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HOUSE-BUILDING—THE HOME.

The season of house-building is just at hand, and the construction of a house and home in which a family are to spend the most part of their time, is a process of such importance as to require really very serious consideration, and more especially in so far as the construction concerns the health of the family or the prevention of sickness. The following are important points, which should receive first consideration.

First—The particular locality or site for the house; 2nd. The preparation and construction of the foundation and cellar; 3rd. The material of which the house is to be built; 4th. The lighting; 5th. The provisions for warming and ventilating; and 6th, and perhaps most important of all, and which, in rural districts, especially, is apt to be most neglected, provision for the removal to a safe distance of all waste and excremental matters.

THE LOCALITY OR SITE.

The locality of the house should be as far as possible from any swampy or very wet soil, and the site should be so elevated as to permit of thorough drainage. In the words of Dr. Sheehan, Rochester, N.Y.:—"A house over a damp site is never healthy. The ground moisture is continuously striking up the walls, and through cellar bottoms improperly constructed, and the inmates suffer from frequent attacks of catarrh, neuralgia and rheumatism. Consumption is now

regarded, in a large measure, as due to the same unsanitary condition. Investigations by Dr Bowditch proved this in Massachusetts, and Dr. Buchanan sums up the English experience as follows: 'That wetness of the soil is the cause of phthisis to the population living upon it, and this proposition may be affirmed generally, and not only of particular districts. If a house is to be healthy, the ground water and moisture must be excluded from the inmates. Sub-soil drainage will effect the former, and damp courses laid in the foundation walls, or dry areas around them, the latter. The necessity and utility of both are abundantly proven. Two royal stables near Munich, with the same arrangements as to stalls, feeding, attendance, etc., suffered very unequally from fever. In the one, the level of the ground water was five to six feet below the surface; in the other only 2½ feet. The latter was the unhealthy stable, and when it was drained so that the ground water was as low as the other, it became equally as healthy."

Thorough under-drainage of the soil under and for a long distance around the house is absolutely indispensable to the perfect health of the inhabitants thereof. This, for reasons well given below, in the words of Dr. Eza M. Hunt, Secretary of the State Board of Health, New Jersey, U.S., in a paper on Health and Home, in the last report of the State Board of Health: "There is no such purifier of ground as

air. No ground is so solid as that there is not either air or water in the inter-spaces between the earth-particles. That this amount is very considerable you may easily test by filling a glass with dirt and seeing how much water you can pour in it. If the dirt is dry the amount of water that you thus pour in shows how much air was in the glass between the particles of dirt, for the water only takes the place of the air. If the ground is thus kept full of water it expels all the air except the little that mingles with the water itself. Now, we know that not air and water, but *circulating* air and *circulating* water are the two great agents for keeping the ground in a condition favorable to health. We secure both of these by securing a low water level in the ground, so that air can circulate down to it, and so that the water coming from the clouds can also circulate in the soil and not find it already full of stagnant water. To accomplish this, deep under-drainage is necessary. As the ground differs very much in natural degrees in different places, and as the soils and underlying strata differ very much, according to the geological structure and artificial additions, the depth at which it is necessary to lay tile in order to secure circulation in the upper ground and a low level of the ground-water is very different. The farmer is not slow to find this out about his fields, and the builder who finds out whether he is building on clay, or gravel, or sand, or alternate layers of these or in a muck bed, is not slow to find out if he will. We knew a man who dug out a pond on a hill and built a house over it without any drainage except enough to carry off the standing water from the pond. It was a fine-looking house, but became notorious for chills and fever. We know an eminent engineer who claims that in most cities there is need of drainage to the depth of fifteen feet. This view is

based on the fact that most cities are built near streams of water, where the natural water level is not very low; that as buildings shut out sunlight and air, evaporation goes on slower, and storm-water and the absence of prolific vegetation add to the ground moisture. This is all true. Many cities are now suffering from ground saturated with water more than from any other cause. This shuts out the air which would otherwise circulate and oxidize filthy matter and take care of it. It is wonderful what an amount of compost or organic matter the ground will take care of if only it can be allowed to have air in it and the water that comes from above circulating through it. But, if you shut these out, stop cropping the ground, and then by building on its surface increase dampness, you interrupt nature in one of its chief arrangements for health. Drains, therefore, ten to fifteen feet below the surface, are not extravagant for some parts of cities, but much will depend on the character of the soil. At any rate, no house should be built, either in city or country, unless the builder has arranged to make the usual level of ground-water many feet below the surface of the ground." Indeed, several feet below the cellar floor.

In cities, houses are sometimes built over city garbage—dead animals and all sorts of waste matters, mixed with ashes and road scrapings. This is simply dreadful, and the inhabitants of such houses could not be perfectly healthy. It would be better, as regards health, to build over a graveyard. In the course of a number of years the soil might become tolerably purified.

Many old houses might be made much dryer and healthier by thorough drainage under and around them.

THE FOUNDATION AND CELLAR.

The time will probably come when there

will be no such thing as a cellar connected with a dwelling house, and when all dwellings will be built on arches, giving as free circulation of air under as around the house. So long as cellars are used they should be well-lighted, and so constructed as to be as dry as any other rooms of the dwelling. If they are not thus dry the dampness will pervade every part of the house. Hence there should be a system of tile underdrains many feet below the cellar floor. Ground air and dampness cannot be wholly shut out by cement walls and floor, therefore, the air in the soil, under and around the cellar, should be rendered dry, as well as pure.

In building on soils retentive of moisture, even if well underdrained, there should be what is called a "damp course," put in the walls of the foundation a little below the cellar floor, and another a foot or two above the ground level and rain-water splash. The importance of this may be understood from the following: In a house built by Mr. Eassie, C.E., near London, he estimates "that the foundation walls occupied 8,000 cubic feet, or 115,000 bricks; under ordinary circumstances the bricks will contain 5,000 gallons of water, and if the subsoil is very humid or porous, the bricks will absorb and retain 7,000 gallons of water plus the matter contained in the mortar. This wet will be continuously striking up into the walls by capillary attraction exerted over 2,400 cubic feet," unless prevented as above indicated by a "damp course." He adds, dampness from these sources has often been traced up thirty feet in height above the ground.

LIGHTING THE DWELLING.

A house to be healthy must be well lighted. Window glass must be freely used. The houses in Ottawa are for the most part very badly lighted—that is, the medium sized houses, built chiefly to rent.

But very few are well lighted. Windows are too commonly obstructed, too, with blinds and curtains, and more windows are needed on this account.

THE BUILDING MATERIAL.

The kind of material for the walls of the house is not of so much consequence so long as it be dry. On this it will be as well to give the following lines from Dr. Hunt's paper above referred to: "The idea of a perfect building material is but an extension and modified application of the idea of a perfect ground structure on which to build. While there is more need of compactness in order that it may resist or accommodate itself to forces above ground, the idea of porosity or perviousness must be preserved. It must be material which admits of the circulation of air through it, yet in such a sieve-like way as not to cause draught. Brick, because it is a form of compact but aerated ground, and porous stone, because it is another form of earth structure, are valuable for this purpose. Some stone is so compact as too much to exclude air, and thus becomes too damp for building material. So walls may be painted and successively papered to an extent which makes them too impervious. The art of healthy house building is so to combine materials as to secure this properly distributed circulation of air, and if possible secure it at proper temperature, to govern the admission of light, as adapted to human beings, and thus follow out the natural laws which govern man in his relation to his enclosed condition, and the adjustments which within certain limits are allowable. But it is wonderful how wise it is for us in all artificial constructions to study closely the laws of natural philosophy, and not only conform thereto, but, in deviations make our deviations on the basis of the law. It is of great import that now scientific tests unite with practical experience to enable us to decide many questions

bearing on the welfare of life. We can accurately test the quality of stone or brick, the angularity and quality of sand, the excellence of lime or cement, and whether the mortar is properly tempered. So brick, or blocks of terra-cotta, can be had of definite degrees of porosity, and even the various woods are closely tested, as well as the effects of varnish, oils and various paints. The right combination of materials to form a proper dwelling house, as well as the right preparation of foundations, are well understood, but often greatly neglected."

HEATING AND VENTILATING.

To enter fully into the heating and ventilating of houses and the various methods employed, would occupy more space than could be devoted to it here, and only a few practical hints can be given. In ventilating ordinary houses too much attention is usually given to openings for fresh air to enter a room, and too little to methods for withdrawing foul or breathed air. If with an open fire place the foul air be removed from a room, as it will be very effectually, fresh air will force its way into the room through the cracks and crevices about the windows and doors and through the porosities in the walls. With the ordinary open fire place there is a great loss and waste of heat, but with an open grate stove and a long pipe passing through upper rooms there is very little waste heat, and some of these stoves are very handsome, as well as very economical. With an opening in the pipe in each of the upper rooms through which the pipe passes, good ventilation is obtained for these rooms. But the openings in the pipe should be large—as wide as the pipe will admit of, and six or eight inches long, and so arranged that they can be partly closed if desired. The difference between the air of a bedroom having a stove pipe, with an opening in it, passing through the

room, and with a little fire in the stove, and that in a room with no such means for withdrawing the breathed air, is most marked to any ordinary observer on entering such rooms in the morning, after they have been occupied during the night. To those living in houses not provided with special means of ventilation (and very few houses are so provided), and who want an inexpensive plan, and do not object to a stove pipe passing through rooms, the writer can confidently recommend the above as being about all that is really necessary. If the rooms are tightly constructed, and no cracks about the windows, openings should be provided for fresh air to enter, as by lowering the upper sash. In cold weather a minute opening will let in a good deal of cool air. Some sort of device for turning the fresh air after it enters the room, up against the ceiling and so spreading it about, would be of great advantage by preventing the air taking a direct course toward the opening in the stove pipe.

The plan of warming the air by means of a furnace in the basement, distributing it to the rooms above, and removing it at the roof, is an excellent one, provided the pipes are all kept scrupulously clean, and the air be taken from a pure source, a few feet above the ground, and be not overheated with the furnace. The furnace by which the air is warmed by means of steam filled pipes is the best.

The plan now in too common use of warming rooms by means of steam pipes in the rooms, is very objectionable, unless some means be provided for changing the air in the rooms, as this method of warming provides for no ventilation whatever.

