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INDEX OF CONTENTS.

	PAGES
Military Convention of 1874	33
Military Education of the Nations, by W. Cannon, M.D.	34
Bowen and Bennett's Technology, by T. Bowen, U.S.	39
Sanitary Convention at London, Ont.	41
The Sanitary Convention of 1874	44
Proposed Bureau of Health Statistics at Ottawa	46
Water Pollution (Illustrated)	47
House Plumbing and Ventilation (Illustrated)	49
Sanitary Plumbing—British and American for Plumbing Convention of Baltimore, U.S.	50
Holiday Festivals—Switzerland (Illustrated)	51
Gothic Architecture, for Clergymen and School Teachers—Illustrated with 12 plates, quarto.	53
Practical Sanitary Education—Care of the Sick	56
Receipts for Food for Sick People	58
Health Exercises—Home Gymnasiums (Illustrated)	60
Ventilation for Schools—(Illustrated)	61
Scientific and Hygienic	62
Accidents—Emergencies—Poisonous	64
Doulton's Combined Smoke and Air Flues (Illustrated)	65
Domestic Items	67
Miscellaneous	69
To Our Readers	74
Points on School Hygiene, by A. F. Blaisdell, A.M., M.D.	74
Educational Notes (Rules for Teaching)	75
School Notes	76
Book Notices	77

ADVERTISEMENTS, &c.

DAYS OF ISSUE.—HEALTH AND HOME will be published once a month.

PURPOSE.—It will be devoted to the promotion of Sanitary Education in Homes and Schools, and the diffusion of Sanitary Knowledge to all classes; combining Sanitary Science and Health recreations with domestic usefulness. Its field covers all relating to health, plumbing, heating, ventilation, drainage, water and food supply, and is a work that will be of value to keep as a book of reference in every family.

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As the Secretary is frequently asked, who are persons who have become members of this Association? we publish the names of a few for the convenience of reference, but cannot afford space for all. The list is rapidly increasing, and with every prospect of there being from four to five hundred members in Montreal alone. When the whole Dominion is canvassed, it will probably become the most numerous association of members organized for a good purpose in Canada, and will take its place among other honored Associations of the World.

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HEALTH AND HOME

THE OFFICIAL ORGAN OF

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DEVOTED TO THE PROMOTION OF PRACTICAL SANITARY EDUCATION IN HOMES AND SCHOOLS,
AND DIFFUSION OF SANITARY KNOWLEDGE TO ALL CLASSES; COMBINING
SANITARY SCIENCE WITH HEALTHFUL RECREATION.

VOL. I.

MARCH-APRIL.

Nos. 2-3.

Ontario Sanitary Convention.

Held at Ottawa, on the 11th and 12th March, 1884.

THE Ottawa Sanitary Convention formed one of the series held under the auspices of the Ontario Provincial Board of Health during the present year, and which have tended very much to promote a feeling for increased sanitary knowledge, and to create a desire among the citizens of those cities in which these Conventions have been held, to assist in carrying out the objects of the chairman and members of the Provincial Board of Health, under whose auspices they are held.

The Convention was fairly represented by members of the Senate and the Commons, and Citizens, as well as gentlemen from other parts of the provinces, interested in sanitary measures.

Among those present were Dr. W. Oldright, Chairman of the Provincial Board of Health, Drs. Covorton, Bryce and Cassidy, members of the same; Dr. W. Canniff, Medical Health Officer of Toronto; Dr. Rao, of Oshawa; also, Dr. Sweetland, Sheriff of Ottawa, President of the Canadian Sanitary Association, and F. N. Boxer, Civil and Sanitary Engineer, the Secretary. Among the medical men of Ottawa were present Drs. Grant, Hill, Stephen Wright, H. P. Wright, Henderson, Mark, Small, Rogers, and Dr. Robillard, Medical Health Officer; also several clergymen and professors of schools, among whom were G. Baptle, M.A., M.D., Ottawa; Science-Master of the Normal School, and Professor Wood, M.A., Principal of Ottawa Ladies' College,

besides Robert Surties, City Engineer, and T. Guerin, Civil Engineer of the Board of Works.

Dr. Sweetland having been called to the chair, the proceedings were opened with prayer by the Rev. Mr. Longley.

After some very appropriate remarks from Dr. Sweetland on the importance of these Conventions as a means of disseminating sanitary knowledge among the masses,

His Worship the Mayor of Ottawa addressed the meeting in a few kind words of welcome.

Dr. Oldright then delivered his introductory address. He observed that one of the objects of this Convention meant hard work, and although there still existed among men much of that apathy to health matters which pervaded all classes during the plagues of olden times; yet, he was glad to say, that a lively spirit in favour of sanitation had been created by these meetings and discussions, and he felt that the day was not far distant when that spirit would spread over the land, and zymotic diseases to a great extent be restrained. He then went on and explained the significance of the change that came over the health of the cities in Britain after its Government passed the Act in 1875 establishing local Boards of Health throughout the country, with power to institute sanitary reform. He referred to the large number of deaths in Ontario from contagious diseases, and contended that if we had proper Sanitary Boards who could have power to make by-laws and to insist on the plumbing, drainage, sewerage and ventilation of houses being made perfect in every respect, a

large number of deaths from zymotic diseases might be prevented, as well as deaths from consumption—the latter disease being aggravated and made more fatal from living in damp and unventilated houses. He also spoke of the necessity of the Dominion having a Sanitary Board to carry into effect those powers over which it had control, particularly in relation to immigrants, with whom a great deal of disease was imported into the country; also to the necessity of a Factory Act. There was much, he said, to be done by the joint action of the provincial and municipal governments, particularly in relation to sewerage, and the draining of malarial surroundings of cities. He contended that there should be local Boards of Health in every province, with complete organization, to put into effect any sanitary suggestions made. He trusted that the outcome of the Convention would be to strengthen the hands of those who were endeavouring to bring about reforms that would effect a saving of life throughout the province.

The first paper read was by Dr. Canniff, Medical Officer of Health, Toronto, on the

SANITARY EDUCATION OF THE MASSES, AS CONDUCTED IN THE CITY OF TORONTO DURING A PERIOD OF FOUR MONTHS.

We give the full contents of this paper with a few observations, as an example to other Boards of Health at present existing, and to those that may hereafter be established, should the Health Bill now before the Provincial Parliament of Ontario to enforce the formation of Boards of Health, become law.† If so much can be done by an energetic physician in so short a time, let it be a caution to municipalities never to appoint a medical officer, who is an incompetent man, to an office of such great importance, in which he, to a great extent, holds *life and death in his hands*. To appoint any incompetent physician to such an important office, merely to give him the means of living, is sacrificing human lives to his ignorance and inactivity.

DR. CANNIFF'S PAPER.

Mr. Chairman and Gentlemen:

Wishing to contribute something to further the object of your Convention at this time, I have thought it might be well to lay before you two short reports* respecting the sanitary work done in the City of Toronto during last summer, or, speaking more accurately, during the

months of August, September, October and November; and, with these reports, some account of the inauguration and prosecution of the work.

I think there are some features of this work worthy of the attention of Sanitariums generally, and I have reason to believe that the sanitary condition of Toronto, as reported, is not altogether singular; also that the remarks contained in the report will largely apply to other places.

It is hardly necessary to make the statement that the public are woefully ignorant about sanitary requirements in connection with their homes; that municipal bodies are as a common thing, quite indifferent, or are averse to availing themselves of the services of medical men who, from their professional education, are able to give salutary aid on such matters. This indifference, or aversion—this unwillingness to spend money for the preservation of the health and lives of the public, is doubtless due to a want of knowledge of the subject, or pre-conceived opinions. Sanitation as applied to municipalities, as well as to private and public places, is of so recent growth that its importance and power for good is too generally unknown. It is the duty of those engaged in sanitary work to avail themselves of every possible means to carry information into the homes of every municipality. It is true we have laws, provincial and municipal, by which certain sanitary evils may be overcome, abated, or prevented; and in a certain way, very efficient laws they are; but this mode of treating insidious evils by legal steps I venture to assert is not the best; at least, law should be a *dernier resort*. If we take it for granted that many transgress at once the laws of health and the municipal law through ignorance, it is obvious that the evil should be first treated by persuasion and education rather than by coercion. This is the point which I desire to make, in bringing the subject before this Convention.

Allow me to relate some portion of my experience as Medical Health Officer for Toronto during last year.

I may say the office of Medical Officer for Toronto was created at the beginning of 1883. I was appointed to the office on the 13th March. There had been a very efficient City Commissioner for many years, who was also health officer, though not a medical man. I am very efficient, in fact few, if any, non-professional persons could, to so great an extent, have attended to the sanitary requirements of the city as did City Commissioner Coatsworth. Therefore, when a medical officer was appointed it was not thought necessary, if indeed thought of at all, to relieve that officer of any of his work as health officer, which, however efficient the officer might be, could not be done on the same principles as would be done by a medical man. More than that, the Commissioner had other and pressing duties to attend to as Commissioner of Works; besides numerous matters constantly referred to him as an executive officer. Still more, the City of Toronto has, during the last few years, grown very rapidly and assumed the characteristics of a great metropolis. The result had been that the private premises of many citizens were in a condition far from satisfactory from a sanitary standpoint. As the summer advanced I became painfully aware of the fact that

† This Bill has since become Law.

* For one of these reports see page 44.

while, as nominally the Medical Health Officer, I could not be absolved from responsibility. I was powerless to act. I had no assistance, no inspectors, no executive authority. When midsummer had arrived, I was, nevertheless, receiving daily numerous complaints of sanitary evils from citizens.

These complaints I could not attend to. Duties which had been allotted me in connection with the sick poor, rendered it impossible for me to personally inspect many of the places complained of, and when I had done so, I could only refer the matter to the City Commissioner, whose staff might or might not find time to enforce the municipal law.

It was under such circumstances that I deemed it my duty to address the committee of the City Council, to which was relegated health matters, upon the subject. The committee, however, could not see its way to afford me any assistance. At this juncture, Major Draper, the Chief of Police, offered to place at my service a certain number of policemen for sanitary work. After conferring with the chairman of the committee referred to, and subsequently with the Mayor on his return from a journey, I was in a position to accept the offer so timely made. The result was that ten policemen were detailed to serve under my direction.

Toronto is divided into five districts for police purposes and there were two men allotted for each division. At a conference of civic officials it was arranged that I should have, as the field of labour for my staff, the *private* premises of the city. It is hardly necessary to say that the policemen set apart for this sanitary work were entirely unacquainted with the duties awaiting them, and I may add, I was a novice in undertaking to teach and guide them in inaugurating a system. Certainly it was my first experience in commanding a body of policemen.

It was about the 1st of August that an inexperienced Medical Health Officer with a staff of policemen (although in training and bearing as *policemen*, unexcelled if equalled on the continent), yet quite ignorant of sanitary matters, began the work of sanitary reform in the city of Toronto. The whole arrangement was completed in short order. On one day it was decided that the work should begin, on the next, the inspectors all fled into my office for instruction and guidance. I quickly decided as to the course I should adopt. I wrote out a certain number of questions, and although I did it hastily and without premeditation, the expeditious preparation answered well. The questions were as follows:—

Instructions for the Inspectors.

1. Ask permission to inspect the house and premises.
2. Ascertain the provision existing in each building for drainage, and the condition of the cellars.
3. If city water is used.
4. The number and kind of water-closets or privies; and their condition.
5. If there is any well or cistern, covered or uncovered, in use, or otherwise.
6. What disposal is made of the kitchen and chamber water.
7. What is done with the sweepings and refuse of the

house from day to day—is it given to the scavengers regularly.

8. Note if any complaint is made with regard to sanitary matters in connection with the building or neighborhood.

9. Obtain the name of the occupant and owner or agent.

10. Condition of the stables and disposal of manure where horses or other animals are kept.

11. General condition of the yard.

12. The number of inmates.

13. In factories and industrial establishments ascertain the number of men and women employed, and the hours of work.

Of course these questions might have been improved, and in a day or two I saw where alteration would be desirable, but to make changes would confuse the men in their work. So they continued to act under these directions for four months, with results which appear in the reports. You will notice the first question: The police inspector was to ask "Will you permit me to inspect?" This first question indicated the course of action to be pursued.

The appearance of a policeman at the door was calculated to produce the impression of authority to be exercised whether it might suit the will and convenience of the citizen or not. Such an impression I believed would cause a prejudice and prevent, at least in a measure, the successful application for information. The inspector was also instructed at the same time to state that the object of the inspection was to secure the welfare of the people, and that the Health Office desired the co-operation of the citizens. By this means almost every householder became a willing assistant to supply the desired information. I also asked the daily press to set before the public the importance of the work, and to request the co-operation of the public; and I was much indebted to the press for the valuable assistance as well as encouragement it conferred. But the inspectors were instructed after a few days to do something more. They were not only to find out and report insanitary evils, but as well to inform the people why such and such things were an *evil*; and a great many required instruction on this matter. They were required to point out how evils should be remedied and how they could be prevented; how to dispose of refuse, decaying organic matter, and slops. They were to explain the danger of certain conditions of privies, water-closets, cisterns, of drains, and of faulty state and position of wells. The necessity of using, and the proper mode of applying, disinfectants was explained. On a pad of common paper easily carried, the inspector, with a pencil, wrote his report of each place. Each question was known by a number. Opposite each number the answer was written.

Every morning the reports of the previous days' work was before me. These I examined, and when the inspector presented himself at the appointed hour, I was prepared to give further instruction, and hear fuller explanation in cases which required attention. A good deal of time was taken up in visiting the landlord or agent, to inform him of existing evils, and a good deal of tact was required in securing the willing

acquiescence of these persons to carry out the directions it was found necessary to give. Not only was the nature of the evil pointed out, but the requirements of the law was explained. Some were appealed to on the ground of setting a good example to others. Those found unwilling to comply with the directions of the inspectors, were asked to call at my office to receive explanations, etc.

There were some, however, who could not be induced to abate or remove obvious evils. At these obstructions the policeman often chafed, and they were for indicting the parties before the Police Magistrate at once, but, as I had all I could do in instructing and advising those who were willing, I did not yield to solicitations to take the law in hand, which would have occupied much time and have tended to turn the public against me. As the season advanced, many of the hostile or unwilling parties became ashamed of themselves and began to abate evils.

As a result of four months' work, I have annexed reports which are respectfully submitted now to this Convention.

I believe that this mode of procedure has much to commend it. I am sure it can be improved and extended. Sanitary inspectors should be well informed on general sanitary matters. They should be instructors. They should have tact and judgment, and rarely resort to any authority which they may possess.

It is true there are avaricious landlords with whom it may be difficult to deal, but even such persons may frequently be induced to attend to the decent requirements of the tenant. But the inspector has to guard against being influenced by tenants' stories and grievances; or of becoming a party to one side or the other.

VENTILATION OF PRIVATE DWELLINGS.

BY G. BAPTIE, M.A., M.D.

This paper was accompanied by several illustrations to show how, in many ways, private buildings might be ventilated at a comparatively small expense. The object aimed at by Dr. Baptie was to impress upon the minds of his hearers the great necessity of ventilation in private dwellings, and to illustrate, by a number of diagrams, how easily this could be accomplished in any family by adopting some of the plans shown in the illustrations which had been found to act with effect and had cheapness to recommend them, so that there could be no excuse for neglecting one of the most important requisites in a dwelling to ensure health, on the score of cost.

Dr. Baptie's paper was followed by one read by J. F. Cassidy, M. D., member of the Provincial Board of Health, Toronto, on the

VENTILATION OF PUBLIC BUILDINGS.

This was a very able paper, and we regret that our space is too limited to enter into its merits

at length. Dr. Cassidy strongly advocated the use of machinery in large assembly rooms, such as churches, court houses, schools, theatres and manufactories, to produce a constant and even flow of pure air, and also the introduction of many air shafts around a chamber to withdraw the foul air from every part equally, without creating a draught.

A long discussion took place on both of these papers on ventilation, particularly as to the necessity of supplying aqueous vapour to fill the place of that evaporated by heating apparatus. The general opinion was that as rarefied air became so increased in bulk, the quantity inhaled contained not only less oxygen, but also less humidity, and that as the heated air ascended rapidly to the ceiling, a great portion of its aqueous element was absorbed in the plaster, or carried off through ventilators; consequently, as fresh air entered a building and passed over a heated surface, its aqueous portion immediately became converted into steam and rose rapidly to the highest parts of a room; thus, those below that point suffered from a dry heated atmosphere almost entirely deprived of its natural aqueous element.*

VENTILATION OF PULLMAN CARS.

In the discussion on ventilation, Dr. Grant, of Ottawa, called the attention of the Convention to the necessity of the public bringing to the notice of the proper authorities the great necessity that existed for better ventilation in Pullman Sleeping Cars, and, in fact, to railway cars in general. Everyone knew that in the Pullman cars the great need there was of a better mode of ventilating the bedding, which was slept on night after night, by many persons whom it would not be healthy to sleep on the same mattress after. Any one

**Let any one hold a wet handkerchief before a fire, and it will at once be perceived how rapidly the steam therefrom ascends upwards. It does not take a lateral direction and disperse through the room, but goes up at once to the highest point.*

If we stand on a table in an artificially heated room, we will find the upper atmosphere almost unbearable from heat; consequently, if a method was contrived to keep this heated atmosphere in circulation through a room, much less heat would suffice, and the heavier gases, such as carbonic oxide, would become more dispersed and less dangerous to health. The hotter the air is, the more water it can contain. The moisture in the air of an ordinary room absorbs 50 to 70 times as much of the radiant heat as the air does.—Ed.

entering at night from the pure outer atmosphere into the impure inner atmosphere of a sleeping Pullman car, or crowded railroad car, can realize the impurity of the air constantly inhaled and exhaled, without any renewal, until the carbonic oxide it contained became absolutely poisonous.

The necessity of more attention being given to this important matter being brought to the notice of the Railway Companies was unanimously acceded to. In fact, it concerned the Government of the country.

ABUSE OF ALCOHOL AND INCREASE OF NERVOUS DISEASES IN MODERN TIMES.

This very interesting paper was read in the evening of the first day by C. W. GOVERNOR, M. D., Toronto, also a member of the Provincial Board of Health.

Owing to the attraction of an exciting debate in the House of Commons, the audience was not so large as it should have been; those who were absent, lost hearing read a most instructive paper of a high literary character.

SCHOOL HYGIENE.

BY PROF. S. WOODS, M.A.,

Principal of the Ottawa Ladies' College.

This paper was full of plain outspoken truths, the experience of a gentleman having a thorough practical knowledge of all those common-sense requirements so necessary to the health of teachers and children in our Public Schools. The reader first alluded to the uninviting character of our Public Schools, both inside and outside, the cheerless and unattractive features of the architecture and the grounds, and then of the defective ventilation and drainage of these buildings, in which children spend one half of their active life, when both body and mind are rapidly developing and ripening into maturity. He spoke of the furniture of the schools being unnatural and painful, the lighting injurious and defective; and he deplored the apathy and ignorance of those who had the control of these institutions, in which their own children and the future men and women of the country, were passing that particular epoch in their lives that moulded their mental character and built up their frames to become vigorous and strong.

In concluding his remarks he stated that he considered close application to studies, so long as the health of the students was kept up by pro-

perly ventilated schools, regular out-door exercise and careful discretion on the part of the teacher, never injured any one; if injury did happen, it was from other causes beyond the control of the teacher.

ZYMOTIC DISEASES, WHERE THEY ARE AND WHY.

BY P. H. BRYCE, M.A., M.D., TORONTO,

Secretary of the Provincial Board of Health.

This subject was made particularly interesting by means of the introduction of a magic lantern, illustrating on the illuminated disk on the wall, in a magnified form, the different forms of fungi, scientifically known as Bacteria, from which typhoid fever and many other of the class known as zymotic diseases are produced. He showed how, under certain atmospheric changes, these fungi increased in their growth, and in the same rates increased the mortality from miasmatic fevers, and that no other inference could be drawn from the experiments and researches of celebrated physicians and scientists than that the prevalence of all such diseases arose from the existence amongst us, of these forms of Bacteria, either in our dwellings or surroundings, and that in the fitness of the subject these germs or fungi entering into the body generated and developed.

DIET IN RELATION TO DISEASES.

BY E. PLAYTER, M. D.

Owing to the speaker's voice not being very audible, the drift of the subject could not be closely followed by the audience. A discussion arose after this paper was read, on a statement made that according to statistics, cancer had increased greatly in the past few years, and the doctor attributed it to the too free use of animal food. He also thought that animal food rendered persons sensible to cold,* and that life might be prolonged by abstinence in diet by persons advanced in age.

*[This is an error—during three years the Editor was exposed during severe winters on the survey and cutting out of the boundary line between Canada and the United States, all found animal food essential to keep up caloric in the system, and he was informed by a late Royal Engineer, who was sent to construct the forts at Fort Garry, that he required in that climate to eat four times the quantity of animal food that he had been accustomed to, when living at Quebec.—Ed.]

Dr. Caseldy said he would like to know if the increase of deaths from cancer, mentioned by Dr. Playter, was based on actual increase, pro rata, for it was to be borne in mind that population was on the increase, and it was only natural that the specific number of deaths from any one cause would increase also.

Dr. Playter admitted that he did not speak from any personal experience, and that statistics on the subject were not so complete as could be wished.

F. N. Boxer, C. and San. Engineer, though not concurring in the idea of old persons, particularly, avoiding animal food, believed that the moderate use of it was in no way injurious to the health of the aged. He thought that moderation in diet and regular living had a great deal to do in the preservation of life. He knew of one friend who had an excellent appetite, and ate meat to the last of his days, and who lived to the age of 94.

The next paper read was by

THOMAS GUERIN,

Civil Engineer of the Public Works Department, on

SEWERS AND SEWAGE.

This paper was a remarkably interesting one, and was illustrated by a diagram of a sewer, as frequently improperly constructed, and also of a street, showing at its crossing the catch basins or gullies,

Mr. Guerin in alluding to the well known fact that wherever a large number of people are congregated and living together, there disease will break out, unless proper means are provided to carry off ordure and other impurity. In order to do so, sewers and house drains have been resorted to wherever the water system prevailed. And if the sewers and house drains are reliable, we have protection from those germs of disease which are conveyed into them in excremental matter, which, if the sewers are perfect, is rapidly discharged therefrom; but, should the sewers and house drains be imperfect in their construction and do not perform the functions required of them, then they become the propagators of disease by producing gases and infectious germs destructive to human life.

He then alluded to the way in which sewer-gas entered into dwellings, and gave an instance how the wealthy resident of a mansion, who had spared no means to secure himself from danger from the ingress of gases therein, and imagined himself secure from all such danger, nevertheless

was poisoned by sewer gas, which, through faults in its sanitary construction, found access into the house. He stated that it was no evidence that sewer-gas was not in a dwelling because it was not smelt, for in its most virulent state it may be without any perceptible odour.

The question which immediately concerns us, he said, was to adopt some means of being protected from a contact with sewer-gas, or germs of disease propagated in foul sewers and drains. We must have "gullies or catch-basins," so as to catch the street drainage and convey it to the sewer. Yet these openings or gullies serve as ducts for the sewer-gas to escape and poison people on the side walk. This, he contended could be obviated by trapping these gullies so as to admit the drainage from the street, and prevent at the same time the egress of the gas from the sewer. In the cities of Montreal and Ottawa, these gullies are kept opened intentionally for the escape of the gas under the belief that they will ventilate the sewer and render the gas therein harmless. This course of proceeding, he said, must be fatal to many a life. Our dwellings must be connected with the sewer by the house-drains. The wash-basins, sinks, bath tubs, closets, &c., all discharge through waste pipe into those drains, so that all the interior of a house is exposed to a liability of being poisoned by the gas from the sewer passing upwards from the sewers through these waste pipes. Now the first requirement, therefore, to ensure safety from this danger would be to cut it off by efficient trapping. The water-trap, which is the one generally in use, did not do this effectually—that experiments made by Dr. Fergus, of Glasgow, showed conclusively that although the pressure of sewer gas against the water in the traps experimented upon was of no force whatever, nevertheless the gas passes through them.

The experiments were made with glass traps and it was found that the light gases pass through by the top of the bend and the heavy gases by the bottom. The gas at first saturates the surface of the water next to it in the trap then it sunk down in a fine stream, and then gradually travelled through to the other side where it again spread out and began to diffuse itself into the atmosphere about it. These facts Mr. Guerin said, went to prove that water-traps are not sufficient barriers to oppose the entrance of gas.

After alluding in a cursory manner to typhoid

typhoid and diphtheria being caused from the poison emanating from sewers and their arteries, and how hotels and public buildings became infected with sewer-gas, Mr. Guerin exhibited a trap invented and patented by himself. This trap was sealed by a valve which rendered it impossible for gas to pass it. He stated that it had been on trial for the last eighteen months in the public offices of Ottawa, and read a certificate from the Engineer of Public Works stating that it had given entire satisfaction.

The members of the Convention then examined the trap and pronounced it to be the best they had ever seen.

Our space will not allow us to go into further details of Mr. Guerin's excellent paper. We will conclude the same by briefly alluding to his remarks on Montreal sewerage, which he asserted is of the worst description.

Let us now examine, he said, some of those sewers, from an engineering point of view.

COLBORNE AVENUE SEWER.

This sewer has dimensions which give it a capacity double that of the Craig street tunnel, so that it is capable of draining an area of the city twice as large as that which the latter sewer is capable of draining; yet the Craig street sewer is intended to drain 2,152 acres, while the Colborne Avenue sewer, having double its capacity, drains only 1,130 acres.

The Colborne Avenue sewer has a capacity nearly five and a half times that of the Fullum street sewer; yet the Fullum street sewer is expected to drain 2,000 acres, while the former sewer, over five times its capacity, drains only 1,130 acres.

The Colborne Avenue sewer has a capacity eight times that of the Bonaventure street sewer; yet the Bonaventure street sewer was built to drain 1,900 acres, while the former, which has only one-fourth its capacity, is intended to drain 1,300.

CRAIG STREET TUNNEL.

The Craig street sewer has a capacity very nearly four times that of the Bonaventure street sewer; yet the former drains 2,142 acres, while the latter sewer, which has only one-fourth its capacity, is intended to drain 1,900 acres.

