get all the blame, but which ought to be, and which can be, readily and safely enough resisted by a healthy, vigorous individual—give rise to a "cold"—kindle into a flame, as it were, the smouldering combustibles—and the work of destruction is soon completed.

No intelligent individual who will study the facts in relation to this important subject will doubt that with abundance of fresh air permitted into all dwellings, schools, shops, etc., and with attention on the part of each individual to the condition of the skin, a very large proportion, if not nearly all, these deaths from lung diseases might be prevented.

FLORICULTURE.

Touching the notion that plants in rooms are unwholesome, the *Gardeners' Chronicle* says: "Setting aside special cases, it may be said, as a general rule, that plants in a living-room, if they have any perceptible effect at all, are beneficial rather than otherwise. We are glad to see the faculty take this side of the subject. An American physician has, it seems, pointed out that plants render great service in rooms warmed by dry air. The value of plants and flowers as *dé-lassements* for the weak and weary is acknowledged on all hands."

Everybody ought to keep house-plants in winter, if they cannot keep more than two or three. Have something green to look at in the dreary winter time. Don't have too many. Half a dozen well-kept plants will give you more pleasure than a large bay-window full half taken care of.

A lady writes on this subject to the *Rural New Yorker*, as follows:—There are few things pleasanter or more cheering during the dreary winter season out-doors, than the green or blooming plants inside the comfortable room, and while every well-regulated household may have a part of the interest in the beauty of the summer garden transferred to the sitting room or parlor for the winter, I will give a few hints to the Horticultural Club in the transfer of the beauty of summer out-doors to the beauty of winter in-doors.

In selecting pots, do not use too large sizes, a small pot, if steadily cared for, and, by that, I mean if not neglected and allowed to become too dry, will furnish twice the bloom that the same plant potted in a much larger pot would afford. Large pots mean a profusion of foliage; small pots, of bloom. All pots should have a layer of charcoal on the bottom, red coals taken from the kitchen stove and cooled answer the purpose, affording better drainage, at the same time keeping the earth from souring.

I have found a soil composed entirely of leaf mold from the depths of the woods to be the very best, requiring the least water, and producing the richest color in leaf and bloom, but where it can not be procured, any good loamy soil, mixed one part sand, to two of soil, will do excellently, or in case of necessity, well rotted manure, but it must be well rotted, mixed one part soil, one manure, and one of sand, will answer. The fine dust swept from the street can be used as a fertilizer if no other is procurable. Now, that our pots are ready, comes the process of transferring. I usually water my plants thoroughly some hours before, selecting a cool, cloudy day if possible, and do the work as late in the afternoon as I can, thereby giving the plants the

benefit of a nap before beginning their new life, which, by the way, should be quite in the shade in some cool room for the first three days.

All fine fibrous rooted plants are easily removed, while those of a single, or tap root, are best left to the ravages of the frost king. Some choice kinds as, for instance, the mignonette, can be planted in pots where they are expected to remain, in July or August, and make fine winter bloomers.

Foremost in the floral ranks for lawn or conservatory is the extensive family of geraniums.

There is an endless variety of silver leaved, bronze, and tricolor, as ornamented foliage; about a dozen scented varieties, with the double and single ivy-leaved geraniums, which together with the pelargoniums or Lady Washington geraniums, make up a list sufficient of themselves to fill our window garden, all requiring about the same culture, and being the most easily cared for of all house plants, asking only moderation in all except light—that, however, seems to be a necessity for perfect development.

Among hardy winter flowering plants, I have a great fancy for the abutilon, really a greenhouse shrub, growing from five to ten feet in height, and by some called flowering maple, from the resemblance its leaves bear to the maple. There are a number of varieties, some requiring a support like a fuscia, and having a leaf rather long and narrow. But I do not fancy the abutilon when it attempts vine nature. I like it as a stately, symmetrical tree in miniature.

The abutilons are very popular on account of their cleanliness, healthfulness and almost constant bloom, whether as a bedding plant in summer, or a house plant in winter. In color of flower they range from pure white to crimson, scarlet and

deep orange, with all intervening shades and veining. The foliage of some varieties is of a deep green, others, as *A. Thompsonii*, mottled with yellow shading out into a creamy white.

