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MISSING

THE DOMINION
SANITARY JOURNAL

DEVOTED TO THE
PUBLIC HEALTH

AND KINDRED SCIENCES.

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*BEAUTIFUL HEALTHY HOMES,
 PURE AIR, PURE WATER, GOOD FOOD.
 HEALTHY, HAPPY, CONTENTED FAMILIES.*

SALUS POPULI SUPREMA LEX.

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ON SOME SANITARY ASPECTS OF HOUSE CONSTRUCTION.

By WM. WALLACE, Ph.D., F.R.S.E., F.C.S.,
F.I.C., President of the Philosophical Society
of Glasgow.

The following very valuable suggestions from this high authority were made at the Congress of the Sanitary Institute, Glasgow, Sept., 1883.

Last winter I read a paper on building-stones to the members of the architectural section of the Philosophical Society, and the subject attracted a good deal of attention among the architects and builders in the city, especially as it had a direct bearing on the selection of a stone suitable for the erection of the magnificent pile of buildings about to begin by the Corporation of Glasgow. An opinion was also expressed that the chemist might give valuable information, and make useful suggestions to the architect and builder if he would devote his attention to the construction of buildings. The encouragement received on that occasion has induced me to bring before the architectural section of the Sanitary Institute a short paper on some of the sanitary aspects of house construction, excluding entirely from consideration the important subjects of drainage and sewerage, which I leave to others who have made them a special study.

Granting, then, that a house is well drained, and that the plumber work is properly trapped and ventilated, what is wanted to make it a healthy residence is

that it should have plenty of light, and that it should contain at all times air pure and dry, or at least as pure and as dry as may be possible. The subject of light may be dismissed in a few words. The importance of having large windows is perfectly understood, and so far as isolated buildings are concerned it is unnecessary to say anything. But as regards street architecture, it is of the utmost importance that houses should be built of a height, bearing a direct relation to the breadth of the street in which they are situated; hence the paramount importance of having enacted by Parliament rigid building regulations for cities and towns, in order to prevent the erection of tenements of such a height in proportion to the breadth of the street that the windows in the lower storeys get little or no sunlight. This is a subject which has been thoroughly discussed in this and other cities, and I hope that in course of time more stringent rules than we at present possess will be enacted. A fair proportion in this latitude is that the house should not exceed in height two-thirds of the breadth of the street; thus giving three storeys in height for a street of 45 to 50 feet wide, and four storeys for one of 60 to 70 feet. I say, advisedly, in this latitude; for while at the equator the sun at mid-day is perpendicular or nearly so, in high latitudes it forms with the earth's surface an angle more or less acute. Hence a street in Cairo of only 15 or 20 feet wide may be better lighted than one of 40 or 50 feet in Stockholm. As regards the direction of a street, I should prefer to live in one placed as near as possible north and south; in this case, and taking the west side of the street as

an example, the sun shines from morning till mid-day in the front, and from mid-day till the evening in the back of the house. But in a street running east and west, the houses on the south side get scarcely any direct sunlight—in winter none at all—in front; while those on the north side are equally unfortunate as regards the back rooms. No apartment can, in my opinion, be considered a perfectly wholesome one which does not enjoy direct sunlight during some part of the day. But if an apartment must be so situated that it cannot have sunlight, it is some compensation that it have very large windows, so that it may get as much diffused daylight as possible.

Purity of air cannot be maintained in a house unless it be thoroughly dry. Setting aside the not inconsiderable quantity of water produced by our own breathing and by the combustion of gas, oil, and candles, the air in a house is liable to be rendered unwholesome from excess of moisture, 1st, by absorption of water from the rock or soil below, and, 2nd, from the porous stone of which the building is constructed. Not only is the air loaded with moisture from these sources, but it is rendered impure from the exhalations of fungous vegetation or dry-rot, which at the same time destroys the joists and other carpenter work, and seriously affects the stability of the house. It is a mistake to suppose, as many do, that dry-rot attacks only the wood in the basement storey. It is a common occurrence for the ends of joists built into porous stone to become affected by fungous vegetation; and it is frequently seen in pulling down old tenements that the ends of the joists are quite gone, and that, probably, for many years the joists have been resting only on the plaster cornices of the rooms. The remedy is the use of 'shoes' of glazed fire-clay or other material, which are built into the wall, and into which the ends of the joists are placed. The 'shoes' should be somewhat larger than the joists, which should be kept in position by little wedges of wood, so that air can play freely around the end of the joists. Such protected joists will last for hundreds of years, if other circumstances are favorable.

The porosity of most varieties of building stone is remarkable. In the paper to which I have already referred I have given, besides other properties, the quantity of water capable of being absorbed by the stone when air-dried. By weight it ranges from 3.4 per cent. in the celebrated Craigleith stone to 7.2 per cent. in the red sandstone found in Wemyss Bay, on the Firth of Clyde. The significance of this property of porosity is still more readily appreciated if we take the amount of water absorbed by bulk instead of weight. 100 parts by measure of the hardest and best freestone take up about 8 quarts of water, and the inferior kind 12 to 15 parts. A cubic foot of the stone will therefore absorb from 5 to 9 lbs. of water, or from half a gallon to nine-tenths of a gallon. The absorption of water by certain kinds of stone is so rapid that in slight showers of rain the whole of the water that falls is imbibed; and although a great part of this evaporates afterwards from the surface of this stone, a portion must always find its way inwards, and this is especially the case when the surface of the stone is kept constantly wet by continued rain.

Another property of freestone is its power of permitting the passage of air or other gas by transpiration and diffusion. A cube of stone varnished over on four sides and enclosed in the other two in an air-tight case provided with inlet and outlet tubes, permits the passage of coal gas to such an extent that the gas can be lighted and will continue to burn, even although the pressure is not more than an inch of water. The same thing applies to other building stones which we, more or less, possess, and to bricks, unless these have been exposed to a temperature high enough to flux the material of which they are made. The quantity of air diffused into and out of a house by the walls must be very considerable, and as it is a process that is constantly going on, it must necessarily exercise an appreciable influence in maintaining the purity of the air in dwelling-houses. If, however, the stone or brick is saturated with water, the porosity is, for the time being, destroyed; or if there is any air diffused at

all it will be loaded with watery vapour, and therefore of less value, in a sanitary point of view, than it would be with only its normal proportion of moisture. Besides this evil there is the more serious one of the water actually reaching the joists and other wood, such as 'doaks' and wall plates and straps, and causing these to decay, and so interfere with the stability of the structure. Coating the stone with oil, paint, silicate of soda solution, or other means of rendering it impervious to water, prevents the absorption of rain; but it also, at the same time, destroys the valuable property of diffusing pure air into and impure air out of the house. The only way that I know of securing the advantages of the porosity of the stone and preventing the injurious action to which I have referred is to have double walls, with a space of a few inches between, into which air is freely admitted by openings in the wall at top and bottom placed in such a manner that rain will not enter them or lodge in them. The openings may be about three inches square, and placed about six feet apart, and they should be sloped upwards for the reason I have above stated. The inner wall may be of brick, either $4\frac{1}{2}$ to 9 inches thick, according to the height of the building, and it should be tied into the outer wall by pieces of thick iron wire with angled ends. The system of building with concrete blocks pursued in Sandown, Ventnor, and other places in the Isle of Wight, is well adapted for constructing walls on the principle I have indicated. The blocks of concrete are about 18 inches wide by about 12 inches, and are of two thicknesses, those for the outer wall being 4 or 5 inches, and for the inner about 3 or $3\frac{1}{2}$ inches in thickness, and these are tied together by pieces of iron wire, with a space of about 3 inches between them. This forms what looks, to those accustomed to the 2-feet thick solid walls of Scottish houses, a very flimsy wall, but it appears to be sufficiently strong for a building of two storeys in height, and with a few openings above and below for the admission of air into the space between the outer and inner walls, it would form a structure

which, in a sanitary point of view, would be perfect, although I would prefer to have the inner wall of brick, which is more porous than the blocks of concrete, formed of fine gravel and cement, which are used in the Isle of Wight.

It is a common observation that, in spite of every care being taken in the construction of a building, the joints of the stone are often imperfect and admit water freely, especially when the rain is accompanied, as it often is, by high wind, especially when the wind comes from the south-west. To prevent the rain penetrating it is customary in some districts to build, not on a flat bed, but one sloping slightly upwards. This is a system highly to be commended; and if it be objected to on the ground of giving less stability to the building than working upon a perfectly level bed, this objection might be overcome by making the greater part of the bed level, with about two inches of the stone on the exterior side of the wall slightly bevelled.

In the case of rubble walls the best thing that can be done, probably, is to point them with a mixture of Portland cement with twice its bulk of sand, taking care that the sand is not too fine; and then to whitewash the entire walls with Portland cement, a process which may be repeated with advantage. But the pointing should not be done until the walls have had a summer's sun and are practically dry; otherwise the greater part of the water in the walls will evaporate inwards, that is, into the house, and so keep the atmosphere damp for a longer time than is actually necessary. A two-foot wall will not dry thoroughly, however, even under the most favorable circumstances, in less than two years.

As regards the interior of houses, plaster, whether on brick or lath, is exceedingly porous, and permits of a ready diffusion of gases; and a wall merely whitewashed or colored with distemper is better in a sanitary point of view than one that is covered with oil paint, which becomes by this process practically impervious to the passage of gases. Wall papers are probably not so bad in this

respect as oil paint, but are certainly inferior to distemper or whitewash.

The foundation of a house and the basement are the most important parts of it as regards its sanitary condition. The most perfect foundation upon which a house can be built is a solid platform of concrete, extending over the entire area of the building, and from two to three feet in thickness, according to the height of the walls, and coated over on the top with nearly pure cement. No damp could penetrate this mass; but I would not, even in this case, lay the sleeper joists upon the concrete, but would place them at a sufficient height to obtain ventilation of the space below the floor. In case of accident, arising from the bursting of water-pipes, or other causes, I would make the concrete with a slight upward slope towards the centre of the area, so that water could run away freely through the ventilating gratings. This would be a somewhat expensive foundation, but I think it would be a most satisfactory one. Another system which would probably prove equally good is to build the foundation walls and dwarf walls up to a certain level, fill in the interior spaces with broken material *to the same level*, and cover the whole surface with a layer of Portland cement with two parts coarse sand 3 inches thick. Another system still is to place a damp course of slate, or slaty stone, bedded in Portland cement, on the whole of the walls; fill up the whole foundation to the same level with broken material, and cover this, but not the walls, with asphalt. This makes excellent foundation, but the filling in is generally omitted, the architect being content with a damp course on the walls just below the sleeper joists, and levelling the interior space and asphalt. In this way I have seen very serious evil resulting from the absorption of water from the soil by the portion of the wall below the damp course, then giving off sufficient watery vapour to keep the space below the floor quite damp and to introduce dry-rot to a most alarming extent. It is a not uncommon practice to neglect the precaution of putting a damp course on dwarf walls, in which case dry-rot is almost

certain to occur unless there is profuse ventilation. In such a case the joists should be laid not in a wall-plate of wood, but upon roofing slates placed below each joist, but it is better to place along the top of the dwarf walls a complete anti-damp course of roofing slates bedded in cement, and upon this to lay a wall-plate in the usual manner.

With regard to the ventilation of the space below the basement floor, it is a safe rule to have gratings all round the building, if it is a detached house, not more than 10 feet apart; but if it is in a street where ventilation can be obtained only in front and back, the gratings should not be more than five or six feet apart, and should be of ample size, say 10 inches by 6. In order to facilitate the free circulation of air, the dwarf walls and partition walls should have numerous and large openings. It may be objected to such ample ventilation as I have indicated would make a cold basement storey; but the simple remedy is to put ashes, with or without lime, below the floor, in the same way that deafening is applied to the upper floor.