The means for removing and disposing of waste excremental matters, especially in rural districts, will be discussed in the next number of the JOURNAL.

TESTING DRAIN AND SOIL PIPES.

The practical remarks below are from an abstract of a paper read at the Congress of the Sanitary Institute of Great Britain, held at Glasgow, a few months ago, by James Steward, S.E., &c., a sanitary engineer of much experience; the peppermint test being from the N. J. State Board of Health:—

For a number of years past the inhabitants of this city (Glasgow) have displayed a very considerable interest in the efficiency of the sanitary appliances connected with their houses, and have shown a most laudable anxiety as to the proper testing of the various drains and pipes, which are the necessary constituents of every dwelling house.

Having had for upwards of thirty years very considerable experience in the almost innumerable details of such matters as generally practised, and more especially as practised in the West of Scotland, I have some confidence in hoping that the notes of a successful practise and experience I am about to lay before you may have some claim upon your attention.

When a necessity arises for an examination of the sanitary condition of a dwelling house, a sanitary engineer, or other duly qualified person is called in by the owner and requested to test the drains, &c. Unfortunately, however, these tests frequently extend no further than the surface drains and vertical pipes. Then follows a report that certain defects exist in the drains and plumbing works, and such are recommended to be remedied and improved.

The drains are then lifted and relaid, or it may be, as I have frequently seen, that the joints or junctions are only cemented as they lie. The work is done; but no attention is given to the swampy and malarious condition of the ground in the vicinity of the defects which still remains

in the same saturated state, due to the previous defects in the drains; or it may be from the still defective drains of adjoining houses, the level of which may be higher; or perhaps from ground water.

The drains being finished, the saturated material is put back into the hole or trench, the floor is closed up, and if any thought is given to the condition of the sub-soil, it is, that it will soon dry up, now that drains are supposed to be perfect.

The methods adopted for testing the horizontal drains and vertical pipes are as follows, viz.:—1st. By the *smoke test*, relying upon *sight* and *smell*. 2nd. By the *paraffin*, *peppermint*, or other tests, relying upon *smell*. 3rd. By the *water test*, which also relies upon observation.

THE SMOKE TEST.

Regarding the test by smoke it may be considered very suitable, indeed, perhaps it is the best for testing vertical pipes and apparatus in a house; as any defect usually becomes visible at once by the smoke, or is apparent, more especially if the wood-work covering the pipes is removed as far as possible; otherwise a current of air may carry the escaping smoke up the recess for the pipes, which generally extends from the basement floor to the roof.

As regards the testing of drains, I cannot speak quite so favorably in applying smoke to them: assuming that the drains are defective, there are many houses of which the basement or ground floors are covered with asphalt, Portland cement, tile, or other impervious flooring, so that it is impossible for smoke to find its way through, except at some small opening at the foot of the soil, or other pipes passing into the ground.

In other instances of very frequent, if not constant occurrence, where the escape or appearance of smoke cannot be observ-

ed, although the upper parts of the joints are filled, small parts at the bottom are left quite open; these may arise through the carelessness of the workman, or may be left open with the idea of draining the ground; but the reverse takes place, the open part of the joint is therefore constantly sealed with water, and no smoke can escape.

THE PARAFFIN OR PEPPERMINT TEST.

I have entered so fully into the smoke test it is not necessary I should detain you with any lengthened observations on this method of paraffin, &c., &c., as they are so far similar in composition and action, viz., air with smoke, or air with the smell of paraffin or peppermint.

My remarks will therefore apply as to whether it can supersede the smoke test and give better results; from my experience I am inclined to give smoke the preference; the statement already made as to the uncertainty of the smoke test when applied under certain conditions to the horizontal drains in the ground, the same will apply with greater force against the paraffin or peppermint test, both of which I consider to be trifling, uncertain, and misleading, if either of these are alone to be depended upon.

METHOD OF TESTING.

The oil of peppermint, when brought in contact with hot water, has an excessively pungent smell. "If such an excessively pungent mixture as this be introduced into the drainage system of a house, even the smallest leakage will become evident. Suppose the least possible defect to exist in any joint of any of the pipes, a strong smell of peppermint will be evident near the defect. The only difficulty is finding a place to introduce the peppermint. It will be quite evident that it is no use to pour it into any of the appliances in the house, as, were such done,

this smell would so permeate the whole of the premises, by way of the staircase, passages, etc., that time would not be allowed to detect the leakages. Some means must be discovered of getting the peppermint in from the outside. This is not always possible, but generally it is. In the case illustrated there would be no difficulty. The rain-water pipe at the back admirably suits the purpose. One person gets out on the flat roof, near the top of the pipe, and provides himself with peppermint and four or five gallons of water, as near boiling as possible. Meantime, all doors and windows are closely shut, and persons are stationed about the house to observe if the smell expected becomes evident, and to locate, as far as possible, the point from which it issues. The man on the roof pours about half an ounce of the oil down the pipe, and follows it with the hot water. He need then retreat from the place a little, for the peppermint-laden steam which will come from the pipe is blinding in its pungency. As soon as possible he plugs up the top of the pipe with a towel, or some such thing, to prevent the occurrence of the vacuum which would otherwise be in the pipes, and which would tend to draw air from the house into the pipes instead of from the pipes into the house, at any leakage. It would probably not be a minute before the people in the house would perceive the smell at various places. The manipulator of the peppermint must remain perched on the roof until those inside have had time to make their observations, otherwise he will infallibly bring the smell with him."

The test described is an excellent one, as Dr. Hunt says: "It is searching and is simple in application, but it has one drawback. It is impossible by means of it exactly to localize a leakage. This drawback does not apply to the smoke

test, as made by a smoke machine. This is nothing more nor less than a centrifugal pump attached to a vessel for generating smoke. The pump pumps smoke out by a pipe, which may be inserted in any pipe in direct communication with the drain, or in an aperture made for the purpose. The test is in all respects similar to the peppermint one, excepting that the leakage is not smelt, but seen, and as we all know seeing is believing."

THE WATER TEST.

The injury resulting from the constant outflow of moist sewer air into and saturating the ground under the floors is a serious evil ; it is therefore indispensable that the drains should be both *air and water tight*.

The application of the water test to the main drain of a house is, in my opinion, by far the best method, and is therefore superior to the other methods I have referred to, for is it not the fact that the object we endeavour is to have the drains water tight ?

This method is not generally practised, perhaps from the want of a suitable apparatus of easy and simple application, or it may be from a desire to avoid the certainty of showing whatever defects of construction may exist. The *modus operandi* is this : the pipes should be entirely stopped up at the ends and filled with water, some upright part having been previously selected or formed for the purpose of observing if the drain holds the water, or the reverse ; the other ends or branches having been closed in a similar or sufficient manner, the water may then be turned on, and the pipes filled to the part marked on the upright pipe, and carefully watched to see if the water falls below the mark ; and should it do so it shows at once there is a leak somewhere, and no doubt can arise as to the actual results of this method of testing,

and nothing is more certain or satisfactory.

Another advantage to be derived from the water test is, that the proprietor or tenant can have the satisfaction of observing the effects of it, either by showing the *efficient* or *deficient* construction of the drains at the upright part selected and marked for the purpose ; this he could not follow out so well or readily with the smoke or paraffin tests ; and in the event of a new drain being tested, the workman might be apt, on a defect being noticed, to fill it up hurriedly to hide it ; such an attempt would at once be detected on the application of water.

In the majority of houses that I have been called on to examine, I should not consider it at all requisite that any tests should be applied ; as the damp appearance of the walls, and sometimes the floors, are sufficient of themselves to tell the true state of matters below.

The damp plaster is observed in some cases rotting above the parts that have been repaired with Portland cement, this repair having been done with the mistaken idea of keeping down the damp, or may have been done at the time of the last overhaul of the drains : such expectations are not realized ; the insufficient relaying of the drains, or the neglect of draining the sub-soil is soon shown by the above-mentioned indication ; and in addition by the paint at many places along the foot of the walls being destroyed, and getting daily worse, as the sub soil gets more impermeated. * * * * *

The foregoing observations regarding the actual results of testing by the smoke machine have been altogether applicable to drain pipes ; but the defects usually observed in the soil or other discharge pipes when applying the test to them, are insufficient water seal in the traps, open or cracked joints, and perforation of the lead traps or bends.

ACTION OF WATER ON LEAD PIPES.

The cause of the destruction of the lead in this manner is by common consent attributed to the action of sewer gas; it may therefore be considered bold on my part to come forward and question a subject so universally admitted as this alleged action of sewer gas on lead pipes.

I have given this particular matter careful observation for a number of years, and the conclusion I have come to is, that the perforation is caused by the vapour or humid air in the drains and vertical pipes, arising from the warm water discharged from the house. This vapour ascends till it comes to the trap, and there condenses in drops of distilled water on the upper side of the trap or bend. I have looked into a trap and observed the drops hanging, and have removed them with my fingers along with the destroyed part, as a substance which is chemically named "carbonate of lead;" and as each succeeding drop forms, it falls off, taking a portion of this substance with it, and leaving a clean surface for fresh chemical attack.

At the time of the out break of typhoid fever at Crosshill, in March and April, 1875, I was then acting as sanitary surveyor for the Govan Parochial Board, in the district then known as "No Man's Land;" and during my examination into the sanitary condition of the houses, I saw a good example of the action of vapour on lead, in the case of a lead-lined hot water system connected with a tenement there; this cistern had a wooden cover, and there was a space between the water and the underside of the cover, which was constantly filled with vapour, the action of which was seen in the coating of the leaden sides of the cistern with the substance I have referred to, a sample of which I have retained and now show you; and although I hold that the action on the lead pipes is by the vapour, and

not by sewer gas, still the same remedy would require to be carried out, viz., ample ventilation of the discharge pipes.

Dr. Alfred Carpenter, in his work, *Preventive Medicine and Public Health*, states: "It is a soft and distilled water which acts so readily on lead."

Then Col. Waring, in his work formerly quoted, states at p. 33: "These gases (sewer gases) have in a much less degree, *if they have at all*, the power of decomposing lead pipes."

SEWAGE-SOAKED SOIL.

