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THE

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SEWERAGE AND SEWER VENTILATION.

BY WM. OLDRIGHT, M.A., M.D.,

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In a recent number of the "SANITARY JOURNAL" appeared an extract from "La France Medicale," in which, after speaking of a visitation of typhoid fever, (I think), the writer proceeds to say that this, like some other outbreaks, tells trumpet-tongued of the necessity of doing away with sewers—which are nothing else than elongated cesspools, and resorting to a rigid dry-earth system, with frequent removals. Opinions such as this show that there is plenty of room for the discussion of the question of drainage; and even for taking up some points which one might almost suppose too well and too commonly known to require notice; its importance in a practical point of view being such as to demand that it should be thoroughly understood in all its details.

It is not my intention in this paper to enter into a discussion of the various theories of the causes, and mode of propagation, of certain forms of disease, nor to quote statistics to show the value of the various systems of dealing with sewage matter; but rather to point out some of the essentials of a proper system of drainage.

The popular idea of a drain seems to be some kind of a subterranean passage into which an unlimited supply of fluid may

be passed without returning in substance to its point of departure; and generally no consideration is given as to whether it passes to a safe and proper place, without leaving on its way some of its noxious matter, or returning it under an altered, but still noxious form. It is needless to say here that these points must all be attended to, as well for immediate sanitary efficiency as with a view to the permanence and self-action of our drains. Before entering upon the subject of construction of a system of drains there are certain

PRELIMINARY CONSIDERATIONS

to be taken up, into which I do not intend to enter in detail, as yours is not an engineering journal, but to which I may briefly allude.

1. The *Area* of the locality will have to be considered in order to provide sufficient sewage accommodation, and yet not so much as to impair the flushing operation of surface water by too extensive a distribution.

2 The *Rainfall* will have to be considered with a similar object in view, and one must in addition consider whether the fall is equable or varying.

3. The *Geological and Physical* characters of the soil will also have a bearing on this question; and in addition bear upon the question of the care that must be exercised in building our drains, shifting and soakage of sewage into the soil being much more liable in porous than clay soil.

4. The bearing of *Water Supply* will be self-apparent.

5. As also the *present and prospective population.*

6. The nature of the *present sanitary appliances* must be considered.

7. And lastly the facilities for a proper *outfall* and *final disposal* of sewage: a most important and too much neglected consideration.

Viewed as to its objects we may make the three divisions of *surface drainage, subsoil drainage,* and *removal of the waste and excrementitious products of houses.*

As this latter division is the one in which we are most immediately interested as householders, and over which we have most control as individuals, I shall first address myself to it, and shall at once proceed to consider the

VENTILATION OF HOUSE DRAINS,

inasmuch as there are some points in this connection which I want to overtake in this number of your journal. I am aware

that in so doing I am departing from the more natural order of my subject.

It has been well remarked that "unventilated sewers are more dangerous than steam-boilers without safety valves;" and yet how very little attention do we find given to this matter; and into what obloquy does this neglect sometimes throw the whole matter of sewerage:—witness the extract we have quoted from "*La France Medicale*:" In an English town typhoid fever broke out in one of a row of houses; some houses of the row were connected with a common drain, others were not. In all of the houses so connected the fever broke out, in the others it did not. This was looked upon as a conclusive practical argument against sewers, instead of being considered as an argument for having them so constructed that air laden with the emanations from one cannot blow through the others either into adjoining or remote houses; for it is found that with an unventilated system of sewerage, the higher, and once more healthy, districts of a city become the more pestilential.

Some noxious forms of sewer gas are not *always* to be detected by the nose, and hence are more subtle in their action. Among the gases more commonly evolved from sewers, I may mention sulphuretted hydrogen, carbonic acid, carburetted hydrogen, nitrogen and ammonia.

The *causes* operating in the evolution of sewer gas, besides those operating more generally, such as the natural *diffusion of gases*, are:—

1. *Difference of temperature* between sewer and external air, causing a rapid interchange under the laws of diffusion of unequal weights of air.