In a wet climate such as ours, in which it is not an uncommon occurrence to have half an inch of rain falling in a single day, it is a proper thing to cover the chimney-tops in order to prevent rain from coming down and keeping the gable walls to some extent constantly damp, and it is a good thing to combine with the cover a means of preventing down-draught in the chimneys during high winds. The cover which I recommend is one having a flat top with a space below, the whole chimney-top and cover being constructed of galvanised iron. The chimney is 10 inches diameter at the bottom and 8 inches at the top, the cover is 12 inches diameter, and the space between the top of the chimney and the cover is 4 inches. The cover is supported on three iron rods, and is fixed by nuts in the top, which are easily removed when the chimney is to be swept. All chimneys should be lined with fire-brick cylinders very carefully jointed, otherwise a great deal of watery vapour from the combustion of the coal will find its way into the gable walls, and there may be trouble also from

smoke. A chimney from a stove, unless kept open below, is certain to give trouble from the condensation of water. Every cubic foot of coal gas gives by combustion about an ounce of water; and as gas stoves consume from 10 to 30 cubic feet per hour, a very large quantity of water is produced. In ordinary coal fires the large proportion of heat wasted up the chimney prevents any considerable condensation of water unless when a fire is just lighted; but in the case of gas stoves the heat passing up the chimney is comparatively small, and is probably never sufficient to prevent entirely the condensation of water.

In this brief sketch I have taken up only one branch of my subject and I do not propose to deal with others, such as the ventilation of dwelling houses and public buildings; but I shall merely notice, in conclusion, an exceedingly simple means of ventilating apartments, which I have found to give excellent results. It is to put in every window in the house a series of perpendicular holes, one inch in diameter in the lower frame of the top sash of the windows. The holes may vary in number from three to six, according to breadth of the window, and I may say that I have not found it necessary, even during the prevalence of the highest wind, or during the coldest weather, to close any of these orifices.

ON THE PRESERVATION OF HEALTH.

The following extracts are from a discourse delivered before the Workingmen's Institute of Canton, Baltimore, Md., by R. McSherry, M.D., Prof. of the Principles and Practice of Medicine, Univ. of Maryland, from the *Sanitarian*. Dr. McSherry spoke upon the dwelling house, air, habits of life, personal cleanliness, etc.

Of all the trite sayings in common use, there is none more just than that which makes health to be the poor man's riches, the rich man's bliss. Take health from the poor man, and he is poor indeed; take it from the rich man, and you take from him the best part of riches, and

that is their enjoyment. To the rich as well as the poor, come forcibly home the words of the inspired writer "Better is death than perpetual sickness," when a man feels that his life is a burden to himself and to all around him.

What is health? To most of us it is something like happiness, nearly but not quite attainable. When all the organs of the human body are performing their functions harmoniously and well, the man considers himself to be in health; and so, in general terms, he is. But when the overwrought brain brings a headache, or the overwrought muscles suffer with myalgia, often mistaken for rheumatism, or the overfed or underfed stomach suffers with indigestion, or the throbbing heart enlarges and suffers from overstrain, or the gouty toes punish and disable the high liver, or pallor, palpitation, languor and debility show anemia and incapacity for work, sometimes when the necessity for it is most pressing, then, under all such conditions and circumstances, then it is apparent that the great blessing of health, often so little appreciated when in possession, is lost, or, at least, endangered.

It is a spontaneous cry of the human soul, What shall I do to be saved? and one may ask with almost equal propriety, what he may do to save the humbler part of his individual existence?

We all want ease; now health is *ease*, and thence it readily appears how the want of it is just exactly *dis-ease*. But most diseases in the whole category are what we call preventable; we can escape them if we know the means and use the precautions. Undoubtedly prevention is better than cure.

Speaking grossly, we know the causes of nearly all diseases, though when we undertake the investigation of the intimate nature of the causes, not only the people, but the most zealous pathologists, often get into a muddle of embarrassments. We all know, for example, the cause of chills and fevers, or intermittent fever—it is malaria; everybody knows where malaria abounds; and, furthermore, that exposure to it will produce the intermit-

tent or malarial fever. But what is malaria? Bad air is its proper definition. But do we understand that malaria applies to all bad air? Not by any means. Then malaria must be some peculiar kind of bad air. And so it is; but, although chemists, and microscopists, and biologists, and pathologists undertake day by day and year by year to solve the intricate mystery of this very common, familiar, and wide-spread cause of disease, here, there and everywhere, they cannot tell us with certainty what its intrinsic nature may be. Nevertheless, we all know where it is to be found, what are its influences, how we may drive it from a given locality, or arrest its progress from the swamp to the habitation, or counteract its poisonous influence.

We say truly that contagion is the cause of any given attack of scarlet fever. But what is contagion? In some sense the word means contact, but what is the contact or contagious matter? What is the intimate nature of the matter that passes from one living organism to another, reproducing the morbid changes in the recipient that it has already effected in the transmitter? To answer this question we call to our aid the germ theory, which is as yet still but a theory.

What we do know is, that if we keep ourselves or our children out of reach of the obvious cause, which is sometimes quite practicable, we or they will escape from that particular disease.

Every man forms some theory of the causes of disease, and his theory is often well-founded on the bases of common sense and common observation. A stout, vigorous fellow is cut down while but little beyond the natural force of middle life. A broken shaft might be his monument. Well, says one who knew his habits, he was a pretty hard drinker—a pint of whiskey a day, on an average, would hardly satisfy him. No more need be said.

A handsome young woman dies of consumption, developed from pneumonia. She was rather delicate, perhaps at best; but, notwithstanding that, her friends remember how her fair neck and shoulders were exposed upon more than one sharp

winter's evening, and how her shoes that she wore out and in were not near so heavy as her father's slippers, only to be worn by the fireside. Her friends appreciate justly cause and effect. She dies, in fact, of disease contracted by her own imprudence.

From prolonged and careful observation, I am satisfied that the great majority of people die of accidental, or it may be incidental, deaths. Many pursuits involve incidental dangers, and a man may have to risk his life to maintain it. The sailor and the fireman offer ready examples.

I do not mean to dwell, however, upon accidental or incidental deaths, as generally recognized, or of which such minute and pleasing details are furnished by the accident insurance companies. I do not mean to speak of these, but of accidents much less glaring. A man comes out of a warm workshop, overheated, and sits or lies down to enjoy a refreshing current of cold air. He subjects himself very unwisely to passive exposure to cold. It is so delightful that he may fall to sleep where he lies. In one, two or three days he finds he has a fever; he has terrible aches in the back, or in the knees, or all over; he cannot stir for violence of pain. What is the matter? An attack of rheumatic fever. What is the cause? Cold, from careless exposure. Sooner or latter he gets well. But is he well? He may be quite, but not surely, for some years thereafter he may find himself suffering with incurable disease of the heart—a sequence of that attack of rheumatism; which was in itself not inevitable, but accidental. Every day we find men carried off to their long home quite prematurely, if we understand anything of cause and effect pertaining to our mortal career. One man ends his course suddenly by drinking a pint of fire-water, as the Indians call it, and another as suddenly by drinking, when overheated, an equal draught of ice-water.

Now it certainly is a question of paramount importance to know what one should do, or should not do, to be saved—that is, according to our present consideration, in the physical order.

A man must live in a house ; and, let us ask, in what kind of a house, and with what surroundings, in the interest of himself, his wife and his children ?

He and they must have food and drink. What shall be the quality and the quantity ?

He and they must have clothes. What kind of clothes ?

He and they must have work, and rest, and leisure. How much work, how much rest, how much physical, how much mental occupation ?

He wants himself and his family to live according to a sound moral code, and then may properly ask, what are the relations between sound health and sound morals * * * * *

THE PROPRIETIES OF LIFE.—It is a great thing for families and neighbors, and indeed for all of us, to cultivate civility, kindness, and forbearance, towards each other. It is a great thing to cultivate good morals as well as good manners. An eminent hygienist says that a comfortable condition in life and good morals are the most valuable auxiliaries in promoting a sound hygiene. This is certainly true. Comfort, good morals and good health, are nearly associated. Immorality is a fearful promoter of bad health. Every physician could astound you by his observations in this regard. The bad passions or the depressing passions should be kept under close restraint, simply looking to the physical welfare of man. This generation is suffering by inheritance from the passions, vices and folies of preceding generations, and the sins of the fathers are visited on the children. That we cannot help : we have to take our inheritance with all the evils that it entails. What we can do is to mend and amend our own courses. We can be just to ourselves, and to our own posterity. We can become better and wiser, healthier and happier than we are, and this by sound sanitation and sound morality. We can save ourselves or our own generation, from many infirmities of mind and body by a well ordered life. Temperance in all things, and an early and judicious marriage, are two most important conservative agencies.

SANITARY ASSOCIATIONS.

The convention just held under the auspices of the Ontario Board of Health at London presented a good opportunity for the people of that city to organize a local sanitary association. The Provincial Board of Health, and those members of the community among us who take an interest in sanitary work, are not to be looked upon as enthusiasts, or specialists with a hobby they wish to ride to death. They are all practical people who have recognized their individual responsibilities to the State, in other ways than that of mere peaceful citizenship. They feel they are to a certain extent their brothers' keeper, and whilst protecting their own lives, and guarding their own health, they acknowledge their responsibilities to their neighbour.

We acknowledge the right of the Government to pass certain strict laws for regulating public health, known as quarantine laws, and are justly incensed when they are disregarded. We are terribly indignant and outraged on learning of an outbreak of smallpox, from some fresh arrivals to the country, and call for all manner of stringent punishments, and yet we deliberately neglect the most important matters relating to health, considering them too trivial for notice, and thereby expose ourselves and our children to the fell influences of typhoid or enteric fevers or diphtheria.

In our country the spaces about dwelling houses are as yet hardly so closely built up as in the larger cities in the old world or in the States ; and this breathing space as it may be called, due to the width of the streets and the spaces that exist between houses tend to make people callous. A small yard behind a dwelling or a plot around the house, are looked

upon almost as safeguards, even among the higher classes. Not long ago we ventured to advise a friend to examine his drains as we believed them to be the cause of a good deal of his illness. "What is the use of meddling with my drains," he said, "we have plenty of fresh air about our house"!

A great honour has been paid to Canada, in fixing on Montreal as the place of meeting for the British Association for the promotion of social science next year. One of the subjects to which this Association directs much attention is sanitary work. The visitors to Montreal will assuredly visit other of our towns and many places on the other side of the boundary. Coming to us, as many will, from clean, well kept English cities, comparisons will be drawn between their own homes, and places visited in Canada and the States, that some of our larger towns will be able to present a favorable appearance we do not doubt; but if they should visit any of the smaller places the award may be more favorable to our neighbours.

We strive to perfect our business appliances in every possible manner, by the introduction of new methods of working, labor-saving machinery and so on and yet we neglect the most important machine, the human body.

We consider that if certain lines of sewers and water pipes are laid in particular streets, all that is necessary is done, we have only to connect our house-drains so that bath-water, and soil-pipes may discharge themselves and our premises be rid of what is a nuisance to ourselves. For example, in a row of houses, one householder may have taken great care to have his drains all properly laid, trapped and ventilated, and he may enjoy the satisfaction of believing himself perfectly

safe from all emanations from the sewers. His neighbour on the other hand is content with a pipe running from his house to the main drain which carries off his soiled water and all fæcal matter. He does no more and lives on contentedly in the ignorance which unfortunately is *not* bliss. From the effects of want of proper precautions sewer gas enters the house, sowing its seeds, which develop themselves in forms only too well known. The occupants of the ill-drained house suffer, but more than this takes place, the neighbour who has done all to protect himself frequently suffers too: and he suffers in this respect, the foul gases are carried over the upper part of the house *under the roof*. The cases in which party walls between houses (whether semi-detached villas or in rows) are carried up through the roof are few and far between. The existence of this shaft or funnel over the houses, whilst liable to cause fire to spread, is a certain cause for the spreading of infection, as we know by painful experience. A case came under our professional notice in which a family of young children suffered severely all one winter, from "general debility." We could not find any faults in the drainage; indeed the proprietor appeared to have taken a great deal of trouble to have his drains and soil-pipes properly ventilated. After a good deal of examination we were able to trace the ill effects to a neighbouring house, where the sanitary arrangements were very incomplete, and from which the smell of sewage was plainly perceptible in our client's house; the medium of communication being the vacant space below the roof!