BONAVENTURE STREET SEWER.

The Bonaventure street sewer has a capacity only 14 per cent. greater than that of William

street sewer; yet this former is expected to drain 1,900 acres, while the latter sewer is required to drain only 260 acres.

The Bonaventure street sewer has a capacity only equal to twice that of the sewer adjoining Victoria square: yet the former is intended to drain 1,900 acres, while the latter drains only one acre.

With such a sewerage system, the city of Montreal can never be free from pestilence.

[Whatever may be the faults of the Montreal sewerage, the public should know that the present efficient City Engineer, Mr. P. St. George, who has only recently been appointed as head of the Civil Engineer Staff, is in no way answerable for it. In fact the entire blame rests with the Council, who, from the beginning, would never vote a sum of money for preparing a proper system of drainage for the city, and for the necessary surveys requisite for the same. The sewerage has been done by piecemeal—by fits and starts—and not conducted under any method or system. One late City Engineer, we know, received his principal support for the situation he obtained on the pledge that he would use all his interest to have constructed the McGill street sewer, which discharges its noxious matter at the Queen's Wharf, one of the most central positions along the whole line of wharves, and which costs the Harbour Commissioners a large sum of money every year to dredge out the foul matter discharged into this basin from this sewer.

So long as Aldermen on the Road Committee, and Aldermen on the Health Committee are permitted to interfere with engineering matters of which they have no knowledge whatever, so long will the public money be wasted and the work inefficiently performed.—ED. C. S. A.]

HIDDEN CAUSES OF DISEASE EXPOSED.

BY F. N. BOXER,

Civil and Sanitary Engineer, Montreal; Secretary of the Canadian Sanitary Association.

The subject of this paper was a very important one, not only to dwellers in towns, where the water-carriage system is adopted, but also to residents in the country using well-water.

Mr. Boxer's paper was accompanied by three sheets of illustrations, one showing the way drinking water was polluted from the oozeings of cesspits, privy vaults, and surface matter finding their way into wells; another illustration

showing the ordinary defects in plumbing, house drains, ventilation, etc.; and the third exhibiting the proper manner in which a dwelling-house should be constructed in its sanitary appliances and drains, so as to ensure perfect ventilation and security against the dangers arising from sewer-gas.

The first portion of his paper pointed out the dangers arising from disease-germs, gases, vapors and fumes, in their several relations to which, human life is exposed either in dwellings or factories, and he considered it necessary, in the first place, to impress upon the audience the insidious character of these particles and gases, either from being absorbed or inhaled, and which thus become the *prima causa* of disease. He then exposed, on the illustration, the hidden sources from whence they proceeded.

He stated, as an illustration of the great danger to which we are now exposed since the introduction of the water-carriage system, that it had been ascertained the deaths from zymotic diseases in cities healthily situated, but having that system in use, amounted to 25 per cent. of their annual mortality, and that in Montreal, which is a city having every advantage that situation and locality could give to make it healthy; yet, owing to the neglect of its Health Department and its officials to systematically inspect and enforce the Health by-laws, the deaths from zymotic diseases last year, and other diseases accelerated from bad house drains, from the official report, amounted to about 31 per cent. of its annual mortality, its death-rate being 3849, and those classed under zymotic diseases 1116. To show more forcibly the great necessity of taking every possible precaution to have sanitary appliances and house drains kept in the most perfect condition and efficiently trapped and ventilated, it was stated, on the most reliable authority, that in certain large cities in Britain, typhoid fever and diphtheria were scarcely known until the introduction into the houses of water-closets and their connections, which from bad plumbing and other inferior work and materials soon became small sewers and arteries of corruption. He also alluded to the danger of vegetable matter decaying in cellars in Spring-time, and the dangerous practice of throwing the washings from infected patients and their clothing into yards and public streets; this water often contains the germs of infectious diseases, which, when dried, but still retaining the power of

propagating disease, are blown about by the winds, and often produce sickness in houses which are in a perfect sanitary condition. This, he said, was another *hidden source* of disease which mystified often the medical faculty.

He considered that in order to obtain immunity from these sources of danger, there should be special legislation; not the legislation of municipalities, that is, to make such by-laws as they think proper, and to enforce them or not at their pleasure, but the legislation of the Provinces by mutual agreement, and that these laws should render it imperative that all new houses, in their sanitary fittings and drains, should be constructed on the most approved principles, and inspected by a properly qualified Government or Municipal officer, before closed up. He gave great praise to the Province of Ontario and its Provincial Board of Health for their exertions to improve the health of the people, which he said was a "*nation's wealth*," and raised its moral standard. He considered that Governments should do in the future far more than they have done in the past, which, in fact, almost amounted to nothing, to promote health. Charitable Institutions, Literary Institutions, Art Societies, all received more or less pecuniary help from Governments and private individuals; but for the promotion of health, the most important question of all, little was given. We spent over \$400,000 annually to bring immigrants to the country, when with one tithe of that amount, judiciously expended, in five years, 5,000 lives of our own people, who perish annually in Canada from diseases which are preventable, could be saved. He spoke feelingly of the suffering brought on the home circle through the prevalence of these diseases, and urged upon all to assist them by their influence, as far as human foresight and precaution would permit, to expel from their homes all sources from which arise zymotic diseases, and to protect and strengthen those young lives which God had given them to rear, from *premature death or decline*.

PREVENTION BETTER THAN CURE, OR VENTILATION *versus* QUARANTINE.

BY CHARLES ROGER, M.D., OTTAWA.

Dr. Rogers dwelt entirely with the subject of contagious diseases, and strongly advocated the policy of isolation. He considered that in every house where small-pox occurred, a red card

would be placed on the door notifying the fact, and if patients could not be isolated, they should be sent to an hospital and placed under the care of experienced nurses. He also gave several other excellent suggestions which, from want of space, we are unable to print.

This concluded the last of the papers.

On the motion of Dr. Rao, seconded by Dr. Cassidy, the thanks of the Convention were voted to the Mayor and Corporation of the City for the use of the City Hall, and for the personal interests of Mayor Bato for the interest he had shown in the event by his constant attendance at the sittings.

Votes of thanks were also passed to the railway companies for the reduction in ordinary fares kindly given to those coming from a distance to attend the Convention; also to Dr. Sweetland as chairman, Dr. Small as secretary, and Drs. Grant and Wright for the interest they had taken in the Convention.

Sanitary Convention.

Held at London, Ontario, 17th November, 1893.

We promised in the February issue of this Journal to give extracts from some of the valuable papers which were read at this Convention, but so many applications have since been made to us for notices of Sanitary papers and other health matters that, to comply with the desire of the public, would require a journal double the size of the one we publish. The experience gained after the recent Sanitary Convention at Ottawa, has proved how effectually the CANADIAN SANITARY ASSOCIATION is able to expand the objects of Provincial Boards of Health by following after its footsteps, and building into an edifice on the foundations they have laid, and it is to be hoped that these Conventions will be held more frequently than heretofore, so that the greatest benefit will accrue from their awakening up our people to the dangers that threaten them from want of knowledge of those causes which propagate and spread infectious diseases.

THE ADDRESS.

The first speaker on this occasion was Dr. Rao, of Oshawa, who, in a very able address, explained the purpose of these Health Conven-

tions as being the means best calculated to improve the sanitary condition of the people, inasmuch as it brings them together in a social manner, to impart to each other their own experience and knowledge in matters tending to improve the health of the community, and awakens an increased interest in sanitary education in those cities in which these Conventions are held. The people, he said, in those cities could not but feel the importance of the subject from the disinterestedness of physicians and sanitarians, who, at much expense and loss of valuable time, came from long distances to assist in imparting their store of knowledge and advice, which, however small an offering, still continued to increase the bulk of sanitary education which was now impressing itself seriously on the mind of the people.

He referred to the necessity of ventilation, the removal of filth from premises, as well as public nuisances—common to so many towns,—and to the necessity of every town adopting a comprehensive system of sewerage.

A paper was to have been read by E. Playtor, M.D., of Ottawa, on the "Typhoid Plant, its Nature and its Soil." Dr. Oldright appeared on the platform and explained the reason of Dr. Playtor's unavoidable absence.

Wm. Oldright, M.A., M.D., chairman of the Provincial Board of Health, then read a paper by W. S. Harding, M.D., Quarantine Officer, St. John, N.B., on the subject of "Public Health." We regret that we have not the paper before us, in order to give extracts from the same, as it appears to have been listened to with marked attention and elicited much applause.

SANITARY DRAINAGE.

On this important subject, Mr. Wm. WALKER, of London, addressed the meeting. He spoke of the perfection arrived at in English towns; and even in the country districts the Rural Sanitary Authority Act is strictly enforced. He then proceeded to describe the manner in which the law is enforced, and the regulations laid down by the Act.

THE WATER SUPPLY OF LONDON.

Professor W. SAUNDERS, of London Western University, read a paper on "The Water Supply of London," and was followed by His Honour, Judge ELLIOTT, with an instructive paper on

INSANITY WITH RELATION TO CRIMINAL RESPONSIBILITY.

He said the subject on insanity, with relation to criminal responsibility had caused much controversy between the two professions. It was the province of a judge to inform the jury what are the conditions of the mind which constitute responsibility—that is to say, which would render the accused responsible for having broken the law. Now it must be evident to all that a judge, in that situation, must feel the desirability of adopting some plain instructions which would be intelligible to a jury. He remembered having heard a physician, who had paid much attention to this subject, deliver a lecture upon it in this town; this gentleman stood deservedly high in his profession, but was rather hard upon the lawyers, especially upon the judges. It was all very well in a lecture to discuss those slow, obscure and intricate disorders of the brain and the effect of their actions on man, but it was a very different thing to instruct a jury in a plain, practical and intelligent way, as to the points they should consider in rendering a verdict. The directions usually given by a judge to the jury in cases where insanity is set up as an excuse for crime, is—"Did the accused at the time he committed the act know the nature of the act, and that the act was wrong?"—that is to say, wrong in the sense that it was contrary to law. Judge Elliott here gave instances—*one*, in particular, of a man tried for the murder of his five children; insanity was set up as a defence. The judge directed the jury in the usual way, and the jury ignored the defence, and found the man guilty of murder. The case was laid before the Home Secretary, who deputed two eminent physicians to examine the man, and on their report the man's life was spared. It was strongly objected that the judge in charging the jury ought to have gone further, and expressed to the jury that if the act was committed under an uncontrollable impulse, he should not have been convicted. But it is evident, he said, that the admission of this doctrine might open the door to some of the wild theories which have been advanced, especially in the neighbouring state, under the name of impulsive insanity, emotional insanity, &c. Consequently, judges hesitate to go further in this direction than they have hitherto done. At the same time he believed that in practice there was less to complain of than members of the medical pro-

fession generally thought. For what does the direction usually given include? Everything which is material to show whether the person's mind was sufficiently sound to enable the jury to form an opinion on this subject. The wisdom of medical men is introduced to show whether the person's conduct, in respect to the particular act, is symptomatic of a mind so diseased as to render the person irresponsible for his acts. Thus it would be found that, practically, the limits within which the question of responsibility is decided in the courts, are more extensive than is generally supposed. It is well known that some persons do labour under extraordinary delusions upon particular topics, yet those persons, apart from their delusions, that is to say when entering upon other topics, appear as rational as ordinary men. Are these persons to be shielded from punishment? Some medical writers assert that there cannot be delusions so strong as to be what are called insane delusions conjoined with a mind sufficiently sane in some respects as to render the person responsible. Others do not appear to go so far. But, however this may be the jury, from the facts asserted by medical evidence, are to pronounce upon the individual's mental competence to know the nature of his acts or to control them. The course now taken by the courts in dealing with the question of insanity in criminal cases, may appear a rough and ready way to dispose of a question involving intricate physiological enquiries. Nor is it likely to be satisfactory to the medical student who perceives that it involves nice discrimination as to the delicate organisms of the brain. But it may help to reconcile us all to this practical, and perhaps imperfect mode of administering justice in relation to insanity, when we reflect how imperfectly in the tribunals of this world we mete our justice to criminals in cases where insanity does not come into question. A miserable wretch, reared amidst the haunts of vice, to whom no pious and loving parents ever imparted by tuition or example those early lessons of virtue and morality which are inestimable, experiences no more loneliness than he whose lot has been cast under happier auspices. "Take temptation away," says Thackeray, "and which of us is better than our neighbour." Yet grinding poverty, temptation, evil associations, and these, with blunted sensibilities, furnish no shield against punishment. Says the practical man of the world: "It cannot be otherwise; society

not be protected. We cannot in courts measure criminal delinquency by a finely graduated scale." Unhappily this is true, and this reflection may help to reconcile us to what may appear an imperfect mode of dealing with iniquity, in respect to criminal responsibility.

Mr. JOHN ALLEN, of Chicago, Editor of the *Sanitary News*, delivered an excellent address on

PROVINCE OF SANITARY JOURNALISM.

After dwelling on the limited demand now existing for sanitary papers, the lecturer went on to treat of the legitimate field to which a paper must look for its subscribers. He said: "It is probable that a Sanitary Journal which expects to receive its support from a generous public will fail, therefore I believe it most necessary, at the present time, to interest particularly those trades appertaining to the subject as well as to the profession. The people who *should* support sanitary literature are very numerous, but those who *will* support it are not so plentiful. From the nature of their calling, and as representative men of the localities in which they live, the preachers, doctors, and lawyers are under implied obligations to support public health movements. As a matter of fact they do not do it. The lecturer then in a clear and pointed manner went on to say: "The sanitarian fondly hopes that some day the profession of medicine will experience a change in its practice, and that its character will then be preventive rather than administrative. This result will come gradually. Even now observers can detect a change in the Medical Journals of the land. Instead of adhering strictly to literature relating to the curative art, they will pay more or less attention to preventive medicine and hygiene literature. Very frequently I have had my nerve centre of felicity vibrated by some of what I, at least, would concede to be my best efforts enounced in the columns of a Medical Journal. Medical and Drug Journals are great trespassers upon Sanitary literature." The speaker then asked: What has the Sanitary press attained? It has accomplished the conversion of a large class of tradesmen from ordinary plumbers into sanitary plumbers; it has created a new profession—that of sanitary engineering; it has induced architects to change their work from merely artistic to a sanitary character; it has provided a ready means of communication and interchange of sanitary views, thus evolving the

best. Those of us engaged in the dissemination of sanitary information have a most delightful expectation before us. As our labours bear fruit, we may see in our mind's eye the more thorough enjoyment of life taken by our readers in the improved dwellings, free from foul air, dampness, and sewer emanations. The increased longevity of the human race, the greater amount of felicity experienced by those who do live, and the improved construction of habitations, we reasonably expect to follow as the legitimate results from our journalistic work.

ALLAN McDUGALL, OF TORONTO,

Member of I. C. Engr., Eng., and Sanitary Engineer, spoke in reference to several of the Canadian Swamps, more especially to the Luther Swamp; the flat lands in the Chatham District, and the flat lands near Winnipeg, and along the Red River. When in the North-west he had frequently nothing to drink but swamp water. The hot season following the wet season produces malarial fever to some extent. This was not to be wondered at, taking into consideration the immense evaporation which followed, owing to the dryness of the atmosphere in those regions, and it was the very fact of the air of Manitoba being so dry which accounted for fevers not being more prevalent.

Prof. Saunders attributed the absence of malaria from the North-west to the fact that the air there was never at rest; that a continual movement of the atmosphere in and around Winnipeg was always noticeable. This, together with the usual dryness of the air, accounted largely for the comparative absence of fever.*

Want of space precludes us from continuing our synopsis of the valuable papers read at the London Sanitary Convention, but which we shall again continue in our May number. The remainder are as follows:—

DISINFECTANTS, by Professor Wm. Saunders, chemist.

INFECTIOUS DISEASES AND THEIR PREVENTION, by Dr. Wight, of Detroit, U.S.

SCHOOL HYGIENE, by Inspector Dearness, Inspector of Schools, Middlesex.

* The engineers and party employed by the Federal Government in the summer of 1882 to survey Lake Manitoba, with the view of devising means to carry off its surcharged waters which, for five years past, had been overflowing the land, covering thousands of square miles, experienced no malaria while surrounded by the overflow of water; but as this overflow is now gradually subsiding, it will not be surprising if, in a few years hence, malaria will be felt in Manitoba.—Ed. O. S. A.

The Sanitary Condition of Toronto.

REPORT OF THE MEDICAL HEALTH OFFICER FOR
THE YEAR 1883.

We congratulate the city of Toronto in possessing a physician as Medical Officer of Health, who has so admirably performed the onerous and arduous duties of his important office during the past year. We have no doubt whatever that the exposure he has made of the insanitary state of the city from foul privies, foul wells, foul yards and other causes, all tending to promote zymotic diseases, will result in a happy decline in the death-rate of Toronto. The brevity, clearness and compactness of his Report, which can be read and understood at a glance, is in striking contrast to the voluminous muddle of other men's brains, thoughts, and experiences which have hitherto been passed upon the public in a city we know of as original matter, and at a most unnecessary expenditure of public money. It is to be hoped that in the future the Medical Health Officer of that city will confine his annual Report to what he has actually done personally, which, for the past year, might be expressed with a cipher (0!), and save the Mayor and Aldermen (for no one else reads it, if even those gentlemen do), the annual hash and re-hash of plagiarism contained within its pages.

The following is the Medical Health Officer's Report:—

Office of the Medical Health Officer,
Toronto, January 28th, 1884.

Mr. Alderman Carlyle, Chairman Markets and Health Committee:

Sir,—In a Report submitted to the Council on the 2nd December last, relating to the character and extent of the work which had been done by the Sanitary Police acting under my directions during the four months thus employed, I stated that, "as one result of the inspection I had for reference very full reports of the sanitary condition of the city," and that I should submit a tabulated statement of these reports as soon as it could be prepared. I have now the honor to submit for the consideration of your Committee the tabulated statement referred to.

It is necessary I should state that complete accuracy is not vouchsafed for. The Inspectors began the work without the experience which can only be acquired by time and practice. But, notwithstanding, and after making allowance for the improvements mentioned in the Report I have referred to, it may be safely stated these tables present a very fair statement of the present

sanitary condition of the City. At all events I have reason to believe that the insanitary evils have not been over-estimated nor the number exaggerated.

It will be observed that the reports show a large number of premises without drainage, and no inconsiderable number with defective drainage. I have reason to believe that these numbers do not fully show the extent to which the want of proper drainage imperils the citizens. The importance of having adequate drainage leads me to respectfully urge upon your Committee the necessity of taking early steps to secure a full and free outflow from every district and yard in the City. The want of drainage, there is every reason to believe, has been and continues to be the cause and promoter of certain diseases, while giving intensity to many ailments due to other causes. Until sewers are constructed in all the streets and lanes, so that private drains may be conveniently connected with them, there will remain portions of the City without the requisite for the sanitary welfare of the people. It is to be feared that not a few of the places reported to be drained have only box or wooden drains, or perhaps only what is called natural drainage.

The subject of water supply for domestic purposes is also of great importance in a sanitary point of view. While the number of services for supply of City water is rapidly increasing, there are a good many who have only well or cistern water for family use. The table shows upwards of 500 cases in which neither City well nor cistern water is available, but there are a much larger number where the inmates of dwellings have only cistern-water, which is unfit for consumption. With regard to the large number of wells still remaining, a considerable portion are not in use for household purposes, or are only used occasionally—a custom to be condemned, inasmuch as well water only now and then drawn is by no means so pure as that in daily use. A well not in use, or rarely used, must be considered a foul well, and should be filled in with clean earth. In fact, as I have had occasion to state before in reports to His Worship the Mayor, I believe the time has arrived when every well in the built-up portions of the City ought to be closed. The soil has become so fouled and overladen by filth and water from dwellings and various establishments, and by excrement from man and beast in the course of years, that it is next to impossible for a well sunk in the earth to contain pure water. Although the source of the supply may be a spring undefiled, which is not likely, yet with every falling rain, and in the spring from the melting snow, there will be washed into the well from the surface a quantity of filth quite sufficient to contaminate the water; and, moreover, unless the wall of the well be water-tight there will be frequent additions by soakage. A well thus contaminated may have water seemingly pure when regarded by the unaided senses; but the test of the analyst will disclose at once the evil which may be a fruitful cause of disease. The danger from using such water will be greater after a rainfall, or in the summer when the water is low and the filth lying at the bottom is more easily stirred up

I have not mentioned the worst case of well pollution. The reports show a large number of wells situated in more or less proximity to privies where either the wells nor the privies are enclosed with water-tight walls. In these cases, especially when the privies are not drained and the house slops are habitually thrown into them, the time will not be long before the fluid from the privies will find its way into the wells. Doubtless it is in this way that many cases of typhoid and other low fevers arise.

Before leaving this subject I must inform your Committee that a considerable number of cases were reported in which tenants of houses were obliged to use water for domestic purposes obviously foul, or seek it from a neighbour. It is respectfully submitted that in the interests of the poorer classes, who are likely to be more susceptible to low forms of disease, the civic law should be sufficiently explicit to secure a prompt remedy for such an evil. Another fact must be stated, namely: A certain number of property owners, it was reported, had converted the discarded well into a privy. This idea of storing away the most dangerous kind of health-destroying material, one might suppose would not be entertained by any sane person.

The returns show that there are now in use in the City a very large number of privies. The character of these privies is by no means uniform, and it was found impossible to classify them, except as full or foul. While some of them are constructed in a more satisfactory manner, many are little better than pits in the earth. Too many are shallow and overflowing into the yard or street. In some cases families were found with no such necessary convenience as a privy, and the street became the receptacle of the excrement with the slops and garbage. In not a few cases capacious privies were full to overflowing. Some of these had not been emptied for years; some had been from time to time partially emptied, leaving the rest putrefying and to become a serious pest. The reports show that in a large number of cases the dangerous nature of the privy contents was enhanced by the daily addition of the slops and garbage of the house. The total of privies given refers to the actual number; but the total of water-closets refers to the number of places which have closets, which may have one or many.

Without considering the general question as to the best mode of disposal of excreta and sewage generally, it may be remarked that the use of privy vaults, even when properly constructed is now condemned by all sanitarians for use in a thickly-populated district. Although it is far from a pleasant contemplation that the sewage of a population of nearly 100,000 should be poured into the bay to gradually convert it into a cess-pool, still of the evils it is preferable to have water-closets, by which the excrement may be carried at once away instead of collected on premises to become a source of imminent danger to the public health. In the interest of the public health it is to be hoped that the scheme for carrying the sewage of the City away by intercepting trunks will very shortly become an accomplished fact.

The number of unclean yards, it will be noticed, is large. Of course some of these yards are less filthy than others, but on the other hand some are reported as abominable. This number does not include clean and unclean cellars, of which a good many are reported. The causes of uncleanness are generally the depositing of garbage, refuse of the kitchen with the chamber and kitchen slops. A filthy yard is a source of danger, not only to the occupants of the place, but also to the neighbours. And under the influence of the heat of summer, when the ground is moist, there will emanate not only foul-smelling, but pestilential vapours which a current of air may carry some distance, perhaps to strike down with disease those who endeavour to keep their premises in a proper sanitary condition. Until the public are educated to appreciate the importance of cleanliness of house and premises, it will be found necessary to have frequent and regular inspection.

The Inspectors were instructed to report those places at which the refuse capable of being burnt was thus destroyed. It is gratifying to know that even so many reported do adopt this mode of destroying kitchen and other refuse, and it is to be hoped, now that the citizens have been informed of the value of so doing, that a great majority will follow this practice.

Although this report has attained to a considerable length, a very great deal more might be said with respect to the sanitary requirements of the City. There are many evils in connection with factories of various kinds, and of industrial establishments, especially those where articles of food are handled, which should receive early attention. The want of provision for ordinary comforts, for convenience for the employe, for common decency in behalf of females, for safety against fire, for ventilation and proper plumbing in public and private buildings, in many of the hotels, workshops and the various places of learning, call for prompt and adequate treatment.

It requires to be stated as a gratifying fact that there are no places—hotels, factories and private premises—the reports of which show little or nothing to be desired in the way of sanitation. I have reason to believe that the work of the Inspectors has created an earnest desire on the part of many citizens to give proper heed to this most important matter. It is true there are some who believe that the demand for sanitary reform is uncalled for. I have been met, and the Inspectors were often met with the statement that, as in the past, the public had got along with such an order of things, there could be no reason why a change or more particular care should be required. But it ought to be sufficient, in reply, to remind the dissentient that Toronto is only fifty years old, that it is only within the last twenty years that the City has assumed anything like the proportions of a Metropolis. The circumstances of living which may be harmless in a rural district when applied to a town or city become altogether harmful. The question of the utility of sanitary observances needs not to be determined on scientific grounds only. There are abundant statistics to show that proper attention to sanitary matters has materi-

ally reduced the rate of mortality. And this is not all. By the application of sanitary laws there will be a great saving to the public in preserving the health, giving comfort, saving expenses incident to sickness, and, by keeping the broad-winner in health, saving the family from want, or perhaps from becoming a public burden, or its members from lapsing into a life of intemperance and crime.

All of which is respectfully submitted.

WM. CANNIFF,

Medical Health Officer.

In four months Dr. Canniff, with ten policemen supplied from the City force, inspected and reported upon the sanitary condition of every dwelling-house and building in his City, except a few Streets and Squares, of the better class, which he had not time to complete.

The adoption of this system in Montreal and other cities similar to it, is a matter which we have most strenuously urged, and commend it to all Boards of Health. If it can be done in Toronto with a population of 100,000 persons, with ten policemen in four months, it can be done in a city like Montreal with the same number in six months, and then that City would have a record of the sanitary condition of every house in it, provided active and intelligent men were employed on that duty.

His policemen inspected 140 streets, with the buildings thereon—their yards and lanes—and the following is the grand total of the work done. These men report as follows:—

10,207 premises which were drained; 4,396 premises *not* drained; 1,421 premises having defective drains; 12,194 premises using City water; 4,330 using well water; 1,538 foul wells; 5,014 using cistern water; 1,162 foul cisterns; 2,994 houses having water closets; 14,133 privies; 3,936 privies full; 1,996 foul privies; 6,344 houses from which slops were thrown into privies; 1,113 houses from which refuse was thrown into the streets; 2,444 unclean yards; 4,535 houses in which refuse was burned up; 512 houses having no water in use; and yet with this heavy record Toronto has a death-rate far lower than Montreal, and why?—because the main cause of all zymotic diseases lies in the water-carriage system, and this system, in the very acme of imperfection, is more in use in Montreal than in Toronto.