2. *Upward draught* in houses (caused in this way) acts as a ventilating shaft, in the wake of which the sewer air will follow if allowed.

3. The *expansion force* created by the sudden accession of heat in the drain, viz., by pouring down hot soap suds or boiling water. Air expands 1-491 of its bulk for each degree of heat. If then the temperature of the air in the drain be raised from 50° to 150° the result would be a pressure of 6 7-10 ft. head of water, enough you will see to force any trap, unless some other means be provided for its escape. And this raise of temperature is not at all an improbable one.

4. The *ebb and flow* of water in the drain is in itself an expulsive force. When water is poured into a drain it must, of course, displace its own bulk of air, (less the small amount

gained by compression). Out of which end of the drain, (supposing that it has no ventilator), this air shall pass will be determined by circumstances; it passes most readily where it meets with least resistance, always giving preference to an upward direction owing to the greater gravity of the water. Hence, if the upper end be untrapped and the drain not running (which it seldom will) full bore the greater portion of sewer air will escape into the house. If it be trapped and the lower end open the air will be forced out at the lower end. But suppose that the water in the main sewer is above the level of the mouth of the house drain, and a considerable body of water be poured in, it must displace the air in an upward direction, and force the trap unless there be some other vent. This condition often exists; and I will show hereafter why it is desirable that house drains should not open at the highest portion of the arch of the sewer. This ebb and flow acts like a double acting piston or syringe.

5. It also causes an increased generation of gas by the constant *evaporation* arising from the alternate wetting and drying of sewage on the sides of the drain.

6. Direct *afflation* through the sewer system is another operating force; the wind blowing up through the mouths of the main sewers, unless they are secured by flap valves at their mouths. A Southerly wind will have this effect in Toronto.

(To be continued.)

ON THE DISPOSAL OF EXCREMEMT AND SEWAGE AS AFFECTING THE WATER SUPPLY.

"It is highly probable," says Dr. Parkes, "that to barbarous and inefficient modes of removing the excreta of men and animals we must partly trace the great prevalence of disease in the middle ages, and there is no doubt that many of the diseases now prevailing in our large towns are due to the same cause. There is no want of evidence to prove the last clause of the above quotation. And that many of the diseases prevailing in the present age in our large town, and in our small towns too, are caused by the barbarous and inefficient modes of disposing of excreta, chiefly human excreta, or in many instances of not disposing of it at all, is a disgrace to our civili-

zation, of which we are so apt to boast. There are marked signs of improvement however in this respect, and probably no subject coming within the scope of sanitary science is attracting more attention at the present time than that of the disposal of excreta and sewage, and certainly there is no subject of greater importance as regards Public Health.

It is quite evident, it seems to me, that if we wish to prevent decimation in our fair country by typhoid fever, and other diseases arising from impure water, we must either adopt some more general and efficacious method of removing from near our dwellings and disposing of excrement, or otherwise obtain our water supply for domestic purposes from artesian wells. It is well known how easily excretory matters find their way long distances through soil, especially when this is porous. Accumulations too of such matters, as in privy pits and barn yards, are not unfrequently situated in the direction in which water-supply springs set. We find a very large proportion of cases of typhoid fever may be traced to water contaminated with fecal matter; indeed this sort of contamination appears to be the principal cause of the disease.

In the Societe de Medecine Pratique, of Paris, a discussion has recently taken place on epidemics of typhoid, from which it seems that in France as in Great Britain and on this continent the belief is becoming universal that the prominent cause of this disease is the impurity of drinking-water. "Instances" (quoting from the *Medical Press and Circular*,) "have of late years been so multiplied of the evil effects of the communication of sewage with drinking-water, that there are probably but few physicians who now refuse to admit that this is the chief cause of the occurrence of epidemics of typhoid fever."