Achania is another green-house shrub, a continuous bloomer, bearing scarlet flowers, and, from its freedom from insects and its easy cultivation, a most desirable house-plant.

Almost all begonias are also desirable for window gardening, as each has special merits either as constant bloomers, or from beauty of foliage, and in the same list we place *bonvardias*, requiring about the same temperature as begonias, an average of 65 degrees, easy of culture and a profuse and brilliant winter bloomer.

These last named require more heat than geraniums and abutilons, and can be given the warmest side of the plant stand or the brackets nearest the stove.

ON ADULTERATION OF FOOD.

Not long ago a Committee was appointed by the U. S. National Board of Trade for the purpose of awarding large prizes for the best Act or Acts, accompanied by an essay, designed to prevent injurious adulteration, and to regulate the sale of food without imposing unnecessary burdens upon commerce.

From the report of the Committee of Award, made after a careful examination of the papers submitted, we take the following extracts, just published in a Supplement of the *Sanitary Engineer* :—

In view of the statements, which for the last two or three years have from time to time been made, with regard to the prevalence in this country of adulterations of food, which are dangerous to health and life, and which have created so

much agitation in the public mind, as to induce the National Board of Trade to establish this competition, it is very gratifying to find that none of the essayists produce any definite or satisfactory evidence as to the widespread existence of such dangerous adulterations in this country.

The absence of such evidence, in addition to the results recently obtained by several expert chemists in extensive series of analyses of the usual articles of food in this country, which results have been made known to the committee, fully warrants us in declaring that none of our staple articles of food or drink are so commonly adulterated as to be dangerous to health or life. Such dangerous adulterations appear to be mainly in the form of poisonous colors or coloring matters as, for instance, in confectionery, and even these are rare.

The question of the adulteration of food, with perhaps the exception of milk, should therefore be considered not so much from a sanitary standpoint as from that of commercial interests; as being of the nature of a fraud, in aiding the sale of articles which are not what they are represented to be. The main objects of legislation upon this subject should be to prevent deception, to furnish to the public authoritative information, and to nullify the operations of ignorant and sensational alarmists, who damage the business interests of the country quite as much as do the evils of which they complain.

We are of the opinion that there is much more danger to health and life in this country from adulterated drugs than there is from adulterated food, and that any legislation which is to deal with the one should also deal with the other.

To indicate the legislation upon the adulteration of food and drugs,

which will protect health and prevent fraud, and at the same time not impose unnecessary burdens upon trade, is a matter of very great difficulty, as the result of this competition clearly shows, for we do not consider any of the Acts proposed to be satisfactory.

We do not think that any law upon the adulteration of food and drugs can be made efficient without a properly constituted health authority to supervise its execution. The questions involved are in a high degree technical, and require special training in those charged with administering the law. At the same time we think that the existence of such health authorities should be taken for granted in the Acts, and that these should not attempt to create them.

We believe that every State should have a Board of Health, but that such Boards should be created by independent legislation.

We think it unadvisable that the law should attempt to define in detail as to what an adulteration is. A very considerable amount of discretion should be left to the Board of Health in this respect, limiting it only in the direction of possible over rigidity. Many well recognized articles of commerce, although harmless and even useful, may be said to be adulterated, and it should be left to the discretion of the Board to exempt any article from the penalties imposed in the Act.

TYPHOID FEVER.

In an address to the Society of Medical Officers of Health recently, John S. Bristowe, M. D. F.R.C.P., Physician to St. Thomas's Hospital, President of the Society, said: With regard to enteric fever, sanitary science has made discoveries which are of great practical importance. We know that the contagion or

poison of the disease is contained mainly, if not exclusively, in the alvine evacuations of patients who are ill of it, and in that of no other persons whatever; and that it is by the pollution of drinking-water and of other articles of diet by minute proportions of these poisonous evacuations that the disease is propagated. It is largely for this reason that our present system of sewerage is superior to the old plan of fæcal storage in cesspools and middens; and that the water supplied by the water companies is so much safer than that derived from superficial wells, and (notwithstanding Dr. Frankland's monthly assaults upon its purity and fitness for drink) so wholesome. That structural and other sanitary improvements have involved a large diminution in the prevalence and mortality of enteric fever in London during, say, the last twenty or thirty years, there can be no doubt; and that enteric fever is, above all diseases, the one in regard to which medical officers of health and sanitary authorities are directly serviceable, is equally beyond dispute. The disease will never, probably, be wholly eradicated; but it is one that can be kept in abeyance by careful attention to sanitary conditions: it is one in regard to the origin and diffusion of which, the quality of the water drunk, its source, and method of storage, and the condition of the drains and water-closets, play a most important part. And it is a disease, too, which, when it breaks out in any locality, is in most cases the consequence of some sanitary default which, though often difficult of discovery, admits of remedy or removal.