Bureau of Health Statistics.

PROPOSED BUREAU OF HEALTH AND STATISTICS AT OTTAWA.

This question of the desirability of the Federal Government establishing a Bureau for the collection of Vital Statistics at Ottawa, has long engaged the attention of several of the leading physicians in the different provinces, and on their representations to the Government, at different times to take steps to accomplish this object, the sum of \$10,000 was appropriated in 1882; but that sum was found to be totally inadequate for carrying out, in any practical or reliable shape, the objects contemplated. Rather than that this money should go back to the Treasury, the medical officer of Montreal made himself particularly active in getting up a convention, consisting of physicians from different parts of the provinces, and a deputation from the Board of Health of Montreal to wait upon the Minister of Agriculture, to confer with him regarding the advisability of forming a Dominion Bureau for the collection of Vital Statistics. At that interview with the Honorable J. H. Pope, Minister of Agriculture, there were present the Honorable Sir Charles Tupper, Minister of Railways, the Honorable A. P. Caron, Minister of Militia and Defence, and J. C. Taché, Esq., M.D., Deputy Minister of Agriculture.

The following resolutions were adopted:—

“Resolved,—That in the opinion of the meeting, in order to prevent disease and preserve human life, it is advisable that the Dominion Government should organize and sustain an uniform system of vital statistics for the Dominion.”

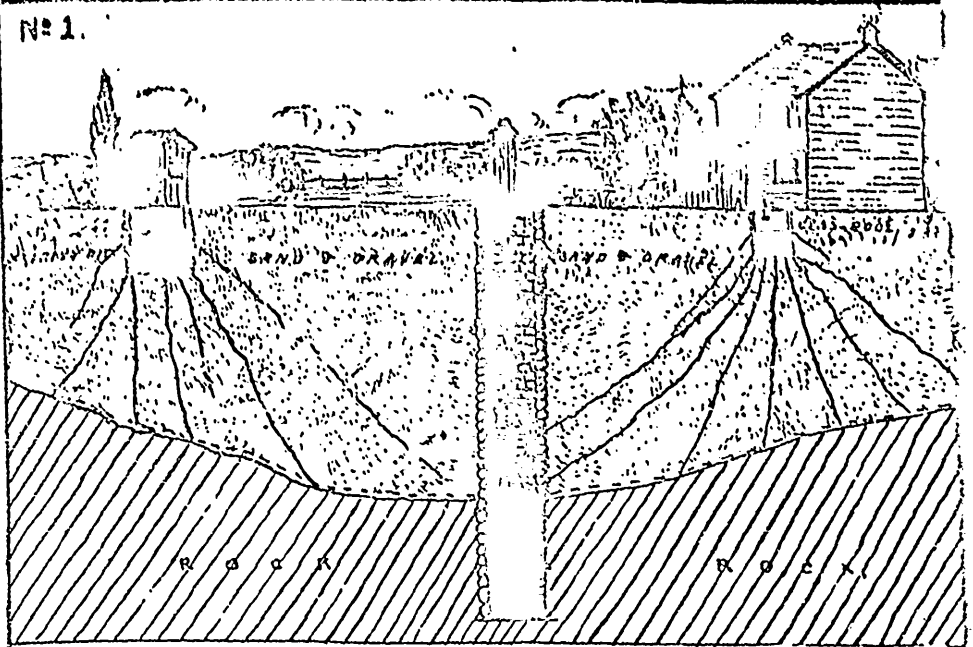
“Resolved,—That as immediate action is necessary, the Federal Government be invited to initiate at once a system of vital statistics where organized Boards of Health are established, so that statistical information may be utilized by these bodies.”

“Resolved,—That it is desirable that a central bureau of vital statistics be established, and if found to be within the province of the Federal Government, a *comprehensive* scheme of health returns.”

The Minister in accepting these resolutions assured the deputation “that as far as lay in his power, and he might say that of his colleagues, nothing would be left undone that could in the smallest way serve the end which brought them together.”

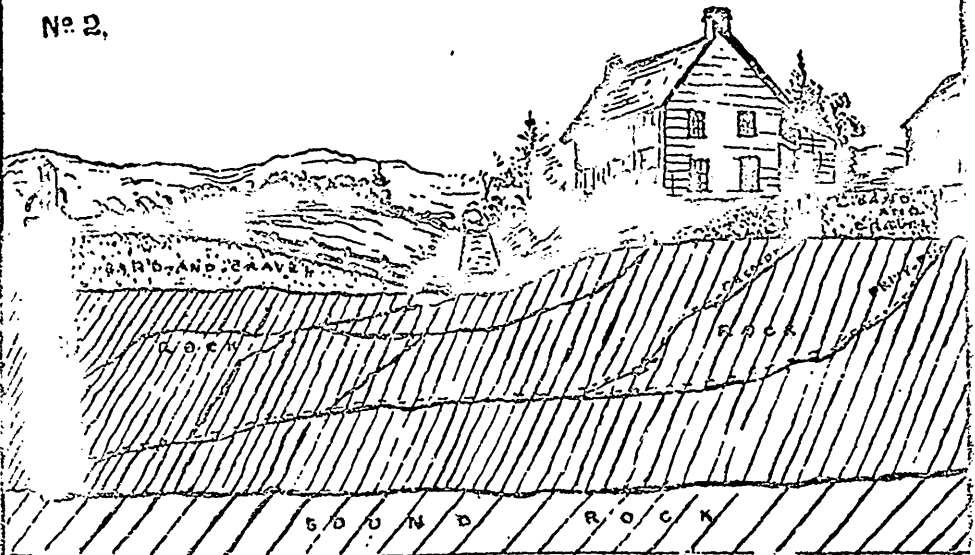
Now it must be observed that the object of this deputation was to obtain the formation of

No 1.



— POLLUTED MATTER FROM PRIVY-PIT AND CESS-POOL.
 - - - FLOW OF POLLUTED MATTER ALONG FACE OF ROCK INTO WELL.
Four cases of typhoid fever occurred in above house - one died.

No 2,



PLAN SHEWING HOW WELL-WATER IS POLLUTED.
*This Well was 500ft from the house, the polluted matter passed through
 seams in the Rock into the well. Causes of typhoid & one death.*

Domtillon Bureau for the collection of Vital Statistics, and in the second resolution it says, "To initiate at once a system of Vital Statistics where organized Boards of Health are established, so that statistical information may be utilized by those bodies." We call attention to the words we have placed in italics.

The result of this deputation was to this effect, that the Government decided to divide the \$10,000 between 11 cities, which had paid Medical Officers of Health, and the money was to be applied to the cost of collecting *mortality* statistics.

We now find at the expiration of a year that Dr. Phylsair, formerly a resident of Toronto, proposes a plan of forming a Sanitary Bureau to be associated with the Department of Agriculture, the very thing which had been brought before the Minister the year before by some of the most eminent physicians in the country, and embodied in the foregoing resolutions, and he obtains a few of the local physicians of Ottawa to form a meeting to consider his *plan*, without consulting those physicians who, for years past, had been urging upon the Government this object; and without any one present at the meeting even discussing the plan, a committee was appointed to wait upon the Minister of Interior to lay the same before him, in order that a sum might be placed in the estimates—'just to make a beginning.'

Some of the committee felt afterwards that the part they had taken in this movement was too hurriedly done, and that it might be taken as a slight made upon those physicians and other gentlemen who had formed the Health Convention at Ottawa in 1882. It did, indeed, seem strange that this matter should have been got up hurriedly, just two days before the meeting of the Ontario Sanitary Convention in the same city, and composed of the Chairman of the Provincial Board of Health and other physicians who had formed members of the previous deputation, and in the temporary absence of Dr. Sweetland, the President of the Canadian Sanitary Association.

Now, what does all this mean—does it mean that the Government should give another \$10,000 this year, that somebody may get a slice out of it by being made the secretary to a Health Bureau at Ottawa? That is probably just what it means.

What good has the money granted for the collection of mortality statistics done for Montreal? Before the money was granted the By-law of Montreal compelled the Superintendents of Cemeteries to furnish, free of cost, the certificates of deaths to the Board of Health, and the certificates were tabulated by the statistical clerk of the department without any cost to the city. Now, about \$1,100 was paid by the Government to Montreal last year for no practical purpose whatever. The Superintendents of Cemeteries got 15 cents for each copy of certificate of death, and as the total number of deaths in Montreal last year was 3,849, which would be say \$578, the balance, with perhaps some trifling sum for some other information, goes to the medical officer, and for what? simply for receiving these certificates of death, putting them into a large envelope and sending them to the Minister of Agriculture. He does not even tabulate them. If he even *utilized* the information, as the second resolution evidently intended the medical officers should do, some good might follow, but this he does not do. Was it any wonder then that at the joint meeting of the medical men of the Ottawa Sanitary Convention and the President and Committee of the Sanitary Association it should have passed a resolution to the following effect:—

"That further consideration of any legislation in connection with public health be deferred until after the next meeting of the Canada Medical Association, in order to give the Committee of that body time to report."

It is much to be hoped that whatever action may be taken hereafter in the matter, no private ends will be considered to the detriment of the public good.

Water Pollution.

The immense number of wells existing in the city of Toronto, as stated in the able report of Dr. Canniff, its Medical Health Officer, cannot but be detrimental to the health of the citizens of that rapidly increasing city; it is indeed a matter of so much importance to the community that we cannot, at too early a date, draw the attention of the public, throughout the Dominion, to the danger to life in drinking water from wells, polluted from the ooziings from cess-pools, and from other filthy sources.

A very able pamphlet on this subject has been published by Dr. Irving A. Watson, M.D., Secretary of the State Board of Health, Concord, N.H., from which we take one of our illustrations, and from which, in future numbers, we shall give further extracts. In the present number of this journal our space is too limited to enter more fully into the dangers of health to which people are exposed in town and country by drinking water from wells which, although clear to the sight, contains the germs of typhoid and diphtheria.

On the illustration, Fig. 1, will be seen, without requiring explanation, how a well can be polluted from filth surroundings.

On Fig. 2, how a well, sunk into rock, can be polluted from similar sources through fissures or faults in the bed of the rock.

Our next number will contain an important article on this subject and with more illustrations.

House Plumbing, Drainage & Ventilation.

In the illustrations on the opposite page are shewn two half-sections of a house—No. 1 an approved plan for plumbing, draining and ventilating, and No. 2 shewing the faulty method generally adopted in the ordinary class of city houses. It will be perceived in No. 2 that no ventilating pipe is provided to the soil pipes nor ventilation pipes whatever in any place. No trap between the main sewer and the house; and the house drain placed under the floor where, if defects exist, they cannot be examined without destroying the floor, as very frequently the flooring boards are laid at right angles to the line of the house-drain. It will also be observed that the bath and wash-basins discharge into the foul water-closet traps, which method ignorant plumbers call trapping, but which is a trap to breed a fever.

The following instructions should be borne in mind in the construction of that portion of a building which relates to its sanitary appliances:

1. Construct the house-drains on grades that will carry off, as quickly as possible, all liquid and semi-liquid wastes.
2. Trap between the sewer and the house so as to prevent foul gases from entering into the house-drain either from the sewer or from a cess-pool. This trap will always break the pressure

of gas from the sewer, so that less pressure will come upon the other traps in the house. Then if the plumbing is perfect and a good grade to the house-drain, or iron soil-pipe, and the latter ventilated through the roof, and having a fresh air inlet, there will be little danger to be apprehended from the water-carrings system.

3. The fresh air inlet-pipe should, in this climate, always be placed sufficiently high off the ground, so as not to be closed from snow, and a grating placed over its mouth.

4. All soil pipes should be of iron, and when ever possible, kept in sight, in order to detect a once a leaky joint.

5. The course of all pipes should be kept as straight as possible.

6. Provide each fixture, as nearly as possible with a suitable trap, and vent pipes to such water-seal traps as are liable to be emptied by siphonage.

The illustration shows the rear half of a building—presuming the sewer to be in the rear—it is merely drawn to show the principle that should be adopted in all houses.

Sanitary Plumbing.

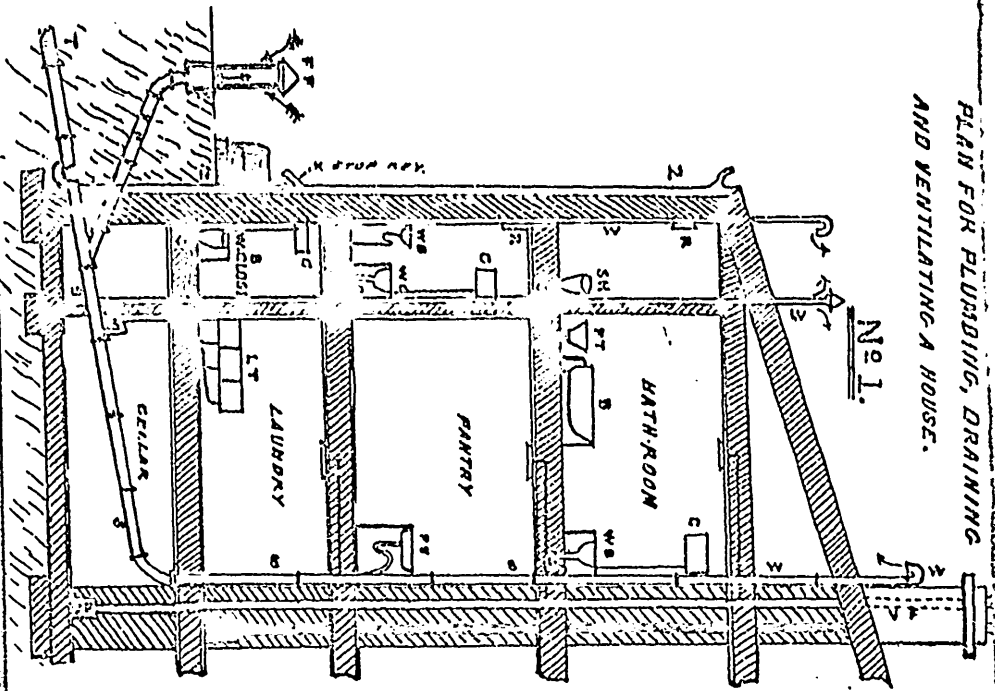
In the hope that the Board of Health of the City of Montreal will soon become impressed with the deep responsibility resting upon its members, and for the information of all future Boards of Health in any city or town, we give regulations relating to plumbing and drainage such as are generally adopted in the principal cities of the United States, in the hope that a time will be lost by the City Council in passing a by-law for regulating plumbing and house drainage in Montreal.

RULES AND REGULATIONS FOR HOUSE DRAINAGE AND PLUMBING.

Unless the Board of Health shall permit otherwise the drainage system of a hotel, tenement, dwelling house, stable with sleeping apartment, or factory shall be constructed as follows:—

1. *Filing Plans and Specifications.*—No person shall proceed with any of the drainage system of the above said buildings, or extend or alter new or old work (except repairing leaks), until they have filed at the office of the City Engineer, upon blanks, in such form as the Board of Health shall order, a notice of the work to be performed.
2. Such notice shall consist of a clear description of the work to be performed, or abstract of the speci-

PLAN FOR PLOMBING, DRAINING AND VENTILATING A HOUSE.



No. 1.

REFERENCES.

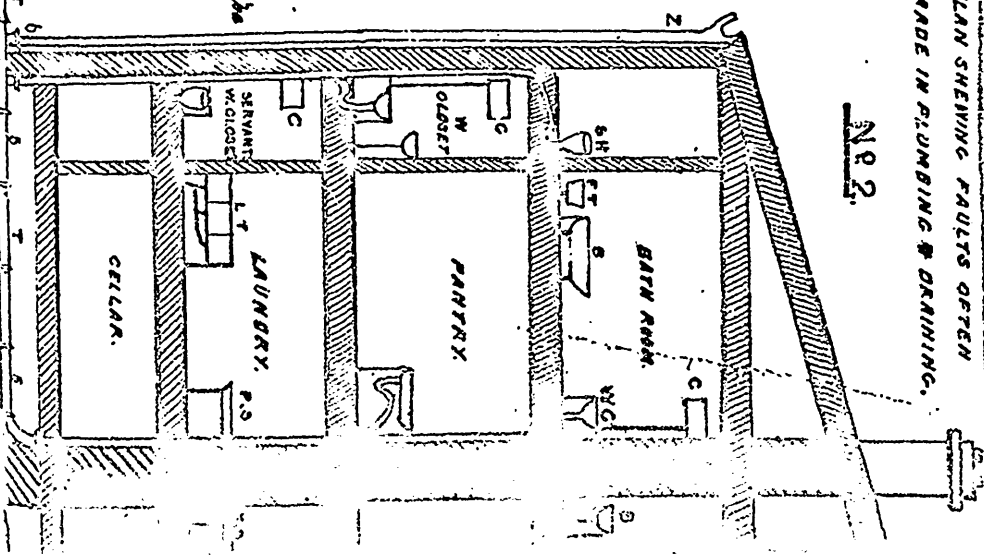
- C. Cistern.
- W.B. Wash-bowl.
- B. Bath.
- Z. Drain into basement.
- S. Drain into S.P. No.
- L. Lead into S.P. No.
- T. Tile drain.
- S.H. Slop-Stopper
- F.T. Foot Stab.
- V. Ventilated Flue into S.P. No.
- F.F. Fresh air Ventilator.
- M. Street or Rain drain.
- K.B. Kitchen sink.
- L.T. Laundry Tubs.
- P.S. Pantry Sink.
- V.F. Ventilating Flue.
- W. Wash-pipe Ventilator.
- K. Drainage to Cistern.
- W.C. Water Closet.

FAULTS IN PLAN 2.

1. No ventilator to toilet.
2. No fresh air intake.
3. No separate trap to Bath or Drain.
4. No ventilating flue in chimney.
5. House drain into cellar.
6. Drain into S.P. No. into drain.

PLAN SHOWING FAULTS OFTEN MADE IN PLOMBING & DRAINING.

No. 2.



callons, and be accompanied with a plan showing the different connections and the relative location of the different fixtures from the outlet at drain or cesspool to the termination above the roof.

3. All plans must be legibly drawn in ink on white paper tracing linen—no tracing paper will be accepted. One vertical section of the plumbing arrangements will be sufficient if it can be made to show all the work; if not, two or more drawings should be made. The size of paper or linen must be 8 x 12½ inches, or 12½ x 16 inches, or larger if necessary to make a clear exhibit.

4. No work on the drainage or plumbing shall be commenced until the plans are approved by the City Engineer. Plans and specifications will be approved or rejected within ten days of the time of filing.

5. After a plan has once been approved no alteration of the same will be allowed, except on a written application of the owner.

6. Notice.—The City Engineer must be notified when any work is ready for inspection, and all work must be left uncovered and convenient for examination until inspected and approved and certificate given to that effect.

7. Inspection.—All plumbing work in new buildings or new work in old buildings shall be tested by the City Engineer by hydraulic pressure, and in case the work does not stand the test, the water shall be turned off from the building, and not let on again until the plumbing has been pronounced satisfactory by the City Engineer.

8. Main Drain.—Every building shall be separately and independently connected with a common sewer or cesspool.

9. That portion of the house drain which is outside of the building, and more than four (4) feet from the foundation walls shall be constructed of extra heavy cast iron soil pipe or of the best quality of vitrified drain pipe.

10. That portion of the house drain which is inside the walls, or under the building, and that portion outside of the building and within four feet of the foundation wall, must be of iron pipe, with a fall of at least one-half (½) inch to the foot. When practicable, it must run along cellar wall and be securely fastened thereto, or suspended from the floor timbers in iron hangers. When this is impracticable, it may be laid in a trench beneath the basement or cellar floor, and provided with movable covers at proper intervals to give access to joints, for caulking, &c, but not be covered up until permission to close has been obtained from the City Engineer.

11. Trap. The house drain must have a trap located beyond all house connections, of the same size as the drain, provided with a hand hole for convenience in cleaning.

12. Fresh Air Inlet.—There must a fresh air inlet pipe entering the drain on the house side of main trap, of not less than four inches internal diameter, extending therefrom to the external air and terminating at

a point not less than three (3) feet above the ground, away from all windows, as the City Engineer may direct.

13. Soil Pipe.—All pipes receiving the discharge from water closets must be of iron at least four inches internal diameter and continued of undiminished size at least two (2) feet above the roof, away from all windows, and left open at the top.

14. Branches.—All branches over seven (7) feet in length must be continued of undiminished size through and two (2) feet above the roof, and not less than four (4) inches in diameter.

15. Connections.—All connections shall be made by λ bends and Y branches and all changes in direction shall be by curved pipe. No trap shall be placed at the foot of a vertical soil pipe.

16. Waste Pipes.—All waste pipes from sinks, basins, bath-tubs, wash-tubs, etc., where two inches or less in diameter shall be of lead; all over two inches must be of iron.

17. Rain Water Conductors.—Whoever rain water conductors are connected with any pipe of the drainage system of a house, they must be of iron with lead joints, trapped where they enter the drain. No rain water conductors shall be used as a soil pipe or ventilator to a drain.

18. Traps.—Every pipe connecting a water closet with the soil pipe must be trapped close to the connection with the water closet.

19. All waste pipes must be trapped at each separate fixture, and as close to the fixture as possible.

20. Safe Water.—All waste pipes from safes under fixtures must be run separately to basement or cellar and left open; in no case must they be connected with the soil pipe or any other waste pipe.

21. Refrigerator Water.—No waste pipe from a refrigerator, or other receptacle in which food and provisions are stored, shall be connected with a drain, soil, or other waste pipe, but must be separated therefrom by an open sink or tray furnished with trap.

22. Tank Overflow.—All overflow pipes from tanks must be run to kitchen sink and left open. In no case shall it be run into a soil or waste pipe.

23. Ventilation of Traps.—All traps must be furnished with a vent pipe run from the crown of the trap. The vent pipe from a water closet trap must be at least two inches in diameter, other vent pipes must be as large as the waste pipe from the trap. All ventilation pipes must be run, of undiminished size, separately or combined together, to two feet above the roof, and left open, away from all windows, or may be run into soil pipe above all connections. All ventilating pipes extending through the roof must be at least 4 inches in diameter.

24. In no case shall a soil, waste, or ventilation pipe be connected with a chimney.

25. No brick, earthenware or sheet metal pipes shall be used for ventilation pipes.

20. *Cast Iron Pipe.*—All cast iron pipe must be free from holes and other defects, of a uniform thickness of not less than $\frac{1}{8}$ -inch for a diameter of four-inches or less, and not less than $\frac{1}{4}$ of an inch for five and six inch pipe, and shall have the full weight of the following table, for the corresponding diameters:—

Internal Diameter.	Ordinary Pipe.	Extra Heavy Pipe.
4 inches.....	3 $\frac{1}{2}$ lbs. per foot.	5 $\frac{1}{2}$ lbs. per foot.
5 ".....	4 $\frac{1}{2}$ " " "	9 $\frac{1}{2}$ " " "
6 ".....	6 $\frac{1}{2}$ " " "	13 " " "
8 ".....	8 " " "	17 " " "
9 ".....	10 " " "	20 " " "

And before being connected, shall be thoroughly coated inside and out with coal tar pitch applied hot by immersion, or some equivalent substance satisfactory to City Engineer.

27. *Quality of Joints.*—All joints in earthen pipe must be made in hydraulic cement, care being taken that the inside of the joints and of the pipe is properly cleaned out before connection is made with the house.

28. All joints in lead pipes must be made in solder, and wiped joints to be used where practicable.

29. All joints of iron and lead pipe shall be made by a brass ferrule of same size as lead pipe, set in the hub of the branch of the iron pipe and caulked with lead; the lead pipe to be attached to the ferrule by a wiped solder joint.

30. All joints in cast iron bell and spigot pipe to be made with packed oakum and molten lead, well caulked, at least $\frac{1}{4}$ inches deep, and made water and air tight.

31. Where screw joints are used they shall be packed in red lead and made steam tight.

32. No paint or putty shall be allowed on joints.

33. *Water Closet Supply.*—No water closet shall be supplied directly from the house supply pipe, but shall be supplied from a special water tank or cistern used for no other purpose.

PLUMBING ORDINANCE.

We also call the attention of Boards of Health to the following copy of the Baltimore Plumbing Ordinance. We are certainly in need of a similar ordinance in the city of Montreal, and the sooner we set to work to put into proper working order the machinery of the Health Department of that city the better for its inhabitants now and in the future.

AN ORDINANCE TO PROVIDE FOR THE INSPECTION OF SOIL, WASTE AND DRAIN PIPES, AND OTHER SANITARY PLUMBING.

WHEREAS,—Much sickness has been produced in this city by improper and defective plumbing work in connection with the construction of waste pipes from

bath-houses, wash-stands, sinks and water-closets, and other devices for drainage; and

WHEREAS,—In the judgment of the Mayor and City Council of Baltimore, it is necessary for the preservation of the health of the city that all such work should be properly examined, inspected and regulated to an officer of the government; therefore,

SEC. 1. Be it enacted and ordained by the Mayor and City Council of Baltimore, That the Commissioner of Health, by and with the approval of the Mayor, shall annually hereafter appoint an Inspector of Plumbing for sanitary purposes, who shall be under the direction and supervision of the Board of Health, and subject to all the rules and regulations of the Health Department.

SEC. 2. And be it further enacted and ordained, That the said Inspector of Plumbing shall be a practical plumber, selected from among those persons who are well informed as to practical plumbing and skillful and well trained in matters pertaining to the sanitary regulations concerning plumbing work, and shall not be interested, directly or indirectly, in the business of plumbing or the furnishing of plumbing material during the holding of said office, under penalty of instant dismissal; said Inspector shall receive a salary of \$1,200 per annum, payable monthly, and after entering upon his duties shall give a good and sufficient bond to the Mayor and City Council of Baltimore in the penal sum of two thousand dollars for the faithful performance of his duties.