One of the principal stumbling-blocks to the formation of Associations, or to rectifying domestic sanitation is, that

nearly every householder has perfect faith in the perfection of his drains. The case is fresh in all our minds of H. R. H. the Duchess of Connaught being poisoned by drain fever at Bagshot Park, and yet only a few days ago it was announced that the Duke had been suffering from typhoid fever contracted at that place. We are obliged to a friend for an interesting case. He rented a short time ago a large country mansion with the usual proviso, drains in good order. Before he had been there many days, there were three or four cases of typhoid fever among the servants, and he himself was laid low by it. When the necessary examinations were made, the floor of the kitchen was found to be one mass of abominable filth; and the drains were discharging into it! Such cases are common all over the world, and there is no town or village in Canada in which a similar state of affairs is not to be found.

We know that in the United States much intelligent attention is being paid to sanitary matters. It is not necessary for a town to possess both waterworks and sewers to have a Sanitary Association formed. Over one hundred and seventy Rural improvement societies exist among our neighbours, and in the old country the list of cities and towns with sanitary associations is rapidly increasing, as is also the membership. In Edinburgh, for example, the Association is three years old and the membership has risen from 300 to 1,800. There is no reason whatever why we should not have similar associations in Canada. We only want the "will," the way is right before us; we must shoulder our responsibility and lose the idea that we are each one, only one independent atom of the general public, or society, that what we do is neither here nor there, that we cannot influence the community at large.

We have never heard this point more forcibly illustrated than in a sermon by an eminent Toronto divine, who pointed out that any employer causing his workmen to inhabit unwholesome residences, or work unnecessarily in unwholesome localities; or the contractor who laid a sewer pipe in such a manner that sewer-gas would enter a house from it, *was guilty of a breach of the sixth commandment!* He spoke true and sensible words, which deserve to be written in the frontlets of our memory, and he includes under that category all who neglect proper sanitary measures, whether as landlords or householders.

COPPER SALTS AS PRESERVATIVES FROM DISEASE.—Regarding the virtues of copper as a protection against infectious disease, (*Med. Times and Gaz.*) Dr. Burq has inquired as to the death-rate amongst copper workers during the last epidemic of typhoid fever in Paris, and finds further confirmation of his views that the action of copper is opposed to the development of the microbes of infectious diseases. He proposes to study the action of salts of copper upon the microbes cultivated by M. Pasteur.

PAYING PHILANTHROPY.—The Improved Industrial Dwellings Company possesses thirty-two estates in various parts of the metropolis, on which 4144 dwellings have been erected and are in occupation; 615 more are in course of erection. On the completion of these the number of persons residing in the Company's dwellings will be nearly 25,000. The usual dividend of 5 per cent. has been declared after carrying to the reserve fund £3000.

THE BLUE COLOR OF MILK.—It is stated that in milk which has become blue, a peculiar microscopical organism, a sort of bacteria has been discovered, which multiplies with very great rapidity, and in so doing produces a peculiar blue matter similar to aniline. Milk which is kept in such a manner as to prevent the access of these organisms does not become blue. Blue milk is unfit for food; and should never be given to children.

A RIDE FOR LIFE.

The two interesting instances below are from Dio Lewis' Monthly :

Wife and I landed at San Diego, that beautiful city on the extreme south-western corner of California, and, after spending a few days at the Horton House, we took saddle mules and visited the valley of the Cajon, where we stopped over night with Captain Miner, the most friendly of hosts.

Early the next morning we began our climb to the Falls of San Diego, Captain Miner accompanying us. He wished to show us a canyon, covered with chapparal, where there lived a million quails. He stated the number with an easy confidence which proved that he had counted them. We accepted his testimony and did not count. It certainly would have been easy to bag a thousand in a few moments, but I begged so hard for them that the captain turned back without the wagon-load which he had promised his good wife to bring with him. The California quail is such an exquisitely beautiful bird, and its family life so sweet, that I would have gone on my knees to prevent the slaughter of the innocents. No person of sensibility can sturc their little ways and then kill them.

After the captain had left us, we kept on by the side of the San Diego river, and before night climbed to the foot of the famous falls. While picketing our mules I discovered two young men busy making camp on the opposite side of the canyon. I called to them, and in pantomime invited them to visit us, which they signalled they would do after supper. I urged them to take supper with us, but they politely declined. An hour later, just as we had finished our dessert of oatmeal mush, our neighbors came. One was a tall, brown-haired, bright-eyed gentleman, of perhaps twenty-six ; the other, a slight, blonde lad of eighteen. We were much impressed with their intelligence, and pleased with their gentle bearing toward each other. It was in strange contrast with our wild surroundings and with their rough corduroy pants, flannel shirts, and pith hats. ■

They told us they had long been intimate friends, and when the health of the younger began to break, and the doctor had warned him that nothing but a year in the saddle would save his lungs, they left their home in the East and came to the Pacific coast, where they had been climbing through the mountains with the aid of mustangs for three months. Already Fred was quite another man.

To illustrate the change, Fred whacked his thigh, and informed us that, three months before, that leg was not more than half its present size.

We arranged to meet them again a week later, and already felt that they were dear friends.

They were scarcely out of earshot when my wife seized my arm and whispered the strange question :

"Do you know what I think?"

"I don't; but please stop pinching."

"Fred is a girl," she cried, pinching harder and harder.

"How do you know that?"

"How do I know it? Don't you suppose I know a girl when I see one?" exclaimed my better-half.

"My dear I came to the conclusion long ago that you know pretty much everything, but will you tell me how you found out that this young man is not a young man at all, but something else. I grant you that he behaves remarkably well, but might not a young man, by some accident, behave himself?"

"Oh, but that sweetness, that softness, that exquisite delicacy of manner and speech! I am astonished that you can't see; but then you men are so blind."

"My darling, permit me to call your attention to the fact that you have often spoken of my blindness. I would not have you suppose that I doubt what you say. If you had said this young man was a kangaroo or a gross of tack hammers, I should not dare to doubt it. I am only trying to find out your signs of sex."

My better three-quarters made no reply, but went on to say :

"What can it mean? Nothing wrong, I am sure. They are beautiful people, and I know would do nothing improper ;

but what can it mean?" Before their next coming my wife shook her head and said, "What can it mean," many times.

When they came again we were very glad to see them, and they seemed glad to see us

We recalled that Fred had worn a pair of buckskin gloves when calling on us at the Falls, and had shaken hands without removing them. We had not been especially impressed with the circumstance, for we both wore the same sort of gloves from morning till night, and often slept in them, but on the occasion of their second visit we noticed, and thought if the gloves were removed, Fred's hands would be remarkably small. This tended to confirm my good wife's suspicions.

Our friends invited us to dine with them the next day, and when they were fairly out of hearing, my wife grasped my arm, and in the same excited whisper, asked :

"What do you think now?"

"Think? Why, I think we have met a couple of well-bred young gentlemen, and—"

"Well-bred fiddlesticks! I declare, you men are stone blind. Now do you pretend to say that you don't see that 'Master Fred' as the other calls him, is nothing but a girl?"

"*'Nothing but a girl,'* is rather cool nowadays, when a man hardly dares to open his mouth in the presence of a woman of any age," I said, as bravely as I dared, to my better seven-eighths.

My devoted companion kept it up. That night when I was just dropping off to sleep, she reached over, gave my blanket a jerk to rouse me, and exclaimed :

"Why her whole style, her walk, her chin, her beautiful eyes, her delicacy and sweetness of manner, and his tenderness toward her—it is all as plain as can be. They are just married; she is threatened with consumption, and as this dress is so much better for saddle work in the mountains, etc., etc. Oh, I see it all just as plain as the nose on your face."

I knew my nose was a big one, and my wife's favorite object for illustrating vast things, but I knew likewise it was a dark night, and that I was lying with my face

turned from her. I said nothing, but began a series of evolutionary snores, which she finally accepted as genuine, but which, as one can never hear the real sounds in himself, were probably not a good imitation.

She roused me the next morning and told me of a curious dream she had had about the beautiful bride in breeches. On the way over we rode side by side, where the trail was wide enough to give our mules a chance, and discussed our scheme.

Our welcome was very warm; our dinner was excellent. We had finished the stewed-canned oysters, the canned turkey with cranberry sauce, and canned green peas, and were busy on the dessert of canned strawberries and peaches, when my wife opened our "little game." Addressing herself to Mr. Morton (Fred) she asked :

"Don't you think, Mr. Morton, if a lady were sick, say of consumption and needed to live a year or two in the saddle, it would be a capital plan for her to adopt a man's dress, and thus secure all sorts of freedom?"

Our plan was to look Fred square in the face at the conclusion of this question. It was evidently a bull's-eye shot. He blushed, and turned a look of astonishment and interrogation upon his companion, which proved that my wife was right. She always is.

Then, without waiting for them to change the subject, I took up my part, and said :

"We met a couple the other day, the most beautiful people I have seen in years; the bride lived in the saddle, was dressed in men's clothes, and was rapidly recovering from a genuine consumption."

"Where did you meet this couple?" asked Major Barton, by which name Fred addressed his companion.

"At the San Diego Falls," was my reply.

Then we gazed at the Major. This was our programme. He looked at his companion. They both turned all sorts of colors, and we all burst into roars of laughter. Then followed a long and most interesting talk. My wife had guessed the exact truth; Fred was a bride. The

family physician had pronounced his case genuine, pulmonary consumption, and had shaken his head over the near future.

The young people consulted together, and after much anxious doubt, but with the full consent of friends, were married. After a deal of trouble they succeeded in obtaining the proper measurements for Fred's corduroys, and in ten days were climbing the rugged sides of the Sierra Nevadas. They had been zig-zagging through the mountains, and in three months had reached the point where we first met them.

A curious change came over Fred's manners. As soon as the facts were known to us, I imagine he felt very much as Eve did when she became aware that her clothing was rather scanty. Whereas Fred had slapped his thigh, talked of his growing muscle, and strided about like other young fellows, now he excused himself, took something out of a bag, went behind a clump of bushes, and soon returned with a blanket arranged like a woman's skirt.

I recall these facts nearly four years after the close of our camp-life on the Pacific coast. The occasion was an exciting scene in Central Park, New York. Wife and I, with the old camping instinct upon us, were sitting under a tree in a shady nook in that beautiful park, watching the saddle riders. A pair of wild ones were coming. I exclaimed :

"It's Fred ! it's Fred !"

We sprang to our feet. The recognition was complete all round. The horses were the same they rode in California. Quiet enough they were there, eating what they could pick up ; but here, with cats and thorough grooming, they were full of the very dickens.

The next day we dined with our friends. It was hard to recognize in our beautiful hostess the thigh slapping Fred of the mountains.

I complained that the long, silken skirt did not look natural.

Mrs. R. (we now for the first time learned their real name) invited us to spend the next evening with them. Mr. R. opened the door, and told us they had

sent their servants out for the evening. In the grand parlor we waited for our hostess. In came Fred with the same old corduroys, woolen shirt and old boots and pith hat.

He went riding about the room, regular free and easy mountain fashion, and when the laughter had subsided, slapped his thigh, and said :

"When I went to the Pacific coast that leg was so small and soft that it could hardly carry me ; now it is big enough and solid enough to carry me through a long life."

"Yes," exclaimed the proud and happy husband, "my wife would not part with those clothes, nor with her splendid horse. She feels, as I do, that they have saved her life. We believe that a good saddle horse, properly ridden, can carry a consumptive from the grave back into the midst of life and health."

I will add, that I have seen many remarkable restorations from advanced consumption through life in the saddle. I think the chances are about as good here as in California.

ANOTHER ONE.

While practising my profession in Buffalo, where I lived many years, the mail brought a note one evening requesting an interview with reference to the writer's health. He came next morning and said :

"You see I am an Englishman ; I came to America two years ago seeking my fortune. An old friend induced me to stop here, and now I am the junior partner in the firm of G. T. & Co. My father, mother and sister all died of consumption. I have been coughing and getting thin for about eight months. Please feel my pulse."