In my former remarks I have made reference to the re-draining of a house, the filling up of the trench with the same sewage-soaked soil. This practice, I may tell you, is going on every day in this locality, not only as regards the trench cut for the drains, but the whole water-logged area below the floors remains as it was prior to any alterations, attention not being given to the drainage of the ground water, neither at the time of the building of the house, or now, when a so-called improvement is made. This objectionable work that I have just referred to, is being executed by tradesmen who have neither the skill, experience, workmen, or sufficient appliances necessary for carrying out such work.

It is, therefore, all the more necessary that these matters should be attended to when we look at the position of many of the best houses in this city and neighborhood, viz., the site of the house is excavated out of a sloping bank, leaving high ground at the back, a raised roadway at the front; the back ground slopes to the house or back area, and consequently all the ground water, and perhaps the sewage water from a defective sewer in the lane behind, follows the slope of the ground, and permeates through the foundation. When this state of matters is combined with leaky house drains, you

can readily understand what condition the house will be in; and though I merely state this as a hypothetical case, there are many houses in the surrounding locality in a similar condition, and where the configuration of the ground, although somewhat different, is equally telling against their sanitary condition.

In concluding these remarks, which I trust may have met with your approval, I have only to add that the neglect of the sanitary arrangements which we find in so many habitations, calls for their regular and careful examination, and that our chief endeavour should be to rouse the interest of the general public in these matters, and I know of no other association, or organized body, that have done so much to promote this good work as the Sanitary Institute, of Great Britain.

THE EXAMINATION OF WATER FOR SANITARY PURPOSES.

Abstract of a paper by CHARLES E. CASSAL, F.I.C., F.C.S., Demonstrator, Department of Hygiene, University College, London, and B. A. WHITELEGGE, M.D., B. Sc., and of discussion thereon.

The analysis of water is a subject which has of late years excited the keenest controversy among chemists and sanitarians. In spite of painstaking investigations and exhaustive discussions, there are few subjects in the whole range of chemical science which call forth so much difference of opinion, not only with regard to the methods to be employed, but also to the accuracy of the results obtained, and the degree of importance and significance to be attached to them. At the present time additional interest will perhaps attend discussions on this subject, in consequence firstly, of the suggestion of

NOVEL MODES OF INVESTIGATION, depending upon the cultivation of organisms, and thus differing entirely from those

in common use; and, secondly, from the recent forcible and apparently damaging criticisms to which certain of the most commonly-accepted methods of analysis have been subjected.

The object of the analyst is to determine—1. The presence or absence of impurities in the water he is called upon to examine. 2. The nature and quantity of such impurities if present; and to form, so far as he can upon this evidence, an opinion as to the wholesomeness or the reverse of the water supply in question. The old method of exactly estimating the different mineral constituents of the residue was for sanitary purposes quite useless. The organic was the matter of greatest moment to the sanitarian, but its exact determination presented great difficulties. The various methods proposed were all referable to one of two classes, viz., those which aimed at its estimation in the water itself, and those which did so in the residue. Confirmatory evidence was afforded by the presence of nitrates derived from the oxidation of nitrogenous organic matter, by the presence of chlorides, which invariably accompanying animal pollution, nearly always indicated the presence of sewage, by microscopical examination, too frequently neglected, by color, &c.

Two processes were in general use for determining the organic matter in water itself, viz., the *Oxygen and Permanganate Process*, which aimed at a measurement of the amount of pollution by the rapidity and extent of the decomposition of a weak solution of permanganate of potash, acting on the oxidisable matter present, and the *Wanklyn Process*, which made the amount of ammonia evolved, on boiling with a strongly alkaline solution of permanganate of potash, a measure of the quantity of nitrogenised organic matter. The chief process dealing with the dry residue is that of Frankland and Armstrong, in which

the nitrogen and carbonic acid, evolved in its combustion with cupreous oxide, were taken as the measure of the nitrogen and carbon contained in the organic matter. The oxygen process, originally devised by Forchhammer, is unreliable and unsatisfactory, though as now improved it afforded valuable confirmatory evidence.

The value of water analysis generally has of late been called in question, Dr. Buchanan, for example, having stated his belief that "we must go beyond the laboratory for evidence of any drinking water being free from dangerous organic pollution," and that "the chemist can tell us of impurity and hazard, but not of purity and safety." It has been alleged that where the absolute and relative amounts of impurity had been previously known, both Frankland's and Wanklyn's processes had given results very far from the truth, and by some that cultivation methods were destined to supersede chemical analyses, and that in short, as Dr. Angus Smith puts it, water analysts must be prepared for

A NEW ORDER OF THINGS.

As regards the first of these objections, it was true that there was a limit to the quantity of organic matter that analysis could detect, and it could not distinguish between living and dead matter, or between noxious and harmless, specific and non-specific organisms. A minute quantity of enteric stools would be more dangerous than a large amount of healthy ones, just because they were enteric, and the chemist could only state the actual quantity. But he could tell us that the water was polluted and where non-specific pollution was present, specific might be so too, and even if it were not, putrefaction might render the "innocent" pollution dangerous. Dilute sewage might be under circumstances drunk with impunity, but it could never be considered safe or desirable.

That a quantity of a specific poison too small to be detected by analysis might exert its pathological effects could not be denied, and in these rare cases it was much to be desired that we could "go beyond the laboratory" and perform a physiological experiment, but as a matter of fact such specific organisms were rarely present without a large amount of other organic pollutions. The only

WELL AUTHENTICATED INSTANCE

of this kind was that of a well at Caterham, where a man suffering from enteric or typhoid fever had been at work, and in which he confessed to having defecated. The circumstances were ably investigated by Dr. Thorne-Thorne, who traced beyond question to the mingling of the water from this well with the general supply 200 cases of the fever which occurred within a fortnight of one another. But conclusions of an unjustifiable nature had been drawn from it, Dr. Cory thought, and might be found stated in the report of the medical officer of the Local Government Board for 1881-82, as that the excreta of this man were uniformly distributed through the 1,861,000 gallons of water pumped from this well during the fortnight, and that, even on the assumption that the man evacuated nineteen pounds of fæces daily for the fortnight, there would consequently have been but one grain per gallon of enteric stools in the water in question, a quantity which he found by experiment would yield only 0.014 parts per million of albuminoid ammonia, and be insufficient to remove the water from the class of "extraordinary purity."

The authors of the paper thought that whatever future might be in store for cultivation processes, they did not afford at present any information that could not be as well obtained more easily.

Dr. THURSFIELD remarked that he had himself performed, perhaps, more water

analyses, which had been the bases of legal proceedings, than any man, and he considered Wanklyn's processes quite accurate enough for their purpose; but he maintained that the evidence of analyses might condemn a harmless water and permit the use of one highly dangerous from specific pollution, and he denied that the Caterham case was by any means an isolated one, several having come under his personal notice in which waters, pronounced on chemical grounds to be pure, had been proved by statistical enquiry and by their physiological effects to have been the means of spreading disease, and even the fact and manner of their contamination had been discovered.

Mr. WYNTER BLYTH had frequently observed the development of the sewage fungus in waters kept for 24-28 hours in an incubator; it sometimes appeared in such as were considered pure on other grounds, but always in the impure and in those to which a little sugar had been added.

Dr. TRIPE objected to judgments on waters being based on chemical analyses alone, since these failed to give any idea of the condition in which the organic matter exists, a fact of far greater importance than its quantity, and referred to his report of an outbreak of diarrhoea, &c., of a severe character attacking all, whether residents or visitors, who drank the water of a particular main at Stamford Hill without boiling, and no others. The water was analysed and pronounced pure by Mr. Wigner, but a quantity of a peculiar mycelium was found in the main. He protested against the low value attached to the microscopical examination in the scheme alluded to, though living organisms merely indicated the presence of organic matter on which to feed, and need not be themselves injurious.

Dr. WHITELEGGE remarked that though

the microscope could not as yet distinguish the various kinds of bacilli, it might frequently, by revealing fragments of tissues, point to the nature and source of pollution.

COAL GAS AND WATER GAS.

(From the Sanitary News.)

There is much discussion, in different cities where coal-gas and water-gas are used, or about to be adopted, as to the relative merits of each as an illuminant, and as to their action on the system when respired. The coal-gas people very naturally look with suspicion upon a water-gas company when it proposes to establish itself in the same city. It is possible that their alarm does not spring entirely from a fear that the commercial value of coal-gas may be disturbed, but that they really believe that water-gas is more dangerous to the public health than coal-gas. The ground upon which the accusation rests is that water-gas contains carbonic oxide in varying degrees (about 30 per cent.), while coal-gas contains scarcely more than ten; in some States not more than 10 per cent. of carbonic oxide being allowed by law to be present in illuminating gas. The sanitary portion of the question hinges partially upon the fact as to the poisonous or non-poisonous nature of carbonic oxide. Nearly all chemists unite in calling carbonic oxide a poisonous product, producing death if inhaled in sufficiently large quantities. The fact remains undisputed that coal-gas will, and often does, produce death, when allowed to escape into a room occupied by a sleeping person, or one determined to commit suicide. The question arises, would a gas containing 30 per cent. of poison cause death quicker than one containing 10 per cent., and, if so, enough quicker to make material difference in the recovery of a person from asphyxiation when discovered? Prof. Ira Remsen

believes that there would be such a few minutes difference between the lengths of time when the same effect would be produced as to make no difference to the person. Bloxam states that 1 per cent. of carbonic oxide mixed with atmosphere is sufficient to kill warm-blooded animals. This statement is hurtful to both gases. Granting that both are dangerous, even though they are so in varying degrees, it is not more detrimental to water-gas than to coal-gas, for the same protection to life must be observed in the use of both. Leaks, open joints, partially opened burners, etc., are dangerous when either kind is used.