SEC. 3. Be it further enacted and ordained by the Mayor and City Council of Baltimore, That no pipe now used or hereafter to be used to drain any matter, solid or liquid, from any building used for the habitation or occupancy of man, into any well or sink used for the reception of any substance except pure water, or into any public sewer, or into any stream, or into the harbor, shall be put up, constructed, altered or repaired, without obtaining a permit therefore from the Board of Health, which permit shall be issued without cost to any property owner, builder, architect, or other person interested or in any way connected with such work, in an application in writing, stating the location of the premises where such work is to be done, and the time when it will be commenced.

SEC. 4. And be it further enacted and ordained, That any person, after receiving such permit as is provided for in the preceding section, shall, without notifying the Commissioner of Health, in writing, commence any portion of the work thereby authorized at an earlier day than that named in their application for such permit, shall be subject to the fine hereafter imposed for violation of the provisions of this ordinance.

SEC. 5. And be it further enacted and ordained, That all such plumbing work as is referred to in this ordinance, shall be done subject to the supervision of the Inspector of Plumbing under the direction of the Board of Health.

Six. And be it further enacted and ordained, That no such plumbing work as is referred to in this ordinance shall be performed in any other way than in strict conformity to such orders and directions as may be prescribed by the Inspector of Plumbing, with the approval of the Board of Health, for the proper protection and preservation of the health of the city, and any such refusal to comply with such orders, shall subject the person who may disregard them to the fine hereinafter imposed for violation of the provisions of this ordinance.

Six. 7. And be it further enacted and ordained, That any person or persons who, individually or through others, shall construct, erect, alter or repair such drain pipe, without first obtaining such permit, shall be subject to a fine of five (5) dollars, and if it shall be found that any drain pipe intended to be affected by this ordinance, shall have been constructed, erected, altered or repaired contrary to the rules and regulations of the Board of Health, and in such a manner as to be detrimental to health, then the person or persons so offending shall be subject to a fine of twenty dollars, and shall be subject to a further fine of two dollars for every day such pipe shall continue in such condition after receiving due notice thereof from the Commissioner of Health of the Board of Health, such fines to be enforced as other fines for the violation of the City Ordinances, and there shall be a separate account kept by the Inspector of Plumbing of all fines and fees collected under the ordinance, and the same shall be paid into the City Treasury as other fines are collected and paid into the City Treasury.

Six. 8. And be it further enacted and ordained, That whenever any such work as is herein referred to shall have been done in conformity to the provisions of this ordinance, it shall be the duty of the said Inspector of Plumbing to give the owner or owners of the premises a certificate to the effect that said work has been inspected and approved, which said certificate shall be signed by the said Inspector of Plumbing and by one of the members of the Board of Health.

Six. 9. And be it further enacted and ordained, That in consequence of the appointment of the officer of Inspector of Plumbing heroby authorized, the Commissioner of Health is hereby directed and required to reduce the number of Sanitary Inspectors now, and heretofore annually appointed by him, by one at least.

Six. 10. And be it further enacted and ordained, That all ordinances or parts of ordinances, inconsistent with the provisions of this ordinance, be and they are to the extent of such inconsistency, heroby repealed.

Approved October 22, 1883.

[There ought to be formed in the city of Montreal a Board of Works, in which the appointment of Building Inspector, Inspector of Plumbing, and other appointments of a similar character should be incorporated.—Ed. C. S. A.]

Holiday Pastimes.

SWIMMING.

Swimming may be ranked both as a pastime and as a purely gymnastic exercise, but it has a still higher claim. It is one of the most essential features in physical education; and it should never be left to the choice of youth to acquire the art, but its practice should be inculcated as an absolute duty. It is strange that this branch of bodily training should have been hitherto so much neglected, even among the classes whose lives are passed chiefly on the waters. But in England a change is in progress, and at some of the public schools the rule has been very properly adopted, that no youth shall be allowed to practice rowing until he has been certificated as a swimmer.

We would have all our readers cultivate this most useful art, not only for the benefit it may possibly be in delivering them at some time from danger, but also at all times one of the most healthy and invigorating physical pursuits. We shall give a few plain instructions, calculated to assist any youth in learning to swim; but we must advise him to have recourse at the outset, if he can, to the practical aid of some friend who acquired the art. His example and occasional help may inspire the learner at once with a confidence in the water, which is the first thing to be acquired in swimming, and will make the rest come easy.

There is little difficulty, either in town or country, in obtaining access to the water. We believe all our large towns are now supplied with swimming baths, in which it is preferable that the beginner should practice, rather than that he should seek an open stream for the purpose. The baths should be attended by experienced persons, from whom lessons may be obtained if desired, or whose help may be useful in any emergency; and at such places the learner may also gain kindly hints and assistance from others who have recently experienced, and are ready to sympathize with, his difficulties. But if the beginner is the denizen of a rural locality which is destitute of such an advantage, he should exercise care in the selection of a spot in which to practice. Let him, in the first place, choose a stream the bottom of which slopes gradually from the bank, and ascertain its precise depth at various distances. Let him be very careful to select a place which is free from woods, either attached to the bottom and scarcely seen from the bank, or floating freely on the surface. A clear stream, with gravelly or sandy bottom, is by far the best. One with a muddy or rough and stony bottom should be avoided; and especially keep clear of water the bed of which is full of deep and sudden holes.

Bathing on the sea-shore can only be practiced with safety when the beach is shelving, and its general freedom from rocks, &c., are well known. The novice should select still weather only for the purpose, or the sudden coming in of a wave may take him off his legs, and carry him helplessly out to sea.

The best time for practising is in the morning, an hour or two after sunrise; but bathing or swimming on an empty stomach is not advisable. A crust of bread, with the addition of a cup of coffee if practicable, is all, however, that will be necessary. Bathing or other shortly before or shortly after a full meal is injurious, but the latter especially so. Take a brisk walk before you enter the water, that the body may be in a glow when you step in; then strip as quickly as possible, and take your plunge while the blood is still coursing freely through the veins. When you have learnt to swim, you will be able to enter by diving; but until you have, you must walk into the water, and in this last case you should dip the upper part of the body in and out again, otherwise the blood will be driven too much to the head.

We must say a word as to the mechanical aids to Swimming, as the youth desirous of learning the art may in the absence of all other help, think it necessary to have recourse to such assistance. Hardly any contrivance, however, yet devised is free from some objection; and we must not be understood as recommending the resort to either, if it can be avoided.

Among the most venerable and at the same time the most objectionable of these appliances, are the cork-floats or buoys, which may be seen in the shop of almost any cork-cutter. They usually consist of several circular pieces of cork, of various sizes, fastened together by a strap or thong of leather, the largest piece in the centre, and the rest tapering off at the top and bottom. Two of these floats are used by each person, and are fastened under the armpits, so that the chest rests upon them in swimming, and the head and shoulders are thus buoyed up in the water. But the contrivance is an awkward and cumbersome one; it hampers the free movement of the arms, and even if it should lead to nothing worse, it causes the learner to contract a very clumsy and defective style of swimming. The floats, however, are liable also to slip from their position, and in this case they become worse than useless. The novice in this case feels his legs thrown upward instead of his head, and the proper movement of his arms being checked, his supposed means of safety become a source of positive danger. Some fatal accidents have happened in this manner. The use of floats is, therefore, gradually being discarded, as their evils become more widely known.

Better by far, and perhaps best of all such aids, is a modern contrivance made of the same material, and is known as the cork jacket. Stout straps of cork are attached together in such a fashion that they encircle the body completely round, and being fastened by strings at top and bottom, leave the limbs comparatively free, while the necessary buoyancy is obtained from the light armour in which the chest and back are thus encased. This jacket was invented more particularly for the purpose of saving life at sea, but its obvious utility has commended it to the use of persons learning to swim, and it is likely to meet with wider favour as its merits become more generally known.

An ordinary life-belt, fastened round the waist, is

sometimes used for the same purpose, and is far less objectionable than the cork floats; but it must be obvious to our readers that even such appliances as the jacket and the life-preserver leave less freedom of action to the body than in the case when they are dispensed with, and consequently that the learner who desires to swim with grace and ease is placed at a disadvantage by their use. Moreover, when such help has been habitually relied upon, it becomes a source of embarrassment to part with it suddenly; something has to be unlearned, and something more to be learned—namely, the power of the body to float by its own natural buoyancy while the limb maintain a proper position.

Confidence founded on a right apprehension of the principles involved in swimming and self-command, or presence of mind in the water, are the first essentials in learning the art. If the learner could trust to theory only, confidence should come at once, for he has only to be told that the specific gravity of the body is less than that of the water, and consequently that the body, if left to itself, with the limbs in a proper position, will float of its own accord. Benjamin Franklin's method of demonstrating this, by entering shallow water, and trying at once to dive in the direction of the shore, requires more nerve and coolness on the part of the novice than many are in possession of. All who can satisfy themselves of the buoyancy of the water without such practical test, may be content to attempt the simple motions of swimming, and leave diving of every kind until they have become somewhat used to the water. Supposing, then, that the learner is about to make his first effort, without either personal or mechanical assistance, he must carry out into practice what we have already remarked as to the selection of a spot characterized by a shelving bottom, and having done this walking into it until he is nearly breast high, turn round towards the shore, and try to reach it by swimming. The head must be held up and thrown backward, the chin being kept well clear of the surface of the water; the chest must lean, as it were, upon the water, being well inflated with air before the stroke is taken; and while the chest is thrown well forward, the back should be allowed, so that all the muscular power of the body may be exercised in the forward motion. These movements, the work of a second in execution, are preliminary to the stroke itself, which is performed in the following manner: Bring the hands together a few inches below the surface, and a little in advance of the chin, the elbows being bent below the stomach; the fingers should be quite close together and the palms slightly concave. Now extend the hands forward as far as possible, and, when the full distance is reached, separate them with the palms downward, and sweep the water backwards in a half circle. The elbows thus come back to the body, and the hands are brought quickly together as before, the edges only being presented to the water until the hands meet.

While the movements are being performed by the arms the legs have their part to play as follows: At the

HOLIDAY PASTIMES.



FIG 1. BEFORE THE STROKE

FIG 2. AFTER THE STROKE.

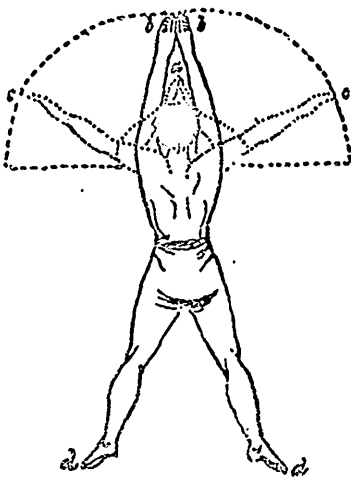
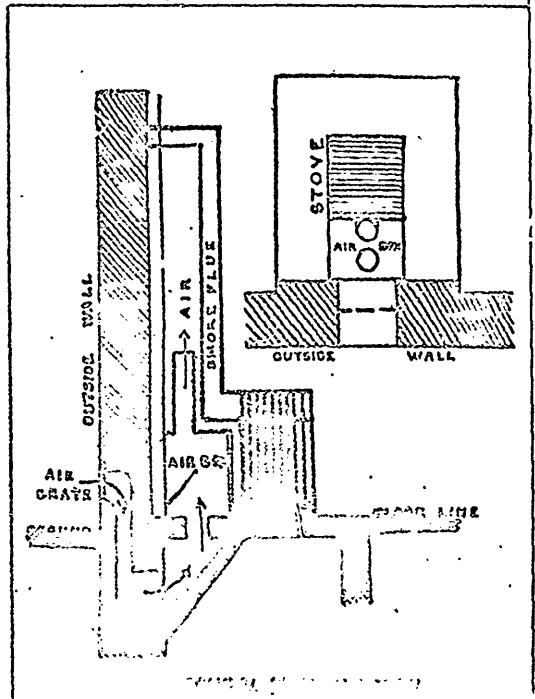


FIG 3. THE ACTION OF THE LIMBS.



moment when the learner's arms are first thrown forward, as described, he will find his legs rising to the surface; the knees should then be bent forwards, so that the legs may presently be thrown out well behind; the feet should be kept apart, and the toes turned out. When the hands have made their sweep, the legs are thrown downwards and sideways by a vigorous effort, the stroke of the leg thus alternating with that of the arms, and the movement of both arms and legs being so timed that the legs are fully extended out behind at the moment when the arms are stretched straight forward. The movement of the legs is performed with more celerity than that of the arms, and you must time their action accordingly, remembering that, in preparing for each stroke, the legs and the arms are both drawn back towards the body at the same instant.

The illustrations given with the present paper will enable the learner to comprehend these instructions clearly. Fig. 1 shows the position of the swimmer in the water just before the stroke is made, and Fig. 2 the attitude when the limbs are fully extended, the arms being just about to make their sweep. The action of the stroke itself is shown so far as possible in the accompanying diagram (Fig. 3). The arms, gathered up at *a*, with the hands together, are then thrust forward to *b*, and swept round to *c*, when the elbows are bent inwards and the hands come back together as before described. The movement of the legs cannot be properly shown in the diagram, but will be at once understood by a comparison of their position in Fig. 1. before the stroke, and that after they are fully thrown out, in Fig. 3.

In the stroke of the legs you should press against the water with the soles of the feet, not with the toes only; and in that of the hands, you should not only thrust or sweep the water *aside*, but press it *downward* also. By these combined movements, the resistance afforded by the water is turned to account both in propelling the body and keeping it on the surface. You rise with a rebound from the downward motion, and you are made to shoot forward by the backward impulse of the limbs.

The various movements thus described may be practised before the learner attempts to enter the water. He may take a stool or form, and, laying across it on his stomach, may go through the successful evolutions, so as to become familiar, to a certain extent, with the nature of the stroke, and to learn to time the action of his hands and legs. A little practice of this kind will be useful, by helping to give him the necessary self-possession when he first trusts to the open stream.

—Dio Lewis thinks that before the year 2000 centenarians will be very common, and even diamond weddings not very rare. He bases his belief on the fact that during the first six months of the present year 500 persons died in Philadelphia who had lived to or beyond the age of 80, against 489 in 1882, and 449 in 1881. Moreover he tells us that in 1816 the average length of life in Boston was 21 years; in 1874, 42 years.

To Clergymen and Teachers of Schools.

With reference to our offer on page 28 of the February number of this journal, to donate to clergymen, teachers of schools, builders and others to whom the lithograph plates alluded to would be of value, we now furnish the descriptive matter for twelve plates which relates to Gothic Architecture and its details.

This description is necessarily concise, but it will be found sufficiently explicit on reference to the plates.

The reason why we make this donation to the professions and trades mentioned, is because we desire to enlist in our membership clergymen and teachers, knowing the value of obtaining their wide-spread influence in families and among the young. The plates relating to building construction are of course only of value to the trades to which they appertain.

The gift is a personal one, and has no relation to the expenditure of the funds of the Association, the plates being the private property of the editor.

The descriptive matter for other plates will be continued in our next issue.

Gothic Architecture.

The origin of Gothic Architecture is thought to be hid in the mysterious darkness of a barbarous age." We will therefore simply describe the three different kinds:

FIRST—The simple *Pointed Arch* which is struck with two centres on the line of the impost.

SECOND—The *Tudor Arch*, with four centres, of which two are on the line of the impost.

THIRD—The *Ogee*, with four centres, two on the impost line with the apex, the segments struck from the latter being reversed. The latter is principally, tracery and small work. (See method of producing arches plate XIII.)

The *first style* of gothic architecture is principally known by its very pointed arches and heavy character, with doors deeply recessed, plain mouldings and sometimes with grimacing heads. The doors were small, with merely a plain pointed arch and the windows were plain, pointed and narrow, from whence they gained the name of lancets. (See plates from V to VIII.)

Towards the end of the *Twelfth Century* windows began to be ornamented with moulding

round the outside. Shortly after this period the lancets were united which gave rise to larger windows with two lancets within one main arch, the vacant space being filled up with circles, trefoils and quatrefoils, the columns began to be longhoned, clustered and frequently encircled with fuses or bands, the capitals formed of flowers or foliage. Buttresses were slender and projected more than in the German style. In the latter part of this period *flying buttresses* and *spires* were introduced.

The *second style* of gothic architecture was from 1240 to 1380, and is distinguished by the rectangular form of all its arches, and embraces the most brilliant epoch of its history. It is noted for its chaste and harmonious appearance, and the walls were less massy and in beautiful proportions. The doors were less recessed but larger, and more highly finished, and formed of more graceful arches, surrounded with triangular pediments whose tympanums, as well as the tiers below, are headed with a variety of little flowers.

About the end of the *Thirteenth Century*, *triboled rose*, and in private houses, *bow windows*, made their first appearance. *Rose windows* were at first simple, ornamented with trefoils and quatrefoils united by flowing tracery; afterwards they were formed of an elegant assemblage of branch tracery radiating from the centre. The columns of this style were more delicate and elevated, the capitals shorter, but richer in foliage. Clustered pillars were sometimes formed upon a single plain round capital. The *crocket* ornament was popular at this period at the angles of spires, canopies, turrets, buttresses, etc. The buttresses more projecting, ornamented with tablets and richer niches, and crowned with crocketed pinnacles.

Towards the *Fourteenth Century* this style became more gorgeous, the ribs in the vaulting of the naves and aisles were multiplied and branch out into a variety of tracery. Spires were richly crocketed, longer and more delicate, terminating frequently with a branch of foliage or flame, called *finials*. Parapets were considerably richer and more open formed of panels and roses, enclosing trefoils, quatrefoils, etc. Its tracery is frequently mingled with back leaves. (See plates VII, VIII, IX.)

The *third or Florid Style* of gothic architecture lasted from 1380 to 1500. During this period gothic architecture by degrees degenerated into

fantastical ornament, unmeaning and useless ornament; arches suffered a general depression, until at last they lost almost entirely their pointed character. Every variation of parapet, pinnacle and buttress are now in use, the latter very projecting and loaded with statuary, heraldic, insignia, etc. Various parts of the summits, particularly the angles, are ornamented with round cupolas. A remarkable character of this style is the extreme depth and delicacy with which all ornaments are wrought on the stone. Windows begin to lose the elegance of their form and proportions and are multiplied and widened for the introduction of additional lancets with a very obtuse arch. The divisions of the head display, instead of roses and trefoils a variety of undulating forms, and the moulding of the arches are sometimes festooned with foliage and particularly leaves endive, vine, thistles and broccoli. *Portals*, too, marked the style; they are invariably surmounted with a square head or pediment, whose spandrels are ornamented with foliage or sculpture (see plates VIII and IX.)

The gothic architecture in England, or on the Continent, has been divided into three distinct styles.

THE EARLY ENGLISH, commencing with the reign of Richard in 1189 and continued till about 1300, near the end of the reign of Edward the First.

THE ORNAMENTAL ENGLISH.—From 1300 to 1400, beginning near the reign of Edward the First, and continuing up to about the beginning of Henry the Sixth.

THE FLORID ENGLISH.—From 1400 to 1537, the time of the dissolution of religious houses, including the reign of Edward the Fourth, and concluded with the reign of Henry the Eighth.

The *Early English* style is chiefly distinguished by its long narrow windows and bold ornaments and mouldings. Beautiful examples of this style are shown on plate V. The circular *Rose*, or *Catherine Window*, is frequently found in large buildings of this style. The steeples are often adorned with finely proportioned spires. The ornamental works of this period are distinguished for their boldness and contempt of refinement.

In the **ORNAMENTAL STYLE**, the windows are distinguished from those of the preceding period by being larger, and divided into lights by slen-

der upright stones called *mullions*. In some cases the mullions branch out into geometrical figures, and are all of equal size and shape, in others they are dispersed through the head in curves of various descriptions, which is called *flowing tracery*. The circular window was also brought into perfection in this style. The capitals are frequently enriched with foliage. Buttresses are frequently richer in the building and are usually finished by pinnacles. Crockets and other ornaments were brought to perfection during this period.

FLORID ENGLISH OR PERPENDICULAR is the last style of gothic architecture; it is distinguished by its superfluity of decoration and uncompromising minuteness. It is marked most strikingly by its windows, the mullions of which are carried up perpendicularly to the head instead of finishing in flowing lines. They are also distinguished by a transom or cross-mullion to break the height.

In the groining of the roof a small number of ribs, diverging from a centre, are carried up in the form of one side of a pointed arch, and terminated at equal distances from the centre by a semi-circle, as they recede from the point they are divided by smaller ribs, and these again subdivided so as to make all the panels of nearly equal size, which are ornamented with feathered arches, and the intervals between these semi-circles are filled with tracery of the same description. This exquisitely beautiful kind of roof is called *fan tracery*. Arches in general were very round. Parapets were generally embattled and pierced. The general ornaments of the perpendicular style is nothing but a series of vertical panelling. (See plate VIII.)

A beautiful ornament often used is called the *Tudor flower*, and is a series of square flowers placed diagonally and frequently attached, connected at the bottom by semi-circles.

BEVERLY MINSTER—PLATE V.

This is a beautiful example of external composition of the *first period* of gothic architecture. Fig. 2 is a niche in front of, and Fig. 3 a pinnacle to one of the buttresses of the nave of the same edifice. These are of the *second period*.

Figs. 4, 5, 6, 7, and 8 are windows from various edifices, showing the gradual advance from the plain lancet arch of Beverly Minster, to the arch of the most elaborately enriched with tracery.

WESTMINSTER HALL.—PLATE VII.

Fig. 1 is an elevation of this fine edifice, it exhibits the external composition of the *third period* of gothic architecture.

Fig. 2 is a plan of the front showing the ribs of the groined entrance, the ichnographic projections of the tabernacles, etc. Fig. 3 is one of the flying buttresses in front. Fig. 4—a spandril of the entrance porch enlarged. Fig. 5—crockets on the gable. Fig. 6—part of the head of the upper windows of the towers enlarged. Fig. 7—a foliated horadled pedestal. Fig. 8—canopies, pinnacles, etc. Fig. 9—an enriched foliate pendant. Fig. 10—one of the pedestals for the reception of statues with the niches enlarged. Fig. 11—part of the canopies, etc. Fig. 12—one of the foliate pendants. Fig. 13—the corbel.

NORMAN AND GOTHIC ARCHES, DOORS AND WINDOWS.

These are samples of the simplest form of Norman arch to the richer and more complicated arrangement which follow, until the engraving and gradual advance of the foliated arch. This first appears in Fig. 10. Fig. 12 shows the substitution of the latter for the circular of Fig. 9 in a similar composition. Fig. 13 exhibits the gothic pillars or columns, and Fig. 14 the shafts which become identified with the pointed styles.

GOthic Moulding AND CAPITALS.

Figs. 1 to 14 are *String Courses and Cornices*, of which 1 to 4 are Early English, 5 to 8 are of the Decorated Period, 9 to 12 belong to the Perpendicular. Figs. 16, 17 and 17½ are *jamb mouldings* belonging to the Decorated Period, and 18, 19, 20 and 21 are of the first or Norman Period. Figs. 22 and 23 are *window jambs* of the Perpendicular Period, also 24, showing a capital and base of the same period. Fig. 26 is a section and elevation of an Early English capital and base. 27 is a cornice moulding of the Perpendicular Period. Fig. 28 is a moulding on the chamber plane and the return to the square arch, and 29, Nos. 1 and 2, the front side of a moulded bracket. Fig. 30 is the elevation of a door frame. 31, Nos. 1 and 2, the front elevation of a bench end. 33, ornamentation of a small panel, and 34, Nos. 1 and 2, show the section and elevation of a Perpendicular cornice.

Practical Sanitary Education.

CARE OF THE SICK.

By a Fellow of the College of Physicians of Philadelphia, U. S.

(Continued from page 12 February number.)

AIR FROM KITCHENS, &c.

Keep the air the sick person breathes as pure as the air outside, without chilling him. Many persons think, as before remarked, that the thing has been done if a door or window is opened; never mind where the air comes from, whether from a close entry, a foul kitchen, or even from an untidy water-closet. If the air does come from any such place, the sick-room is not "aired," as the saying is, but only more poisoned. The kind of air one wants, is the best air of the neighborhood, and this usually comes from the outside of the house.

With air, as with water, it should not only be apparently pure, but it should also be certainly fresh.

With plenty of open windows to let in the pure air, and a little burning fuel to take off the chill, it is an easy matter to get the kind of air all sick persons need. It is a rare thing indeed for a person to "catch cold" while in bed. Indeed, some physicians say they never saw a case of it from such a cause, and if the bed-clothes are properly tucked in about the shoulders, it is hard to imagine how such a thing could occur, unless the air is so cold, as it were, that it acts upon the lungs as it would upon the ear, nose or fingers, directly inflaming these organs of respiration, as it would "frost-bite" the parts named.

PRECAUTIONS ON GETTING UP IN THE MORNING.

The time when people are apt to catch cold is just after getting up from a warm bed, when the skin has become somewhat relaxed from many hours or perhaps days of lying there, and rendered less capable of reaction. The same temperature which refreshes a patient in bed while protected by the bed-clothing, might destroy the patient just arisen. Common-sense will tell us, from this, that while we want pure air, we of course want that which cannot chill the sick person.

Here it may be remarked that what is frequently called a cold, is as often the result of debility as the direct exposure to a draught of cold air. If each individual will observe his own case the next time a cold is contracted, it will be found that more than likely it was preceded some days by lassitude, headache, more or less complete inability to exercise the thinking faculties with the usual success, disturbed digestion, etc., etc. These symptoms have all become exaggerated by a very slight exposure, and sometimes the cold appears without any remembered exposure. When the named symptoms appear, it perhaps would be wiser to examine into the supposed cause of them, rather than what particular exposure to a draught of air gave rise to the cold. While a discovery of the remote causes of the attack may place it in the power

of the person to prevent a recurrence, and the cause is often a disturbed condition of the health, a judicious, generous diet and attention to fresh air will often give more relief than "Squills" and other domestic remedies of the same kind.

PROTECTION FROM COLD.