"What, ninety-five."

"That's about it, and I fancy it gets above a hundred."

"How about your breathing ?"

"Hills and stairs make me gasp. I have all the symptoms. I watched my sister, and know just how this horrible thing works."

"Night sweats ?"

"Not much, though occasionally my

shoulders and neck are wet when I wake in the morning."

"Pain?"

"I have several times had a severe pain under my shoulder blade, and lately a dull aching just here under this collar bone."

"Expectoration?"

"I raise pretty freely in the morning."

"Prepare yourself and let me listen."

After listening at his chest awhile, I asked: "Do you want me to tell you the truth, or humbug you with a nice story?"

"The truth, doctor, the whole truth."

"Your lungs are in a bad way. The left lung through all this upper part, is a mass of tubercles. Some of them have softened. The upper part of the right lung is slightly tubercular, but the softening has not yet begun."

"There can be no mistake?"

"I can mark the exact line of the deposit."

With reddened eyes and trembling voice he said: "I wouldn't mind it for myself, but a beautiful girl, whom I love better than my own life, expects me to come for her next winter. It will kill her, sir. Of course nothing can be done for me?"

"Let me listen very carefully, and then you must give me a day to think about it."

When he came next morning, I said: "I have written a letter to your friend in England. Here it is. Read it, and hurry it off by the first mail."

"DEAR LADY—Your friend George C. has come to me about his health. I have examined his lungs, and find that he has consumption. In the ordinary course of things he will die in about six months. He told me with streaming eyes of the crushing grief this news will bring to you. My dear lady, *if you will come to us, you and I will save him.*

I am your friend, etc."

The young man withdrew to a window, and when he could command his voice, said: "Are you serious? I thought this disease was as incurable as death."

The letter was sent. A horse and saddle were purchased. He was so impressed with the necessity of doing as I prescribed that he started on his morning ride, in all

weathers, at exactly eight o'clock. He rode, as soon as the first soreness disappeared, three hours and a half every day. In a month it was three hours in the forenoon and two in the afternoon. In a little more than two months Mary arrived while George was out with his horse. She came at once to me, and with painful eagerness, asked, after speaking her own name, "How is George? For mercy's sake don't tell me he is worse!"

My wife insisted that the marriage should come off at our house. We all cried, and that does seem *so* absurd at a wedding.

Of course parts of his lungs do not breathe, but he is a healthy man, and does a large amount of work. His wife still writes to us. She closed her last letter with the words: "*May God bless you for saving the life of my noble husband!*"

I believe that nothing but a saddle horse could have saved him. Of course I do not disparage other features of the needed regimen, but the saddle horse is the *Hamlet* of this play. I do not believe in "specifics." But the saddle, in consumption, comes very near one. Dr. Holmes' saying that "the outside of a horse is good for the inside of a man," is emphatically true in diseases of the lungs.

The needed improvement in digestion and assimilation cannot be secured without much exercise, and the lungs forbid all other forms of active exercise but the saddle. While a single flight of stairs or a slight hill will make the patient gasp, he can ride a hard trotter ten or twenty miles. [One cannot ride a horse without being out of doors, and this, too, is an important factor in the improvement.—ED. S. J.]

QUARANTINE. — The members of the Pasteur Cholera Commission are of opinion that the immunity enjoyed by Marseilles from cholera is due to the rigorous enforcement of quarantine regulations, as this is the first time that the city has escaped the scourge when the disease has been raging at Alexandria.

DR. BUCKNELL will deliver a lecture at the London Institution, in February, on the "Relation of Madness to Crime."

HURRY, WORRY AND WASTE.

The following on this very important subject is from the *Lancet* (Lond., Eng.).—

Attention is every now and again called to the many irresistible proofs which exist that there is something radically wrong in our modern mode of working, and rarely a week passes without some signal collapse in the ranks of our foremost men. An endeavor has been made to show that the cause of that brain wreckage which so commonly occurs among statesmen and politicians is the bad habit of turning night into days; which has been furnished by the British legislature. The truth is, however, that the break-down of public men is not due to any special cause. They are affected, as the ordinary members of modern communities are affected, by the hurry, worry and waste that are characteristic of the age in which we live, and which pervade all classes and sections of the community.

The demon "overwork," erroneously so-called, is as active among commercial men, who go to bed at 10 or 11 o'clock, as among statesmen, who sit up hearing and making speeches until the small hours. Side by side with this fact must also be set up another, namely, that as a rule the votaries of fashion and gayety sit up a good deal later than members of parliament, and yet do not suffer half so much. In truth, we must look below the surface if we would search into the deep effective cause of the trouble we lament.

It is not "overwork," but worry, that kills. Our men of brain might do a great deal more than they do, if only they were less feverish in their haste, less harrassed by worry, and less wasteful of energy. We are all in too much of a hurry in what we do. We have too many irons in the fire, too much business on hand at the same instant, and are far too energetic in our endeavors. With deliberation, calmness, and such reserve of strength as results from perfect restraint, a man may do an infinity of work without either trouble or injury.

The system of breathless haste and eager anxiety is rapidly undermining the human constitution. We are impatient for results. Statesmen and politicians are kept on the strain of sustained attention, and their brains are for many hours of the twenty-four in a state of ferment. The brains of speculators on the Stock Exchange, and even the brains of merchants in their private rooms, are equally taxed in the same way. All classes of the community share the turmoil. The period is one of brain-working impetuosity; of hurry, worry and waste—the waste of cerebral energy and nerve force. The higher nerve centers are kept incessantly at work, and become, as it were, overheated, so that it is impossible they should quiet or cool down in the brief period of time allotted to repose. Too often they do not rest even in sleep. The brain only dozes instead of sleeps, and as a result there are dreams of the recent day's work—that infallible symptom of impending mischief. The only marvel is that, looking to the utterly unphysiological character of our mental and nervous habits of work, the number of sudden failures is not greater than it is, and that we have not a larger percentage of brain mortality to deplore.

AIR AS A SANITARY AGENT.

By R. ANGUS SMITH, LL.D., PH.D., F.R.S.,
F.C.S., &c.

The following interesting extracts, containing something out of the usual course on this subject—something new,—are from an address delivered at the congress of the Sanitary Institute, Glasgow, in September last.

It was an Englishman that discovered oxygen. Priestley called it vital air, with a due appreciation of its wonderful powers. It was a Frenchman, Lavoisier, who gave, we may say, its scientific work to do, and called it by its present name. The two nations have worked together for many years, thinking on similar subjects, whether friendly or at war.

If we leave for a moment the attention to individual workers, and consider the

ordinary observation of moderately observing men, we find how wonderful is the difference noticed between places and objects which have been closely shut up and those which have had the clear sweep of the air of heaven upon them. We call the former places close or musty, or depressing, or in various ways endeavour to define our objections to them. The Arab, in the free air of the desert, is afraid of even the outskirts of a town. Some people can smell great cities at a considerable distance, and, coming this year from wandering in Norwegian seas and valleys, I fear I am right in thinking that I had acquired the power of perceiving the near approach of places supposed to be intensely civilised.

When a room is shut up even for a day, unless the room be very large indeed, there is always that peculiarity observed by sensitive persons to which there is given the name of closeness. Yet there are people who do not seem to observe this, and who live their lives in rooms in which this closeness may be constantly observed. I have often reflected on this peculiar condition. Surely if oxygen removes all impurities, these impurities ought to have been removed, since the oxygen of the air is never absent from these rooms, except to such a small extent that the estimation of the change is extremely difficult. If we lift up a window and allow the air to blow into the room, so as to entirely replace the original air, we do not at all times attain sufficient aëration. It takes but a few minutes in a climate like this, where there is considerable motion of the air, to renew the atmosphere of a room entirely; we may judge of this by making a trial upon a visible atmosphere, viz., one pretty well filled with smoke. We see how rapidly with an open window every trace may be removed from the farthest corner, and yet this new air is not sufficient to refresh the room, and closeness is the characteristic still complained of. It is the custom in well-regulated houses not to renew merely the air, but to cause the air to blow through the house for a considerable time every day when the weather permits it. Knowing this for a long time, I wondered very much what

was the reason. Surely, I said, there was vital air enough without this long continued current.

Then that remarkable discovery made by Schönbein came to my mind, as I suppose it has to the minds of many other chemists, and I thought it must be the ozone in the air that does the work, and as there is little ozone in a volume, the air requires many repetitions of bulk. There may be some truth in this still; but whether, because the air receives imperfect contact with the substances to be purified, or whether the mechanical action of the current is necessary, or some other cause, it is certain that a continual current is necessary for perfect purification. Looking further at this subject, it occurred to me that really clean houses were preserved in this condition by something more than currents of air generally, and that good housewives resorted to the practical method of rubbing by hand, and it seemed clear that no furniture could be preserved from that peculiar condition of mustiness in any house where the doors and windows must be frequently closed, unless the absolute removal of certain substances from the surface were resorted to. And what was this substance that required to be removed? I suppose it to be one of organic origin. In speaking of this, perhaps you will excuse me if I enter with more detail upon my own work than the works of other men. I shall, naturally, feel more at home; and as this Institute will take care that you are made acquainted with all the discoveries relating to sanitary appliances made in all parts of the world, this may be a reason for contracting a field of my observations, and I cannot hope to keep your attention so long as a discussion of the whole range of inquiry would demand, even if I had power to speak so widely.

I may here bring in an account of an inquiry concerning ammonia, which will explain some of my meaning. It is taken from the Memoirs of the Literary and Philosophical Society of Manchester:—

'If organic matter is everywhere, the presence of ammonia is everywhere possible; and if that matter is decomposing, ammonia is everywhere. That is the

general statement which this paper illustrates. It is now many years since it was observed by me that organic matter could be found on surfaces exposed to exhalations from human beings; but it is not till now that full significance of the fact has shone upon me, and the practical results that may be drawn from it in hygiene and meteorology. These results are the great extension of the idea that ammonia may be an index of decayed matter. The idea itself has been used partly, and to a large extent—as illustrated in my *Air and Rain*; the facts now to be given enable us to claim for it a still more important place. The application seems to fit well the conditions already examined; and by this means currents from foul places have been readily found. This does not apply to the substances which may be called germs, whether it be possible to see them or not, because these are not bodies which have passed into the ammoniacal stage, although some of them may be passing—those, for example, which are purely chemical and exert what we may call *idiolytic* action.

'Ammonia must ever be one of the most interesting of chemical compounds. It comes from all living organisms, and is equally necessary to build them up. To do this, it must be wherever plants or animals grow or decay. As it is volatile, some of it is launched into the air, on its escape from combination; and in the air it is always found. As it is soluble in water, it is found wherever we find water on the surface of the earth, or in the air, and probably in all natural waters, even the deepest and most purified. As a part of the atmosphere, it touches all substances and can be found on many; it is in reality universally on the surface of the earth in the presence of men and animals, perhaps attached more or less to all objects, but especially to all found within human habitations, and, we might also add with equal certainty, the habitations of all animals.

'If you pick up a stone in the city and wash off the matter on the surface, you will find the water to contain ammonia. If you wash a chair or a table or anything in the room, you will find ammonia in the

washing; and if you wash your hands you will find the same; and your paper, your pen, your table cloth, and clothes, all show ammonia; and even the glass cover to an ornament has retained some on its surface. You will find it not to be a permanent part of the glass, because you require only to wash with pure water once or twice, and then you will obtain a washing which contains no ammonia; it is only superficial.