At the Society of Arts, London, Eng., in May last, Mr. Jabez Hogg delivered a lecture on "River Pollution, with special reference to the Impure Water Supply of Towns."* The lecturer maintained that by no power of filtration conducted on a large scale can any of the dissolved animal impurities be removed, even the minute animal and vegetable miscroscopic forms—spores, seeds and ova,—easily passing through most of the filters in ordinary use. He recommends that artesian wells should be sunk far out of the reach of sewage contamination; "having recourse to the large supplies of water stored up in the deepest recesses of the earth.". The attention of many is of late being turned to this source of water supply. But even if we obtain water from such sources, if the excrement is not

* Medical Times and Gazette.

properly disposed of, we shall have air contamination, which though seemingly not nearly so pernicious as water contamination, is undoubtedly very injurious to health.

I now propose to make a few observations, first, on the different methods of *removing* excreta from the immediate vicinity of dwellings, and then, on the manner of *disposing of* or *utilizing* the excreta and sewage.

The different modes of removal are conveniently divided into 1st., The Water-Carriage Method, and 2nd., The Dry Methods.

The removal of excreta by means of the water used for domestic purposes, especially if there is abundance of water at such an elevation as will give considerable force, and an adequate fall for a free out-flow, is the most expeditious and cleanly, and, as channels of some sort are necessary for the waste water, it is certainly the most economical method. And very pretty to the mind's eye is a large town or city with an almost inexhaustible source of supply of pure water above it, from which streams are more or less constantly flowing through numerous pipes into and through our dwellings—through our sculleries and water-closets, and even laving our bodies, removing in short all impurities from around us and forcing them, if not a safe distance away in all cases, at least out of our sight. But this system of removal, unless every part connected with the waste-pipes and sewers, and even with the supply pipes, is of the most perfect construction, and the sewers properly ventilated, and constant vigilance is exercised in order to maintain this perfect condition, instead of preventing disease, it will be almost certain to furnish very ready means for its development and propagation; as by accumulations of excreta, and their consequent fermentation, and by the escape of poisonous gases into dwellings, or by reason of these gases, or even of the sewage itself, finding their way into the water of cisterns, or of contamination of the soil by leakage. Furthermore, the greatest difficulty in this plan of removal is the proper disposal of the large amount of sewage—of the largely diluted excreta, after it has flowed from the sewers. But more on this point further on.

The *dry methods* of removal are, that of admixture with deodorizing substances, as ashes, certain manufactured deodorizing powders, charcoal, and dry earth; that of removal without admixture; and the pneumatic plan.

The pneumatic system for the removal of excreta was briefly described in the third number of the SANITARY JOURNAL. In

this, the excreta fall into a straight, smooth, earthenware pipe, from which they are extracted daily, or every night, by exhaustion of the air. It has not been very extensively adopted, but is believed to be best suited to low lying towns where the water-carriage system cannot be well carried out. It is said to have proved a decided success in Amsterdam, though others have denied this and declared it to be impracticable.*

The plan of removing excreta without admixture, except perhaps with ashes and household garbage, is carried on in some towns. In Glasgow, according to Parkes, the excreta from one part of the city, containing 80,000 inhabitants, are removed every day in this form, and sent long distances, "at a profit." In some towns on the continent of Europe the excreta are removed in boxes every evening. If the removal can be made daily, says Parkes, the plan is a good one. Earth, ashes or some dry material is sometimes previously inserted, and should be always, as it is very essential, to prevent the contents adhering to the boxes.

The method of admixture of excreta, as soon as voided, with deodorizing substances, especially dry earth and charcoal, and frequent removal, appears to be, from a sanitary view, superior to all others. A number of deodorizing powders have been manufactured for this purpose, but not one of them is equal to charcoal or dry earth.

There is no better deodoriser than charcoal. Animal charcoal is best, but is too expensive. Charcoal is manufactured from peat and from sea-weed in some countries, and the quantity required for disinfecting being only from one-fourth to one-eighth that of dry earth, it is much more convenient. In the plan proposed by M. Stanford, and now in use in Glasgow, in which sea-weed charcoal is employed as a deodoriser, and when it has become impregnated with excrement, the mixture is re-carbonized in a retort, and the carbon again used, the distilled products, it is said, are sufficient to pay costs, and even give a profit. In Canada, might not abundance of charcoal be manufactured from the refuse of timber, at a sufficiently cheap rate?