Cold has been called "the great enemy of age," and as the same inability to resist death is found in the sick, cold may be said to be the great enemy of the weak. The report of the Registrar-General of Great Britain for the cold months of the current year 1875, shows that while there was no new melody, but only the familiar forms of bronchitis, phthisis pulmonalis (consumption), and pneumonia (inflammation of the lungs), always holding their own in the returns of the causes of death, yet these well-known diseases have been answerable for a number of victims greatly in excess of the average. Thus, where the weekly average for ten years, from the three specified causes, had remained about stationary; during the prevalence of the cold weather of December, there was an increase of twenty-five per cent. in the death-rate. The probable, or, at least, the only assignable cause of this mortality, was the low temperature which prevailed. This is true as to the cause of death, and the same authority shows that the death-rate from all causes, among persons 60 years old and upward, which previously stood at 62 per thousand of all the deaths from these causes, rose during seven cold weeks to 130 per thousand, and during the cold weather of the last two weeks of December, 1874, rose still higher to 150 per thousand.

The same authority tells us that the fatal effects of cold were found in 1855 to be subject to the same definite law of increase just noticed. If life is divided into stages of twenty years, as 20, 40, 60, 80, the mortality assignable to the cold at the four periods is 2, 7, 5, 45, 182, so rapidly does it increase as age advances. In another expression, it may be said, the returns show that the rate of mortality is doubled every nine years after the age of 20.

While these official figures from the *Times* disclose how rapidly the aged succumb to the cold, as well as how many more of the ordinary sick yield also to its influence, it will be found that an increase in infantile mortality is also to be noticed.

While cold leads to this great mortality among the weak and aged and the very young, it can not be doubted, on the other hand, in warmer latitudes it would be found, if reliable statistics could be had, that the great heat of summer leads to quite as great a mortality among the aged and debilitated. Ordinary observation will satisfy any one of the truth of it about young children.

Now, for practical purposes, there is little difference between an aged or young person and a sick one. Hence, because violent and extreme changes should be avoided as much as possible at the periods of life mentioned—cold proving most destructive to the aged, and

at to the young—therefore a corresponding carefulness should be observed in regard to the sick of every age.

The consideration of these facts naturally leads to an inquiry whether we are helpless under the conditions which they disclose; but common-sense and experience fortunately show that we are not. While susceptibility was doubtless increased by the sudden variations of temperature referred to, the question arises whether the still greater variations to which people *unthinkingly* expose themselves may not be quite dangerous. In this respect, an audience leaving a hall or place of amusement is an instructive sight, and all generally be found to include numbers of delicate ladies who habitually dress in furs and warm wraps, who have been sitting for two or three hours, with low dresses, in a heated, vitiated and relaxing atmosphere, and who then wait, before starting home, in a cold, draughty lobby, not only standing in thin shoes, but talking and laughing with their friends, take deep breaths of the raw, cold air into lungs which have been previously breathing a vapor-bath. Many of these changes of temperature incident to the customs of society are of a purely *artificial* character scarcely to be resisted by the strong with the best of health. The taste of health and strength is often too great for the robust, and the weak had better avoid them.

Many of the illnesses deplored under this head are doubtless due to the direct *shock* given by the sudden entrance of a volume of cold air into the lungs; which could have been avoided almost entirely by the simple expedient of breathing only through the *nostrils*, and keeping the lips closed, so the air shall have become warmed before entrance into the lungs.

The sudden changes from heat to cold do not all place away from home. Many of the "colds" are due to the arrangement of private houses, which appear to be built for neither heat nor cold, and do not resist either of them. A person going from the house to the outside cold air has been taught to put on a coat, but a person going from one room to another does not thus fear, and steps into a cold bath without warning. We say cold bath, for practically the communicating entries of the house, with gas-burners at every landing of the stairs, is just about as well a devised means of getting the heat from the lower rooms, where needed, to the garret, where *not* needed, as if specially designed for the purpose, particularly if the lower outside doors are occasionally opened. *Robust* should therefore always pass through entries and along stairways as well protected as if going into a room as cold on the other side of the front door.

CONGESTIONS.

A chill from such air to an invalid, or even a healthy person, drives back the blood from the surface upon the internal organs, probably inflicting upon them sudden and serious injury. Even the reverse of this is injurious, for it is well known that there is no more common cause of chilblains than bringing numb fingers suddenly to a warm fire. What occurs

to the fingers will occur, under like circumstances, in the lungs; and many of the fatal attacks of pneumonia (inflammation of the lungs) occurring in the aged and the debilitated could probably be traced back to the sudden changes of temperature in passing from a warm room to one that ought to be so; or to taking in volumes of frosty air into the lungs, through the mouth, on coming from a heated apartment.

TYPHOID FEVER.

With many physicians who have given the subject attention, there is no doubt that the increased prevalence of typhoid fever in the better houses of the large cities, within the past few years, is *largely* due to the contamination of the breathing air with poisons of this character. Minor expressions of the same disordered condition of the blood, as ulcerated sore throat, persistent debility, general malaise, and other complaints of the same character, are doubtless largely due to the same influences. While they may not of themselves often be the technical cause of death, these poison vapors impair the general health, and the person falls a ready prey to diseases, which, under the circumstances, would have pursued a happier result.

Many households now suffering from what they term obstinate colds, headaches, and, in fact, many other symptoms which compel them to say they are never well, would not only find a disappearance of these things, but also secure escape from typhoid fever and other ultimate results of this blood-poisoning, by an inquiry into the entire subject of the drainage, and apply the means of relief herein suggested.

IN DISEASE LESS HEAT IS PRODUCED THAN IN HEALTH.

In most diseased states, there is much less heat produced than in health; and there is a constant tendency to a decline and ultimate extinction of the vital powers by the call made upon them to sustain the heat of the body. In such cases, the patient should be looked at with care every little while, and as soon as this *tendency* is discovered, the temperature of the body should be kept up by heat externally applied, as by means of warm bricks, tin cans or bottles filled with hot water, etc.

DECLINE OF HEAT OF BODY TOWARD MORNING.

Such cases of decline of the heat of the body occur at all times, even in summer. This coldness, indicating a decline of vitality, is most apt to happen toward morning, at the time the effect of the preceding day's diet begins to be exhausted. Everybody knows that it is usually toward the morning when we begin to suffer from the effects of cold, and it is because the vital forces are then beginning to slacken, from the want of food. If this is the case in health, it is the same in disease. Hence, from midnight until nine or eleven o'clock the next morning, the condition of the patient should always be carefully watched, and as soon as want of heat is noticed, the nurse should at once take means to counteract it.

THE PATIENT AND THE PHYSICIAN.

In all diseases of the respiratory organs, the importance of care in adjusting the temperature, especially at night, is seldom thought of; yet a little trouble taken in time has often saved a delicate constitution from falling into Consumption. Even in a bad climate, it is only by experience that any one can tell how far this terror of all families may be escaped. People are often wholly demoralized by fear when its name is mentioned. Medical men who hesitate to use the word, knowing what despair it will lead to, are accused of deceit. The frantic parent whose child is threatened, tries all kinds of experiments, rushes wildly from place to place, consults all kinds of quacks, uses half a dozen methods of treatment, perhaps all at the same time, alternately keeps the patient constantly in the open air, and secludes him altogether, and when the end is inevitable, in such fatal cases, comes at last, is subject to life-long self-questionings as to whether any thing more might have been done. Some people, again, are never warned of dangerous diseases or tendencies until it is too late. The physician's grave looks are unseen, his warnings unheeded, and then he is asked to bear the result.

The right reason, among the many reasons invented, is seldom thought of when the death occurs, for all that affection and anxiety could do has been done. A little more precision and obedience to the orders of the physician; a little less regard to the morbid cravings of the patient; a more complete absence of a display of nervousness or fear, might have doubled the chances of the sick person's recovery.

CURRENTS OF AIR TO BE AVOIDED.

Although fresh air of the proper temperature is absolutely necessary, the prudent nurse will always arrange its entrance so as *not to allow a current over the patient*. No rule can be laid down here to avoid this, but it must be left much to the judgment of the attendant. If the nurse sees no way to avoid the "draught," be sure to ask the physician when he comes.

 Receipts for Sick People.

 FOOD FOR THE SICK.

Any person obliged to provide food for the sick must have been struck, after a few days, with the difficulty in getting a *variety*. There is really but few things a sick person cares to eat, and does not want to eat the same thing too often. As a rule, the sick prefer *plain* articles, of the best quality, cooked in the most approved, simple style. As a general thing, they do not eat game or fish, and prefer good beef to almost anything else, unless lamb-chop. Occasionally, fowl is eaten, usually chicken. Greasy foods, or foods cooked in grease, will not be tolerated; nor are spices or highly seasoned dishes as apt to be liked, as those without them.

A sick people do not eat a great deal, too great a variety should not be offered for any single day. If there is reason to think the illness may not be a long one, the nurse should keep in mind her resources, in the shape of foods likely to be eaten by that particular patient in that special attack, and map out the future accordingly. In this way, the more delicate and concentrated can be held back until she shall have been compelled to abandon some of the others, quite as useful early, but less so later. For instance, where beefsteak, lamb-chop, or soups can be given, the nurse should keep back the beef-ten until the later stages of the disease, when the stomach can digest only the most delicate food. By delicate is meant digestible, with the least tax upon the stomach; not expensive, or saturated with some almost intolerable "flavor," as some persons about the sick-room seem to imagine.

The reader has doubtless often seen beefsteak, lamb-chop, beef-ten, and brandy and cream given during the day, when the first *alone* should have been used.

Tenderloin cut across the grain, as all meats should be, is the best part of the beef, for the sick. The steak should be about half an inch or a little more in thickness, and broiled over fresh coals not giving off smoke. The object, in broiling all things, should be at once, before the *escape* of any of the contained juices of the piece, to secure over the whole surface a film of cooked substance which will act as a shell to retain the useful parts within until they become cooked.

The meat should be cooked enough to be palatable. The hard, dry portions should be rejected as carefully as scraps of bone. Pepper and salt should be used according to taste.

A tender lamb-chop, if properly boiled, with the fat removed, before serving, is often acceptable, and is as easily digested and as nutritious as anything likely to be given.

The convalescing often strongly expresses a desire for something salt, and with a different taste from the ordinary food. Thin shavings of dried beef cut across the grain, or a fragment of broiled smoked herring, or herring-roe, is a grateful and usually harmless addition to the meal.

Roasted potatoes are preferred by the sick, as a rule, to all other forms of preparing them. To get a couple of mealy ones suitable for the delicate, at least half a dozen should be cooked. During convalescence, when beefsteak begins to be eaten, a little well and dryly cooked tomato is not only palatable, but useful. Potatoes fried in very thin slices, without a particle of grease applied on them ("Saratoga style"), are often grateful to the convalescent.

BOILED RICE.

Most readers think this is something easily prepared. So it is, perhaps, but few nurses have an idea of the necessity of having it properly done—that is, cooking it until every grain becomes perfectly *softened*. If the grains are not reduced to this soft state, rice is almost certain, when swallowed, to irritate the

digestive organs, and instead of soothing the parts and sustaining strength, will actually produce a diarrhoea, etc. This has been frequently noticed in hospitals.

When properly boiled until each particle becomes so softened that the grain can not be detected when eaten, but not cooked so much that the shape of the grain is destroyed, and the mass reduced to the appearance of paste, there are few articles of diet for the sick which can be made more acceptable to the taste of invalids than boiled rice.

MILK BLANC-MANOE

A quart of a pound of loaf-sugar, one quart of milk, one and a half ounces of goodisinglass. Pour the milk into a lined saucepan, add the sugar in powder, and the beinglass in small shreds; then boil gently until the latter ingredient appears all dissolved. Keep stirring over the fire for about ten minutes, observing especial care to prevent these easily scorched materials from becoming so.

Strain into a pitcher, and when nearly cold pour into a mould oiled with a little of the freshest oil. When required for use, it may be carefully turned out.

RICE BLANC-MANOE

A quart of a pound of the best rice-flour, two ounces of loaf-sugar, one ounce of butter, and one quart milk. Mix the ground rice with some of the milk into a perfectly smooth paste, placing the remainder of the milk into a lined saucepan, with the butter, sugar and enough lemon-juice to give the desired flavor. Bring the milk to the boiling-point, and stir in the rice-paste. After boiling for ten minutes, pour into a mould previously greased with salad-oil. When perfectly cold, it is ready for use upon removal from mould.

ARROW-ROOT BLANC-MANOE

Two table-spoonfuls of fresh arrow-root, three-quarters of a pint of milk, lemon and sugar to the taste. Mix the arrow-root to a perfectly smooth paste with a portion of the milk, putting the rest into a lined saucepan with the pulverized butter, sugar and lemon-juice. Let it boil, constantly stirring until thick enough for use, then pour into the mould until cold enough for serving.

CORN STARCH

To one table-spoonful of corn starch add enough cold water or cold milk to make a perfectly smooth paste. Then pour this into half a pint of boiling milk and carefully boil a few minutes, stirring it all the time, and putting in a little salt. Sweeten to the taste and add any essence or spice liked by the person who is sick. Then set aside to cool.

This, like everything else which contains milk, requires great care to prevent it from scorching, and the least of it can be observed by the person for whom prepared. For this reason, a sauce-pan with thick sides is usually preferred, and the heat should always be applied to the bottom of the vessel. In stirring, be cautious not to splash against the sides of the utensil more than can be helped, for there the scorching usually takes place.

ARROW-ROOT.

Take a table-spoonful of arrow-root and mix with it enough cold water to make a paste free from lumps. Pour this slowly into half a pint of boiling water, and let it simmer awhile until it becomes thick and jelly-like; sweeten to the taste, and add a little nutmeg or cinnamon. Instead of the half pint of boiling water, the same quantity of boiling milk, or half milk and half water may be used. This will make it more nutritious.

OATMEAL GRUEL.

Mix a table-spoonful of oatmeal with a little cold water until it makes a smooth paste; pour this gradually into a pint of boiling water and boil slowly for twenty or thirty minutes, stirring it all the time, and being very careful not to let it scorch in the least. Salt, spice, and wine or brandy should be added to it, unless there is some good reason for not doing so.

For good reasons, the Scotch oatmeal was generally ordered, but the Bethlehem, Canada, and quite recently, the brand known as the Ohio oatmeal, have been found quite as useful and palatable. On the score of economy alone, under these circumstances, it may be well to give the domestic brands a fair trial.

BOILED FLOUR.

Take a pint of good wheat flour, the up in a piece of muslin in a firm mass, as you would a pudding, put it into a pot of boiling water, and let it boil from morning until bedtime. Then take it out and let it dry. The next morning remove the muslin, peel off and throw away the thin rind of dough, and with a nutmeg-grater grate down some of the hard, dry mass into a powder. One, two or three table-spoonfuls of this powder may be used, by first slowly and carefully rubbing it down into a smooth paste with a little milk, then mixing this paste carefully with a pint more of suitable milk, and bringing the whole to the boiling-point. Be careful, as you must with everything else containing milk, to keep from scorching; and this can best be done by applying the heat to the bottom of the vessel alone, not to the sides.

The boiled flour thus prepared, can be given by a spoon or through a nursing-bottle.

PANADO.

Take a slice of wheat bread, break into fragments, and sprinkle over it a tea-spoonful of ground cinnamon, put into a cup; pour on it a pint of boiling water, and boil a few minutes until well mixed, when some sugar with a little grated nutmeg must be added. If desirable, a piece of butter may be put in, and also some wine or brandy.

BARLEY-WATER.

Take nearly an ounce of pearl barley and wash it well. Then pour on it a pint of boiling water and carefully boil to one-half. Strain the liquid through a towel, then add some sugar and lemon-juice. A small piece of orange or lemon-juice, dropped in while boiling, makes it more acceptable to many persons.

To be continued.

Health Exercises.

HOME GYMNASTICS.

All that people need for their daily indoor exercises is a few pieces of apparatus which are fortunately so simple and inexpensive as to be within the reach of most persons. Buy two ash handles, (such as rake or pitchfork handles). Cut off enough of one of them to leave the main piece a quarter of an inch shorter than the distance between the jambs of your bedroom door, and square the ends. On each of these jambs fasten two short hardwood cleats, so slotted that the squared ends of the bar shall fit snugly enough not to turn. Let the two lower cleats be directly opposite each other, and about as high as your shoulder the other two also opposite each other and as high above the head as you can comfortably reach.

Again, bore into the jamb, at about the height of your waist, a hole as large as the bar is thick. Now work the auger further into each hole till it reaches the first piece of studding, and then an inch or so into that. Find how many inches it is from the jamb to the end of the bore in the studding, and cut the second handle in halves, pass it through the hole in the jamb, and set its ends into the hole in the studding. Bore a similar hole in the other jamb, directly opposite, and repeat the last-named process with the nearest studding-piece, and adjust the remainder of the fork handle to it. Now cut off enough of each piece of the handle to leave the distance between the two about eighteen inches. You have then provided yourself with a pair of bars on which you can try one of the exercises usually practised on the parallel bars, and that one worth almost as much as all the rest. (See Fig. 1.)

Fig. 2. represents a pair of pulley weights, their merits will be seen at a glance. Instead of the weights swaying sideways and hanging against the boxes, as they are liable to do in the ordinary old-fashioned pulley weight boxes they travel in boxes AA, between the rods BB. A rubber bed also prevents the weight from making a noise as it strikes the floor, while another capital feature is the arrangement of boxes, in which you may graduate the weight desired by adding little plates of a pound each, instead of the unchanging weight of the old plan.

One of these boxes, with its lead, can be easily

used as a rowing-weight, by rigging a pulley a few inches above the floor, and directly in front of the weight box, and then making the rope long enough to also pass under the pulley. A stick of the thickness of an oar handle can then be attached to the end of the rope. If the old-fashioned pulley-weights are preferred as they are cheaper, long boxes take the place of those iron rods, and a common wire weight travels up and down in the boxes.

Here then we have a horizontal bar fitted for most of the uses of that valuable appliance, a pair of parallel bars or their equivalent for certain purposes a pair of pulling weights and a rowing weight. Now with the addition a pair of dumb-bells, weighing at first about one twenty-fifth of the user's own weight, we have a gymnasium more comprehensive than most persons would imagine. The bar, cleats, and parallels ought to be made and put up for not more than four dollars, and four or five dollars more will cover the cost of pulling weights and gear on the old plan, unless a heavy rowing weight is added.

Here is a gymnasium, then, under cover, ready free, exactly at hand, when one is lightly clad in rising or just before retiring which takes up but little room, can hardly get out of order, which will last a dozen years. With these few bits of apparatus every muscle in the trunk, nearly all those of the legs, and all those of the arms, can by a few exercises so simple that they can be learned at a simple trying, be brought into active play. The bar in the upper place will be useful mainly for grasping, hanging or swinging on by the hands, or for pulling oneself until the chin touches it. In the lower it enables one to perform very many of the exercises usual on the horizontal bar. The short bars or handles have scarcely more than one office, but that is one of the most important of all exercises for the weak-armed and the weak-chested. This exercise is called "dipping." The bars are grasped with the hands, the feet being held off the floor; then starting with the elbows straight again, and so continuing. The pulley weights admit of a great variety of uses reaching directly every muscle of the hand, wrist, arm, shoulder, chest, abdomen, the entire back and neck, while by placing one foot in the handle and pulling the weight with it, several of the leg muscles soon have plenty to do as is also the case with the rowing-weight. The field of the dumb-bell is hardly less extensive.

HOME GYMNASIUMS.

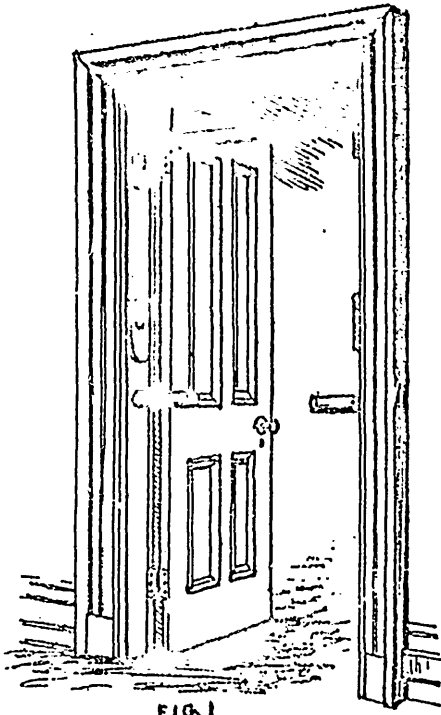


FIG. 1

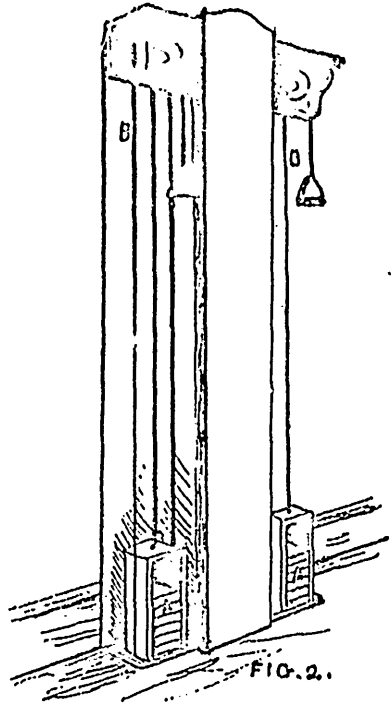
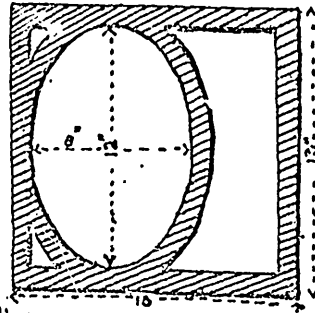
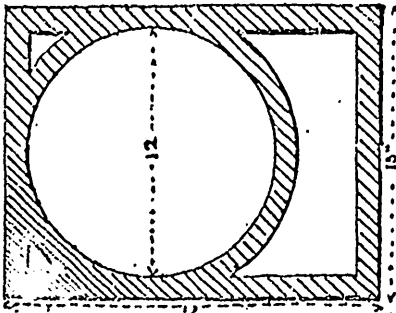
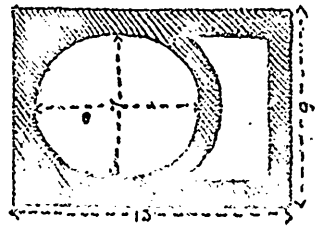
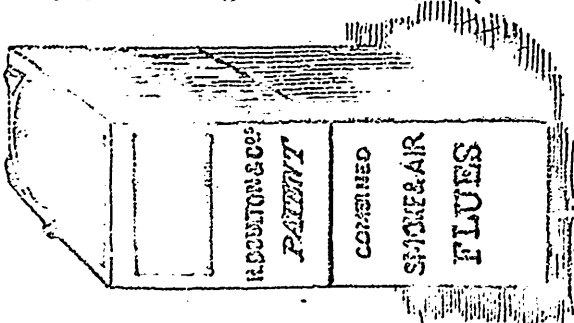


FIG. 2.



SMOKE & AIR-FLUES.



The fact of having apparatus close at hand, when one is lightly clad, will tend to tempt any one to get at them a little while morning and evening. If a parent wants children to use them instead of placing the apparatus in his own room, the nursery, or an empty room where all can have ready access, would be better. Of course, in such case there should be additional weights and dumb-bells suited to the age and strength of those who are to use them. Indeed by providing children at home with articles which they like to use, and the use of which brings much direct good, the nursery has a new value—greater, perhaps, when made the most of than it ever had before. All the exercises needed to make children strong can be readily learned, as all of them are exceedingly simple. In another place these exercises will be indicated.

The parent can then select those exercises he sees the child needs, and teach them in a few minutes, so arranging it as to get the children to exercise a certain time every day: As has been shown, the cost of all these appliances will not be nearly as much as a moderate doctor's bill, and quite as little as the patent gymnastic articles, which are so often praised, mostly by people who know little or nothing of other forms of exercise than those fitted to their own apparatus. A large beam, for instance, has been devised with handles fastened by a contrivance above it, which is meant to restore the spine (when out of place), to its proper position. But there is scarcely anything it can accomplish which cannot readily be done on some of these simple, old-fashioned, and far less cumbersome pieces of apparatus.

The Dominion Census.

The second volume of the census has been brought down. From it, it is learned that the reported deaths for the several provinces are 14.27 per 1,000 in Prince Edward Island, 14.64 in Nova Scotia, 15.02 in New Brunswick, 19.07 in Quebec, 11.81 in Ontario, 12.34 in Manitoba, and 20.35 in British Columbia. There 3,507 doctors in the Dominion; 168,000 farmers and farmers' sons; 4,519 Government employes; 8,094 lumbermen; manufacturers, 2,299; mariners, 17,823; merchants, 17,449; 5,671; miners, 6,541; printers and publishers, 5,227; professors, 228; railway employes, 8,220; seamstresses, 11,961; stenographers, 72; stevedores, 4,073; tailors, 11,939, and telegraph employes, 2,195. In the recapitulation the number contained in the agricultural class is 516,411; in the commercial class, 107,646; domestic class, 74,830; industrial class, 287,296; professional class, 52,974, and those belonging to no particular class, 205,228.

There are in the Dominion 8,852 churches, divided as follows; Baptist, 944; Catholic, 1,485; Congregational, 110; Disciples, 56; Church of England, 1,267; Lutheran, 98; Methodist, 3,017; Presbyterian, 1,363; Unitarians, 7; other churches, 20.

[It is a matter for deep consideration on the part of the Provincial Legislature this indisputable statement that the death rate in the Province of Quebec is 19.07 per thousand, whilst that of Ontario is only 11.81 per thousand, it is also strange that the death rate of British Columbia is 20.35 per thousand, but the latter probably can be accounted for on account of its mixed population, of which Chinese and Indians form no small portion.

The argument of the Medical Health Officer of Montreal that the large death rate of that city is owing to the large birthrate, is simply made on his own statements, for which we have as yet seen no reliable figures to corroborate.

The large death rate in the Province of Quebec is mainly owing to its neglect in large cities of its drainage and house plumbing, and proper attendance to other sanitary requirements. With the water-carriage system came typhoid and diphtheria, and the increase of consumption, also, is mainly due to damp houses and a vitiated atmosphere. When we again assert that the death rate of Montreal from zymotic diseases, and other complaints augmented from damp mouldy cellars and bad ventilation, is 31 per cent. of its annual mortality, it is high time that the Legislature took the health question in hand.