Having been requested to describe the process employed in the manufacture of water-gas, the *Sanitary News* gives two processes for comparison. In making water-gas, the furnaces or gasogenes contain anthracite coal fully ignited. Steam (alternating with air to maintain the heat) is introduced into the gasogenes forming the so-called water-gas. This gas is conducted into carburetters containing naphtha vaporized by heat, which, uniting with the gas, passes into retorts highly heated, and forms a permanent gas. This gas then passes through condensers, scrubbers, purifiers, and station meters, into the holders, ready for distribution. The only materials used are steam, anthracite coal and naphtha. The gas is purified with lime. Coal-gas may be made from cannel and coking coals. A mixture of these coals and cannel is put into a highly heated clay retort, and the volatile portions of the coal and cannel, consisting of tar, oil and gases, are driven off by the heat, the gases are collected, condensed, washed or scrubbed, purified by hydrate of lime from the sulphur compounds, carbonic acid and all deleterious products, tested as to purity and illuminating power, and stored in the gas-holders ready for

consumption. The following are analyses of coal-gas and water gas, made by Prof. Remsen :

COAL GAS.		Per cent.
Carbon Dioxide (carbonic acid).....		0.0
Illuminants (ethylene, etc.)		4.3
Carbon Monoxide (carbonic oxide).....		7.9
Hydrogen		50.2
Marsh Gas.....		29.8
Nitrogen (by difference).....		7.8
		100.0
WATER GAS.		Per cent.
Carbon Dioxide (carbonic acid).....		0.3
Illuminants (ethylene, etc.)		12.85
Carbon Monoxide (carbonic oxide).....		28.25
Hydrogen		30.3
Marsh Gas.....		21.45
Nitrogen (by difference)		6.85
		100.00

Prof. Charles F. Chandler, of the school of mines, Columbia College, New York city, well known as an expert on the subject of illuminating oils, has lately made an investigation into the subject of water-gas in its influences on health. He has made a report in which he says that water-gas, if used with the same cautiousness coal-gas has to be used, is no more dangerous to health than coal-gas. This is probably the ultimate conclusion to be reached by every fair-minded investigator.

THE BEST SUGAR IS CHEAPEST.

We have tried all sorts of sugar and believe that the most economical and the safest sugar for any one to buy is pure loaf sugar. It is much sweeter than any other. The principal substance used in adulterating sugar is glucose, which is sugar made from various vegetable substances, chiefly grain. It is very extensively used to adulterate cane sugar and produce the cheap sugars which are sold in the market. Reputable dealers sell it as glucose, but there are many dealers who sell glucose for sugar. The nature of the glucose is to make a close, sticky sugar; it does not produce grains like cane. It is not injurious to health but its

sweetening properties are not nearly equal to those of cane sugar.

HOW TO KNOW PURE LOAF.

What is the difference between the sugar which is sold in apparently smoothly cut lumps and other white sugar, the lumps of which are somewhat rough on their surfaces? In the words of a cotemporary the difference is considerable, and the latter, which is pure loaf sugar cut into lumps, always commands a higher price in the wholesale market, and cannot be adulterated. It is called in the market 'cut loaf.' The former quality of sugar is what is known as 'cubes.' The cut loaf sugar is made in lumps of fifty pounds out of cane sugar, then sawed into slabs, and these slabs are partly cut through and partly broken. It is easy to distinguish the marks of cutting and breaking on each lump. The cube sugar is made of soft sugar and pressed in moulds, which gives the smooth appearance. The cut loaf sugar will keep its shape in any climate, and is suitable for shipment. The cube sugar will sometimes on a sea voyage resume the consistency of the soft sugar, and the change of form is due to adulteration.

ONTARIO HEALTH LEGISLATION.

Since the last issue of this JOURNAL the Legislative Assembly of Ontario passed an Act to make further provisions for promoting the public health, to be known as the Public Health Act of 1884. It embodies many valuable features and if its provisions are carried out much sickness will doubtless be prevented and many lives saved. It provides that the provincial board of health may issue regulations to prevent the spread of disease, to secure sanitary conditions, and to establish quarantine, the local board of health being charged with the enforcement of the regulations. The board is authorized to

conduct investigations into the causes of disease. A local board of health is to be formed in each city, village and township; though two or more localities may unite their municipalities into a health district. The local health boards, or district boards, appoint their medical health officers. Any costs recoverable from an owner, in abating nuisances, may be recovered from the occupier and deducted from the rent. The local board of health is to make inspection for nuisances and order their abatement. Offensive trades may not be established without the consent of the municipal council. Plans relating to proposed systems of water-supply or sewerage must be submitted to the provincial board of health, and no sewer or appliance for their ventilation shall be constructed in violation of any principles laid down by it. Health officers and sanitary inspectors have power to inspect meat and other articles of food. Householders and physicians must report cases of small-pox, diphtheria, scarlet fever, cholera or typhoid fever within twenty-four hours.

THE BACILLUS OF CONSUMPTION.

In the *Philadelphia Medical Times*, H. F. Formad, B.M., M.D., lecturer on Pathology, University of Pennsylvania, in a paper read before the Philadelphia County Medical Society, gives the following description of the bacillus tuberculosis (consumption).

The bacillus discovered by Koch, of Berlin, as well known, is a vegetable organism, and belongs, according to Cohn's classification, to the group of filamentous bacteria (Desmo-bacteria), variety Bacillus.

The tubercle-bacilli form, according to Koch, a species of bacillus by themselves, and on Koch's authority as a *mycologist* we can accept this statement as correct until proved otherwise.

The tubercle-bacilli present themselves

as thin, slender rods, in length varying from one-third to the whole of the diameter of a human red blood-corpuscle; in breadth they do not exceed one-fifth to one-tenth of their length. They vary in size in different locations, and, according to observations made by myself conjointly with George Bodamer, my assistant, they vary also greatly in size in different artificial culture-media. In nearly dry soils they appear, as a rule, much smaller than in moist soils. They are blunt at the ends, and frequently contain unstained spores in varying number which give them a beaded appearance that might be (and has been) mistaken for short torula chains of micrococci. The rods are sometimes slightly curved, and they frequently appear in pairs, forming a V-shaped figure; occasionally the rods are seen crossing one another. Often they appear within animal cells in tissues and other matters which they invade, quite isolated and scanty, so that there may be seen only a few bacilli, or only one bacillus, in a whole microscopic field. Sometimes they occur in large, dense masses, particularly so and most commonly within and around cheesy masses in lymph-glands, and in the cheesy fragments met with in the contents of lung-cavities, as Koch himself first pointed out.

It may be of interest to note that tubercle-bacilli may considerably multiply in sputum when it stands in a bottle for some time, as first observed by Bodamer in my laboratory. Williams, of the Brompton Hospital for Consumptives, records also that he has seen the bacilli multiply in sputum after standing in a warm room for ten days.

DEMONSTRATION OF MICRO-ORGANISMS.

A very distinguished audience (*Medical Times*) assembled at the Parkes Museum,

on March 27th, to witness Mr. Watson Cheyne's "Demonstration of Pathogenic Micro-Organisms." Sir Joseph Lister, Bart., in the chair. After stating that the great group commonly called bacteria might most conveniently be sub-divided into four classes:—(1) Micrococci (round bodies), (2) Bacteria (small oval or rod-shaped bodies), (3) Bacilli (large rod-shaped bodies), (4) Spirochæta and Spirilla (rods spirally twisted), and dwelling on the great variety as well as importance of the various parts played by this great group in the economy of nature, Mr. Watson Cheyne demonstrated numerous micro-photographs taken by Dr. Koch, as well as some drawings, by means of a lime-light apparatus. He observed that great differences existed among the various bacteria in their behaviour towards the human body, some could be injected without causing any injury, others could not grow in the living body, but could develop in dead portions of tissue, and the secretions of wounds, giving rise to poisonous products. The true pathogenic organisms were able to attack the living body and multiply in it; they included the organisms which found entrance through some wound giving rise to the traumatic infective disease; and others which could obtain entrance without any observable wound. Further, certain organisms, such as the *bacillus anthracis*, were capable of growing outside the body in dead organic substance, while others, such as the *bacillus tuberculosis* were apparently only capable of development in the living organism or under artificial conditions which reproduced to some degree those existing in the tissues of warm-blooded animals, though capable of long retaining their vitality in the dry state. With regard to the traumatic infective diseases, he thought that the most absolute proof had been furnished that the bacteria found in

them, and nothing else, were the causes of these diseases; to establish such a proposition it was necessary that an organism of a definite form, and with definite characteristics, should always be found in the blood or in the affected part; the blood or the affected part when inoculated into another animal of the same species must produce the same disease; when the blood or the affected part was inoculated on a suitable soil outside the body the micro-organisms grew and must be indefinitely propagated in similar soil. When in this manner the organisms had been separated from the remains of the materials in which they were imbedded, their inoculation in an animal must produce again the same disease, the same organisms being found in the diseased parts. These conditions had now been fulfilled with regard to anthrax, septicæmia of the mouse, erysipelas, tuberculosis, glanders, and acute pneumonia. With regard to typhoid fever, relapsing fever, cholera, and ague, the evidence was very strong, but not conclusive. Mr. Watson Cheyne concluded by dwelling on the importance of surrounding circumstances, chiefly those summed up in the phrase, unhygienic conditions, as concomitant causes of disease by preparing the blood for the attacks of these micro-organisms.

Correspondence.

OVER-EDUCATION—SCHOOL LESSONS—CASES IN POINT.

(To the Editor of *The Sanitary Journal*.)

My attention has been called to this most important subject by a very judicious selection which I find in a recent number of your JOURNAL, from the *British Medical Journal*. Undoubtedly the necessity for unequivocal utterances from the entire public press, but more particularly from the various medical journals has really become quite urgent. Many of those at

present exercising control over the curriculum of studies in our public schools seem to have no other aim in the discharge of their responsible duties than that of parading their own superior knowledge. No kind of regard seems to be shown for the susceptibilities of growing children; but work is expected of them out of all proportion to their mental development. This must strike the most superficial observer as a grave error in judgment, and one requiring correction before it is followed by disastrous consequences to the mental and physical development of our children. It will be admitted, I think, that there is great need for a wise discrimination on the part of our public educators, so as to make no demands upon children in our public schools which will have the effect of dwarfing their intellects, with regard either to the amount or character of the work required of them. I am fully persuaded that, in both these particulars, the tendency of the present system is to excessive requirements, especially for children of tender years. I do not wish to be considered as among those who are always croaking over the errors in our present system of public instruction. As a whole it is admirably conceived, and, in most particulars, satisfactorily administered. But, like all other human conceptions, it is not free from what I have no hesitation in characterizing as grave imperfections.