THE *Kentucky Magazine* has among the entertaining papers of its first number one entitled "How I Enjoyed the Small-pox."

THE SPECIFIC AGENT OF TYPHOID FEVER.

Professor Klebs of Prague believes that he has discovered the micro-organism which constitutes the specific agent of typhoid fever, and develops his views in a paper. He has for a long time, assisted by his pupils, been making researches in this direction. He writes that he has been able to find at the necropsy of twenty-four persons carried off by dothinitis, micropes in various organs: in the intestinal mucous membrane, in the thickness of the cartilages of the larynx, in the pia mater, in the foci of lobular pneumonia, in the mesenteric ganglia, in the parenchymata of the liver, and generally diffused in the organs which showed the most decided lesions. These micro-organisms shewed themselves in the form of rods, about eighty micrometers in length and 0.5 to 0.6 micrometers in thickness. They have been constantly observed in the bodies of dothinitic patients since the attention of Professor Klebs was drawn to the subject, and they are always absent from the organs, and specially the intestines, of subjects who have died from any other disease than typhoid.

DOUBLE WINDOWS AND VENTILATION.

Double windows are valuable in excluding cold, or promoting warmth in a room, but they tend too much to make a room air tight, when there is no special provision for ventilation, as there rarely is. With special inlets for fresh air, they are very useful indeed. An exchange gives the following:—One square foot of glass surface will cool over one cubic foot of air per minute from the temperature of the inner to that of the outer air. A single glass window, six by three

feet (supposed to be air-tight), will thus cool by contact one hundred and eight cubic feet per minute, when the outer air is at 0° , the inner at 60° ; a dead loss of fuel. This, if saved, would suffice to warm fresh air more than sufficient for ten persons, or to enable the windows of the room to be thrown wide open for fifteen minutes or half an hour. This is the best practical ventilation for a bed room or sitting-room. It should be done while the room is not occupied, unless in the judgment of the medical attendant a patient may be safely left, if well covered up. The remedy is to be found in hollow walls and double-sashed windows. When double sashes are too costly, double panes, with an air space between, are useful. When transparency is not essential, a tight-fitting frame, over which is stretched some translucent material, as oiled silk or waxed paper, does good service.

VENTILATION AND CARBONIC ACID.

This Journal has always advocated, in ventilation, the removal of foul air by an opening in the upper part of a room rather than at the floor. The following from the Sanitary Engineer affords good evidence that this is the best method. Where the carbonic acid is there also will be doubtless most of the organic impurities.

Aristide Beaud, in his inaugural thesis for the degree of Doctor of Medicine, submitted to the Faculty of Paris, August 3rd, 1880, reports the results of examinations made by him of air collected in theatres, lecture-rooms, cafes, etc. These examinations were made to determine the amount of carbonic acid present, which was taken as representing all impurities.

He found the proportion of carbonic acid always greater in the upper than in the lower parts of assembly halls, which corresponds to the experience of others.

In bed-rooms, he also found the proportion of carbonic acid greater near the top of the room, and the proportion found in the morning was always much less than theory would have indicated, the difference being due to cracks and to diffusion through the walls.

ON OVER SANITARY PRECAUTIONS.

On this *The Plumber and Sanitary Engineer* writes as follows: The inquiry is occasionally made, Are you not over-refining in your sanitary precautions, and recommending too many traps, vents, and other supposed safeguards in plumbing arrangements? Are all these things really necessary or only fashionable? and, may there not be a reaction some time toward a less amount of plumbing details?