—E. C. S. A.]

Ventilation.

A simple and effectual method of supplying fresh air without draft to a school-room, appeared in the pages of the *Builder*. The details will be seen on reference to the accompanying small plan and section. It may be described as an air-box made of sheet-iron, and placed behind or connected with a stove. The box is connected by an air-shaft with the outside wall, and has an inlet-pipe above, which admits the fresh air into the room. In passing through the "box" the air becomes slightly warmed in winter, when there is a fire in the stove, and it is a good ventilating shaft in summer. It is most effective when it is most required, i.e., when other openings, doors or windows, are closed. Its advantage over the old plan of a simple opening under the stove, is that there is no danger of dirt or ashes falling into it and filling it up. I may add that I designed it twelve months ago, for a Board School in Leicester, where it has been found to work admirably. The fresh air inlet pipe could be taken to any part of a room where the stove might be placed.

Scientific.

The Air of Houses.—There is much confusion in the minds of some people, says the *London Building News*, with respect to the dryness or dampness of houses. An air-tight room is more or less damp, though people are generally apt to think it otherwise if there is no draught and all the air carefully shut out. As a general rule, we invariably find the most draughty house is the driest, as it will be generally found to be the healthiest, if not the most comfortable, in cold weather. But the air of a room as that for an invalid, may become too dry, it may be overheated by a stove, which would become injurious to the patient. In certain cases vaporizers are now employed to give the air of the chamber its healthful proportion of moisture.

Mr. G. J. Symons, in a paper on meteorology, has remarked that the subject of the hygrometry of the sick room was unknown two generations ago. If, in addition to temperature, the quantity of moisture in a sick room were indicated by the hygrometer, a great deal more might be done for the invalid's comfort. It is just as easy to regulate the hygrometric condition of the sick room as its temperature, and, in many respiratory complaints, the former is even of greater importance than the latter. The hotter the air is the more water can it contain, and this condition does not appear to be apprehended by those who dwell in such rooms, or provide the means of heating or ventilating them.

Prof. Tyndall found that the moisture in the air of an ordinary room absorbs 50 to 70 times as much as the radiant heat as the air does. Moisture is the regulator and conservator of the heat, and in due quantity acts like a blanket, by protecting us from a too sudden cooling or heating. The question is one, we think, worthy more attention by the sanitary builder than has been given to it. Complaints are loud against hot-fir furnaces, as they overheat the air and render it unfit for breathing; they tend to scorch and dry the air, and to this extent they are unhealthy.

THE SAVING OF SANITARY SCIENCE.—We take the following suggestive extract from a letter of Edwin Chadwick to the *London Morning Post*, and shall await with interest the conclusions Dr. Richardson will reach after the examination referred to:

"Dr. Littlejohn, the health officer of Edinburgh (which has about the population of Glasgow), informs me that during the last decade a saving of 4,000 lives has been effected, mainly by the clearance of the worst parts of the town under the authority of their Improvement Act, and by the early notification of infectious diseases, and by their early discovery and isolation of the cases by which the spread of epidemic diseases is prevented. He states that those clearances have cost the ratepayers £2,500,000. This outlay should be redeemed by a payment of some \$150,000 per annum of principal and interest in some thirty years; but it will be found to effect a reduction of the cost of funerals and sickness in such proportions as is specified in the instances of Glasgow; and Edinburgh, I estimate, admits of nearly as

great a reduction of its sickness and death rate. Our examinations of the sanitary conditions and the preventable sickness and mortality in towns were of necessity incomplete and one-sided. We have not, then, the means of ascertaining, even proximately, the extent of waste and of money loss attending it; nor have we now, except proximately. We have the one item for the death rate and the estimated sickness rate, but we have no statistics to give us the extent of the loss entailed upon the adults of the clearly wage classes by the extent of loss by disability from sickness alone. I am fully aware that those I have taken may be challenged as wide under estimates. So, therefore, are the means of payment for effectual means of relief. I am glad to state that I have succeeded in introducing our great physician and sanitarian, Dr. Richardson, who has examined most closely the preventatives of diseases, to make what I call a clinical examination of the city, to get out the consequences and costs of insanitary conditions more completely than has hitherto been done. He is doing it for Brighton, and I have no doubt he will present an important example for the use of other cities, especially such heavy death-rated cities as Manchester and Dublin, and those in the United States."

Hygienic.

DOES RUNNING WATER PURIFY ITSELF?—This subject has been discussed in the *Popular Science Monthly* by J. A. Judson. He takes a decided negative, as will be seen by the following paragraph: It is not impossible to point out authorities on sanitary matters so wedded to pet theories that they unhesitatingly deny that the conversion of a pure running stream, or even a large river, into a conduit for the sewage-flith of a great city, will have any deleterious effect on the potable quality of the water taken a few miles below the filth-entering point. It has been demonstrated that this is not only false in theory, but also in fact. It was Dr. Letheby, of the English "Royal Commission on the Water-Supply of London," it is believed, who was the first to announce what has since been proved a fallacy, viz., that "if sewage be mixed with twenty times its volume of river-water, the organic matter which it contains will be oxidized and completely disappear, while the river is flowing a dozen miles or so;" and further, that "it is safe to drink sewage-contaminated water after filtration." The "Royal Rivers Pollution Commission" of 1863, unwilling that this expression of opinion should remain untested, submitted it to careful and ingenious experimental investigation. The result is thus announced: "It is thus evident that so far from sewage mixed with twenty times its volume of water being oxidized during a flow of ten or twelve miles, scarcely two thirds of it would be so destroyed in a flow of one hundred and sixty-eight, at the rate of one mile per hour, after the lapse of a week." And, after mentioning details in support of this, the commissioners conclude with the remark that "it will be safe to infer, however, from the above results, that there is no river in the United Kingdom long enough to effect the destruction of sewage."

oxidation." Dr. Frankland, an eminent English authority, before the Royal Commission on Water-Supply, gives some strong testimony in support of the statement that it is impossible to remove the sewage-contamination from water by any known process, natural or artificial, so as to render it harmless, except by boiling for a long time, or by distillation; and, as these two processes are impracticable on a large scale, then, he says, in his opinion, "Water that has once been contaminated by sewage ought not afterward to be used for domestic purposes; and, inasmuch as it is generally believed that the noxious matter of sewage exists there in the form of minute germs, which are probably smaller than blood-globules, I do not believe that even filtration through a stratum of chalk could be relied upon to free the water perfectly from such germs."

CELLARS.—There are hundreds of houses in the country that are built over dark, noisome holes full of dampness, impure air, decaying vegetables, and rotting timbers. The holes in the ground are called cellars, but they are so unsuited for the purpose which they are designed to serve, that they deserve rather to be called "death-traps." Light is as essential to the healthfulness and purity of a cellar as it is to the dining-room or parlour. The requisites of a good cellar are freedom from dampness, light, and a temperature low enough to prevent decay, and there is no difficulty in securing these conditions if cellars are only constructed above ground. Dark, close houses are notoriously unhealthy, and every possible device is resorted to light and admit air-currents in them; yet we see cellars that are a hundred times worse than the darkest of houses left without light or ventilation, to breed germs of disease and death. All houses require cellars, both for the storing room they afford and their contribution to the comfort and health of the dwellers; but there is no reason why sanitary law should be set at defiance in their construction, neither is there any necessity for groping about in darkness, and, besides, when light is admitted there is in immunity from the danger of fire which attends carrying a light into the darkness, and which, from accident or carelessness, results sometimes in a disastrous fire.

ANECDOTES CONNECTED WITH VENTILATING AND HEATING ARRANGEMENTS.—A writer in a recent number of the *Sanitary Engineer* says:—A large public institute near New York was heated with a hot-water apparatus, which proved quite satisfactory until one very wintry day word was sent to the contractor that the inmates were freezing. He came, and after listening to the trustees' complaints at the apparent failure of the apparatus, explained that the steam from the boilers was neutralized by the enormous windows on the north side of the building, reaching from the ground to the roof and covering some hundred square feet of surface. The casings of these windows were so close that the keen wintry blasts were forced into the rooms and then down the registers, so that the hot-air was blown out of the cold-air supply box into the yard, melting the snow, and as an actual fact the inmates gathered around this out-door opening to warm themselves. The contractor said that if the trustees wanted more heating service they could have it, but more fuel would be needed. He thought the simpler mode of remedying the

difficulty was to put shutters on the windows. This was finally done, and no trouble has since been experienced. Here is another illustration of popular ignorance. A gentleman while attending church one evening found that his feet were very cold, so that he had to raise them from off the floor. Calling the attention of the sexton to the fact, the latter said with some perplexity, "Yes, we have a good many complaints of cold feet from others; but I can't understand the reason why we can't keep the church warm; we surely have fires enough." So saying, he pointed to a register in the floor directly behind the gentleman in the adjoining pew. Looking around, the latter could see that there was a hot fire in the furnace beneath, and yet no heat came up. When a handkerchief was placed over the register it scarcely stirred. The visitor asked the sexton, "Have you any means of ventilation?" "No, sir." "Are there no windows open?" "None whatever." "How, then, can you expect the air to come in here if it can't get out somewhere?" There was no response; the man was nonplussed. "Did you ever try to blow into a bottle?" continued the inquirer. "No, sir." "Do you think, if you did, that you could force any more air into a bottle than there was in it before?" He couldn't say; never had thought of it. "Well," continued the gentleman, "you would soon find, if you tried, that it was impossible; and neither can you force air into this church through a register if you don't open a window or some other orifice." But the sexton demurred, "opening a window would let in the cold air, wouldn't it?" "You just try it," was the response; "Raise one of the windows on the leeward side of the church, and see what will happen." It was done, and instantly the handkerchief lying on the register rose half-way to the ceiling with the force of the ascending current. The sexton stood and stared in astonishment. "Now what you want to do," explained the visitor, who was a ventilating engineer, "is to keep your windows open, or to put in ventilators." He further offered to plan the latter free of charge to the church, and left his card for the trustees to call on him, but, of course, they never came near him, and I suppose cold feet are still the main attraction to the faithful attendants of this church, in spite of the red-hot theology preached.

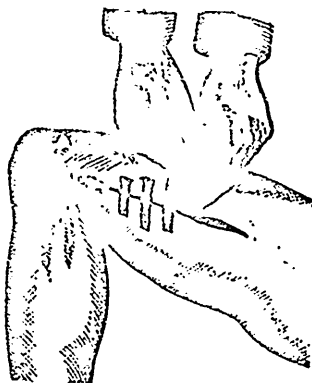
EFFECTS OF SANITARY OPERATIONS.—The Registrar-General, in the last quarterly report, gives an example of how a district may be improved by the adoption of a proper system of sanitation. He instances the town of Llandudno, which at one time had a high death-rate, and which, of course, necessitated something being done to lower it. A scheme of sewerage was designed by Mr. Baldwin Latham, and carried out, at a cost of £30,000 with great success. The death-rate is now nominal, being only 8·4 per 1,000, and during the three months in question not a single death from zymotic disease took place. In order to value the change which has occurred, we may point to the neighbourhood of the town—the rural district outside, which is not sewered, where the mortality was 38·6 per 1,000, with a zymotic death-rate of 4·3 per 1,000. The Registrar gives great praise to the town for its enterprise, and when the new works for a water supply are completed, no doubt the death-rate will be further lowered.—*The London Metropolitan.*

Accidents—Emergencies—Poisons.

(Continued from page 16.)

INCISED WOUNDS.

After the hemorrhage ceases, and the clots with any foreign matter have been carefully and gently removed, by a judiciously directed stream of water from a sponge, the separated surfaces and edges of the wound should be brought carefully together. To retain them in position until union has taken place, strips of adhesive plaster may be used. This being a resinous preparation, it soon becomes dry, and useless for the purpose. Hence get but little at a time, and replenish with recently prepared as often as is necessary. In cities it can usually be had good from the large shops, where large sales prevent an accumulation of stock. With a pair of scissors, cut it lengthwise, into uniform sized strips of about a quarter of an inch in width, or even less in some instances. These can be subdivided in length, so as to extend across the wound, and far enough on each side to secure a suitable hold on the skin. Warm the plaster side of the strip at the fire until it becomes thoroughly and uniformly melted, then beginning with one end (recollecting that the centre of the strip should cross the incision) rapidly and completely attach it to the skin, as a rule at right angles to the line of the cut. As the middle part approaches the wound, with the fingers bring up the skin towards the incision, from the other side, upon which the other half of the strip is to rest; then rapidly attach the rest of the strip.



If this is not done, the strip of plaster will be found in folds, owing to the yielding of the soft skin beneath, and the edges of the wound separated. If one strip will keep the edges approximated along the whole length of the wound, no more is needed. If not, use others. Where more than one is used, the edge of the strip should be brought across a short distance from the extremity of the wound, so as to permit the ready exit of blood or pus. Confinement of either or both by the plaster, or anything else, favors "burrowing," as it is called, and consequent separation of the wounded surfaces. On the scalp, the face of men, and the extremi-

ties of some persons, the hairs must first be shaved off the skin, or the plaster will not remain attached.

Most persons, in using adhesive plaster on a wound, apply a large piece, or several small pieces, so as to completely cover it. This must not be done. A few drops of blood escaping after such an arrangement, even when the edges of the wound have been carefully brought together, undergoes decomposition, irritates and inflames the parts, loosens the plaster, and changes what otherwise should have been the result of the accident.

Adhesive plaster is best for use, but as it is not portable, often in an emergency it is easier to get Isinglass plaster. This is a thin tissue of silk spread on one side with a solution of isinglass or other gelatinous substance. Heat is necessary to soften adhesive plaster: but moisture dissolves Isinglass plaster. As in most wounds there will be some liquid discharged, it can be seen at a moment's thought why adhesive plaster will remain attached, while Isinglass plaster will become detached.

When Isinglass plaster can be procured, it should be cut into narrow strips, the adhesive side moistened, and then applied as above directed. The black variety of Isinglass plaster, usually sold in small envelopes, scarcely fit, as a general rule, to be used.

Speaking of plasters, the writer will say that on occasion, where none was to be had, the edges of a incised wound of some length were successfully brought together, and held there by a postage stamp, divided lengthwise into four strips.

In shaving the face cuts are sometimes made which bleed to a troublesome extent. A crystal of common alum should always be kept with the apparatus, the bleeding absorbed by a fold of a towel, and then before the blood can accumulate, thrust into the incision the edge of the crystal, holding it there a few minutes. If the bleeding continues, it is because the alum does not reach the divided vessel, and the wound should be wiped out until it can.

If the incision is deep, or there are not good points for attachment of the plaster, sutures are often employed by the surgeon. No definite rule can be given for the circumstances requiring them or the method of using them. An ordinary sewing needle will not answer, but a needle with a cutting edge, such as saddlers or glovers use for stitching leather, can be secured, if the regular surgeon's needle cannot be procured. The suture is of white silk, or possibly white flaxen thread might answer in an emergency. Surgeons now generally use fine wire of silver or iron, as metal irritates the part it comes in contact with less than a rough thread.

The edges of the wound having now been properly brought together, and retained there, the next thing is what is called the "dressing." All manner of things were once used for this purpose, under the impression that they were healing. They are now used by surgeons simply for protective purposes. The simplest are therefore the best. Hence water is now used under the name of "Wet Dressing." As Isinglass plaster is softened by moisture, water cannot, of course, be employed when this material has been used for retaining purposes.

Take two or three thicknesses of what is called Pad-

lint, if it can be conveniently had, if not of old linen,* or even old muslin, somewhat larger than the wound. With a pair of scissors or a sharp-pointed knife perforate the folds, dip in cold water, and after squeezing out the excess, evenly apply to the wound. To retain in position, a strip or two of adhesive plaster can be thrown over, or a small roller (bandage) may be lightly applied. Keep the linen, or substitute, constantly wet, not moist, with water. Sometimes the wounded member is supported in a sling.

This dressing is so simple, and at the same time so useful, that surgeons are apt to use no other in simple wounds; but unfortunately, it is so simple that many persons, unless they are intelligent, have no confidence in it. They prefer pain-killers, liniments, herbs, and snives. Remember, the natural reparative process unites the parts, and the effort of the surgeon is only to put the parts in the position best calculated to favor this to advantage. All foreign matters, never mind under what name, as a rule, are obstacles, not aids, to this process of nature.

In using water as a dressing, or applications of any kind to the surface, if a sense of chilliness appears, its use should be discontinued for a time. As said elsewhere, the conversion of the liquid to a vapor requires much more heat than might at first be supposed. When the chilliness is observed, a little of some kind of stimulant may often be used.

If the pain is severe, sometimes opium in the form of Tincture of Opium (Laudanum) is added to the water applied.

After a certain time, usually twenty-four hours, occasionally sooner, sometimes later, the outside strips of plaster holding down the lint should be divided, the parts removed, and the lint carefully removed, after loosening it as far as is practicable by moistening with tepid water. Should any portion be closely adherent to the wound, or any part of it, through coagulation of blood or escape of any pus, and fail to become detached under delicate manipulation, with a sharp pair of scissors divide the lint as near as convenient to the point of adhesion, letting the fragment remain, with the hope that by the next time separation can be secured.

The adhesive plaster now only remains, and if it has been properly applied the condition of the wound can be easily determined. If there is no discharge of blood or other material, the plaster should be let alone, and another piece of lint and retaining strips applied, and kept wet with water as before.

The next day the same examination should be made. If blood or pus is found, remove it with a soft piece of moistened sponge, being very careful not to disturb the strips of adhesive plaster. Should any strip have become loosened, remove it by catching hold of the extreme end and separating it gently and slowly until detached almost up to the line of the incision; then drop that extremity, taking up the other and go through

with the same thing until only the central portion over the wound remains to be separated. This is done to lessen the chance of tearing the wound apart, which pulling at one end of the strip would favor. With a little soap and water then remove the remains of the resinous portion of the plaster from the skin, dry gently and well, and apply a fresh strip as a substitute for the old, observing all the precautions suggested.

These remarks apply, of course, to a simple incised wound, when union takes place at once, or with little suppuration (making of pus). This cannot always be secured, from suppuration of the sides of the wound after the dressing has been applied, or an unfavorable condition, as it is said, of the blood. In such a case the blood or pus must be removed once a day, as a rule, the surfaces of the wound kept together, as much as possible, by adhesive strips until a junction is effected. Do not use too much soap and water, as the only object of them is to better and more easily remove the foreign matters (blood and pus), which, if retained, act as irritants; but not to remove the reparative material poured out by nature for joining the separated surfaces.

If, owing to the general health of the patient, or a new character given the wound by some unavoidable mishap during the course of treatment, there should be decided suppuration, the injury may require more frequent dressing, especially in hot weather. In such a case, if the wound has up to this point been without professional advice, it may be better to consult a physician, as a suitable tonic, a different diet, or even some local applications to the seat of injury, may be followed at once by an improvement in its appearance. ("Cut Finger," see p. 18.)

Under the classification adopted, have been included with incised wounds those instances where portions of the body have been cleanly cut off. Never mind what part it is, if the excision has recently taken place, the separated portion should be taken, rapidly freed from any foreign matter, and applied to the part from which it has been separated, in the position it previously occupied. Should the weather be cold, some raw cotton might be applied around it to preserve the warmth, and some measures inaugurated by which gentle and uniform pressure can be kept up for a reasonable time. After making all allowances for the remarkable stories told in reference to such things, there is no doubt that much can be said in favor of the practice and little against it; for if circulation and adhesion are not restored, it can be said that only a little time has been lost.

PUNCTURED WOUNDS.

These vary in their importance, not only according to the depth of the wound and the structures penetrated, but according to the instrument inflicting them. The chief peculiarity and danger of these wounds is, that their nature does not afford sufficient facility for the escape of blood, other fluids, or foreign matters. The retained fluids decompose, or, by mere pressure, irritate the adjacent parts, or by distention, enlarge the original wound.

In punctured wounds the essential idea is to treat it

* By "old linen," many persons think the linen beams of old shirts is meant. For the purpose mentioned it is practically useless. An old domestic linen table-cloth furnishes the best, and next to it, perhaps, old linen sheeting, quite coarse in texture.

as an incised wound; but its peculiar character, greater in depth than external area, requires a somewhat different plan of procedure. Remove whatever foreign matters have entered the wound, and apply a pad to the outer wound, so that it will, if possible, moderately and uniformly exert some pressure along the deeper portion. The wounds fill up with blood, and as it cannot escape externally, on account of the pad, it clots and closes the open ends of the divided vessels, by pressing upon them. If the wound was made with a blunt-pointed instrument, it is practically, as far as union of the divided surfaces is concerned a *contused* wound, which will next be alluded to, and will heal as such. If with a sharp instrument, the wound often heals as an incised wound; and if there is no discharge to require it, the pad may be left in position, as strips of adhesive plaster would be in an incised wound, without disturbance, until union of the divided surfaces is complete.

In case much pain follows, with signs of inflammation around the injury, the dressing (pad) must be removed, to permit the escape of the results of inflammation of the deeper portions of the wound. Sometimes even the external opening of the original puncture is not large enough for the exit of pus and other discharges. In such a case the surgeon must enlarge it until the requirements in this respect are properly met.

Once a day, or oftener if the wound is discharging, it should have the dressing changed, to secure neatness and escape of pus. If certain structures are invaded by the puncture, the surgeon is often at a great deal of trouble to insure healing at the *bottom* of the wound first, to guard against the *burrowing*, as it is called, of pus between the muscles and other contiguous parts.

Under the head of "Punctured Wounds," may be mentioned a trivial set of injuries, quite frequent in occurrence and often attended with serious consequences. They are produced by the running in of a thorn, splinter of wood, or a piece of metal. The foreign body is pulled away in most cases, if it can be done readily; if it cannot, it is let alone, as the phrase is, "to work out." In all cases if a splinter or thorn, it should be got out. Not by poking at it with a needle, or something of the kind, which adds to the irritation, but by making an incision along its course, so as to expose it enough to get a sufficient hold upon it. If the incision should not permit a removal, a more ready escape has been made for the foreign body and any pus ("matter") that may form; thus lessening the probability of the constitutional excitement exerted through the nervous system known as Tetanus (Lock-jaw). If the splinter is under the finger nail, and cannot be pulled out, do not waste the outside end by picking at it. The nail immediately above should be scraped as thin as possible by a piece of glass, and then the thin nail overlying should be split with the blade of a knife, or an incision made on each side of the splinter, the tongue of nail between the incision removed, which should expose the upper surface of the splinter along its entire course. The restraining pressure of the nail upon the foreign body is in this way gotten rid of, and at the same time an outlet for the products of inflammation is given.

A piece of lint, wet in water, to which a good deal of Laudanum has been added, should be applied, and kept wet with it as long as necessary.

When the finger or hand, toe or foot, has been pricked, particularly by anything foul, as a rusty knife or nail, a dirty piece of horn, or bone, the opening does not permit the escape of the retained foreign particles, and inflammation results. The skin on these parts is so thick that it cannot yield when the parts beneath are irritated and inflamed, and the inflamed portion, as it were, tightly bound up or squeezed as in a vice, by the hard skin, and the almost always fatal conclusion of affairs known as Tetanus (Lock-jaw) supervenes in many cases.

Whenever such wounds, to such parts, are received, an incision should be made into the puncture, thereby providing a suitable escape for the blood, pus, etc.; and a piece of lichen dipped in Laudanum forced into the wound. This can be done by almost any one, and may save serious trouble.

In washing clothing, scrubbing and scouring, a fragment, or even an entire needle is sometimes forced beneath the skin. Do not attempt to get it out, but hold the part perfectly quiet until a surgeon can be procured. The slightest movement often places it beyond the detection of the sight or touch. When this happens, there is no occasion to be alarmed, as the needle slips in between the muscles and cannot be felt even as painful. It does no harm there, as inflammation almost never results. Occasionally it is unexpectedly found near where it entered, and in a position favorable for extraction.

To be continued.

Doulton's Combined Smoke & Air Flues.

We give an illustration of Doulton's Patent Smoke and Air Flues, by means of which perfect draught and complete ventilation can be secured. The blocks are made in two feet lengths, but shorter blocks are kept in stock.

The air-flue follows the line of the smoke-flue, the passages being quite distinct. The heat from the smoke-flue causes a current, which carries off the vitiated air admitted by junctions near the coiling. The pipes or blocks are all made to bond with ordinary brickwork.

Where the blocks come together, each air-flue has a lip or projection, which enters the next block and completely shuts off the air-flue from the smoke-flue at the joint. This lip, which dowsels at the opposite corners of the blocks, also holds the lengths firmly together.

The smoke and air-flues are made curved to suit any inclination.

Blocks are kept in stock with the air space covered with a sloping roof and open at the side. One should be placed on the top of each flue where it comes into the open air to prevent the possibility of the descent of rain or smoke.

Such flue would be very suitable in this climate. They are not expensive, improve the draught, and clean easily.

Domestic Hints.

PASTE FOR PAPER.—To ten parts by weight of gum arabic add three parts of sugar in order to prevent the gum from cracking; then add water until the desired consistency is obtained. If a very strong paste is required add a quantity of flour equal in weight to the gum, without boiling the mixture. The paste improves in strength when it begins to ferment.

TEA LEAVES FOR VARNISHED PAINT.—Save the tea leaves for a few days, then steep them in a tin pail or pan for half an hour, strain through a sieve, and use the tea for all varnished paints. It requires very little elbow polish, as the tea acts as a strong detergent, cleansing the paint from all impurities, and making it equal to new. It cleans windows and sashes, and oilcloths; indeed any varnished surface is improved by its application. It washes window panes and mirrors much better than water, and it is excellent for cleaning black walnut and looking-glass frames. It will not do to wash unvarnished paints with it.

ANOTHER CURE FOR CORNS.—The safest, the most accessible and the most efficient cure of a corn on the toe, is to double a piece of thick soft buckskin, cut a hole in it large enough to receive the corn, and bind it around the toe. In addition to this, the foot is soaked in warm water for five or more minutes every morning and night, and a few drops of sweet or other oily substance are patiently rubbed in on the end after the soaking, the corn will almost infallibly become loose enough in a few days to be easily picked out with the finger nail; this saves the necessity of paring the corn, which operation has sometimes been followed with painful and dangerous symptoms. If the corn becomes inconvenient again, repeat the process at once.