In the first place, the curriculum is decidedly defective in the fact that its demands upon the mental faculties of our young children are simply outrageous. This observation more particularly applies to the mathematical portion. As an illustration of my meaning, I give the following question given to a child eight years old, and just beginning to read in the second book of the "National Series." "A sum of money is divided amongst A, B and C

so that A shall receive twice as much as B, and C as much as A and B together, find the share of each." This is substantially the character of a number of questions given during the first three months of the session, and a number of others considerably more difficult, to be solved *independently* by a child eight years of age. After the poor little fellow had worried and cried over such ridiculous problems for some months, I remonstrated with the teacher upon the course he was adopting, and pointed out to him the gravity of the error. His reply was that, on looking over the questions given at the examination of this class for promotion last July by one of our prominent teachers, this was the character of several of them. This question has two objectionable features. First, it is very unlikely to be worked out by the pupil himself, and hence a system of deception is liable to be practised, which is much to be deprecated. Secondly, if the pupil has genius and the determination to solve such a problem himself, the accomplishment of the task involves an amount of mental effort which his tender years do not warrant us in encouraging. Mental concentration of no inconsiderable amount is required for the solution of such a problem, and this should not be thought of in one so young. Let him pick up all the information he can by the ordinary methods, but don't try to make a philosopher of him at the outset. Now, my contention is, that in directing the education of children of such tender years, work should not be demanded of them in any department which would tax the ingenuity and reflective powers of a well developed mind. On the contrary, we should rather exercise our genius for teaching in such a way as will result in mental development without mental or physical slavery. This, in my judgment, is the perfection of instruction, and those who cannot or will not try to reach this

conception of the work are not fit for the vocation. So glaring a defect in judgment as would prompt a teacher to propound questions to a child eight years old the independent solution of which would do credit to one thirteen or fourteen years old, shows a degree of unskillfulness which is quite as objectionable as absolute ignorance of the subject on which he undertakes to impart instruction. Some seem to be impressed with the idea that, having attained to the educational qualifications of first class teachers, their work is done, and this should be an ample guarantee for their efficiency. Unfortunately for both teacher and pupil, this too frequently proves to be a delusion and a snare. Without a special adaptability to his work, and a fondness for it, with a kindness of heart, and good executive talent so as to be able to deal kindly but yet firmly with his pupil, a teacher, no matter what his intellectual gifts or the extent of their cultivation, must prove a miserable failure.

Our younger children at least, are overtaxed with home lessons, and the period of relaxation is too short. No child, say in the second book of lessons, should be required to do any work at home that will require more than one hour's labor or study, if, indeed, he should be tasked at all at home. If his work were judiciously directed during school hours, his progress would be quite as satisfactory as it is now with so much cramming. Cram, cram, cram, seems to be the watch-word of the age, and is killing numbers, not only of our children, but of our young men and women in the higher seats of learning. Everywhere are to be found the evidences of the determination of our educators to compress within the narrowest possible limit the work of preparatory education. Subjects are taught in our public schools that might be, and used to belong to the

legitimate curriculum of our high schools and collegiate institutes. The result of all this is that our children, as soon as they begin to read, are required to be embryo mathematicians, geographers, astronomers, &c., &c., &c. This is rushing to the opposite extreme with a vengeance which will be disastrous to the precocious child certainly, if not to all children. In our public schools the aim should be to impart the kind of instruction to our boys and girls that they will be able to turn to practical account in their every-day life; and if there are children ambitious to advance to a higher education, and engage in literary pursuits, let this work be prosecuted in our high schools. They should not be hurried beyond their mental or physical capacity for the sake of being able to say that, at the early age of ten or twelve, they have mastered so much algebra and so much geometry. This may sound very well, but if it has been the instrumentality in sowing the seeds of disease that will prematurely bring the promising pupil to his grave, we ought at least to pause before incurring so grave a responsibility. That such accidents do occur may be demonstrated in the every-day experience of any one at all conversant with educational matters. I can lay my hands on several very painful cases of this kind; and I have no hesitation in saying that the curriculum of study that encourages ambitious youths to over-tax their mental or physical powers requires readjustment with the sort of improvement that will offer no temptations to those who are too susceptible. Suicide is objectionable no matter what the agent employed for its accomplishment.

“PHYSICIAN.”

Toronto, April, 1884.

Matters Recent and Current.

The SANITARY JOURNAL proposed that the Don Marsh, Toronto, should be filled in with soil from the Scarboro Heights and turned into building sites. *The Mail* thought it would be “a good idea.” We believe it is practicable and worthy of consideration.

THE MUCH-NEEDED FUNERAL REFORM is making some progress. The Toronto Ministerial Association have passed a good resolution in favor of it. If the well-to-do and educated classes would oftener set an example of simplicity in the burial of their departed friends, it would help greatly to prevent costly, indeed vulgar, display by those not justly able in all cases to indulge in it.

THE TORONTO ISLAND BATH COMPANY.—This Company seeks incorporation chiefly for the building and operation of baths at Toronto Island and elsewhere in the city of Toronto or county of York, including the acquiring of lands, wharves, vessels, boats, ferries and houses. This may be regarded as a good health movement, especially if the class most in need of washing—the “great unwashed”—could be induced to take kindly to it and in a practical way.

A DANGEROUS PROCEEDING.—We learn that sometimes cab men in cities convey to burial places in their cabs the bodies of infants who have died of infectious disease. It is said that a man in this city was about to have the body of a child, which had died of scarlet fever, conveyed in a cab to Beachwood, but on his attention being drawn to the danger of spreading the disease to others, he did not carry out his rather inconsiderate intention. This is a matter which authorities should look into.

LIFE INSURANCE.—Perhaps the only thing we can look forward to as being absolutely certain to come to us all, sooner

or later, is death. We are all familiar with it; though probably there are no others who can so readily and naturally realize the uncertainty of life as physicians. He who insures his life for the benefit of his family and keeps his premiums paid up, may rest certain that they will, at some future time, reap the benefit of it, if he takes the precaution to select a good company or association, and he ought to be the healthier for it, from being more contented. Life companies may be all very well for those having plenty of money to invest. They are money making institutions, and get rich through high premiums. In a good mutual association, an insurer is just as safe, to say the least, and with about half the cost. Many stock companies have proved entire failures. In Toronto two good mutual organizations for insuring the lives of their members, have been incorporated: one last year, "The Dominion Mutual Benefit Society," which has now a large membership and is being well patronized; the other, incorporated quite recently, "The Toronto Life and Accident Association." This insures against accidents and provides for a weekly indemnity, and has one important advantage, that one assessment must be paid in advance, so that there will always be funds to pay a loss. The trustees of both these associations are reliable men, there is room for both, and we have no doubt they will prove useful, and will be well supported.

MENTAL OVER-WORK.—A lecture was recently delivered by Dr. C. K. Mills, at the National Museum, Washington, upon "Premature Diseases Among Men in Public and Private Life, brought on from Over Mental Strain." He said (*New York Medical Times*) statistics showed the average age, taking all classes of men in the United States, to be about fifty years, and this shortening of life is due almost entirely to over mental activity or irregu-

larities in life. Taking the average age of a few of the most eminent English and American statesmen, that of the English was found to be seventy-two years and that of the American seventy. The English Chief Justices have averaged a life of sixty-eight years, while the Americans only reached sixty. He said that, taking 146 Representatives and fifty-nine Senators, of the American Congress, and 121 members of the British Parliament, who had died during the period from 1861 to 1883, he found that the average age attained by the members of the British Parliament was sixty-eight, while the American representatives only reached fifty-five and the Senators 61 years. These deaths were caused by a general breaking up of the system and debility, brought on by overwork, nervousness, mental worry and irregular habits."

MANY PREMATURE DEATHS from mental strain, amongst noted Canadians, may be called to mind by any one acquainted with the names of the foremost men in this country. Thomas Moss and Adam Crooks are two of the most familiar who have fallen prematurely, doubtless, from over mental work. A little less severe exercise of the brain, and more recreation, and these might still be counted amongst our most useful citizens, of mature experience. Few will benefit by the warning, though, and many will rush on, putting off, from year to year or from month to month, the resting time they often know they need, until it is, alas! too late.

A MODEL SCHOOL HOUSE WANTED.—A month or two ago we suggested that the Provincial Board of Health and the Toronto City Corporation, or School Board, should join in the erection of a model school house on the most approved sanitary principles. Hartford, Conn., U. S., has recently completed a new high school

building of a model character. It is 236 feet by 100 feet, two stories high, with basement and attic; a clock tower 126 feet high and an astronomical tower 98 feet high. The building is of brick with stone trimmings, and the total cost was \$255,000. The floors are on brick arches supported by rolled iron beams; the stairs are of stone on brick arches; the heating boilers are in a detached building; the walls of the main building are twenty inches thick, inclosing an air space from foundation to roof of four inches wide, and the entire structure is intended to be perfectly fireproof. There are ten class and recitation rooms, play rooms for inclement weather, a hall capable of seating 1,200 persons, a large lecture room, chemical laboratory, and observatory with dome 17 feet in diameter containing an equatorial telescope with $9\frac{1}{2}$ inches aperture.

DIPHTHERIA AND SEWERS.—In Rochester, N. Y., Dr. Sheehan, health officer of that City, states that the health authorities there have noticed an increase in diphtheria as soon as the ground and the street openings into the sewers have been covered for some time with snow.

AN AQUEOUS SOLUTION of glucose, says the *N. Y. Med. Times*, is said to be coming into use as a new adulteration of milk. It retains the density of the watered milk and imparts sweetness. The cow is allowed to switch her tail through it a few times to give it the requisite "cowey" flavor, after which it looks like milk and is milk; and the corner grocery man is prepared to take his affidavit to give with every quart.

SEX IN EDUCATION.—Dr. Clarke, in his book on this subject, says that experience teaches that a healthy growing boy may spend six hours of force daily at his studies and leave sufficient margin for physical growth, while a girl cannot spend more

than four, or, in occasional instances, five hours of force daily upon her studies, and leave sufficient margin for general physical growth.

AT THE CANADA MEDICAL ASSOCIATION meeting, which takes place in August 25, 26 and 27, in Montreal, it is expected that Burdon Sanderson and other eminent English scientists will be present.