This is a perfectly fair and proper question, which we do not seek to shirk. The present requirements of sanitary engineers for the plumbing and drainage of houses are not the products of theory or fancy, but of trial and experience. They are the result of the natural development of civilization and knowledge. When people were content with a pump and a cesspool in the backyard, little need was felt for elaborate drainage arrangements, even though the underground connection of the well with the cesspool was short and direct. But as their wants multiplied, and baths, wash basins, and other conveniences were generally introduced into dwellings, and as increasing population rendered systems of sewerage necessary, more elaborate methods of guarding against the entrance of foul gases

from outside a dwelling and from their formation and diffusion within the dwelling became requisite. The vast increase in defective plumbing from the prevalence of contract work, and the labors of the crooked builder, have been an additional cause for extra care in this direction.

We have not yet reached perfection in these matters, but we do know how comfort can be secured without danger. It costs more at first to do the work in this manner, but in the long run it is far more economical.

THE WORD AND THE PRACTICE OF MEDICINE.

At the recent Sanitary Congress in England, referred to elsewhere, Prof. DeChaumont said:—

“The word medicine, like the word religion, has had more than one meaning in its time, and even in the present day confusion arises, particularly when it is employed in an unfamiliar way. To the savage, medicine is synonymous with witchcraft; to the civilized man, it often presents merely the idea of a drug; or, if it be used by extension to embrace the profession, the giving of drugs appears to be the most important part of it. But drugs may to some extent be called the opprobrium of medicine, as the knife is of surgery. For the highest medicine is that which obviates the use of drugs,—the highest surgery that which saves the limb, not that which lops it off. The Greek for physician can be traced back to a primitive Aryan root, ‘yu,’ which signifies ‘to avert,’ ‘to ward off.’ It is in this sense that we here employ the term ‘medicine,’ and public or preventive medicine is thus the science that wards off disease from the community.

Editor's Special Corner.

THE REDUCED PRICE of the JOURNAL, to \$1.50 per volume, is intended only for those who pay in *advance*, and without *account being sent*; sending accounts incurs great trouble and expense.

CHRISTMAS AND THE NEW YEAR is near at hand, and we hope we shall, before those days arrive, hear from many who have not yet sent in the amount due for this vol.; and especially from some who are owing for vol. 4, and even vol. 3.

TO A FEW DELINQUENTS, who seem very indifferent about paying for the JOURNAL, we purpose not to continue it *after this number*; i.e. if they do not pay at an early day. We trust, however, they will "reform," and permit us to keep them on our list.

IF FRIENDS OF THE JOURNAL would kindly send us names with address, of any persons likely to be interested in the JOURNAL, copies will be mailed them; and the sending of such names will be esteemed a special favor.

THE SCIENTIFIC AMERICAN advertised in another place, is a most valuable periodical, a large weekly, costing \$3.20 per year. We will send it and this JOURNAL, both free of postage, to any new subscriber for \$4.00.

AN ILLUSTRATED SPECIMEN of lead drain pipe eaten across by rats, is given in the *Sanitary Record*, of August. The pipe formed part of a waste-pipe of a sink, in a house near London, Eng. The marks of their teeth were plainly visible on the pipe.

WE RECEIVE REGULARLY the monthly statements of deaths issued by the Health Department of Montreal, by the indefatigable health officer, Dr. Larocque. There were no deaths from small-pox in July; during the previous month there were 8, and in July 1879 there were 26 deaths from this disease.

ASPHALT DRAIN PIPES are now manufactured, and prove to be a very excellent article. After much experimenting the manufacturers have improved in it by combining a number of ingredients so that it

keeps its shape and will resist safely a pressure of 120 lbs. to the inch. To make them continuous and perfectly tight the joints are packed with the same material the pipe is made of, and it "sets" perfectly; so says a correspondent in the *Sanitary Engineer*.

CAUSES OF DIPHTHERIA.—The Montreal *Daily Witness* publishes a report from the Chicago *Times* of some investigations made by that paper into the causes of diphtheria and other zymotic diseases. The *Times* investigator found in every reported case the prevalence of sewer gas in close proximity to the sleeping apartments in which deaths had occurred. The *Witness* says, we are glad to state that our republication of this report is made at the request of a Montreal physician. Now that the medical faculty begins to busy itself with the public health we may look for changes. In times past hygienic movements have originated chiefly from other sources.