"MORE NICE THAN WISE."—Can one be "more nice than wise" about milk? There is a satisfaction in being very particular, and fastidiously nice and neat in personal habits, about what one eats and drinks, and all that, but we can carry the thing too far for our own comfort, and for those around us. One of my neighbours will buy no article of food a second time at a store where the salesman wets the finger in the mouth to pick up the wrapping paper more easily. He is shocked at the idea of carrying off another human being's saliva; and yet my friend will sit in a crowded rail-car or room, and breathe the vital air second-handed, by the hour.—While it is well not to be too nice about some things, in the matter of milk, I think there is the highest wisdom in extreme niceness.

CHARCOAL IN DENTIFRICES.—A correspondent, who is a practical dentist of large experience, sends the *Journal of Chemistry* the following note: I notice a paragraph from the *Chemist and Druggist*, referring to the use of different substances for dentifrice, which states that the "microscope pointed out that every particle of charcoal had proved to be a small crystal, which, acting by attrition, was hurtful to the enamel." If attrition or friction were the only objections to the use of it as a dentifrice, I imagine the consequence would not be very harmful; but it is absolutely dangerous on other grounds. Of course its antiseptic properties are not questioned, but the most

serious danger arises from its pernicious effects upon the gums and soft tissues. I might add that in extreme cases the alveoli or sockets of the teeth are not exempt from its effects. It may be laid down as an invariable rule that no substance should be used as a dentifrice that contains acids or any ingredients insoluble in the secretions of the mouth. Now with regard to charcoal, the microscope reveals the fact that, no matter how finely pulverized, it is composed of minute angular crystals. There are absolutely insoluble in the mouth, and when used they work up under the free margins of the gums, and the more loose and diseased these are the greater the danger. The little carbon crystals get imbedded in the soft tissues, acting as a constant source of irritation which is followed by inflammation. A chronic state is reached; the gums become swollen; pus exudes from their margins; and absorption of gums and alveolar processes, with ultimate loss of the teeth is the sequel. Of course extreme results are produced only by habitual use of the article. I think all observing dental practitioners of any considerable experience will bear me out in the above statements.

THE PROPER TIME FOR WORK.—The habit of writing and reading late in the day and far into the night, "for the sake of quiet," is one of the most mischievous to which a man of mind can addict himself. The feeling of tranquillity which comes over the busy and active man about 10.30 or 11 o'clock ought not to be regarded as an incentive to work. It is, in fact, the effect of a lowering of vitality consequent on the exhaustion of the physical sense. Nature wants and calls for physiological rest. Instead of complying with her reasonable demand, the night-worker hails the "feeling" of mental quiescence, mistakes it for clearness and acuteness, and whips the jaded organism with the will until it goes on working. What is the result? Immediately the accomplishment of a task fairly well, but not half so well as if it had been performed with the vigor of a refreshed brain working in health from proper sleep. Remotely, or later on, comes the penalty to be paid for unnatural exertion—that is, energy wrung from exhausted or weary nerve-centres under pressure. This penalty takes the form of nervousness, perhaps sleeplessness, almost certainly some loss or depreciation of function in one or more of the great organs concerned in nutrition. To relieve these maladies—springing from this unexpected cause—the brain-worker very likely has recourse to the use of stimulants, possibly alcoholic, or it may be simply tea or coffee. The sequel need not be followed. Night work during student life, and in after years, is the fruitful cause of much unexplained, though by no means inexplicable, suffering, for which it is difficult, if not impossible, to find a remedy. Surely morning is the time for work, when the whole body is rested, the brain relieved from its tension, and mind power at its best.

HOW TO STARCH AND IRON.—Every housekeeper knows the difficulty of starching and ironing shirt bosoms, collars and cuffs satisfactorily. When done at a laundry they have a glossy finish which both improves their appearance, and prevents their getting soiled readily. To give a fine gloss to linen a good quality of starch must

be used. It is best to get it by the box of six pounds or more, as it comes cheaper and is always at hand. The empty box is useful for other purposes. I have read of many additions to starch to give a gloss, such as white wax, spermaceti, and gum arabic, and have tried them all, but find them of no advantage if good starch is used. Gum arabic with cold starch sometimes makes the linen stiff. Mix the quantity of starch required with cold water to about the consistency of thin cream, then pour on boiling water and stir briskly. Make quite thick and keep over a good fire stirring all the time. Boil until clear, and some minutes longer to be sure that it is well cooked; (some think a little lard or butter added prevents the iron from sticking.) As soon as it has cooled enough not to burn the hands, take the linen, previously well washed and rinsed, and with the fingers rub the starch well into it and slap together. Continue this until the linen has taken all the starch it will hold. Then smooth with the fingers carefully, taking out all the wrinkles, with a clean damp cloth remove all the specks of starch from the smooth surface, and hang up to dry where no particles of dirt are floating. If hung out of doors when the wind blows it will take out a part of the starch. When dry, immerse the linen quickly in hot water, and roll up in a clean dry cloth. Usually it will be ready to iron in ten to fifteen minutes. Some dip the linen when dry in cold water containing a little starch dissolved, and then roll up. This requires time for the articles to become dry enough to iron well. When a collar, for instance, is ready to iron, lay a clean cloth on the cover of the ironing board, and place on it the collar with the outside down and apply an iron not too hot, lifting the collar up every time the iron passes over it to allow the steam to escape and to prevent its sticking to the cloth. While yet damp turn the collar outside up and iron once or twice, or until nearly dry (bearing in mind not to have the iron too hot); when removed to a bosom board made of hard wood without covering, place on a bare table with polished iron well heated, but not too hot, and go over the collar putting on all the pressure that you can, but not too slowly or it may scorch. Should the linen get too dry to receive a good polish, dampen evenly with a wet cloth. Much of the success in securing a good polish on linen, depends upon the pressure put upon it while damp, and having underneath a hard board. A good polishing iron is essential.—*American Agriculturist.*

HOW COFFEE IS ADULTERATED.

Professor S. P. Sharpley, the State Assayer of Massachusetts, is making some analysis of articles of food, which are resulting in interesting disclosures. Packages of coffee have engaged his attention, but he has found very few traces of the berry itself. The following are some of the results of his examination:—

"Hayward & Co.'s French Breakfast Coffee," the label of which sets forth that only three-quarters as much of it need be used as would be required if ordinary coffee was employed, is found to contain no coffee at all, but to be made of green peas, burnt molasses, and an occasional grain of rye."

A package of "Pure Roasted and Ground Cape Coffee"

was found to be made wholly of peas and nut shells, the latter floating when the mixture was put in water.

A package of "Kimball's First Quality Mocha and Java Coffee" contained no coffee at all, but consisted of peas and rye.

"Gillie's Extra Quality French Coffee" was almost destitute of any foreign substance, peas and rye predominating, with a few oats.

"Chase's English Breakfast Coffee" is a large consumer of peas, the traces of coffee being so slight that the assayer pronounced them accidental.

Happily the analysis has not disclosed the presence of any positively injurious substance, and if people, who can easily find out the cost of a pound of green coffee, expect to buy a like quantity roasted and ground for half the price, they deserve to drink weak pea soup. To detect adulterations, the following rules are given: Take some cold water in a glass and throw upon it about half a teaspoonful of the coffee to be tested, stirring it around so as to wet the grains. Pure coffee will float and scarcely color the water. Beans and chicory sink to the bottom; chicory colors the water at once, beans more slowly. Test the part that floats by chewing it; coffee will thus be recognized by its taste; nut shells, which also float, are hard and brittle. A species of nut which has lately come into use, strongly resembles coffee when ground up, by floating on the water as well as by its feeling between the teeth; but the difference can easily be detected, because the adulterating ingredient is nearly tasteless. After subjecting the suspected article to the above test, spread some of it on a sheet of paper and examine it carefully for grains of rye, oats and peas. The pea ingredient will frequently be found in pieces one-eighth its size, and the rye in half-grains; chicory is tough when taken between the teeth, and has a bitter taste, different to the bitter coffee.

As to the roasted peas and rye which are sold instead of coffee, it is pretty certain that they are more wholesome than the fruit of the coffee plant, being destitute of any narcotic quality; but the thing is a fraud, and it would be better for families—cheaper at least—to roast their own peas and make their own weak pea soup. As to chicory, it is well known that at the restaurants in Paris and other French cities, all the coffee served to customers is largely adulterated with the roasted root of the plant, which is cultivated for that purpose, and much more wholesome than coffee.

REMOVAL OF STAINS FROM WOVEN FRAGMENTS.

—Mechanically attached particles may be removed from all fabrics by beating, brushing and allowing water to fall from an elevation upon the wrong side of the goods.

MUCILAGE, MUCUS, SUGAR JELLY.—Washing with lukewarm water will clear all goods.

FATS.—From white goods: Wash out with soap and lye. Colored cottons: Wash with lukewarm water and soap. Colored woollens: Lukewarm soap and water, or ammonia. Silks: Clean carefully with Benzole, ether, ammonia, chalk, clay, or yolk of eggs.

OIL COLORS, VARNISH, ROSIN.—From all fabrics except silks: Oil of turpentine, alcohol, benzole, and then soap. Silks: Benzole, ether, and soap very carefully, and in a very weak solution.

—Stearin can be removed from all goods with strong, pure alcohol.

VEGETABLE COLORS, RED WINE, FRUITS, RED INK.—From white goods: Sulphurous vapor or hot chlorine water. Colored cotton or woollen goods: Wash in lukewarm water and soap, or ammonia. Silk may be treated in the same manner, but very cautiously.

ALKALINE INKS.—From white goods: Tartaric acid; the older the spot the more concentrated. Colored cottons or woollen goods: If color permits, dilute tartaric acid. Silk: As before, but with great caution.

BLOOD AND ALBUMINOUS SPOTS.—Simply washing out with lukewarm water, for all kinds of goods.

RUST, AND SPOTS OF INK MADE OF NUTGALLS.—From white goods: Hot oxalic acid, dilute hydrochloric acid, and then tin filings. Colored cottons or woollens: Citric acid may be tried. White woollens: Dilute hydrochloric acid. Silks: Nothing can be done without increasing the evil.

LIME, LYE AND ALKALIES IN GENERAL.—From white goods: Simply wash in water. Colored cottons, woollens, or silks: Much diluted citric acid, drop by drop upon the moistened spot, to be spread around by the finger.

ACIDS, VINEGAR, SOUR WINE, FRUIT JUICES, &c.—From white goods: Simply washing; in the case of fruit also with hot chlorine water. Colored goods, either cotton, wool or silk: According to the delicacy of the material and the color, more or less diluted ammonia, to be spread around on the spot, moistened, drop by drop, with the tip of the finger.

TAR, WHIRL GREASE, AS ALSO FAT, ROSIN, CARBONACEOUS PARTICLES AND WOOD VINEGAR.—From white goods: Soap with oil of turpentine, varied with the action of falling water. From colored cotton or woollens: Hog's lard to be rubbed on, and then soaped, and allowed to remain quietly; then washed alternately with water and oil of turpentine. From silks: As in the preceding, but more carefully, and instead of turpentine, benzole and a continual current of water falling from a height, and only upon the reversed side of the spot.

—For cleaning silks, soiled and greased, but not thoroughly discolored by acids, etc., the best agent is ox-gall diluted with lukewarm water and strained. Blood and albumen should simply be soaked in cold water.

SUPERFICIAL LOSS OF SUBSTANCE BY SCORCHING.—For white goods: Rub over thoroughly with a pad dipped in hot chlorine water. Colored cotton or woollens: Whenever possible, color over, or raise up the nap. With silks nothing can be done.—*Boston Journal of Chemistry.*

FORCING THE INTELLECT OF CHILDREN.—The *Medical and Surgical Reporter* in a recent editorial on this subject, contends that much injury is done by sending children to school too early, and holds, very properly, we think, that the portion to puberty should be devoted mainly to physical development.

Miscellaneous.

SANITARY ERRORS.—It is a popular error to think that the more a man eats the fatter and stronger he will become. To believe that the more hours children study the faster they learn. To conclude that if exercise is good, the more violent the more good is done. To imagine that whatever remedy causes one to feel immediately is good for the system, without regard to the ulterior effects.

PRESERVING THE EYE.—Surgery can justly boast of a new conquest. When an eye is severely wounded the healthy one is in danger of being impaired by "sympathy." To preserve the good eye, it was hitherto the practice to remove the injured one. Dr. Roucheron has discovered that by cutting the ciliary nerves the "sympathy" is stopped, and this dispenses with the necessity of removing the injured organ. Forty surgeons have thus operated successfully.

NERVOUS FAILURE.—When men do not die of some direct accident of disease they die, in nine cases out of ten, from nervous failure. And this is the peculiarity of nervous failure—that it may be fatal from one point of the nervous organism, the rest being sound. A man may, therefore, wear himself out by one mental exercise too exclusively followed, while he may live through many exercises extended over far greater intervals of time and evolving more real labour if they be distributed over many seats of mental activity.

EFFECT OF SUGAR ON THE GASTRIC JUICE.—Sugar has been denounced by modern chemists as a substance, the effects of which on dyspeptics are deplorable. A writer in the *Medicine Practicien*, however, does not partake of these fears. He cites the case of a dyspeptic doctor, who for twenty years, had a terror of sugar, but who now consumes three and three-fourths ounces of sugar daily, without inconvenience. Entering the field of experiment in this direction, he found that a dog ate eighty grains of sugar with two hundred of other food, and six hours afterwards its stomach showed but little food; the mucous lining was red and highly congested, and the congestion of the liver was notable. An animal opened after eating two hundred grains of food and no sugar, showed ninety to one hundred grains of food undigested. Sugar, then, favours the secretion of the gastric juice.

—A young artist once called upon Mr. Audubon, the great student of birds, to show him some drawings and paintings. Mr. Audubon was much interested, and after examining the work of the artist, said: "I like it very much, but it is a little deficient in details. You have painted the legs of this bird nicely, except in one respect. The scales are exact in shape and color, but you have not arranged them correctly as to number." "I never thought of that," said the artist. "Quite likely," said Audubon. "Now, upon this upper ridge of the partridge's leg there are just so many scales. You have too many. Nature does her work perfectly. Examine the legs of a thousand partridges, and you will see that the scales are the same in number. All partridges are made alike." The lesson shows how Audubon himself became great,—by patient study in small things.

A HIGHER LIQUOR.—A friend of mine who has just returned from Germany, invited me to a dinner party last week, and, at the close of the dinner—which was a singularly good one—an unknown liquor was handed round, which was particularly recommended by the host and which no one could name. It turned out to be a new "German notion" of appiled science to gormandize. The liquor was a "pepsin essenz," invented by Prof. Oscar Lubruck, of Berlin, capable of digesting cast iron, and which the epicureans of the German empire propose to insure that good digestion shall wait upon appetite. On this occasion it d. d. so, but whether the cook or the professor must bear the palm I cannot decide. I have seen an alderman include dinner pills among his dessert, and over this the "pepsin essenz" which has the flavour of a delicate hock, has some obvious advantages.—*London Truth.*

TOXIC EFFECTS OF TEA.—Dr. W. J. Morton, in a paper upon the above subject, read before the recent annual meeting of the American Neurological Association held in New York, arrives at the following conclusions in relation to the use of tea: 1st. That with it, as with any other potent drug, there was a proper and improper use of it. 2nd. That in moderation it was a mild and pleasant stimulant, followed by no harmful reaction. 3rd. Its continued and immoderate use led to a very serious group of symptoms, such as headache, vertigo, ringing in the ears, tremulousness, "nervousness," exhaustion of mind and body, disinclination to mental and physical exertion, increased and irregular action of the heart, and dyspepsia. 4th. The mental symptoms were not to be attributed to dyspepsia. 5th. It diminished the amount of urine, and retarded the metamorphosis of tissue. 6th. Many of the symptoms of immoderate tea-drinking were such as might occur without a suspicion of the real cause.

APPEARANCE OF THE TONGUE IN GASTRIC DISORDERS.—Dr. Wilson Fox gives, as valuable aids in the diagnosis of gastric disorders, the following conditions of the tongue:

1st. Dyspepsia, with strict atony of the stomach. The tongue broad, pale and flabby, the papillæ enlarged, more especially at the tip and edges.

2nd. Dyspepsia from irritative causes. The tongue is redder than usual; often of a bright florid color, or even raw-looking. It is often pointed at the tip, which, together with the sides, presents an extreme of injection, the papillæ standing out as vivid red points. This form is often associated with aphthæ, and is most common in scrofulous children and phthisical adults.

3rd. Dyspepsia, from excessive or hurried eating, is apt to present a tongue uniformly covered through the greater part of its surface with a thick fur, whitish or brownish, with some degree of enlargement and redness of the papillæ at the tip and edges.

4th. Neuroses of the stomach display a tongue which, as a rule, though often pale, broad and flabby.

HOSPITAL-ROOMS.—It would be a very great improvement to our houses to have in each a room expressly designed for the sick. It should have a sunny exposure. The windows should command the widest possible view. An essential is an open fireplace. Through it the room is kept wholesome and pure. Not only so, but the fire,

with its lights and shades, its rising sparks and glowing brands, its curling smoke, and changeful embers, furnishes ceaseless diversion to the sick one who lies watching it. Nothing is more soothing or quieting. The walls should have their proper adornment. Pictures that suggest quiet and peace, and the floor, fresh life of nature outside should be on them. A bracket, with its vase of flowers; a green, climbing yinc, clinging ambitiously to the ceiling; a book-case; curtains that soften the light while admitting it. All these are helpful to one that lies in weakness and can take no more of life than the little room reveals. Better still, if just outside the window stands a tree, with branches so placed that the leaves of some almost sweep the pane. The sight of twigs, buds, and leaves, stirred by the winds and flecked with bright gleams of the sun, cheer the mind of one idly looking at them. The central thought expressed in such a sick room is—diversion.

NUTRITIVE VALUES OF FOODS.—Prof. Atwater of the Agricultural College of Connecticut has deduced from the various analyses and investigations of chemists a table illustrating the comparative nutritive value of various species of fish, flesh and fowl. Some of his conclusions will surprise many persons, inasmuch as they are directly contrary to generally received notions on the subject. As a basis the Professor takes medium beef—neither fat nor lean—as having a nutritive value of 100. He puts fat pork at 116, smoked beef at 146, smoked ham at 157, ordinary beef at 91.3, mutton at 86.6, butter at 124.1, cheese, from skimmed milk, 159, hen's eggs at 72.2. In fresh fish the highest place is given to salmon, 107.9; Spanish mackerel are estimated at 103.9; boned cod at 106, (above all fresh fish, save salmon); canned salmon at 107; and salt mackerel at 111.1. Oysters, supposed by many to be so nutritious, at 21.8; and lobsters at 50.3. A very satisfactory point in this estimate is that which is cheapest is the most nourishing. The exceptional nutritive character of smoked and dried preparations is due to the evaporation of moisture and compression of tissue. The enormous amount of nutriment in cheese explains the vast consumption of American cheese in England where one sees labourers eating it freely.

HUMOUR IN THE FAMILY.—Good humour is rightly reckoned a most valuable aid to a happy home-life. An equally good and useful faculty is a sense of humour, or the capacity to have a little fun along with the humdrum cares and work of life. We all know how it brightens up things generally to have a lively, witty companion, who sees the ridiculous point of things, and who can turn an annoyance into an occasion for laughter. It is a great deal better to laugh over some domestic mishaps than to cry or scold over them. Many homes and lives are dull because they are allowed to become too deeply impressed with a sense of the cares and responsibilities of life to recognize its bright, and especially its mirthful side. Into such a household, good but dull, the advent of a witty humorous friend is like sunshine on a cloudy day. While it is always oppressive to hear persons constantly striving to say witty or funny things, it is comfortable to see what a brightener a little fun is—to make an effort to have some at home. It is well to turn off an impatient question sometimes, and to regard it from a humorous point of

vlow instead of becoming irritated about it. "Wife, what is the reason I can never find a clean shirt?" exclaimed a good but rather impatient husband, after rummaging through all the wrong drawers. His wife looked at him steadily for a moment, half inclined to be provoked, then with a comical look, she said: "I never could guess countdrums; I give it up." Then he laughed, and they both laughed, and she went and got his shirt, and he felt ashamed of himself and blessed her, and then she felt happy; so, what might have been an occasion for hard words and unkind feelings, became just the contrary, all through the little vein of humour that crept out on the surface. Some children have a peculiar faculty for giving a humorous turn to things when they are reproved. It does just as well oftentimes to laugh things off as to scold them off. Laughter is better than tears. Let us have a little more at home.

DANGERS OF A CHILL.—The *Herald of Health* gives pointedly the results of cooling off too rapidly when one becomes heated by extra labor. It enumerates the following diseases as traceable to this cause: Rheumatism, consumption, Bright's disease, pneumonia, bronchitis, stiffness of the joints, wry neck, pleurisy, catarrh, etc. The following is the method of the evil: The coolness of the evening air is very refreshing to a labourer after a hard day's work in the hot sun, but it is as dangerous as it is agreeable. During the day his garments have been wet with perspiration, and if still damp or wet when the cool of the evening comes, he experiences a chilliness and arrest of further perspiration. The blood does not circulate freely near a chilled surface, and congestions or undue accumulations in internal organs are the consequences. From such congestions of important organs come arrest of secretion: the liver, for example, when engorged with blood, ceases to separate bile from the circulating fluids, and an attack of jaundice follows. Or congestion may occur in the respiratory organs, and pneumonia, bronchitis, or pleurisy may result. An arrest of the secretions of the skin or kidneys may terminate in inflammation of the joints, lumbago, sciatica, or some other rheumatic affection. Furthermore, diarrhcal affections so common in the summer season, are frequently caused by exposing the body to a cool current of air after having been heated, although they are usually ascribed to the eating of some food that is supposed to disagree with the digestive organs. While the latter is true in some cases, the most frequent cause is undue exposure of the body, especially at night, by going to sleep in front of an open window on a hot night, without sufficient covering, forgetting that it constantly becomes cooler toward morning; and so the surface of the body is chilled, and the blood retreated to the internal organs produces congestions that result in diarrhca, dysentery, etc., etc.

HYPOSULPHITE OF SODA IN ERYSIPELAS.—*Anthony's Bulletin* contains the following concerning the hyposulphite of soda as a remedy for erysipelas: "When erysipelas proceeds from a wound, it is more delicate to manage, and requires the best surgical skill; but when it is of the milder form, on the outside skin in the face or any other part of the body, proceed as follows: Take

of hyposulphite of soda any quantity, and make a saturated solution in a bottle of any convenient size—six, eight, or ten ounces. If the individual is a strong, hearty man, and the disease has got a good start, give your patient one tablespoonful every hour for twelve hours; decrease the dose, as the benefits become manifest, any one in three hours. It may cause diarrhca, but never mind, it will destroy any febrile symptoms. Twenty-four hours is generally sufficient to produce a decided change for the better, unless it has six or seven days' start, in which case it will take longer. The results are generally so wonderful that I have never known the remedy to fail. With an old person you may substitute a teaspoonful for tablespoonful, and once every two hours. You may put this down: that the sooner you can get a good quality of the soda solution into the body the sooner the trouble will be over. Now, for an outward application: Use equal parts of the soda solution and glycerine; saturate cotton flannel with the above, and lay on the part affected. Eat simple food—avoid all exciting food and drink; farinaceous diet is absolutely necessary. If you can bathe the part affected with the above solution, do so; then lay on the saturated cotton.

"Hypo is equally as efficacious in any poisons from insects or vegetables; old wounds in sores are healed by washing the parts in a solution of soda. It is also good in typhoid fever, carefully administered.

"Now, if a person has a form of erysipelas that is not so decided, but (say) chronic, let him take a teaspoonful every night of the solution, and the disease will be entirely removed, if kept up for a month. The disease seldom or never attacks a person the second time when eradicated by the soda treatment."—[This receipt may be very valuable, but a physician should be consulted—Ed. C. S. A.]

ANALYSES OF HAIR DYES.—The *London Lancet* had recently twenty-one "hair-restorers," "hair dyes," analyzed. Out of the twenty-one samples examined, no less than fourteen were practically identical in their nature. They contained sulphur in suspension, and also lead in varying, but always in very considerable quantity. Three of these preparations have American labels, the rest were English. The descriptions varied a good deal. Only one was plainly described on the label as poisonous, if taken internally, while many were described as "perfectly harmless," "free from injurious substances," and so on. The prices varied from 25 cents to \$1.50 per bottle.

Two more samples, one of them American, were found to contain lead and sulphur, but in a different form. The sulphur was present as hyposulphite, and, in fact, these preparations may be substantially initiated by adding hyposulphite of soda to a solution of lead salt. A white precipitate first appears, which dissolves in excess, and the solution so obtained does not give a precipitate with *iodide of potassium*. This is noteworthy, because in the handbill which accompanies one of the samples, purchasers are warned against the dangerous hair preparations which contain lead, as likely to lead to paralysis of the brain and insanity, and are directed to test all preparations with *iodide of potassium*.

In another sample, an American one, no free or loosely combined sulphur was found, but only lead, in considerable quantities.

Another of the preparations was contained in two bottles; in one of which ammonio-nitrate of silver, and in the other pyrogallol acid was detected. This, therefore, belongs to an entirely different class from the preceding.

The remaining three preparations analyzed were intended for lightening, instead of darkening the color of the hair. No substantial difference between these samples was detected. Each was found to contain a tolerably concentrated and slightly acidulated solution of peroxide of hydrogen. It is well known that this is the active agent in preparations of this kind. It can hardly be considered as poisonous, but its action on the hair is said to be injurious.

HOW PROPER OUR DIET.—Eating too much and too fast; swallowing imperfectly masticated food; using too much food at meals; drinking poisonous whiskey and other intoxicating drinks; repeatedly using poison as medicines; keeping late hours at night and sleeping late in the morning; wearing clothing too tight; wearing thin shoes; neglecting to wash the body sufficiently to keep the pores open; exchanging the warm clothes worn in a warm room during the day for costumes and exposure incident to evening parties; compressing the stomach to gratify a vain and foolish passion for dress; keeping up constant excitement; fretting the mind with borrowed troubles; swallowing quick nostrums for every imaginary ill; taking meals at irregular intervals, etc.