'This ammonia on the surface is partly the result of decomposition, continually taking place, of organic matter adhering to everything in dwellings. The presence of organic matter is easily accounted for; but it is less easily detected than ammonia. It is probable that the chief cause of the presence of ammonia on surfaces in houses and near habitations is the direct decomposition of organic matter on the spot. If so, being more readily observed than organic matter itself, it may be taken as a test, and the amount will be a measure of the impurity. A room that has a smell indicating recent residence will, in a certain time, have its objects covered with organic matter; and this will be indicated by ammonia on the surface of objects. After some preliminary trials, seeing this remarkable constancy of comparative results and the beautiful gradations of amount, it occurred to me that the same substance must be found on all objects around us, whether in a town or not. I therefore went a mile from the outskirts of Manchester and examined the objects on the way. Stones that not twenty hours before had been washed by rain showed ammonia. It is true that the rain of Manchester contains it also; but, considering that only a thin layer would be evaporated from these stones, it was remarkable that they indicated the existence of any. The surface of wood was examined; palings, railings, branches of trees, grass (not very green at the time), all showed ammonia in no very small quantities. It seemed as if the whole visible surface around had ammonia. I went into the houses and examined the surfaces in rooms empty and inhabited, tables, chairs, walls, plates, glasses and drawing-room ornaments. A (Parian)

porcelain statuette under a glass showed some ammonia; a candlestick of the same material (but uncovered) showed much more. The back of a chair showed ammonia; when rubbed with a common duster there was very little. It seemed clear that ammonia stuck to everything.

'If, then, ammonia was everywhere, the conclusion seemed to be that it was not at all necessary to do as I had been doing—namely, wash the air so laboriously; it would be quite sufficient to suspend a piece of glass and allow the ammonia to settle upon it. For this purpose small flasks were hung in various parts of the laboratory and examined daily. The flasks would hold about six ounces of liquid; but they were empty; and the outer surface was washed with pure water by means of a spray-bottle: it was done rapidly, and not above 20 cubic centimètres (two-thirds of an ounce) of water was used. This was tested for ammonia at once with the Nessler solution. The second washing, taken immediately, produced no appearance of ammonia. Ammonia could be observed after an hour and a half's exposure at any rate; but I do not know the shortest period.'

To me it seemed perfectly clear that the character of closeness was connected with the existence of organic matter, and the organic matter with the ammonia. That ammonia should be found almost everywhere, but in small quantities, was not to be wondered at, considering the universal presence of organic matter in the air and waters of the world. It was when considering these things, the effect of oxygen on this organic matter, that I came to the conclusion that a current of air either carried away the organic matter with it, decomposing it and turning it into gases, or, if this were not possible for the oxygen alone to do this, it might happen that the oxygen destroyed those minute forms which have been shown to be concomitant with putrefaction and decay. A similar mode of thought had previously led me to consider that it was the want of this excess of oxygen that caused confined sewer gases to be so dangerous, whilst the enormous amount of gases coming from decomposed matter, such as on the Clyde,

seemed to pass away, leaving comparatively little effect beyond the disgust and the sickness of the present—but to this point I must return.—*To be continued.*

THE LONDON SANITARY CONVENTION.

The Sanitary Convention, under the auspices of the Provincial Board of Health, opened in the City Hall, London, Friday Nov. 16 at 10:30. Among those present were Dr. Oldright, of Toronto, Chairman of the Provincial Board of Health; Dr. Bryce, of Toronto, Secretary of the Board; Dr. Playter, of Ottawa; Dr. Rae, of Oshawa; Dr. Canniff, of Toronto; Mr. Allen, of Chicago; Dr. Bray, of Chatham; besides a number of prominent citizens of London, physicians, and others. In the absence of the Mayor, Ald. Cowan was voted into the chair. Rev. Mr. Tierney opened the meeting by religious exercises. Ald. Cowan then gave a short and appropriate address, welcoming to the city the visitors who were present on the occasion, and apologizing for the unavoidable absence of the Mayor. He expressed the opinion that the Convention would prove of great service in educating the public in sanitary matters. He then declared the Convention duly opened. The introductory address was then delivered by Dr. Francis Rae, of Oshawa, a member of the Provincial Board of Health. He pointed out the advantage of sanitary science in lengthening out the term of human life, and increasing the sum of human comfort.

Dr. Oldright then read a paper forwarded by Dr. Harding, Quarantine Officer, St. John, N. B., which urged the necessity of spreading sanitary knowledge. Dr. Oldright, in concluding, made some remarks on the necessity of ladies devoting more attention to sanitary matters.

Dr. E. G. Edwards, of London, urged the importance of more general sanitary instruction in schools, and to giving more attention to the removal of excreta from about dwellings quoting this JOURNAL in reference to the most abominable practice of continuing the use of privy vaults

Dr. Playter thought medical men had reason to complain that the public had not more fully co-operated with the profession in efforts to prevent disease. He trusted London would be a starting point for greater co-operation.

Prof. Saunders, of London, then read an interesting paper on the "Water Supply of London." At the afternoon session, Judge Elliott, of London, read a paper on "Insanity in relation to Criminal Responsibility." Dr. J. L. Bray, of Chatham, followed with one on "Malaria." Drainage was the most efficient remedy, and he recommended liberal government grants for the purpose. Mr. J. K. Allen, of the Chicago *Sanitary News*, read a brief paper on the "Province of the Sanitary Press." All classes were under obligation to support sanitary publications. Drs. Bryce and Oldright, Judge Elliott and Dr. Campbell spoke on the subject; the latter especially urging the well-deserved support of this, the DOMINION SANITARY JOURNAL.

Dr. Waugh, of London, read a paper on the "Results of the London West Floods." Dr. Hazlewood, of Grand Rapids, Mich., joined in a discussion which followed. Dr. Edwards referred to moulds in cellars, which were always connected with disease. Mr. Alen MacDougall, C. E., of Toronto, gave some of his experience in swamp lands in the North West and in Ontario.

Dr. Playter, of Ottawa, next read a paper on "The Typhoid Plant and its Favorite Soil;" Dr. Arnott, of London, read one on "The Effects of Milldams on Public Health;" and Prof. Galbraith, of Toronto, a very interesting one on "Construction of Sewers."

In the evening, Dr. Oldright, Chairman, and Dr. Bryce, Secretary, of the Provincial Board of Health, delivered lengthy and practical addresses on the subjects of "Sewerage" and "Local health originations" respectively, the former with various illustrations. These will probably receive further notice on a future occasion.

On Saturday the following papers were read and discussed: "Disinfectants," by Prof. Saunders, of London; "Hygienic Condition of Rural Schools," by Mr. Dearness, Inspector of Schools for East Middlesex; "Infectious diseases in

schools," by Dr. Campbell, of London; and "Why so many people die of consumption," by Dr. Bryce. A number of important resolutions were passed, after which the meeting adjourned.

The meetings were mostly well attended, and at several of them the large hall was well filled with people, amongst whom were many ladies, and all seemed to take a deep interest in the proceedings. On the whole, in the papers read and the discussions upon them, the attendance and general interest manifested, the Convention may be regarded as a very successful one, and can hardly fail to be productive of much good in educating the public and increasing the interest in public health proceedings.

Credit is due to the local committee, who had made all necessary preparations for the Convention. The plashing of water always seems to have a happy effect upon the human organization, and one pleasing feature of the Convention was a temporary fountain constantly playing on the platform near the speakers. It was an excellent, and, as it were, living illustration of the purity of the London water and for the paper read upon it.

We understand it is the intention of the board to hold a similar Convention at Ottawa in February of next year, and venture to predict a like successful one.

THE TOWN OF PULLMAN, Ill., U.S., is a town of about 7,500 inhabitants, and disposes of its sewage by means of a sewage farm, about three miles from the town. The *Sanitary News*, Chicago, says of it: "From the results attained under the care of Superintendent E. T. Martin, it may be said, that sewage-farming is a perfectly safe and inoffensive manner of disposing of city sewage, and that properly managed, a farm can care for the sewage of any city, and yield a handsome revenue to the owners."

DIGNITY IN NURSING.—Prof. Goss, says "trained nursing is rapidly assuming the form of a dignified profession. It is no longer a menial occupation, but an art and a science."

THE AMERICAN PUBLIC HEALTH ASSOCIATION MEETING.

The American Public Health Association have just held their annual meeting, at Detroit, Mich. There was not such a large attendance at the meeting as at some of the previous meetings, but on the whole, it was a very good and profitable one. Many of the most eminent Sanitarians in the United States were present, and some very valuable papers were read and discussed. Dr. Oldright, of Toronto, Chairman of the Provincial Board of Health, Dr. Bryce, Secretary of the Board, and Dr. Canniff, Health Officer for the city of Toronto, were representatives there from Ontario, and took part in the proceedings. Dr. Oldright read a paper on "Overhead Ventilation of Drains and Sewers."

We have observed the somewhat singular fact that the principal Eastern Papers in the United States have hardly made any reference to this important sanitary meeting. When will the public prefer to support papers that will treat upon and discuss subjects relating much more closely to the public welfare than do politics and sensational reports of crime? with which most of the "leading" journals are about filled at the present day.

DR. KOCH'S RESEARCHES ON CHOLERA.

The report of the head of the German Scientific Commission has just been issued, and is a model of lucid and unexaggerated statement, which deserves careful reading. Dr. Koch clearly perceives and lays down the exact limits of the conclusions deducible from his discovery, and his anxiety not to strain it beyond the weight which it will legitimately bear should be a lesson to those who have been proclaiming that, because certain rod-shaped bacteria have been found in the intestine in a few cases of cholera, the cause of the disease has been isolated, and the whole problem solved. The

results of the investigation may be briefly summarised thus (*Medical Times and Gazette*, Lond., E.): Micro-organisms were looked for in vain in the blood of cholera patients; they were found only in relatively small amount in the vomit, but in large quantities in the evacuations. In the cadavers there was no trace of organized infective material in the blood or solid viscera, and the contents of the bowel, though containing numerous micro-organisms, showed no preponderance of any particular variety. The bowel itself, on the other hand, especially the lower part of the small intestine, was invariably, in recent cases of cholera, found to be invaded by hosts of bacilli, in size and shape resembling those met with in glanders. These organisms were collected chiefly in and around the follicles, where they had evidently set up much irritation, and on the villi, into the substance of which they had often penetrated. The autopsies were made, fortunately for the scientific certainty of the results, immediately after death, before any putrefactive changes had had time to make their appearance and complicate the inquiry. So far, the success of the investigation was beyond the most sanguine expectations. But the further experiments which were necessary, in Dr. Koch's opinion, to prove the casual nexus between cholera and the specific bacteria discovered, were unsuccessful. The most varied attempts were made to infect animals of the most different kinds, but though some of the subjects of the experiments died of septicæmia, in no case was cholera reproduced. This may have been due to the fact that no animal yet experimented on is capable of taking the disease, or to the fact that the proper mode of communicating it has yet to be discovered. But Dr. Koch inclines to a third explanation, which is, that at the time when the investigations were made, cholera was losing its virulence. It was already ceasing to affect man, and it was hardly to be expected that, under these circumstances, animals, which have always shown a great power of resisting the infection, should fall a prey to it, however strong the dose of poison administered to them.

THE MORTALITY AMONGST THE
"BETHLEHEM" FOUNDLINGS,
OTTAWA.

It was stated a few weeks ago in a Government report that during the year ending October 30, 1882, in the House of Bethlehem, a foundling hospital in Ottawa, out of 193 inmates 171 had died. It appeared, moreover, that about 500 inmates of the same house had died since 1880. The Ottawa City Council consequently appointed a commission of medical men to examine the institution, make an investigation and report as to the cause of this very large death rate. The commission consisted of the following named gentlemen: A. Robillard, M. D., Medical Health Officer; J. A. Grant, M. D., R. W. Powell, M. D., F. X. Valade, M. D., Hamnett Hill, M. D., L. C. Prevost, M. D. Below is the substance of their report which has just been made to the Council:

The interior of the building was found scrupulously clean and tidy. The room in which were the infants under charge is on the second floor, and on the 9th instant, the day of the visit of the commission, it was occupied by thirteen little ones, attended to by two sisters and six servants as nurses. The ages of these children varied from a few days to a few weeks old, their physical appearance being in accord with the length of time of occupancy of their present quarters, the latest arrivals being the healthiest looking. The area of the room was sufficient to insure enough breathing air to the occupants thereof.