TYPHOID IN MILK.—England has long been suffering from epidemics of typhoid caused by milk. They appear to be commencing in Canada. From the October number of the *Canada Medical and Surgical Journal* we learn that some months ago considerable interest was felt there on this subject owing to a series of cases in which there was the strongest reason for suspecting this method of contagion. Recently the fact has become known that several persons amongst the customers of one milkman were suffering from this disease, which led to further enquiries by medical men amongst those they were attending with fever, with the result of finding still others who have had milk from the same source. It has since been learnt that a member of the milkman's family has been ill with typhoid fever at the homestead whence the milk is brought.

CO-OPERATIVE COWS.—Apropos to the above we may mention that co-operative cow keeping is becoming more and more common, it appears; two or more families unite in keeping a cow to supply milk for their own use. The wonder is that so few families afford themselves the luxury--not by

any means an expensive one—of abundance of good, pure milk and cream, by keeping a cow.

SAD FATALITY.—We learn from the *Alliston Herald*, of November 25th, that diphtheria has made sad havoc in the family of the editor and publisher of the *Sentinel* of Keenansville (S. Simcoe, Ont.). Four of the family have been buried within a period of about a week, including two sons, aged 18 and 21 years, respectively. Another, a young woman, is "at the point of death," and two or three other children and the father, all the others indeed but the mother and wife, are down with the disease, "with the barest chance in their favour." Outbreaks of disease like this should receive close investigation, that others might benefit thereby, and avoid the causes of the like. But who is to make such investigation? In this Canada of ours there is no provision, no organized body, such as there is in almost every other civilized country or state, for looking into such matters.

MICHIGAN BOARD OF HEALTH.—We have not space for the full report, taken for this *JOURNAL*, of the quarterly meeting held in October; but we note that a large amount of work is being done by the Board. "Dr. Kellogg described a water-cooler which was designed to avoid contamination of the water by impure ice, as would happen if the ice were placed directly in the water. A bill has been prepared for regulating medical practice and suppressing quackery. Two candidates had passed the examinations in sanitary science, and the Board had granted them certificates. It was voted to hold two sanitary conventions, such as were held last winter, for the reading of papers, discussion of sanitary subjects, and exhibition of sanitary appliances. The Secretary, Dr. Baker, presented specimens of pine infected with a fungus which had completely destroyed the floors of several rooms, constructed of that wood, in a new building. The fungus seemed to grow most where the floor was covered, as with oil-cloth or by boxes resting on the floor; and in one room the decayed floor corresponded with the portion not exposed to light, though that

case may be explained by a greater amount of moisture in that part of the room, because of dampness underneath. The odor in the room was that mouldy or musty odor not infrequently met with in close rooms. It caused frontal headache, and a person engaged in repairing the floor had spells of sneezing on two occasions some months apart while thus employed.

ABOUT THE MOST SENSIBLE THING YET—The Sanitary Protection Association of Newport, Rhode Island, offers the following prizes, open to all inhabitants of Newport: First. A prize of fifty dollars to the person, not the owner of the house occupied, who shall put his or her premises in the most satisfactory condition by January 1st next, and keep them so until the first of June. Second. A prize of fifty dollars to the house-owner who shall do the most between September 1st, 1880, and June 1st, 1881, towards improving the sanitary condition of any occupied dwelling. Attention is to be given especially to ventilation of the house, dryness of the cellar, the water supply, condition of cess-pool or drains, and of the exterior premises, including outbuildings. Advice as to the best means, in each instance of effecting the several conditions required, will be cheerfully and gratuitously given upon application to the Corresponding Secretary of the Association, Dr. H. R. Storer.

MALARIA PREVALENT.—In New England malarial disease, especially intermittent fever, is unusually rife. The Massachusetts State Board of Health, having been led to look into the question of its alleged increase, is in the possession of facts which abundantly prove that it is not an imaginary increase, or a mere fashion to speak of the prevalent malaria,

AMERICAN NEWSPAPER DIRECTORY.—We take pleasure in drawing attention to this directory for 1880, published by Geo. P. Rowell & Co., New York. This book illustrates the marvellous results of persevering labor and industry directed to a specialty. It is a neat volume of upwards of 1,000 pages of small, clear type, containing not only the names and character of every newspaper and periodical in the United States and Canada, but a brief description of all the cities and towns in which they are published.