The happiest proposition of all as regards the disposal of excrement appears to be that put forth some years ago by the Rev. Mr. Moule, namely, to deodorize the excrement at once with nature's great deodorizer—dry earth. It is not a little singular that it should be only about the middle of the nineteenth century of the Christian era that this certainly

*Medical Times and Gazette, 1873.

most natural of all methods of treating human excrement should have been brought into use, after having been apparently unthought of for many hundreds of years; it is perhaps less singular, when we bear in mind the manner in which the children of Israel were directed by Moses to dispose of their fecal matter (Deut. xxiii. 12, 13), that the modern proposal to use dry earth for this purpose should originate with a minister of the gospel.

Instinct enables animals to know and follow the laws of nature, when reason cannot discern these laws, and the instincts of the higher animals, next to man, especially the carnivora, guide them to bury their excrement in the ground, reasoning, civilized man, in the majority of cases, leaves his to accumulate on the surface. The ancient but highly civilized Egyptians knew better than this.

The principle of Moule's *earth closet* is sufficiently familiar to every one, but I may simply say, it is made either self-acting or is worked by a handle, and a sufficient quantity of earth, previously dried and sifted, is thrown into the pail before the closet is used, and the same amount delivered over each stool as soon as voided. If the closets are properly managed, it is said the fecal matter becomes so disinfected or disintegrated that after a time no excrement whatever can be detected in the mixture.

In Mr. Simon's Report for 1869, Dr. Buchanan gives the following summary regarding the working of this plan :—

1. The earth-closet, intelligently managed, furnishes a means of disposing of excrement without nuisance and apparently without detriment to health.

2. In communities the earth-closet system requires to be managed by the authority of the place, and will pay at least the expenses of its management.

3. In the poorer classes of houses, where supervision of any closet arrangements is indispensable, the adoption of the earth system offers special advantages.

4. The earth system of excrement-removal does not supersede the necessity for an independent means of removing slops, rain-water and soil-water.

5. The limits of application of the earth system in the future cannot be stated. In existing towns, favourably arranged for access to the closets, the system might be at once applied to populations of 10,000 persons.

6. As compared with the water-closet, the earth system has these advantages :—it is cheaper in the original cost, it requires less repair, it is not injured by frost, it is not damaged by improper substances

driven down it, and it very greatly reduces the quantity of water required by each household.

In India the earth system is being brought into very general use. In some stations where water is scarce the invention has been a great boon, and medical officers say that "nothing has been done in India of late years which has contributed so much to the health and comfort of the men." In Great Britain the system has been introduced into a number of public establishments, as Lunatic Asylums and Work Houses, and into some villages.

The best kinds of earth are said to be clay, marl, and vegetable humus; when dried the clay is readily powdered.

The objections urged against this system are the difficulties of procuring, drying and storing the earth; the discomfort sometimes attending the use of the closets when the earth becomes very dry and powdery; the attention which they require; and the inadequacy of the system as a means of removing the whole of the urine and slops.

The second and third objections should have but little weight; the discomfort might be easily overcome, and all systems require attention to be successfully carried out. As to the inadequacy of the system as regards the whole of the excreta, it effectually disposes, as an excreta—disintegrates and destroys—the most troublesome and difficult part to manage of all excrement, and the only after trouble is that of removing and carting it away. It disposes of and destroys that which is probably chiefly instrumental in spreading, if not in developing, the contagium of typhoid fever, dysentery and diarrhœa, if not of other contagious diseases; and the question of health is of much greater importance than that of economy. Again, as a matter of economy, it dispenses with the immense quantity of water required to carry off the intestinal excreta in the water-closet system, and this too very greatly lessens the quantity of sewage to be disposed of, which, as before observed, is *the* great difficulty in the water-carriage plan.