PHYSICIANS AND PATIENTS.—Two respectable English physicians not long ago performed the operation of inserting a tube into the trachea of a child as a last resort in a case diagnosed as croup. The tube becoming obstructed, the father sucked out the occluding membrane, but the child died. The father took diphtheria, but recovered, when he brought suits against the doctors, one for manslaughter and the other for damages. He was unsuccessful, but pleased to know that the doctors had incurred an expense of \$5,000. The profession, headed by Sir William Jenner, took the matter in hand, and each of the doctors has now been presented with \$500, a silver salver, and a complimentary address "richly illuminated."

SMALL-POX.—One hundred consecutive cases of small-pox lately occurred at Sunderland, England, (*N. Y. Med. Times.*) They were of a remarkably mild character, pitting being absent in all of them, and none was fatal. Of the one hundred cases four were unvaccinated; one of these unvaccinated cases was rather severe and of a confluent type, two were of the ordinary kind, and one rather slight.

HOUSE BUILDING IN ENGLAND.—A bill has been introduced in the House of Commons to provide for the better inspection of dwelling houses in England. It commences by reciting that a large number of diseases arise from imperfect sanitary fittings, faulty house drains, inefficient ventilation, and contaminated

water supply, and that it is expedient to provide for a more thorough supervision of all buildings during construction, as well as for a periodical inspection of all buildings when occupied. It is proposed to authorise every local authority to appoint sanitary inspectors to carry out the act. The inspectors are to examine new plans, and no building shall be commenced until the plans for the same have received the approval of the inspector.

RESTRICTING THE SALE OF PATENT MEDICINES.—It is a refreshing novelty, says a London, Eng., exchange, to find the Government taking, without any direct and continued pressure from without, a positive step forward in the protection of the public against the unrestricted sale and use of poisonous "specifics" under a Government stamp. The Vice-President of the Council has stated in the House that the attention of the Privy Council having been directed to some cases of death, in children, from the administration of a patent "specific for whooping cough," a bill dealing with the whole subject of the sale of patent medicines of a dangerous nature will shortly be introduced in the House of Lords. "It would be very difficult to obtain, and perhaps ungenerous to ask for, a return of the number of deaths caused by patent medicines—say, within the last ten years, so that an idea might be arrived at as to the loss of life needed to stir the Privy Council into action."

WATCHING SUICIDES.—At a meeting of the Medico-Psychological Association (Great Britain) a few weeks ago, Dr. Savage read a paper on the watching of suicidal cases, in which, besides discussing the best methods of preventing suicidal patients from carrying out their intention, he spoke of the influence that determined measures of watchfulness exercise in reminding the patients of their purpose, and of prompting, and almost daring, them to make

suicidal attempts. The existence of this influence was admitted and testified to by Dr. Rayner. Dr. Ley pointed out that suicides do not, as a rule, occur in what are known as suicidal cases. These are too well supervised to get a chance. The majority of suicides that occur in asylums are committed by patients in whom no suicidal tendency had previously been suspected. The general outcome of the discussion was, the advisability of making the precautionary and preventive measures stringent, but of keeping them as much as possible from the knowledge of the patient.

CATTLE, says the *Sanitary News*, are more valuable than human beings,—at least, they are viewed in that light by the present congress. An appropriation is made of \$50,000,000 [it must be \$50,000, Ed. S. J.] to restrict the spread of the foot-and-mouth disease now alleged to be prevailing in Kansas, while not one cent is appropriated to stay an epidemic of diphtheria which prevails in every state. A special session of the legislature is called in Kansas and a bill passed providing for a state veterinarian in less than a week after the alarm becomes general. But no especial anxiety is evidenced to pass a bill providing for a state board of health; yet more people die from contagious diseases in a year than cattle.

SMALL-POX.—In the *Glasgow Sanitary Journal* for April, we find that the city is in considerable danger from an invasion of small-pox. It is certainly, says the *Journal*, "the duty of all to aid the authorities in their endeavors to arrest the epidemic before it gains a firm footing." "There can be no doubt as to the urgent necessity for every suspected case being at once reported to the authorities, so that every case, however mild it may be, may be secluded at once. The beginning of all great epidemics, whether they be epidemics of measles, scarlet fever, small-

pox, cholera, or other infectious diseases, are traceable to a diffusion of mild, unsuspected, or undetected cases, which give rise to cases of greater severity." The Journal urges the importance of isolation and of providing ample hospital accommodation, but, not one word about vaccination.

ANOTHER CORSET IMPROVEMENT.—Brush & Brothers, manufacturers of Ball's health corsets, Toronto, have just made another marked improvement in these universally used articles. The corset is cut away, as it were, and does not come down over the hip bone, which certainly does not need *support*, and a freedom and comfort is given thereby which has quite delighted several ladies we know of. These corsets, with the elastic sides, we consider quite unobjectionable from a health standpoint, and are the only corsets we know of that are not objectionable.

IN LONDON, said to be the best vaccinated city in the world, the most startling feature of last week's "return" (the first week in April), says an exchange, is the increase in small-pox. Only eleven fatal cases; but "the number of small-pox patients in the hospitals and hospital-ships has almost doubled in the last fortnight, and on Saturday last amounted to 264. Ninety-two new cases were admitted during the week. Scarlet fever, diphtheria, and diarrhoea, on the other hand, appear to be declining, while the effect of the east wind is shown in an increased mortality from whooping-cough." Yet there is no vaccination for scarlet fever nor diphtheria nor diarrhoea.

POISONOUS CANDY.—Dr. E. H. Bartley, chemist to the Brooklyn Board of Health, (*Can. Med. and Surg. Jour.*) has made a report to that body in regard to the "rock and rye drops" which, although flavored with fusel oil, are constantly sold at the candy shops in large quantities to

school children. A fatal dose of fusel oil is stated by the best authorities to be from 1.4 to 1.6 grammes, or the quantity found in about two pounds of this candy.

A KINDERGARTEN SCHOOL, it is said, will be opened in the Normal School, Toronto, after the holidays.

DR. WEICHSELBAUM of Vienna (*Can. Med. and Surg. Jour.*) says that he has discovered tubercule bacilli in the blood of a patient affected with acute miliary tuberculosis. Tubercule bacilli have also been found in the blood in cases of tuberculous meningitis.

SEWAGE DISPOSAL.—The *Springfield Republican* is in doubt about the wisdom of the Boston experiment, recently commenced, of leading its sewage into deep tide water. The entire cost has been \$4,544,272, and the building of the sewerage is spoken of as "one of the greatest engineering feats of the age." "Nantasket and the contiguous beaches may have occasion hereafter to thank Boston heartily for perfuming the surf and giving a new value to their bathing privileges." London (Eng.) has taught the world that a nuisance can be turned into a profitable product available for agriculture. The market gardeners about the city eagerly take up all the sewage fertilizers turned out at the London works, and find them even better than what they buy in the market. At Pullman, the infant city of Illinois, also, the revenue derived from the sale of the manipulated sewage is a good and fair interest upon the money invested in the works, to say nothing of the incalculable benefit to the community in the solution of a sericus difficulty.

FOOT-AND-MOUTH DISEASE IN MAN.—A very remarkable epidemic of aphthous sore-throat, in Dover, England, has been reported, which seems to have been connected with foot-and-mouth disease in a dairy. There were 144 cases; 130 re-

ceived milk from the dairy in question ; this dairy received a partial supply from a country dairy where the disease was prevalent, and the customers supplied with this milk all suffered, and 14 persons in addition, who had their supply from the country dairy itself. The influence of cream, as a vehicle, was shown by the proportion of attacks in adults, who took cream only, as compared with that in children being large. The symptoms of the sufferers were shivering, headache and fever, pains in the limbs, parched lips, and a vesicular eruption in the throat. In some cases the tonsils were enlarged, and in others they supurated. The medical officer of health is preparing a report based upon a careful investigation.

GREAT interest has been, and is being, manifested in the international health exhibition to be held in England next month. Applications have been made by British Exhibitors alone for space five times as great as that actually at the disposal of the executive council. It appears the French government have appointed a commission, and it is expected that Italy will take a part. A portion of the educational section of the exhibition will be located in the central institute of the city of London. A handsome building in course of erection in the exhibition road has been placed at the disposal of the executive council. The royal Albert hall, with its musical attractions, will form a part of the exhibition, and the aquarium, a popular feature of the late fisheries exhibition, will be continued as an important part of it also.

ENCOURAGING CREMATION IN ENGLAND. —Dr. Price, a Welsh druid, was charged with unlawfully attempting to burn the body of his infant child, and with neglecting to give notice to the coroner of its death. Mr. Justice Stephen said that he

was of opinion that a person who burns, instead of buries, a dead body, does not commit a criminal act unless he does it in such a manner as to amount to a public nuisance. While he thought that to burn a dead body decently and inoffensively was lawful, or, at the very least, not criminal, it was obvious that if it was done in such a manner as to be offensive to others, it was a nuisance and one of an aggravated kind.

FILTH AND THE DIPHThERIC GERM.—Our much respected contemporary, the *Sanitary News*, seems to question the germ origin of diphtheria without reason. In the last number of the *News* we read : "Diphtheria, if not a filth disease, presents some cases and characteristics which strongly shake the faith of the germ theorists. For instance, in Hyde Park, Illinois, a house had connection with a cess-pool ; two little boys playing with a ball, lost it, and as they thought, in the cess-pool, and pried up the cover and fished about in the contents, stirring up the mass. Within six hours these boys were attacked with unmistakable diphtheria and both died within a week. There was no diphtheria in Hyde Park, nor had there ever been any in the house. Another case : In the city of Chicago, Fullerton avenue has a sewer with a "dead" end. The first house having a connection with this sewer near the "dead" end, had within it four cases of diphtheria last winter. An examination revealed the fact that the waste-pipe from the refrigerator connected with the sewer directly and without a trap. There had been, during the winter, no case of diphtheria in any other house on Fullerton avenue." Another case is given in which a child died of diphtheria in a house where there never had been a case of the disease before, and investigation showed that the air supplying the furnace, and which was then distributed to the

rooms above, was badly polluted by filth from a broken drain beneath the basement floor. These cases, we hold, rather favor the "germ theory." If the cause of the disease, as seems probable, is, or is intimately associated with, a very low form of (probably) vegetable growth—a bacteria—which when fully developed is a sort of mildew or mould, all that needs explanation is, how the germ or spore of this got into the cess-pool or drains, where the organism may have been growing and multiplying for a long time.