Between October, 1879, and October, 1883, this institution had received 739 children, the great majority of whom came from a lying-in institution situated on the Richmond Road, in the Township of Nepean, and known as the House of Mercy, a small proportion from the city, and the balance from the surrounding country. At the time of the visit, a child was admitted into

the institution, born that very morning at five o'clock, in the village of L'Original, about fifty miles distant. 644 of the 739 had died—a mortality of more than 84 per hundred—77 had been "placed," and there were 18 remaining in the institution. The mortality had been greater during the last two years than during the first two.

The commission report, "That we consider the above high rate of mortality as the inevitable result of the dry nursing system of the infants in the institution under consideration; the causes which, in our opinion, have co-operated to bring about these results, are:

1st. The want of nourishment from the mother.

2nd. The low state of vitality and oftentimes diseased condition of many of the infants received.

3rd. The location of said institution, in our estimation, not being the most suitable to serve the purpose of the delicate task undertaken, in the great majority of cases, the cause of death, we are convinced, has been derangement of the digestive functions, or complications brought about by disorders of that part of the system."

Though exonerating the ladies in charge of the institution from all blame, believing that they, to the best of their ability, did all that lay in their power to best serve the interest of humanity, the commission recommend that the House of Bethlehem, as a foundling institution, be closed, and that no children be received there under the present system of dry nursing.

A report of the two medical attendants to the institution, Drs. Prevost and Valade, was appended, the only points of additional importance in which are the following:

From the scanty means at the disposal of the Sisters, the establishment was at first altogether too small, but the Sisters did not hesitate to make further sacrifices, and built, at their own expense, as spacious a ward as their means would allow, and was considered suitable with regard to hygiene.

"All the children were submitted to a uniform artificial feeding, modified according to circumstances, such as cow's milk more or less diluted, always supplied

by the same animal for the same children. Nestle's food, and even goat's milk occasionally."

Almost all the children succumbed to diseases of the digestive organs; they rarely lived more than two or three months and perished in the most extreme state of emaciation.

They succeeded in saving all the children who had the good fortune of being nursed by their mothers for at least the first two or three months of their existence.

The report on the whole may be considered as quite satisfactory, yet, though it takes exception to the locality of the building, nothing is given in reference to the ventilation and drainage. It is not easy to believe that, if a fair sized, well ventilated building, in an elevated or well drained situation were provided, many more lives among these little waifs might not be saved, even with artificial feeding. Has not this method of feeding attained to a greater degree of perfection than is above indicated? The powers of the human organization to adopt itself to circumstances, even in the earliest stage of its existence, are great. These little ones it appears came largely from country places; many were probably of healthy parentage. Vastly different would one expect the result to be amongst infants coming from the disease producing slums of some large city.

On the whole, there is so strong a reflection on the power of the hygienic art to preserve infantile life, that we are constrained to ask, has there not been here a great want of knowledge of this art in the management of these little ones? We can readily enough understand that, with a want of such knowledge, and in a badly located, badly drained and badly ventilated building, such a mortality would result; but without such a complete combination of unhygienic environment, it would not be easy to understand it.

But the facts bring out a terrible state of immorality as well as a terrible mortality. Here is a broad field for the moral reformer in which to prevent the development of such "natural," or rather unnatural life, as well as for the physician in

endeavoring to preserve it when developed. And when developed, humanity alone, if nothing of a higher nature, should provide means for preserving it more completely. And we believe that the obtainable knowledge of the present day on the preservation of life could devise, and with means at command, could carry out very much more successfully than the self denying Sisters of the "Bethlehem" have been able to do, measures for preserving such life.

THE GRAND TRUNK AND THE PUBLIC HEALTH—SICKNESS AND DEATH IN THE CARS AND STATIONS.

In Great Britain there has been a discussion respecting the failure of certain railway trains to run "on time," and the *British Medical Journal* asserts that exposure to the weather there, in ill-constructed stations, waiting for unpunctual trains, is a common cause of colds, bronchitis and pleurisy. It appears that in Great Britain there is not a road upon which trains are run with anything like such unpunctuality as trains are run on the Grand Trunk, of Canada. Indeed it seems hardly possible that such irregularity in the running of trains as daily occurs on the Grand Trunk would be tolerated there. The irregularities, with the necessarily accompanying evils, are an outrage upon the public.

In so far as the irregularities relate only to the loss of time to the waiting travelling community, or to the public inconvenience, we have nothing to write; but, on account of their direct relation to the health of the people we must write plainly. Were the waiting rooms at the stations all that could be desired, so far as they bear upon the health of those forced to wait in them for the late trains—were they properly warmed and ventilated, the strain on the nervous system of many individuals, from disappointment and uncertainty, would be more than should be permitted in this age of the world, in any country. But this is of

comparatively little consequence. The During the severely cold weather already experienced this month, during one of the coldest nights, many travellers were forced to wait in the Toronto waiting room without fire or even warm steam pipes. There was indeed no provision for warming—everything was absolutely cold. The Western bound train was nearly an hour late, and the cars, when at length they did reach the station, were about as cold as the waiting room. One gentleman, in a large woollskin coat and cap, told the writer he could not sleep between Toronto and Hamilton on account of the cold. A little boy, warmly clad and running about, was asked if he were cold. He replied no; but a gentleman present said to him, "I think you are the only one on the train who is not cold." If all could have run about like the little fellow, they might perhaps have kept free from actual shivering or chillness; as matters were they could not. It could not be expected that all would escape illness after such exposure, and all did not. It can hardly be doubted that often illness, resulting in death, has a starting point in such exposures on this road. A company which permits such outrages upon travellers is guilty of manslaughter. Would not any intelligent, unbiased jury return a verdict of manslaughter in case of death directly following such exposure, or give damages in case of illness? There must be some way in which such a state of things may be prevented—a state of things which is a standing disgrace to the country.

Nor is this all. The "Water Closets," so called, at the stations are, many of them, disgusting in the extreme. Those at Hamilton, a few mornings ago, were not fit for a pig nor a dog to enter. The whole floor was wet with a filthy liquid, and the closets could not be used with safety. Travellers were in fact forced to abstain from using them on account of waiting rooms, as a general thing, are unfit for any human being to go into even, much less to wait in for an hour or two or more. Sometimes in very cold weather they are without fire or heat of any kind, often they are dangerously cold,

sometimes they are dangerously warm. the condition they were in. Though there were many at the station during the night awaiting the trains, there was no light in these closets—light would perhaps too plainly reveal their filthy state—travellers might grope about amongst the filth, in the darkness, and carry disease and destruction away with them. The closets on the cars, for the want of a little disinfectant or deodorant, and attention, are for the most part intolerably disagreeable. The provisions for ventilating the cars are bad enough at the best, and bad as they are, they are not attended to at all, seemingly, and the air in many of the cars when they are full—often even in the pullman cars—is simply life-destroying. When will the suffering public insist on a change, and better management in the Grand Trunk passenger trains?

—
 CARPENTER ON DISEASE-GERMS.—At the late meeting of the British Association, Dr. Carpenter, F.R.S., in a contribution, "The Germ Theory of Disease from a Natural History Point of View," attempted to show that disease-germs belonging to the very lowest types of life are capable of a very considerable amount of transmutation, and, instead of always developing in one particular mode, and giving rise to one fixed type of morbid action, the different forms of bacilli, micrococci, or bacteria—the germs of the different species of zymotic disease—are capable of modification according to the conditions they are surrounded by; and nowhere is this more evident than in the simplest fungi (moulds and blights), to which schizomycetous disease germs are most nearly related. Such diseases as exanthemata have, according to this view, obtained a fixity of type by a process of evolution. A ship, having on board malarial fever, was described as suddenly developing yellow fever. Typhoid and typhus were instanced as probably dependent on the same germs, developing with different intensity; cholera and autumn diarrhoea probably passing insensibly one into the other, the same germ becoming at one time innocuous, at another time virulent.

GENERAL KERR'S HIMALAYAN TEA.



DIAGRAM OF A CUTTING FROM A TEA PLANT.
*Copied from Houtte's Choix de Plantes, et de
 Cultivation and Manufacture of Tea.*

a. Flowery Pekoe. *b.* Orange Pekoe. *c.* Pekoe. *d.* Souchong 1st. *e.* Souchong 2nd. *f.* Congou. Mixed together. *g.* Pekoe. *h.* Pekoe-Souchong. If there were a leaf below *f* it would be named Bohea.

I. Stem. *K.* Shoot. *1.* Buds from which new shoots will spring as season advances. *Black lines.* Place where leaf should be nipped off.

This high class black tea is not only one of the *best* in the market, but one of the *cheapest*. The price has purposely been fixed as low as practicable. It may safely be affirmed that no tea of equal quality has ever been offered the public in America, under a dollar a pound. Its delicacy of flavor, aroma and refreshing power, give it a very high place among teas; and as its strength or liquorising power is remarkable—if economy is an object—it can be made to go nearly twice as far as other teas. It is well known in England that Indian teas, as imported, are absolutely pure—a very important matter to health. This tea was selected and packed in India to General Kerr's order, and has therefore never been in the market before, but is exactly as received from India. General Kerr, whilst in India, drank Himalayan tea in preference to all others, and therefore, from long experience of its excellencies, he is encouraged to import it, in order to supply, as he believes, a great want, a really good pure tea of excellent flavor, &c., at a very moderate price. Anything that will tend to reduce the present large consumption of green tea, will be allowed by the medical faculty to be a boon to the country.

Price from 60 to 70c. per pound, according to size of package taken.

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 58 Church Street,
 TORONTO.

Matters Recent and Current.

HEALTH FREE.—The National Health Society of England had delivered under its auspices, in 1882, one hundred and twelve lectures. In many poor neighborhoods the lectures were free.

AT AN INTERNATIONAL MEDICAL CONGRESS in Amsterdam in September a committee was appointed to report upon a plan for an international association to deal with epidemics.

DR. C. W. COVERTON, Toronto, member of the provincial board of health of Ontario, has been made a Foreign Corresponding Member of the Spanish Society of Hygiene, of Madrid.

The cattle quarantine at Queber was established in 1875. It is estimated that of the cattle imported for the United States west of Ohio, at least seventy-five per cent. are imported by way of Quebec.

MORTUARY STATISTICS IN THE PRINCIPAL CITIES.—In the principal cities out of England the rates of mortality per 1,000 of the various populations were, according to the latest official returns, as follows: Calcutta 35, Bombay 27, Madras, 28, Paris 25, Geneva 19, Brussels 26, Copenhagen 24, Stockholm 26, Christiania 20, St. Petersburg 33, Berlin 31, Hamburg 27, Dresden 25, Breslau 35, Munich 37, Vienna 29, Prague 43, Rome 31, Turin 29, Venice 23, Lisbon 31, New York 25, Brooklyn 19, Philadelphia 19, Baltimore 19.

MARRIAGE IN SWITZERLAND.—An analysis, published by the Statistical Office in Berne, of the marriages during the year 1881, shows that the proportion is very low as compared with other countries. The average was 7.4 per 1000 inhabitants. Out of every 1000 men and 1000 women of marriageable age, 49 men and 38 women

were married. These figures show a falling off. On the other hand, the divorces were more numerous than in any previous year. Religious differences are one of the most frequent causes of divorce. The mixture of races in the Confederation is the cause attributed.

PURE AIR.—At the Congress of the Sanitary Institute of Great Britain, held at Glasgow last month, Dr. R. Angus Smith, the President of the Section of Chemistry, Meteorology, and Geology, delivered an address on "Air as a Sanitary Agent," in which he dwelt at length on the influence, of the atmosphere in promoting health and preventing disease, and described the process of putrefaction and the effects of oxidation. The fact that oxygen diminished the activity of the minute particles which produce chicken-cholera, that it rapidly and decidedly arrested decomposition in sewage, indicated the central point in all sanitary forms—the importance of pure air.