Now, with regard to the difficulties of procuring, drying, and storing the earth; which appears to be regarded as the greatest of all, our best authors declare that on this account the system cannot be adapted to large towns, though they think it almost perfect for institutions and villages. Earth, even of a suitable quality is about as plentiful as water; true, it will not flow, like water, but must be carried. But if it

can be carried for the use of 1,000 persons, or 10,000, as stated by Dr. Buchanan, as above, I see no reason why it cannot be carried at a proportionately advantageous rate for 100,000 or 1,000,000 persons. Indeed, is it not a rule that in supplies of all sorts the larger the quantity required the smaller the proportional cost? I am not writing unadvisedly, nor am I unaware that 1,000,000 persons—allowing 1½ lb. per head, per day, the full quantity required on an average—would need 70 or 80 car loads of earth every day, or only 6 or 8 car loads for 100,000 people. The earth could be readily enough dried first of all in a proper kiln. It could be brought to the city daily, and, say, one-sixth part of the city supplied every day with sufficient for one week; and the deodorized excreta could be removed every week, or one-sixth part every day. But little storage space would then be required. It must be bore in mind that health, and not alone economy is to be considered. If we will congregate together in thousands, and desire to live, we must provide the means of health.

The utilization and disposal of excreta and sewage, with an account of the Coventry sewage works and of the sewage farm at Croyden will be the subjects for the continuation of this paper in the next number. M. D.

Toronto.

BIOMETRY.

[Abstract of a Paper read before the Section on Practical Medicine of the American Medical Association, Louisville, Ky., May 1875.

BY MOREAU MORRIS, M.D., OF NEW YORK CITY.

In the practice of Medicine and Surgery the arts of diagnosis and prognosis are of the greatest practical value. To excel in these arts, much study and great experience are usually required.

The initial step in the treatment of disease or injury is first the diagnosis, second the prognosis. Any art or knowledge that can aid in acquiring proficiency in this direction may be considered as an additional contribution to the science and art of Practical Medicine. * * * But the study of symptomatology alone can never perfect one in diagnosis and prognosis. There needs something more than present symptoms upon which to base a correct understanding of any case,—a knowledge of the physical indications of longevity must enter largely into these elements.

If symptomatology could illustrate for prognosis that degree of certainty which it does for diagnosis, the practice of medicine would be less empirical and more reliable.

From the earliest history of medicine there has always been recognized an indefinable something inherent in the human system, varying in degree and force—this has been variously designated the "tenacity of life," the "tolerance of disease," the "natural vigor of constitution," the "vis medicatrix naturæ,"—by which some individuals seem able to endure and pass successfully through the most serious of maladies or the most severe injuries without succumbing. Many instances might be enumerated in illustration, but every practitioner will readily recognize such examples in his own experience. How often persons have recovered after injuries, gun-shot wounds and exhaustive diseases, who at the time, to all human foresight, seemed beyond recovery.

There is some inherent principal which mysteriously sustains life through these severe onslaughts. We must recognize a "vis preservatrix" and a "vis a tergo." What this force consists of neither Anatomy, Physiology, Pathology, Microscopy nor Chemistry has been able to elucidate. We know that man inherits vital properties which are in force from conception to death: that his various components are endowed with lifetimes of variable duration; that, like other living things, some parts decay and perish before others, in regular succession. One day we see the plants beneath our feet spring up, throw out their green leaves and budding flowers, all endowed apparently with vigorous, blooming life; and in a few months, or perhaps days, their flowers, leaves and stalks fade, wither and die. These are but prototypes of man. He springs up, flourishes for a time in full vigor, and one by one his secerning organs fail, until at last his physical entity ceases. The vital property has ceased to carry on its secretive power in one organ after another, until it can no longer sustain life. It is not within human ken to describe this vital property.

God breathed into our bodies life, which proceeds under the laws of our being, so long as they are not violated, until the human machine wears out. It is within our power to cut it short, but not to prolong it beyond its natural inheritance. We can study its processes, observe the laws which govern it, judge of its force approximately, see its manifestations, and *estimate its probable period.* There are certain *uniform indications* by which we may judge of man's *probable life-*

time. Some are *endowed* with short, some with a probable long and healthy life.