CAPTAIN EADS SHIP RAILWAY.—The *Scientific American* of this week contains two full page illustrations of Captain Eads proposed railway for transporting ships with their cargo across continents. It shows the proposed construction of not only the railroad, but the appliances for transferring the ships from the water to the rail.

Captain Eads claims by his plan to be able to take loaded ships of the largest tonnage from one ocean to the other across the Isthmus of Panama, as readily as can be done by a canal after the De Lesepp's plan and at a much less cost for engineering construction.

We must not hope to be mowers,
And gather the ripe gold ears,
Until we have first been sowers,
And watered the furrows with tears.

It is not just as we take it—
This mystical world of ours:
Life's field will yield, as we make it,
A harvest of thorns or of flowers.

LONDON FOGS.—Dr. Frankland, who has been studying London fogs, finds that the fogs occur in comparatively dry air, and that they cannot be considered as a sign of dampness. Their persistency in a dry atmosphere he has found to be due to a coating of oil, derived from coal smoke, upon the surfaces of the minute vesicles of water composing the fog, and which effectually hinders the evaporation of the water.

THE following which is going the "rounds" should receive serious consideration from those who are inclined take patent "cure alls":—"The trouble about taking a medicine warranted to cure all diseases is that it may not know exactly what is wanted of it, and in that case it will go fooling round the system, liable to do much harm, trying to cure you of some disease that you have not got."

OF DIPHTHERIA, thirty-eight fatal cases were reported for the week ending November 6th, in Brooklyn, with a probability of an increase of the scourge as the winter sets in. The opponents of "traps on main drains" says the *The Plumber & Sanitary Engineer*, were listened to in that city, and to-day the majority of the houses there are without protection from the filthy public sewers, thus affording facilities for the spread of the malady, just in proportion as the germs increase. The Chicago Citizens' Committee, by one of their recommendations, also propose to afford facilities for the spread of similar diseases.

DANGER FROM GLANDERS.—Many people are not aware, says "*Good Health*," that glanders is a disease almost certainly fatal. It most commonly affects the horse, but is communicable to man. The increasing

frequency of the disease in horses makes it important that the public be warned upon the subject. A surgeon in the German army calls the attention of officers and soldiers, or all who have to do with horses, to the danger of using a pocket handkerchief to wipe away any foam from the mouth or nose of a horse which may have been thrown upon their clothes.

HAPPY THOUGHT.—There was once a man who suffered a long time from a decayed tooth, and he was perfectly aware of the cause of his pain. "Why don't you have your tooth pulled?" said a friend to him one day. "Sure enough, why don't I?" and he went and had the painful tooth removed, simply because some one asked him about it. And so we ask the question, "Why don't you clean your cellars?" "Sure enough why don't we?"—*Ex.*

ACCORDING TO THE RECENT CENSUS of New Zealand, the Maories, or primitive inhabitants, are rapidly decreasing, their numbers, which in 1861 were 55,334, having fallen in seventeen years to 43,595, or about twenty per cent. The causes given for this national decay are love of drink, bad food and clothing, neglect of cleanliness, and unwholesome dwellings. The natives of Hawaii are disappearing still more rapidly. In 1866 they numbered 57,125, and had fallen off in the next twelve years to 44,088.

CONSUMPTION IN FOWLS.—It has long been known that cows, sheep, hogs, and other domestic animals, are subject to consumption as well as human beings. What is known as pearl disease, a very common malady among cattle in most civilized countries, is identical with scrofula, which is closely allied to consumption, if not identical with it. It has recently been shown that common domestic fowls are also subject to the very same disease, it being in hens familiarly known as "gapes." When we connect with the above facts, says an exchange, the further fact that tuberculosis is a contagious disease, and is particularly communicable through the use of the flesh of a diseased animal, it becomes very evident that too much care cannot be exercised in the selection of healthy animals for food.

GLUTTONY.—Dr. Gaetan Delaunay, in an address to the French Academy of Science, devotes a chapter to the study of *gourmandise* or gluttony, which, in his opinion, is more commonly observable in men in proportion as they are lower down in the scale of civilization. Intellectual development and an immoderate love of eating and drinking are rarely to be met with in the same person, those who are most addicted to gluttony being savages, negroes, idiots—all, in short, whose brains lie dormant.