PROGRESS OF INFECTIOUS DISEASES.—While the prevalence of cholera in Egypt and India is decreasing (*Journal of American Medical Association*), and the danger of outbreaks of yellow fever in our Southern and Southeastern ports daily diminishing for the present season, a marked increase in the prevalence of typhoid fever is taking place in New York city and its suburbs, as well as in many other cities and sections of the country. The Sanitary Superintendent of that city states that up to the 1st of September of the present year there had occurred 539 cases of the fever, while for the same period of 1882 the number was only 304. No satisfactory explanation has been given concerning the cause or causes giving rise to the increase.

SMALL-POX AND ISOLATION.—Dr. Tidy, Medical Officer of Health for the parish of St. Mary, Islington, Eng., in his annual report on the sanitary condition of the locality for the year 1882, concludes his

remarks as follows: "Knowing as we do from long experience the treacherous character of this disease, its insidious working in some secret focus, and the swiftness with which it subsequently appears and spreads, it is no small source of satisfaction to know that the Islington Small-pox Camp Hospital premises remain intact. The tents and stores being apparently in good condition, we should, in any emergency, have the immense advantage of being ready at a moment's notice to face the enemy with the *best of all weapons*—a sufficiency of hospital accommodation, so much needed at the commencement of an outbreak, by the sufferers first attacked." That is of course for the purposes of isolation.

THE OTTAWA POLICE COURT, it appears, is drained only by a tile drain. This will soon permit the soil in the neighborhood of the drain to become saturated with sewage; a dangerous state of matters very desirable to avoid.

A CASE OF TYPHOID in the house of the Hon. Senator Skead, not long ago, appears to have been caused by the drain leading from the house to a cess-pool, some distance away, becoming completely choked up. We shall endeavor to give full particulars of the condition of the drain, &c., in the next number of the Journal.

THE PUBLIC HEALTH FOR OCTOBER.

GENERAL—IN ONTARIO—We have met during the past week or two many medical men from various parts of Ontario, and without exception they stated, that so far as their experience extended, the public health throughout the country was unusually good during October, as it had been indeed, and in accordance with our monthly reports, during the entire summer. This, it is generally believed, was owing largely to the heavy rain-fall of the early part of the season. The surface of the ground was well washed and much organic matter washed away that otherwise would have been left to decompose.

TORONTO.—Though no particular epidemic here, there were many cases of diphtheria and typhoid fever, and such are increasing in frequency. Repeated outbreaks of diphtheria, in different parts of the city, had been reported to the health officer. The Carison Creek nuisance still exists and there are a vast number of back yard nuisances.

OTTAWA.—The public health in this city is said by medical practitioners here to be exceedingly good. Some lung and bronchial affections, arising more from individual indiscretions, with atmospheric vicissitudes, than from any insanitary condition of the city. No epidemic. Mortality low.

LONDON.—Dr. Edwards writes, "nothing of importance" in relation to the public health. "The usual diseases were mild in their nature and mortality low. On the whole but little sickness." A few cases of diphtheria, scarlet fever and typhoid, with a larger number of bronchial and lung affections and some malarial fevers.

CHATHAM.—Dr. Bray reports good general health there. Whooping cough is, however, epidemic, and increasing, with some diphtheria and typhoid fever, the latter increasing. Considerable remittent fever too. Mortality low.

BELLEVILLE.—Dr. H. James reports no epidemic; no diphtheria; some scarlet fever and typhoid, and whooping cough. A good deal of bronchitis, with high mortality; also a good deal of acute lung disease, severe, and malarial fevers, too.

BARRIE.—Dr. McCarthy reports no epidemic there; some scarlet fever and typhoid, with usual increase in lung troubles. General health fair, with low mortality.

PUBLISHER'S NOTICES.

THERE IS NO GOOD REASON why "Ready-made Clothing" should not be as well made and of as good and late style when made as ordered clothing. Messrs. Patley & Petley, of Toronto, endeavor to prove that this is the case, and keep on hand a large supply of Men and Boys' Ready-made Clothing, which it is said, is as good as much more expensive ordered work. They have also a large stock of Silks and Carpets.

ONE OF THE LARGEST STOCK OF CARPETS, Oil Cloths and Linoleums in Ontario will be found at the store of Henry Graham & Co., Toronto, where they deal solely in such goods. Purchasers can hardly fail to find it to their advantage to examine the stock and observe the reasonable prices there.

MORSE & Co., continue to display their elegant stock and variety of Soaps—such as exhibited at the Industrial Exhibition—in the window of Shields & Co., of Yonge Street, Toronto.

AT THE MANTLE EMPORIUM, 158 Yonge St., Toronto, Women's and Children's Mantles are a *specialty*, and the styles and prices there must commend the goods to purchasers who examine them.

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BEEF PEPTONIDS contains *only* the *nutritious portions* of the beef. It contains *no water* and *no inert matter* of any kind. We combine the dry Extract of Beef with an equal *portion* of Gluten to prevent a tendency to deliquesce, and in order to present the preparation in a powdered and portable form. It is well known that Gluten is the most nutritious substance found in the Vegetable Kingdom, and in nutritive elements is closely allied to Beef.

Four ounces of BEEF PEPTONIDS represent as much nutritive and stimulating properties as forty-eight ounces of the best lean Beef.

Four ounces of BEEF PEPTONIDS contain more nutritive elements than ten pounds of any extract made by Liebig's formula, and from four to six times more Albuminoids and Fibrinoids than any Beef Extract ever offered to the Medical Profession.

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The favour our preparation of BEEF PEPTONIDS received at the hands of Drs. AGNEW, HAMILTON, BLISS, REYBURN, WOODWARD, BARNES, etc., the corps of eminent physicians who employed the preparation with so much advantage in the treatment of the late PRESIDENT GARFIELD, proves conclusively its great value as a food.

Great care is exercised in selecting the Beeves, and none except the most healthy and suitable are employed in making our BEEF PEPTONIDS.

DIRECTIONS FOR USE.

FOR AN ADULT.—*From a teaspoonful to a desert-spoonful, added to a cupful of boiling water, and salt to the taste. Children in proportion.*

It may be given as often as required, say three to six times a day. If preferred, it may be added to soups or other liquid food. In the event of the patient's stomach being in a weak condition a larger quantity of water should be added to the BEEF PEPTONIDS, and administered in teaspoonful doses.

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THE CENTURY

PROGRAMME FOR 1883-'84.

The programme for the fourteenth year of this magazine, and the third under the new name, is if anything more interesting and popular than ever. With every season THE CENTURY shows a decided gain in circulation. The new volume begins with November, and, when possible, subscriptions should begin with that issue. The following are some of the features of the coming year:

A New Novel by George W. Cable, author of "Old Creole Days," etc., entitled "Dr. Sevier," a story of New Orleans life, the time being the eve of the late Civil War.

"Life in the Thirteen Colonies," by EDWARD EGGLESTON, separate illustrated papers on subjects connected with the early history of this country.

Three Stories by Henry James, of varying lengths, to appear through the year.

The New Astronomy, untechnical articles, by Prof. S. P. LANGLEY, describing the most interesting of recent discoveries in the sun and stars.

A Novelette by H. H. Boyesen, author of "Gunnar," etc. A vivid and sparkling story.

The New Era in American Architecture, a series of papers descriptive of the best work of American architects in Public Buildings, City and Country Houses, etc. To be profusely illustrated.

A Novelette by Robert Grant, author of "Confessions of a Frivolous Girl," etc., entitled "An Average man," a story of New York.

The Bread-winners, one of the most remarkable novels of the day, to be completed in January.

Christianity and Wealth, with other essays, by the author of "The Christian League of Connecticut," etc., on the application of Christian morals to the present phases of modern life.

Coasting About the Gulf of St. Lawrence, a series of entertaining articles, profusely illustrated.

Scenes from the Novelists, HAWTHORNE, GEORGE ELIOT, and CABLE, with authentic drawings.

On the Track of Ulysses, the record of a yacht-cruise in the Mediterranean, identifying the route of Ulysses on his return from the Trojan war.

"Garfield in England," extracts from his private journal kept during a trip to Europe in 1867.

"The Silverado Squatters," by ROBERT LOUIS STEVENSON, author of "New Arabian Nights."

There will be papers on outdoor England by JOHN BURROUGHS and others, a beautifully illustrated series on Dante, a number of papers by the eminent French novelist ALPHONSE DAUDET, articles on art and archæ-

ology by CHARLES DUDLEY WARNER and others, illustrated papers on sport and adventure, short stories by the leading writers, essays on timely subjects, etc., etc.

Subscription price, \$4.00 a year; single numbers sold everywhere, at 35 cents each. All dealers receive subscriptions, or remittance may be made direct to the publishers by postal or express order, registered letter, bank check, or draft.

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To enable new subscribers to begin with the first volume under THE CENTURY name we make the following special offers:

New subscribers beginning with November, 1883, may obtain the magazine for one year from date, and the twenty-four previous numbers, unbound, for \$8.00. Regular price for the three years, \$12.00.

Or, if preferred, a subscription and the twenty-four numbers BOUND IN FOUR ELEGANT VOLUMES will be furnished for \$10. Regular price, \$18.

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The *New York Tribune* once said: "In the avalanche of immoral literature that threatens the children, some strong, vitally wholesome, and really attractive magazine is required for them, and Sr. NICHOLAS has reached a higher platform, and commands for this service wider resources in art and letters, than any of its predecessors or contemporaries." The reference to the wide resources in art and letters commanded by Sr. NICHOLAS was never more fully illustrated than by the extraordinary list of attractions which that magazine announces for 1884. The following will be some of the leading contributors:

Louisa M. Alcott,	J. T. Trowbridge,
Captain Mayne Reid,	Hjalmar Hjorth Boyesen,
Maurice Thompson,	Frank R. Stockton,
Charles Dudley Warner,	Joaquin Miller,
Elizabeth Stuart Phelps,	Mrs. A. D. T. Whitney,
Julian Hawthorne,	Celia Thaxter,
Mary Mapes Dodge,	Lieut. Frederick Schwatka,
Rose Hawthorne Lathrop,	E. S. Brooks,
George W. Cable,	Chas. G. Leland,
Susan Fenimore Cooper,	John G. Whittier,
"H. H.,"	W. O. Stoddard,
	C. P. Cranch,

and scores of other distinguished writers. The best artists and engravers illustrate the magazine. It has been truly said that the reading of Sr. NICHOLAS is

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THE CENTURY CO., NEW YORK, N. Y.

Literary and Scientific.

THE ESKIMO, OR INNUITS.

We learn from the last number of the *Philadelphia Medical Times* that an interesting official report has just been published of the cruise of the "Corwin," which was sent in 1881 to the Arctic Ocean in search of the "Jeannette." The most interesting part of the report the *Times* thinks is that by Dr. Irving C. Rosse, of his medical and anthropological observations.

"He found that while the ethnical points that distinguish the Eskimo from the North American Indian are distinctly marked, this cannot be said to be the case between the Eskimo and the so called Tsuchtschi of the Asiatic coast. Reasoning from this and other facts, Dr. Rosse considers them of Asiatic origin, a view which receives further confirmation from their ability to cross Behring's Straits in boats, and from their practice of tattooing themselves, a custom which was evidently brought from Japan. He says, 'Natives cross and re-cross Behring's Straits to-day on the ice, and in primitive skin canoes not unlike Cape Cod dories, which have not been improved in construction since the days of prehistoric man.' Indeed, for some unknown reasons, their development ceased at the hunting and fishing stage: they are therefore the living representatives of the race that was contemporaneous with the cave-bear and mammoth in Europe. In some particulars Dr. Rosse differs from other Asiatic voyagers in some of his impressions of the Eskimo, or Innuits as they call themselves. According to his experience, they do not have the enormous appetites with which they are credited; indeed, several of them, who accompanied the party, invariably ate less than the sailors did."

"Contrary to general opinion, also, it is stated that their intellectual capacity is by no means feeble; they learn quickly, show great aptitude for trade, and acquire languages easily. Examination of their skulls does not indicate the low grade of intellectuality which they are commonly credited with, but they are well formed, and possess large brain-capacity, averaging as high as the French or Germans. They are honest, truthful, and good-natured, except when they have been corrupted by the bad examples of white men."