Inherited tendencies, habits of living, occupations, observance of sanitary law and residence—all have their direct bearings upon the question of longevity. Acute diseases, accidents, &c., have their life-shortening influences. All of these must be studied in their various relations to length of life.

The study of biometry (the science of measuring life) is comparatively of but recent date. Like every other science its study involves labor and care; statistics are to be collected and compared, its rules and laws elucidated and fixed, to make its practical application of value. When these laws become understood, their application is readily recognized. In medicine, in life insurance in business, in social life, in a higher elevation of mankind generally, both physically and morally, the application of the science of biometry will be found invaluable. The laws of natural selection by which physical perfection may be attained, will find in its exposition the true guide-posts by which to accomplish that much desired result. Intuitively we all apply its principles, even without, perhaps, being able to analyze the reasons for our judgment. The physician, by observation and long force of habit, is constantly applying its fundamental truths. He sees nature asserting and exhibiting wonderful endurance and adaptation under the most adverse circumstances, yet he is unable to define or explain the reasons.

In every-day life we constantly apply its principles in our intuitive estimation of our fellows, we judge of men's qualities or adaptation for certain kinds of business without system or explanable method.

To Dr. T. S. Lambeat, more than any other man, belongs the credit of having studied and reduced to a scientific basis the development and application of this instructive and interesting science. During many years of close application and observation he has fortified its truth by thousands of examples, and so simplified its practical application to the business of Life Insurance, that its laws have become the fixed data in estimating the probabilities of life's period; and as this business, when scientifically and successfully transacted, very largely depends upon a correct estimate and judgment of the probable length of any proposed life, as a matter of security and equity, its application in this direction has already, in the company with which he is connected, reduced the hazard of the business to one of great certainty. * * *

The laws of Biometry are abundantly illustrated by heredity. The histological characteristics of persons when studied under these laws present the most convincing proofs of the status of Biometry as a true science. In the examination of the ancestral histories of thousands of individuals, the deductions therefrom establish the fact that certain measurements can be relied upon almost infallibly, by which to read backward from the person the life characteristics of the ancestry, and hence, inversely to determine the individual's life probabilities. So, when we find a person presenting these general measures in due proportion, we may judge, almost invariably, of his powers of resistance or natural viability. If so be he is descended from a healthy, long-lived stock of both parents, almost without exception it will be found as a rule that he is both healthy and long lived, able to endure much hardship, resist grave maladies, and to recover from the most serious injuries and great nervous shocks.

Again it is found from observation that where there has been long and vigorous ancestral stock upon one side, with perhaps short life engrafted from the other, such person will arrive at a period of partial decline, with ill health, and subsequently recover, living on and beyond this deflection, being sustained by the vitalizing secretory influences of the longer-lived ancestor. A moment's reflection will call to mind many such instances, as when persons have remarked that at a certain period of their lives they were suffering from some special disorder, from which after a period they have seemingly entirely recovered and enjoyed sound robust health. Many such instances must have occurred in every medical man's practice.

That longevity is a resultant of heredity no one will dispute, and that it does not depend upon race, climate, mode of life, or special observance of sanitary law, is also a self-evident fact. Those w o have inherited it can, seemingly with impunity, almost defy all sanitary law, and yet continue to live up to and beyond the allotted limit of "three score years and ten," while those who have not inherited long life cannot by any system of life, or observance of the laws of health or process of prolongation, protract their naturally short-lived inheritance. Of course we must admit that abuse can and does shorten the lives of the naturally long-lived, and acute disease or great injuries cuts them off suddenly; but the rule holds good that the naturally long-lived inheritance affords that innate power of resistance which will carry them through

disaster and disease that will certainly destroy the naturally short-lived.