TABLE SALT AN APERIENT.—Physicians have for a long time known that common table salt is an efficient aperient in ordinary cases of constipation. In a lecture on a case of nervous affection, Dr. Weir Mitchell, of Philadelphia, said that he had recommended the patient to take each morning on rising a tumblerful of water—cold, to prevent nauseating—in which was dissolved a teaspoonful of table salt. "This simple aperient," the doctor adds, "I frequently employ in cases of constipation, and generally find it efficient. There is great advantage in starting the bowels and in keeping them in a soluble condition, particularly in cases of nervous disorder in women, as it sometimes clears up obscure points in the case, and at all events eliminates one source of error."

BRAIN POISONED BY TOBACCO.—A peculiar case of mental hallucination has just appeared in Battle Creek, Mich., in the person of a young man about 18 or 20 years old. He is a cigar maker by trade, and has been in the habit of smoking from 10 to 20 "green" cigars daily. He has not drunk liquor sufficient to produce delirium, and yet he is a raving lunatic, and suffers all the horrible phantasmagoria that pertain to the fully developed tremens. He has worked in and used tobacco ever since early boyhood. Of late years he had used it extensively, principally in strong cigars; and it is supposed that the nicotine has so poisoned and shattered his mind as to partly paralyze it, thus producing the disorder. He has been taken to the insane asylum at Kalamazoo for treatment.

EFFRONT OF SEA-WATER IN THE EAR.—As the season for sea-bathing is approaching, it is timely to talk of a possible ill effect of the salt water. If you don't wish to run the risk of becoming deaf, take a handful of cotton along with you, and when you go in bathing, put plugs of cotton in your ears. This may save you from ear-ache and perhaps from more serious trouble. Dr. Samuel Hoxton, surgeon-in-chief to the New York Ear Dispensary, in a recent communication to the *Medical Record*, estimates that a thousand people of New York city are sent to their physicians, to be treated for ear diseases, every year, whose trouble has arisen from getting water in their ears while bathing, or from catching cold at such times by exposure or neglect.

It appears from the doctor's researches that salt water is peculiarly irritating to the delicate structures of the inner ear. Very cold water of the freshest kind may, however, be equally harmful, and there is a short list of cases, resulting from the Russian bath, two of the patients being themselves physicians. A few instances are cited where the trouble came from using the so-called "nasal douches;" water having penetrated to the ear by the passages from the back of the mouth. But these are unimportant compared with those whose trouble has come from salt-water bathing. In all of 65 of the last-named cases inflammation occurred; in 37 it was acute. A variety of subsequent damages may accrue when the trouble spreads; permanent deafness is not among the least of these and life itself may be endangered.

Surf-bathers are especially exposed to such injuries, since a breaker may strike them on the side of the head and drive the water into the ear; the same result may ensue if the bather gets a sudden mouthful from an unexpected wave, the water then being forced through from the mouth to the inner ear. Man, the doctor thinks, is not naturally amphibious. Animals fitted for aquatic life are provided with various arrangements for keeping the water out; seals, for instance, have a movable membrane in the ear, which closes and shuts out fluid. The muscles of the water-shrew are competent to shut the ear-passages. People who are blessed with very small openings of their ears run the least risk in bathing. A man should never dive, says the doctor, if he wishes to preserve his hearing. When in the surf, he should take the wave on his chest or back, "closing his mouth and nostrils;" though how a man can close his nostrils, the doctor does not state. But the pledget of cotton for the ears is essential and every bather should be provided with it.

THE NECESSITY OF PLenty OF SLEEP.—A writer in *Scribner*, considering "The Relations of Insanity to Modern Civilization," speaks of the loss of sleep as a prominent cause of insanity. He says: "During every moment of consciousness the brain is in activity. The peculiar process of cerebration, whatever that may consist of, is taking place; thought after thought come forth, nor can we help it. It is only when the peculiar connection or chain of connection on one brain-cell with another is broken and consciousness fades away into the dreamless land of perfect sleep, that the brain is at rest. In this state it recuperates its exhausted energy and power, and

forces them up for future need. The period of wakefulness is one of constant wear. Every thought is generated at the expense of brain-cells, which can be fully replaced only by periods of properly regulated repose. If, therefore, these are not secured by sleep; if the brain, through over-stimulations, is not left to recuperate, its energy becomes exhausted, debility, disease, and finally, disintegration supervene. Hence, the story is almost always the same; for weeks and months before the indications of active insanity appear, the patient has been anxious, worried and wakeful, not sleeping more than four or five hours out of the 24. The poor brain, unable to do its constant work, begins to waver, to show signs of weakness or aberration, hallucinations or delusions hover round like floating shadows in the air, until finally disease comes, and

"plants his legs

Against the mind, the which he pricks and wounds
With many legions of strange fantasies,
Which in their throng and press to that last bound
Confound themselves."

HUNGER AND APPETITE.—Dr. Fournié, the French physiologist, distinguishes between hunger and appetite by describing the former as a general desire for food, no matter of what kind, while appetite is the feeling of pleasure which results from the gratification of that desire. This is proved by the fact that often, when we are not hungry, appetite comes while we are eating or at the mere sight and smell of some favorite dish. The question as to where the seat of the feeling of hunger is, has been much discussed by physiologists. Loven asserts that it is not known at all, while Longet and Schiff believe that it is diffused through the whole body; but this latter view is disproved by the fact that in some diseases people waste away without ever having the slightest feeling of hunger. Dr. Fournié's theory is this: When meal-time arrives the glands of the stomach become filled and distended, and ready to accomplish their function of digesting the food. But if food is not introduced, they remain in this distended condition, and the result is the uneasy feeling we call hunger. Excellent proof of this theory is afforded by the habit of some Indians of eating clay to appease hunger. The introduction of the clay is followed by the discharge of the glands, and the sensation of hunger is arrested.

DRUG TAKING MANIA.—Women are rather more given to drug taking than men, though both are bad enough in this respect. Here is what one of our most eminent physicians has to say on this subject:

"Dr. Holmes has said that it would be well for the world if most medicines were thrown into the sea; that it might be bad for the fishes, but it would be better for mankind. For this unasked and impertinent suggestion he has received a good deal of orthodox censure, which I have now to share with him, for I am of the same opinion as Dr. Holmes, and this opinion has long been a part of my Christian faith. That the major part of the world does not agree with us is plain. Indeed most people seem to think that the chief end of man is to take

medicine. Babies take it in their mother's milk; children cry for it; men and women unceasingly ask for it. Shrewd men have taken advantage of this instinct, and in most civilized nations it is to-day one of the chief articles of manufacture and commerce. It is one of those things which are never permitted to be out of sight; but are thrust upon you in the nursery, in the streets, upon the lamp posts and upon the curbstones, along the highways, from the rocks which border the rivers; the medicine chest follows you at sea, as if the sea itself, a vast gallipot of nauseants, were not enough. One might naturally suppose that the supply would at length exceed the demand; but it does not. Everywhere the people are stretching out their arms and begging for medicine, blessing him who gives and cursing him who withholds. They believe, in their simplicity, that if medicine does no good, they can at least do no harm. They imagine, also, that there is a medicine which may be regarded as a specific for every human malady, and that those are known to science, and that therefore we have the means of curing all diseases; but the people imagine a vain thing. Whatever medicine is capable, when properly administered, of doing good, the same medicine is equally capable, when improperly administered, of doing harm; and drugs often substitute a malady more serious than that which they were intended to cure. The Irishman said his physician stuffed him so with medicine that he was sick a long time after he got well.—Dr. Frank Hamilton.

DEAFNESS IN SCHOOLS.—Dr. Gallé has recently read a paper to the Society of Public Medicine of France upon the necessity of giving more attention than has been heretofore bestowed on the condition of the hearing of children in attendance at schools. As a rule, unless a child shows a marked degree of deafness, no attention is given to this matter by teachers, either in assigning seats to the scholars, or in making allowances for their failure to understand questions put to them; and in this way a child often gets the reputation for being stupid, sullen, absent-minded, backward in his studies, etc., and may be even punished for his faults, when the real trouble is that he has not heard distinctly the teachings or the commands addressed to him.

The proportion of children of the school age who are hard of hearing is much more considerable than is usually supposed, ranging from 10 to 25 per cent. of all children in schools, so that there is a fair probability that in every class of ten pupils there will be at least one who is affected in this manner. For this reason it is very desirable that every child on his entrance in school should be examined in reference to the condition of his hearing. If it is found that he does not hear readily at a distance of ten feet, when he cannot see the lips of the speaker, he should either be placed in a separate class, or at a desk very near the teacher. If he can hear ordinary conversation at a distance of ten feet, but not distinctly at eighteen feet, under the same conditions as before, he should be placed in the row of desks nearest the teacher without reference to his position in the class. A little attention to this matter on the part of teachers and superintendents seems highly desirable.

To Our Readers.

We stated in our first number that the continued monthly publication of this journal would depend upon the support it obtained from the public. Although we did not print a March number, we make ample amends now, by giving a double number—March and April—with four pages of lithographed illustrations, besides twelve architectural plates to clergymen and school teachers. The members of the Association, we feel confident, will appreciate the efforts we are making to publish, for their benefit, a first class sanitary journal, for it is our aim not to be surpassed by any journal of a similar character published in the Dominion, and we trust every member of the Association will make it a philanthropic duty to make known its worthy objects to others, and obtain new members, for by so doing, in a very short time, its success would be established on a firm basis.

Private interests and jealousies have been working to arrest the progress of the Association by endeavouring to get up an Ontario Sanitary Association and a Quebec Société d'Hygiène, neither of which are necessary, as the Canadian Sanitary Association embraces all classes, creeds and races. It is said that these two are linking their interests together to obtain a Government subsidy, but even if successful it will not interrupt the steady progress of the Canadian Sanitary Association. Although the editor and publisher of the Dominion Sanitary Journal has already received from the Federal Government, we understand, during the past year, \$1,000, and also a large sum from the Provincial Board of Health to assist him, yet what has he been able to show of actual work done? In three month's time, without receiving any pecuniary assistance from any other source than the subscriptions of our members, we have done more, in the right direction, towards furthering sanitary education and sanitary reform than any sanitary journal heretofore published in Canada, and it is our intention to spread this influence and teaching from town to town throughout the land.

It certainly would be a great injustice to the Canadian Sanitary Association, which was inaugurated under the Canada Medical Society, and holds its annual meeting at the same time and place as the latter, and which has prior and stronger claims for Government assistance than

that of any private gentleman or local sanitary association—not yet even formed—if money were granted to assist them, and the stronger claims of the Canada Sanitary Association, which is of a National character, passed over, particularly when the latter is in full operation, and would be able to show to parliament, at the end of the year, how much practical work it has accomplished throughout the Dominion.

Points on School Hygiene.

BY A. F. BLAISDELL, A.M., M.D.

We propose, in a series of articles, to call the attention of the readers of the *Canadian Sanitary Journal* to a consideration of the most important and practical points on school hygiene, and to discuss those principles which may guide us to a better understanding of such matters as the location and structure of school buildings, their arrangements to secure proper heat and ventilation, the spread of contagious diseases, near-sightedness, and various other topics usually discussed in this connection. It will be our aim to add a few words of encouragement and proffer a little help, to those teachers who live in hope, that, sustained by a more emphatic voice of public opinion, and by more specific and stringent statute laws, they may be enabled and encouraged to teach and apply in their school rooms the more essential principles of physical health; and this, too, with the hearty co-operation of parents and others interested in the physical health of Canadian school-children.

The last decade has witnessed many important changes in the theory and practice of education. Many of them have been weighed in the balance and found wanting; others have been improvements on the old order of things, and their claims have been accepted for what they were worth and become incorporated into the public school system. While so much attention has been paid during the last few years to matters of public hygiene, it is natural that school health, one of the most important branches of the subject, should also attract considerable attention. Such has been the fact. We should be surprised if we took the pains to compile a list of the literature which has been published during the last ten years on this particular branch of public health.

A most valuable contribution to the subject of school hygiene made during the past year is a unique series of statistics compiled by a committee of the Cleveland (Ohio) Board of Education. A thorough and careful canvass was made, in a statistical form, of a great number of pupils of the Cleveland High School, with a view of ascertaining, first, why so many who entered the course dropped out before it was finished; and, secondly, why so many, especially the girls, apparently suffered in health beyond the usual limits of life during their high-school days. The facts, briefly stated, were that twenty-five per cent. of the girls and eighteen per cent. of the boys in the high school had been withdrawn from it on the score of health; that of one hundred girls who entered on a high-school course, 35 per cent. of whom were in good health, 50 per cent. graduated in "very poor" health, 35 per cent. in "poor," and 17 per cent. in "tolerably good" health,—none of whom, it is to be noted, with robust stamina. Since graduation 35 have had fair health, 38 live in various stages of poor health, and 2 have died. The list of the various forms of ill-health among the girl-pupils showed that 75 per cent. had head-aches, 52 per cent. back and side-aches, 44 per cent. had nervous disorders, and 62 per cent. suffered from the manifold forms of functional derangements.

Contrary to common belief, these Cleveland statistics show that ill-health among pupils increases directly with the amount of time spent in study beyond school-hours, and inversely with the amount of recreation. In other words, that the nervous exhaustion and ill-health so common with our school children is caused, not so much by the mild dissipations and careless habits respecting the dietic functions of the body, as by over-study or persistent brain-work. "While there is no denying," says the writer of the Cleveland report, "that social dissipation is bad, it is less of an evil than over study." The writer goes on to say: "Of course we do not seek to draw positive and sweeping conclusions from so few cases, but they show a certain drift, and they show also the necessity of further investigation,—and investigation not confined to one city only. We are trying to bring out a systematic registration of the pupils in our public schools as to their physical condition from time to time. Such a registration would go far, in a year or two, to settle many questions now *sub judice*."

Educational Notes.

RULES FOR TEACHING.

(Translated from *Diesterwey*.)

First.—WITH REGARD TO PUPILS.

1. Teach naturally.
 2. Regulate your teaching by the natural grades in the development of the growing individual.
 3. Begin teaching at the stand point of the pupils; guide them from outward steadily and thoroughly, without interruption.
 4. Do not teach what is in itself nothing to the pupil when he has learned it, nor will be nothing to him at some future time.
 5. Teach intuitively.
 6. Proceed from the near to the remote, from the simple to the complex, from the easy to the difficult, from the known to the unknown.
 7. Follow in teaching the elementary method (inductive from particular to general, not the family-scientific method), deductive from general to particular.
 8. Follow, above all, the psychological aim or the psychological and the practical at the same time.
- Rouse the pupil through the same topic presented from as many points as possible. Combine, especially, knowledge with ability, and exercise knowledge until it is shaped by the underlying train of thought.
9. Teach nothing but what the pupils can comprehend.
 10. Take care that the pupil retains all that he learns.
 11. Do not simply train and polish; education and discipline are not for this, but to lay the general foundation on which to build the character of the individual, the citizen and the nation.
 12. Accustom the pupil to work; make it for him not only a pleasure, but a second nature.
 13. Recognize the individuality of your pupil.

Second.—WITH REGARD TO SUBJECT TAUGHT.

1. Apportion the matter of each subject taught

from the stand point of the pupils, and as indicated above, according to the laws of his development.

2. Dwell especially on the elements.
3. In the establishing of derived principles, refer frequently to the fundamental ideas, and deduce the former from the latter.
4. Divide each step into definite and little wholes.
5. Point out at each step some part of the following, in order that the curiosity of the pupil may be excited without being satisfied; proceed so that no essential interruption shall arise.
6. Divide and arrange the subject matter, so that where it is practicable in each succeeding step of the now the foregoing may appear.
7. Connect those subjects which are especially related.
8. Go from the thing to the sign, and not the reverse.
9. Be guided in your selection of a method by the nature of the subject.
10. Arrange the subject taught according to a special scheme but consider constantly all sides of it.

Third.—WITH REGARD TO THE OUTSIDE CIRCUMSTANCES OF THE TIME, PLACE, ORDER, ETC.

1. Follow up subjects with your pupil successively, rather than together.
2. Take into consideration the probable future position in the life of your pupil.
3. Teach with reference to general culture.

Fourth.—WITH REGARD TO THE TEACHER.

1. Strive to make your teaching attractive and interesting.
2. Teach with energy.
3. Make the subject to be learned palatable to the pupils; and require, above all, a good utterance, sharp accent, clear statement, and thoughtful arrangement.
4. Do not stand still.
5. Rejoice in development for progress; first for yourself; second, for your pupils.

Notes.

Successful experiments have been made in Coblenz, in Germany, into the practice of substituting ravens for carrier pigeons. Ravens being stronger and bolder birds than pigeons are less liable to be attacked and destroyed by birds of prey.

Gas-making by the various corporations in the Birmingham district (England) appears to be a very profitable business. Tipton, which up to the last nine months has been losing money, has made a profit of \$12,000; Walsall made a profit of \$40,000 last year; West Bromwich of \$34,000 and Limobank of \$16,000.

Now pests are appearing to consume our apples. The apple maggot (*Trypeta Pomonella*) leaving the outside of the apple fair to look upon, honeycombs its interior until nothing is left.

M. E. Payrasson has called attention to the danger following the use of old-ware in cases of infectious disease. It is liable to be marred by cracks and flaws in which germs may lurk. Only glass or porcelain should be trusted.

School Notes.

—Dr. Rush, according to the Sanitarian, used to tell his students that no physician should be permitted to engage in practice unless he had served six months in the kitchen, so important did he consider a knowledge of the art of cooking. This prompts us to say that a teacher should be permitted to engage in practice unless he has served at least twice six months in a normal class, so important do we consider a knowledge of the art of teaching.

—Given a room, a teacher, and fifty pupils; but is not necessarily a school. All the conditions are there but one, and that is co-operation. The *Indian School Journal* puts it thus: "If the teacher tries only so hard to teach, and does not secure the co-operation of the pupil in trying to learn, there is no real school. There may be methods, perfect in theory; order the hours the clock tick and the pin drop; examinations that answer perfectly every question; and yet there is no school unless between teacher and taught there is a mutual play of love, sympathy, and good will. Who of us, if weighed in the balance, would be found teaching, not a school, but an aggregation of little ones?"

-- Don't look back. The people who are for ever looking back never move forward. It is a law whose workings you may discover everywhere. In science, men who cling to the past never map out any new discoveries. In art, men who are satisfied with past endeavours never become great artists. In commerce and in statesmanship the progressive men are the men who look ahead, not back. *We must not look back; we must look ahead and keep moving.*—Rev. J. R. Paxton, N. Y.

THE MINOR MORALS.—The children who learn to admire their well-lighted, well-proportioned, well-decorated school-rooms, will soon learn to be dissatisfied with mean, dirty, unbecoming homes; and personal attire, cleanliness, and neatness, as being most directly under the control of the pupil, will be the first objects to which their improving propensities will be directed. In short, the right kind of school-room is like moisture and sunshine to the moral germs of the mind; and so soon as the awakening life becomes a part, so to speak, of the individual consciousness, satisfaction can only be found in progress and improvement.—*Ed. News, Eng.*

ACTION OF WATER AND SALT SOLUTIONS ON ZINC.

The results of a series of experiments made upon this subject by Snyders may be given briefly as follows:—

1. Zinc decomposes salt solutions, concentrated as well as dilute, without access of air or oxygen. Hydrogen is liberated, and oxide of zinc is formed.
2. The solubility of oxide of zinc in the salt solutions hastens and aids the reaction.
3. Oxide of zinc dissolves in solutions containing but 1 per cent. of salt, or even of more dilute. The solubility in different salts is different, being greatest in ammonia salts. It seems to be due to the formation of free alkali, inasmuch as it can exist in solution with a double zinc salt at certain temperatures and by certain concentration. Zinc carbonate and hydrate are not soluble in the carbonates. The solubility of zinc oxide increases as the temperature and concentration increase.
4. If the salt solution is saturated with oxide of zinc the decomposition does not go any further, but the zinc oxide formed subsequently remains undissolved. But few experiments have been made in this direction, and others will be instituted by the same person.
5. With access of oxygen free from carbonic acid the oxide dissolves more rapidly because the zinc oxidizes at the same time. The salt aids this oxidation, not directly, but by keeping the surface clean. This, too, requires to be substantiated by further experiments.
6. The solvent action is somewhat retarded by the carbonic acid of the air, owing to the formation of some basic carbonate upon the surface of the zinc.
7. The decomposing and solvent action is greatest in the case of the chlorides and with potassium sulphate, weaker with the nitrates of the alkalies and of barium, and for magnesium sulphate.
8. Zinc does not decompose solutions of alkaline carbonates or sodium phosphate in the absence of air

With access of air but little zinc is dissolved by one per cent. solutions, because the zinc is protected by the carbonate or phosphates formed by the reaction. In dilute solutions somewhat more zinc oxide is dissolved.

9. The action increases with increase of temperature; at the freezing point of water it is very slight.

10. Solutions of ammoniacal salts take up more zinc than the solutions of the salts of the fixed alkalies. The zinc remains bright in these solutions, and nothing separates, even if oxygen or air is permitted to enter.

11. Hard water does not act upon zinc, even with large percentages of chlorides and sulphates. Soft water dissolves more zinc in proportion as the amount of chlorides, sulphates and nitrates exceeds that of the carbonates and phosphates.

The poisonous nature of zinc salts, even in small doses, renders the above research of more than ordinary practical research.

Book Notices.

THE FIELD OF DISEASE—A Book of Preventive Medicine—By BENJAMIN WARD RICHARDSON, M.D., LL.D., F.R.S., Fellow of the Royal College of Physicians, and Honorary Physician to the Royal Literary Fund. Published by Henry C. Lea's Son & Co., Philadelphia, Penn.

We acknowledge the receipt of the above very valuable work by one of England's greatest Sanitarians.

Dr Richardson, in his preface to his work says: "I have written this work for the members of the intelligent reading public who without desiring to trench on the province of the Physician and Surgeon or to dabble in the science and art of medical treatment of disease, wish to know the leading facts about the diseases of the human family, their causes and prevention. Any one therefore, who opens this book with the expectation of finding in it receipts and nostrums, will not have that expectation fulfilled, and will discover reference to no remedies except such as are of a purely primitive character. The book is octavo size, contains 737 pages and is well got up.—It treats of *Diseases as unity with variety of phenomena; General Diseases affecting mankind; Local Diseases; Diseases from natural accidents; ACQUIRED DISEASES: Acquired Diseases from Inorganic and organic poisons; Acquired Diseases from Physical Agencies, Mechanical and General; Acquired Diseases from Mutual Agencies, Moral; Emotional, and Habitual; and a PRACTICAL SUMMARY OF THE ORIGINS, CAUSES AND PREVENTION OF DISEASE.*

WATER POLLUTION, WELLS, and SANITARY SUGGESTIONS.—By Irving A. Watson, M.D., Secretary of the State Board of Health, Concord, N.H., United States.

We are indebted to this gentleman for two valuable pamphlets on the above mentioned subjects which are of very great importance to the community, and we shall endeavour, from time to time, to disseminate the useful information contained therein to our readers, and thus fulfil the object for which he published them.

BIENNIAL REPORT ON THE STATE BOARD OF HEALTH MARYLAND, JANUARY 1884.

We are in receipt of this valuable Report and shall make good use of the important information contained therein, particularly the valuable instructions given in the appendix for the prevention of Diseases,

HEALTH AND HEALTHY HOMES.—By Robert Sproule, M.D., B.A.

This is a short work on Domestic and Public Hygiene of a similar character and title as one noticed in our February number, by George Wilson, M.D., United States.

Dr. Sproule's little work has been published for the instruction of residents in Canada, and should have a place in every household.

COMPULSORY VACCINATION IN ENGLAND.—A pamphlet by W. Tibb, published by E. W. Allen, 4. AveMaria Lane, E.C.—London, England. Price one shilling sterling.

This work is opposed to Vaccination, a subject which, not being of the medical profession, we are not competent to offer our opinion as to its merits or otherwise. We therefore give the name and address of the publisher, from whom, those interested in this important subject can obtain the work.

THE EXHAUST VENTILATOR.

We have received a pamphlet from the Exhaust Ventilator Company, manufacturers of Blackman's Power Ventilator or Exhaust Wheel.

In a future number we purpose giving a

description of this method of ventilating Public Halls, Banks, Theatres, and Manufactories, and in fact all buildings where motive power can be obtained.

HEALTH AND HOME: A Journal of Sanitary Science and Home Hygiene.

We have received the first number of a new periodical with the foregoing title.

It is to be edited by Fred, N. Boxer, Civil and Sanitary Engineer, of this city, who is well known as an active and advanced sanitarian.

Mr Boxer has already done good service to Montreal by exposing the entire absence of proper system in connection with the Health Department of the City, and by insisting, as a member of the Sanitary Board, upon the necessity for defining in the least manner the duties of all of its officials. He has also been largely instrumental in the formation of the "Canadian Sanitary Association," of which he is the Secretary, and of which this publication is to be the official organ. It is not to be exclusively scientific, but will contain to a considerable extent reading matter that will render it suitable for general circulation. It is to be hoped that the dissemination of literature of this nature will serve to arouse in the profession and the general public increased interest in the hygiene of themselves, their homes, schools and public buildings.

The Journal itself is very neatly gotten up, and the contents are suitable and varied, and the topics well chosen. We wish a long and successful career to "Health and Home".—*Editor Canada Medical and Surgical Journal.*

HEALTH AND HOME: A Journal of Sanitary Science and Home Hygiene.

We have received the first numbers of this new Journal, edited by F. N. Boxer, Civil and Sanitary Engineer. It is the official organ of the Canadian Sanitary Association, and presents a very neat appearance. This new Journal has a wide field into which it may extend its usefulness, for sanitary matters are little understood and still less appreciated by the mass of our population. Its Editor has an excellent record as a member of the Montreal Board of Health, and is well qualified for the position he occupies.—*Editor Medical Record.*