A HEAVY SUIT.—One of the largest actions at law to abate a nuisance, ever brought before the courts, has been begun, it appears, in Toronto. The alleged nuisance is caused by the excreta from about four thousand cows kept on distillery slops from the distillery of Messrs. Gooderham & Worts. This excreta is conducted into a somewhat confined piece of water known as Ashbridge's Bay. Dr. Oldright, chairman of the provincial board of health, has made a detailed report on the matter, and believes that people living in the east end of the city have good cause for complaint.

NEW STEAM HEATER.—According to the *Sanitary News*, some one in Chicago has devised a new and apparently successful method of heating buildings by steam. A coil of pipe is placed in the bottom of a small stove, with which a similar pipe is connected as a supply-pipe. The steam passes into heating-pipes in the rooms of the house. Having gone the rounds of the heating-pipes, the steam returns through a condenser into the supply tank. The whole operation is said to be self-regulating. Among the advantages claimed, are the following: No possibility of explosion; little or no care in management; small space and very little water required: can be attached with little change to common stoves, burning wood or coal; and a saving

over common hot-air furnaces of more than sixty per cent.

A VALUABLE MINERAL SPRING has been found at Thornhill, a few miles north of Toronto, on the farm of Mr. John Langstaff. Analysis shows the water to be much like the Bethesda water, but quite free from organic matter. It is a very agreeable water to drink, and the experience of many is that, in large quantities, it does not oppress the stomach, nor chill the system, like other waters.

Seasonable Hints.

THE BATHING SEASON is at hand. Be not too ready to get into cold water out of doors. Better to bathe at home until the weather and water get decidedly warm.

Go not into cold water when overheated, nor when *cooling* off, nor when cold, nor remain in too long at first. Fatal cramps are caused by such indiscretions.

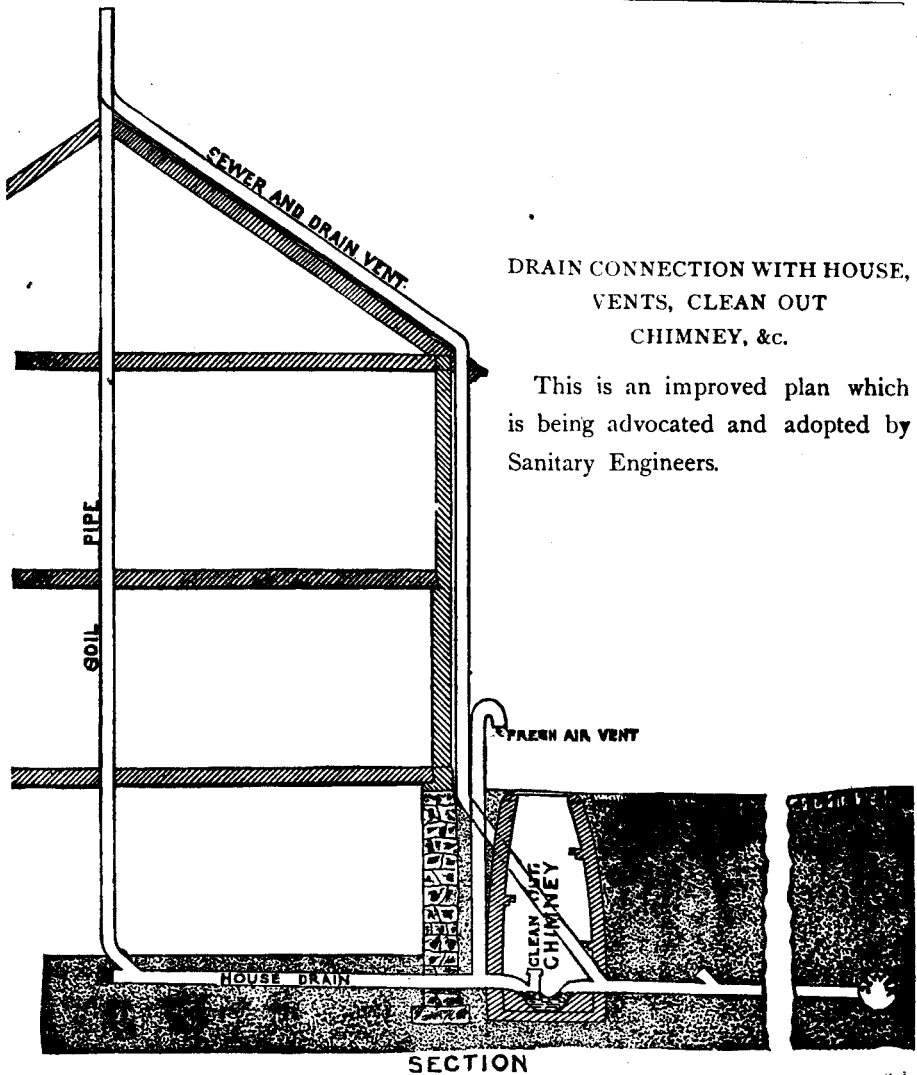
Dry off quickly, and dress as soon as possible, on leaving the water.

LEAVING OFF WINTER FLANNELS too soon has been the prime cause of many a death. Better to be uncomfortably warm than fatally cold. It is a good plan to wear lighter flannels for a few weeks before leaving off altogether, though many do not.

They might be left off at night, if so worn, at almost anytime.

ALL WASTE or refuse organic matter that may have accumulated near the dwelling, during winter, should be at once removed, as rapid decomposition will soon set in and give rise to millions of disease-germs in the air, the breathing of which may be followed by death.

SUSPECTED DRAINS, after the frosts of winter, should be carefully tested for leaks or defects, and any such found repaired at once.



**DRAIN CONNECTION WITH HOUSE,
VENTS, CLEAN OUT
CHIMNEY, &c.**

This is an improved plan which
is being advocated and adopted by
Sanitary Engineers.

WORKING AND THINKING.—It is a no less fatal error to despise labour, says Ruskin, when regulated by intellect, than to value it for its own sake. We are always in these days trying to separate the two; we want one man to be always thinking and another to be always working, and we call one a gentleman and the other an operative; whereas the workman ought often to be thinking and the thinker often to be working, and both should be gentle-

men in the best sense. As it is, we make both ungentle, the one envying, the other despising his brother, and the mass of society is made up of morbid thinkers and miserable workers. Now, it is only by labour that thought can be made healthy, and only by thought that labour can be made happy; and the professions should be liberal, and there should be less pride felt in peculiarity of employment and more in excellence of achievement.

HOW TO PREVENT FIRES.

(Scientific American.)

The following simple precautions suggested by the New York *Independent*, if strictly followed, would prevent a great many destructive fires. The rules might be posted in every store, dwelling, and factory with good results :

The leading causes of fires are kerosene oil, matches and furnaces.

1. Always buy the best quality of oil.
2. Never make a sudden motion with a lamp, either in lifting it or setting it down.
3. Never place a lamp on the edge of a table or mantel.
4. Never fill a lamp after dark, even if you should have to go without a light.
5. See that the lamp wicks are always clean and that they work freely in the tube.
6. Never blow out a lamp from the top.
7. Never take a light to a closet where there are clothes. If necessary to go to the closet, place the light at a distance.
8. Use candles just as much as possible in going about the house and in bedrooms. They are cheaper, can't explode, and for very many purposes are just as good as lamps.
9. Matches should always be kept in earthen jars, or in tin.
10. They should never be left where rats or mice can get hold of them. There is nothing more to the taste of a rat than phosphorus. They will eat it if they can get at it. A bunch of matches is almost certain to be set fire if a rat gets at it.
11. Have good safes in every place where matches are to be used, and never let a match be left on the floor.
12. Never let a match go out of your

hand after lighting it until you are sure the fire is out, and then it is better to put it in a stove or an earthen dish.

13. It is far better to use the safety matches, which can only be lighted upon the box which contains them.

14. Have your furnaces examined carefully in the fall, and at least once during the winter by a competent person. All of the pipes and flues should be carefully looked to.

15. If there are any closets in the house near chimneys or flues, which there ought not to be, put nothing of a combustible nature into them.

16. Never leave any wood near a furnace, range, or stove to dry.

17. Have your stove looked to frequently, to see that there are no holes for coal to drop out.

18. Never put any hot ashes or coal in a wooden receptacle.

19. Be sure that there are no curtains or shades that can be blown into a gas-light.

20. Never examine a gas meter after dark.

Fires, of course, arise from other causes than those we have stated. Smokers burn up much valuable property which is not in the shape of cigars. Bunches of oiled rags of the most inanimate nature in themselves still perform the most wonderful feats in the destruction of property. Tramps, with their old pipes, will creep into barns and hay-mows, and servants will be careless in thousands of ways, but if every person who owns property will give the subject attention, and see that those around him are posted, and see that reasonable rules are always obeyed, many thousands of dollars could be saved annually which are now burned out of existence

Sanitary Wants

A few true temperance men and women to "strike at the root" of the evil, intemperance, and help to abolish unclean homes, bad cookery, patent medicines and tobacco.

Health officers who will find out all the stagnant pools and collections of filth in our cities, and health boards who will have these causes of disease speedily removed.

A better appreciation, and more help, by the public, especially the intelligent public, of the efforts of physicians in preventing sickness.

TRICHINOSIS.—Over 300 persons, recently in Germany were attacked with this disease, nearly one-sixth of whom died, from eating absolutely raw trichinosis pork—the carcase of a badly diseased pig. One single family which consumed some of the meat cooked, exhibited no trace of the disease. It is stated that a certain dose of alcohol diminished the violence of the disease.

SARDINES.—Every one does not know that many of these now in use are small herrings put up in the United States in cotton-seed oil, not always of the best quality, and duly labelled "Sardines à la Française," or, "A l'huile d'olive."

FREQUENCY OF HEART ACTION.—The number of pulsations per minute in the shark is 7; in the mussel, 15; in the carp, 20; in the eel, 24; in the snake, 34; in the horse and caterpillar, 36; in the bullock, 38; in the ass and crab, 50; in the butterfly, 60; in the goat, 74; in the sheep and hedge hog, 75; in the frog, 77; in the marmot, locust and ape, 90; in the dormouse, 105; in the cat and duck, 110; in the rabbit and monocular castor, 120; in the pigeon, 130; in the guinea pig, hen and *bremus terrestris*, 150; and in the heron and monolulous puleux, 200. In man the average is about 70 or 75 per minute.