The probably short-lived may be equally healthy and robust, and able to endure almost as much, while that life lasts, as the longer-lived, yet it seems to be the fact and nature's law, that the period of existence has had its set limit, beyond which no process of prolonging can avail to carry it beyond the allotted period. The secerning elements of the vital organs have their limits, and hence control the existence of the whole organism. We see this illustrated in almost every organ of the body; certain parts cease to perform their functions, die out, and, so long as these are not vital, life continues, although it may be in a restricted sense,—as for instance, persons become bald or partially so at a certain age; they say the same occurred in their ancestors at about the same age; others find their digestive powers failing, and remark the same thing as having occurred in their parents or grandparents. The secretory vitality of these parts is then seen to follow the law of heredity.

Without an inheritance of long-lived secretory powers it is in vain to expect any great degree of longevity in the descendants.

In estimating the probability of a life-time it is entirely useless to depend upon the general average of human life. This rule holds good only as respects human life at large, and therefore we must look beyond life statistics to sum up the problem. *With the duration of individual life general average holds no command.* Ancestral longevity will not obey the general average law, but defies death in many shapes, holding on tenaciously until the machine, actually from rust and the interstitial deposits of years among its most delicate parts, wears out. Even though many times wrecked, battered, shorn of all their sails, and rudderless, their sound-timbered, well-built organs ride out the storms of life to an extreme old age.

The important question then arises: Are there any well-marked indications, externally manifested, by which it is possible to judge of men's powers of resistance to the destructive influences of life?

Are these indications so palpable that ordinary persons can judge by the personal characteristics sufficient to estimate the probable chance of recovery, or in other words of the probabilities of life in disease in different individuals?

These questions may be answered with confidence in the affirmative.

If such is the fact, then it must be admitted we have at hand one of the most certain means of deciding upon the prognosis, and the science of Biometry comes in as the grand marshal of symptomatology and diagnosis. Our treatment of disease can be regulated accordingly. It will not be necessary to fill the human stomach with the contents of the apothecary shop in order to find "something that may hit the disease." By reason of the certainty of our knowledge we can inspire our patient with the hope that is within us, and when he is so inspired half the battle is already won. Who has not seen the brightening eye, the stimulated courage, the grand fight of an unconquorable will, which hopefully and patiently has resisted the almost overpowering death struggle, when his doctor, judging from his own intuitive perception of the great tenacity of the life before him, has assured his suffering patient that he will recover? * * *

Dr. Lucas in his Traite Physiologique et Philosophique de Heredite Naturelle remarks as follows: "The *average of life* plainly depends on locality, hygiene, and civilization; but the *individual longevity* is entirely exempt from the conditions."

"Everything tends to show that long life is the result of an internal principle of vitality which priviledged individuals receive at their birth. It is so deeply imprinted in their nature as to *make itself apparent in every part of their organization.*"

The foregoing statement of Dr. Lucas is also quoted with emphatic approval in a recent work on Heredity, by Ribot, of whom Dr. Lambert remarks that he "may be justly regarded as the ablest of European writers upon this subject."

This interesting and practically important idea of the different lengths of life is well illustrated in the hair glands on different heads, not only, but on the same head. Some hair glands inherit a life of ninety years, while their fellows terminate their inherited longevity at twenty years or under. * * How often we see baldness follow ancestry, even in quantity and position, and the question cannot be avoided: Does not analogy legitimately argue that a similar condition should be expected in every other organ of the body possessing a community of glands?

It is not enough that we analyze the appearance of patients, so that we can discern which *organs* are affected, but we should be able to recognize to what *extent* they are impaired,

how large a portion of them has reached the natural terminus of the longevity belonging thereto, and which is bound to die then and there. If this portion is large enough and belongs to a sufficiently vital organ, to commit homicide upon the other organs of the body depending for life upon the dying portions, it matters not how long-lived the other portions or the other organs may be by inheritance, they must then and there die from inanition. Marasmus is an apt illustration of a homicidal death by this method.

In such cases there will be at first a general appearance of much vigor, and a man of but little observation would be likely to prognosticate recovery, not remembering that "the chain is never stronger than its weakest link." We must observe the weak spots. Then shall we find that many more deaths are produced by natural unavoidable causes, namely the termination of the inherited naturally short life of some organ or portions of it indispensable to the continuance of the whole, than we usually have supposed; whilst again many recover from severe attacks on account of the inherent longevity of such a proportional part of the diseased organ that there really was no danger of dying even under the worst kind of treatment.