LIQUID OXYGEN AND NITROGEN.—According to the latest researches (London *Lancet*) oxygen when cooled to 136° C. (213° F.) liquifies to a colorless transparent liquid at the very moderate pressure of 23 atmospheres, or thereabouts. Nitrogen at the same temperature, when the pressure is cautiously allowed to fall to a point not lower than 50 atmospheres yields a colorless liquid with distinct meniscus. Ozone under quite moderate limits of pressure and temperature is a liquid of intensely blue color, which gives a vapor which can only be compared in color with the brightest blue sky. Pure alcohol is a white solid at about 130° C. (202° F.) At a very slightly higher temperature it is luicous like oil.

TO MAKE METAL HEAVIER without anything visible making it become so: Take a horse-shoe magnet and gather on the ends all the fine iron filings that will stick. Slip off one of the trays from your scale beam and hang the magnet in its place. Now balance it by weight in the remaining tray. If you place an alcohol lamp under the iron filings and light it the filings will be consumed. Will you find that you lose weight in proportion to the amount of the iron burned? No; there will be a greater weight than before the burning, for it has taken oxygen from the atmosphere. It is not strange that this amount of oxygen should add perceptible weight?



ST. LAWRENCE CANALS.

Notice to Contractors.

SEALED TENDERS, addressed to the undersigned and endorsed "Tender for St. Lawrence Canals," will be received at this office until the arrival of the eastern and western mails on **TUESDAY**, the 12th day of November next, for the construction of a lock and regulating weir and the deepening and enlargement of the upper entrance of the Cornwall Canal.

Also for the construction of a lock, together with the enlargement and deepening of the upper entrance of the Rapide Plat Canal, or middle division of the Williamsburg Canals.

Tenders will also be received until **TUESDAY**, the 27th day of November next, for the extension of the pier work and deepening, &c., of the channel at the upper entrance of the Galops Canal.

A map of the head or upper entrance of the Cornwall Canal and the upper entrance of the Rapide Plat Canal, together with plans and specifications of the respective works, can be seen at this office, and at the Resident Engineer's office, Dickenson's Landing, on and after **TUESDAY**, the 30th day of October next, where printed forms of tender can be obtained.

A map, plans and specification of the works to be done at the head of the Galops Canal can be seen at this office and at the lock-keeper's house, near the place, on and after **TUESDAY**, the 13th day of November next, where printed forms of tender can be obtained.

Contractors are requested to bear in mind that tenders will not be considered unless made strictly in accordance with the printed forms, and—in the case of firms—except there are attached the actual signatures, the nature of the occupation and residence of each member of the same; and further, an accepted Bank Cheque for the sum of *Two Thousand Dollars* must accompany the Tender, which sum shall be forfeited if the party tendering declines entering into contract for the works at the rates and on the terms stated in the offer submitted.

The cheque thus sent in will be returned to the respective parties whose tenders are not accepted.

This Department does not, however, bind itself to accept the lowest or any tender.

By order,
A. P. BRADLEY,
Secretary.

Department of Railways and Canals, }
Ottawa, 28th Sept., 1883. }



ST. LAWRENCE CANALS.

NOTICE TO CONTRACTORS.

The letting of the works at the upper entrance of the **CORNWALL CANAL**, and those at the upper entrance of the **RAPIDE PLAT CANAL**, advertised to take place on the 13th day of **NOVEMBER** next are unavoidably postponed to the following dates:—

Tenders will be received until **TUESDAY**, the **FOURTH** day of **DECEMBER** next.

Plans, specifications, &c., will be ready for examination at the places previously mentioned on and after **TUESDAY**, the **TWENTIETH** day of **NOVEMBER**.

For the works at the head of the Galops Canal tenders will be received until **TUESDAY**, the **EIGHTEENTH** day of **DECEMBER**.

Plans and specifications, &c., can be seen at the places before mentioned on and after **TUESDAY**, the **FOURTH** day of **DECEMBER**.

By order,
A. P. BRADLEY,
Secretary.

Department of Railways and Canals, }
Ottawa, 20th October, 1883. }

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PHOTOGRAPHER.

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NOTICES OF BOOKS, &c., RECEIVED.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION; edited for the Association by Dr. N. F. Davis; published at Chicago.

This new publication is a large sized weekly and a welcome exchange.

DIO LEWIS' MONTHLY; published by Mr. Frank Searman, 68 & 69 Bible House, New York.

This attempt to popularise hygienic literature by the publication of a magazine of this sort seems to have been very successful. It consists largely of readable stories, in almost every one of which is a hygienic lesson. Elsewhere in this Journal we give a specimen of an interesting story or two with valuable Lessons on Consumption.

THE MICROSCOPE AND ITS REVELATIONS, by Wm. B. Carpenter, C.B., M.D., F.R.S., &c., &c., Vol I, New York, Wm. Wood & Co.

We have only just received this and three other volumes of Wood's admirable series, which must have been delayed somewhere, as we received Vol. II of Carpenter's work and noticed it months ago.

We shall endeavor to examine them, and give a more extended notice in our next issue.

THE FOLLOWING HEALTH APHORISMS, by Dr. Frank Hamilton, from the *Louisville Medical News*, are very good:—

1. The lives of most men are in their own hands, and, as a rule, the just verdict after death would be *felo de se*.
2. Light gives a bronzed or tan color to the skin; but where it uproots the lily it plants the rose.
3. Mould and decaying vegetables in a cellar weave shrouds for the upper chambers.
4. A change of air is less valuable than a change of scene. The air is changed every time the direction of the wind is changed.
5. Calisthenics may be very genteel, and romping very ur-genteel; but one is the shadow, the other the substance of healthful exercise.
6. Blessed is he who invented sleep; but thrice blessed the man who will invent a cure for thinking.
7. Milk drawn from a woman who sits indoors and drinks whiskey and beer is certainly as unwholesome as is milk from a distillery-fed cow.
8. Dirt, debauchery, disease, and death are successive links in the same chain.



BALL'S HEALTH PRESERVING



EVERY CORSET
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MONEY REFUNDED.

A PERFECT CORSET SECURED AT LAST.

A combination of COILED WIRE SPRINGS, Whalebone and Corset Jean, which is pronounced by our best Physicians less injurious to the wearer than any other Corset made.

Fits perfectly a greater variety of forms than any other.

Yields readily to every respiration and is equally comfortable in any position assumed by the wearer.

Warranted to retain its perfect shape till worn out. By it you secure a more graceful figure than with any other corset. Please give it a single trial and you will wear no other.

What Eminent Chicago Physicians say of it.

CHICAGO, October 23, 1880.
I have examined BALL'S HEALTH PRESERVING CORSET and believe that it is in every respect best calculated to preserve the health of the women who wear it.

It does not seem to be possible for the wearer of such a corset to be injured by tight lacing. It should receive the favorable endorsement of the Physicians who have the opportunity of examining it.

JAMES NEVENS HYDE.

CHICAGO, October 13, 1880.
I have examined BALL'S HEALTH PRESERVING CORSET, and believe it to be the least injurious to the wearer of any Corset I have seen.

A. J. BAXTER, M. D.

CHICAGO, October 27, 1880.
I do not advise any woman to wear a Corset, but if she will do so—and she generally will—I advise her to use one of BALL'S HEALTH PRESERVING CORSETS, as it is less likely to do her injury than any with which I am acquainted.

A. REEVES JACKSON.

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33 FRONT ST. WEST, TORONTO.

ANOTHER HUMAN LIFE sacrificed to science. M. Thuillier, one of the Pasteur cholera commission to Egypt, died of that disease Sept. 20th.

THE NUMBER OF DEATHS from wild animals last year in the Madras Presidency far exceeded that of the previous year. The number from snake bites was given as 920, though probably in reality it was much larger.

POWER OF HOPE.—Oliver Wendell Holmes says that the great secret of success in every form of quackery is hope kept alive in the patient: while the too fatal gift of science is a prognosis of despair.

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

"NEW REMEDIES" is authority for the fact that a little powdered *carbonate of ammonia* sprinkled where dogs are wont to commit nuisances, as in front yards, lawns, &c., will act as a prophylactic. The *modus operandi* of the remedy is based on the well-known fact of the preliminary canine sniff.

CONSEQUENCES.—*First Country Doctor*: "Could you come to my place, Brown, to-morrow morning?" *Second ditto*: "All right, Old Man, what is it?" *First Country Doctor*: "Well, I've had a case of 'endocarditis' which I've very successfully treated with 'convallaria majalis,' and I want you to help with the Post-Mortem!"

ANOTHER SOURCE OF THE SPREAD OF contagion is referred to in a late number of the *British Medical Journal*. It is new clothing, much of which is made up at the houses of the workers. If in these houses there happen to be cases of contagious disease, the germs may be readily conveyed in the clothing to the wearers of the same. Care and enquiry on the part of the manufacturers of clothing is very essential, in order to prevent this.

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2 Patents, Dec. 20th, 1881.

1 Patent Jan. 16th, 1883.

Canadian Patent, March 20th, 1883.

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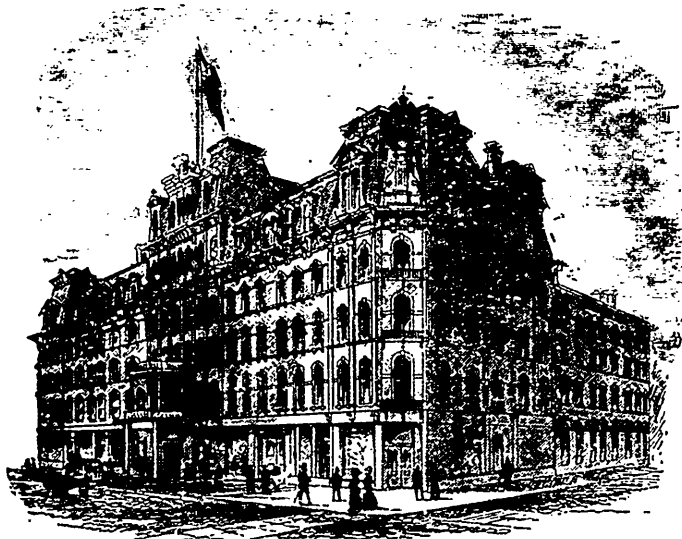
THE only Chain Top Folding Spring Mattress with the Springs set on a rigid foundation, which holds them firm, and prevents the outside rows from tipping out of position; and, being set in line, the Bedding is thereby prevented from dropping at the head and foot, while the network of diagonal chains gives an even yielding support to the Springs and produces more elasticity, and is vermin proof.

SPREAD OF INFECTION BY PAWNBROKERS AND SUCH.—It may be useful (*Galliard Med. Four.*) to draw the attention to a source of propagation of infection among the poor, which sanitary authorities appear seldom to consider, or often to overlook. We refer to the spread of contagion through the medium of clothes deposited in pawnbrokers' shops. The persistency with which the contagium of certain zymotic diseases, and especially of measles, scarlatina, and smallpox, clings to clothes is well recognized by the medical profession. Not a few cases have been recorded of the propagation of these diseases by means of the retention of infecting power in clothes, which had been shut up in boxes for months after exposure to the original infection. There is danger in purchasing at "second hand" shops.

MALARIA IN FLOWER-POTS.—Tending to corroborate the idea that malaria is caused by any vegetable decomposition is the case reported by Dr. Eichwald, of St. Petersburg, of a lady who lived constantly in a room filled with flowers in pots, and who thus acquired an intermit- tent fever, with symptoms of true malaria. Too much of any thing is bad.

DOMESTIC HAPPINESS, thou only bliss
Of Paradise that has survived the fall!
Though few now taste thee unimpaired and pure,
Or, tasting, long enjoy thee!
Thou art the nurse of Virtue: In thine arms
She smiles, appearing, as in truth she is,
Heaven-born, and destined to the skies again.

A LADY, the mother of four children, shed tears because she had not been taught the duties of a mother, before marriage. She is now a chronic invalid, and likely to remain so



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THE PALACE HOTEL OF CANADA,
Near the Parliament Buildings.

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