Literary and Scientific.

TYNDALL ON EVOLUTION.—Tyndall says on this subject, "If asked whether science has solved, or is in our day likely to solve, the problem of the universe, I must shake my head in doubt. Behind, above, and around us, the real mystery of the universe lies unsolved, and, as far as we are concerned, is incapable of solution. The problem of the connection of the body and the soul is as insoluble in its modern form as it was in the pre-scientific ages. There ought to be a clear distinction made between science in the state of hypothesis and science in the state of fact, and, inasmuch as it is still in its hypothetical stage, the ban of exclusion ought to fall upon the theory of evolution."

THE CENTURY ILLUSTRATED MONTHLY MAGAZINE for April is quite up to the average, containing a large amount of both food and recreation for the mind. Not the least interesting article is on the poet—the "True Artist Singer," Sidney Lenier, who—in the one novel that he wrote, at the age of twenty-five—makes one of his characters say: "To make a *home* out of a household, given the raw materials,—to wit, wife, children, a friend or two, and a house,—two other things are necessary. These are a good fire and good music. And inasmuch as we can do without the fire for half the year, I may say music is the one essential." "Late explorers say they have found some nations that had no God; but I have not read of any that had no music." "Music means harmony, harmony means love, love means—God!"

In the last poem he ever wrote, "Sunrise on the Marshes," pencilled while lying, too weak to rise, we read:—

Not slower than majesty moves, for a mean and a measure

Of motion, not faster than dateless Olympian-leisure

Might pace with unblown ample garments from pleasure to pleasure,

The wave-serrate sea-rim sinks, unjarring, unreeling, forever revealing, revealing, revealing,

Edgewise, bladewise, halfwise, wholewise—'tis done! Good-morrow, lord Sun!

ST. NICHOLAS, AN ILLUSTRATED MAGAZINE FOR YOUNG FOLKS, for April, is a very good number, indeed the numbers are all very good and delight all young people who have the privilege of reading them; but the March number was so exceedingly good and rich in illustration, that one feels just a little disappointed with the April issue; though we have no doubt all boys and girls, and even grown up people, who receive it will be pleased with it.

A MANUAL OF PRACTICAL HYGIENE, by Edmund A. Parkes, M. D., F. R. S., late Prof. of Military Hygiene in the Army Med. School. Edited by F. S. B. F. De Chaumont, M. D., F. R. S., F. R. C., S. E., Prof. of Military Hygiene in the Army Medical School, &c. Sixth edition, with Appendix giving the American practice in matters relating to Hygiene. Prepared by and under the supervision of Frederick N. Owen, Civil and Sanitary Engineer. Vol. II. New York: William Wood & Co.

We expressed much pleasure on the appearance of the first volume of this first-class standard work, and now welcome with equal pleasure this, which is the November number of Wood's admirable series Parks' is generally regarded as the best work published on this very important science, and if it were more generally studied by professional men and others there would be less sickness and premature deaths.

The American Appendix, of about 140 pages, treats of American Soils and Climatology and Meteorology and a number of other subjects, with a chapter of "hints to sanitary inspectors." Altogether the work is a very valuable one.

VETERINARY MEDICINE AND SURGERY IN DISEASES AND INJURIES OF THE HORSE, compiled from Standard and Modern Authorities and edited by F. O. Kirby. Illustrated by four color plates and one hundred and sixty-eight wood engravings. New York: Wm. Wood & Co.

This is the December number of Wood's series, and when we consider that no other animal is of so much value to man, and especially to the physician, as the horse, we may regard this as a most fitting work with which to complete the series of the year. The author has shown good judgment in the compilation, and gives to his readers a concise, practical work on veterinary medicine and surgery. We wish both it and Parkes' manual could be obtained separately, and without the purchase of the years' series, and beg to suggest the desirability of the publishers providing for a separate issue of these works.

LEGAL MEDICINE, vol. III., by Charles McMott Tidy, M. B., F. C. S., master of surgery; Prof. Chem., Forensic Med. and Public Health, London Hospital; public analyst, medical officer of health, etc. New York: Wm. Wood & Co.

This is the January number of Wood's series, and as we have stated before this work of Tidy is likely to be regarded as the standard work on this subject. This vol. treats of legitimacy and paternity, infanticide, asphyxia, drowning, hanging, &c.

VIEWS OF OTTAWA, by J. Hope & Co., manufacturing stationers, booksellers, &c., Ottawa. Price 50c.

This consists of 25 well executed views of the principal sights in Ottawa, conveniently arranged to fold in book form, with a brief description of each. It includes different views of the Parliament Buildings, the Chaudiere Falls, Rideau Hall, Ottawa Ladies' College, Notre Dame, Sappers' Bridge, &c., and is highly creditable alike to the publishers and to the city it so well illustrates.

SEVENTH ANNUAL REPORT of the board of health of the State of New Jersey, 1883: Woodbury, N. J., J. D. Carpenter. This contains a great deal of very useful matter. New Jersey is taking rank amongst the foremost states in public health proceedings.

REMINISCENCES OF MY FIRST VOYAGE FROM AMERICA TO ENGLAND, by W. C. W. Bick: Ottawa, C. W. Mitchell; paper p. 64. This is a very readable concise description of a trip across the Atlantic, and of the principal sights of London.

SCHOOL AND HEALTH CIRCULARS, Nos. two and three, for parents, guardians, children, teachers and trustees, issued by the board of health of the State of New Jersey.

THE CANADA EDUCATIONAL MONTHLY for March enters a timely protest against a growing evil in schools, "the display of sumptuousness and finery made by some parents in the dress of their children." We fully agree with the monthly that it is "in excessively bad taste," and savors too much of "Sir Georgius Midas and his vulgar spouse."

THE TORONTO "WORLD," we are much pleased to learn, will soon be issued again. It has been one of the most independent, outspoken, spicy papers that we have had the good fortune to read, and we wish it a new life and a long one. It has taken a strong stand against quackery in medicine, and is entitled to the warm support of the profession; while its columns have been exceptionally free from anything objectionable for family reading.

LEAD FROM FRESH PAINT.—Notwithstanding that chemists believe lead compounds are not volatile, the *Lancet*, (London, E.) states that there seems to be only one possible explanation of the effects of fresh lead paint on luminous paint, and, we might also add on the health often of those occupying freshly painted rooms, and that is, that a surface freshly covered with lead paint does actually emit some volatile compound of lead.

WOOD IS "METALLIZED" and rendered susceptible of very fine polish, resembling a metallic mirror, while it is completely protected from the deteriorating effects of moisture, by being steeped in a bath of caustic alkali, then in one of hydro-sulphate of calcium and sulphur, and in a third one with acetate of lead.

A WRITER in *Hygiene Pratique* states that boots and shoes may be rendered waterproof by soaking them for some hours in thick soap water. The compound forms a fatty acid within the leather and makes it impervious to water.

BLINDNESS has steadily decreased in England for the last thirty years, owing, it is thought, to the improvement of the opticians and the almost complete extinction of the small-pox among children.

KEROSENE OIL will soften boots and shoes that have become hard after being wet, and will render them soft as when new, so says the *Scientific American*.

CLEAR boiling water, it is said, will remove tea stains; pour the water through the stain, and thus prevent its spreading over the fabric.

WIND PRESSURE.—During the gales of the 26th and 27th of January, unprecedented wind pressures were experienced at the Forth Bridge Works. The strongest gusts gave a momentary pressure of $35\frac{1}{4}$ pounds per sq. ft. on a large board, 300 sq. ft. area, and no less than 65 pounds per sq. ft. on a small board, containing 1.5 sq. ft.

OIL OF WINTERGREEN is pronounced more efficacious as an antiseptic than phenol, though it is more costly.

PLATINUM WIRE has been drawn out so fine that it cannot be seen with the unaided eye.

STATISTICS presented by Dr. Billings show that of one million colored infants born in Baltimore, one-half will have died before two years have passed. Of a similar number of white children born there, one-half will live thirty-five years.

THE PROCESSES of manufacturing lumber from straw, it appears, have been of late substantially improved. It is now affirmed that this material can be made to imitate successfully all varieties of natural wood in grain, color and solidity.

TO PREVENT SCRATCHING MATCHES ON PAINT, rub the spot where servants or others commence the process with flannel saturated with any liquid vaseline. After that one may try to strike matches there, but will neither get a light nor injure the paint, and the petroleum causes the existing mark to soon disappear when it occurs on dark paint.

USE OF PEROXIDE OF HYDROGEN IN DIPHTHERIA. By R. J. Nunn, M.D., Savannah, Ga., Physician to the Female Department of the Savannah Hospital. New York: H. A. Von-neidshutz, 69 Pearl Street.

Questions and Answers.

C. N., wants to know if any readers of this JOURNAL can give a good and well tried process for making good pure "home-made" bread—the staff of life.

W. D., will find in this number an article on drain testing which will guide him sufficiently.

HEALTH OFFICER—In disinfecting rooms use 2 lbs. of sulphur, mixed with a little saltpetre, for every 1,000 cubic feet of space. Suspend it in an iron vessel over a tub of water. Having closed chimney openings as well as doors and windows, ignite and get away from the fumes.

Publisher's Notices.

THE SOAPS, "Lily White," "Perfection" and "Queen's Own," manufactured by Rodger, Maclay & Co., Toronto, are generally regarded as of most excellent quality—pure and of good cleansing properties, and perfectly free from qualities injurious to the finest articles of clothing.

KEER'S HIMALAYAN TEA gives such perfect satisfaction to all, without exception, whom the writer knows have tried it, that they much prefer it to any other tea. In the next number of this JOURNAL directions will be given how best to prepare this beverage.

COAL is such an indispensable article in this country that it is of great importance to get it good and pure. A number of known consumers for many years have found that from Mr. P. Burns invariably the best and cleanest, and delivered by very civil, obliging carters.

THE REPORT OF THE MORTUARY STATISTICS of the Dominion was received too late for this issue, we purpose noticing it at considerable length in the May number.

AN APOLOGY is due our readers for the lateness of this issue, from circumstances over which we had no control.

TO GET PICTURES elegantly and neatly framed—and at reasonable prices, there can be no better place than at Matthews' Bros., 93 Yonge Street, Toronto.