Will not these suggestions account for the apparent success of all kinds of quacks and ignorant pretenders everywhere and in all times?

Will not the consideration of these two fundamental ideas of Biometry—first, that each organ is not a unit but a community of parts in regard to longevity and liability to death; and second, that the inherent longevity of any considerable part of the body can be discerned through the signs and indications that its various external parts manifest—will not, I repeat, these points of Biometry make the prognosis of disease much more interesting and satisfactory and practical in its treatment than has ever been the case? Will it not be gratifying to exchange the unsatisfactory impressions, intuitions, or guess-work, as some are inclined to call it, for a rational, reliable method governed by fixed law?

By instituting comparisons or observing certain general configurations uniformly found in a very large number of individuals, it has been found that certain universal conditions pertain to the long-lived and short-lived exclusively. These are found in the size, shape, proportion, color, and capacity of all parts of the body.

Thus we can compare persons descended from long-lived

with those descended from short-lived ancestors, and notice the differences which, as a practical fact, are *found to be well defined;* for example, the following: the comparative size and shape of the head; the colors of its external components, as hair, beard, eyebrows, eyes, shape and size of nose, lips, chin and features in general, and their comparative relative measures; the trunk with its relative proportions,—it may be here remarked, that the *length* has even a more important significance than the circumference; for when the proportion of the trunk is in excess of one-third the height of the figure, we may be assurred of corresponding great life, tenacity, and capacity. A comparatively long trunk gives us a form that affords room for the functions of respiration and digestion, the two most important life sustaining functions of the whole organism.

Given good respiratory capacity and good digestory apparatus, may we not prognose a healthy, vigorous constitution?

In looking over these indicative points, especially in the sick man before us, we need also to inquire into his ancestral characteristics. What has been, not the average, but the special duration of the antecedent lives of his progenitors? What were their peculiar diseases, family diseases so called, and of what diseases, and at what ages did they die, if dead?

Here lies the clue to the factors of the disease under observation in any case.

By observing and applying the laws of Biometry in the treatment of disease, the medical man places himself in the front rank of the benefactors of mankind, and he is also thereby enabled the better to apply the great laws of hygiene for the benefit of his patrons. Observing the temperament, the tendencies to some special form of disease, the predispositions, he is qualified to extend his warning advice regarding Occupation, Residence, and Habits of life, and to suggest at what period of life may be expected certain ailments, and the necessary precautions to avoid, if possible, their worst effects.

Thus in applying the laws of Biometry we may not only be useful to our fellow-man in curing disease, but also as conservators by our forewarnings.

THE HIGHEST and most legitimate work for the physician is to guide the people in the way of perfect obedience to the laws of Hygiene, the prevention of disease, and the promotion of health.—*Dr. Hitchcock.*

SCHOOL HYGIENE.

Education is perhaps the most agitated question of the day; but among the many voices raised in its discussion, the least audible is the physician's. And yet he, of all men, has a right to be heard. "Just as the twig is bent, the tree's inclined," and the development, moral and intellectual, of the pupil of either sex is greatly determined by the physical conditions under which he or she is brought up. As usual, it is from Germany that the most thorough and original innovations are suggested—suggested, too, with a force that ought really to rouse the heads of families to the urgency of the evils that call for redress. Dr. W. Kuby has published a treatise on the hygiene of schools, which may possibly attract fewer readers than one on cremation or on spiritualism, but which discusses with earnestness and judgment, a topic of equal importance with the former, and of infinitely greater moment than the latter. First, as to the school building itself. How often is it not of monastic or even penal design, suggesting what indeed too often exists -the most unsympathetic relations between pupil and master? Why should not the scene of early instruction be as cheerful and attractive as home itself? The nearer the material surroundings of pupil and master to those of the family circle, the better for both; it will wean the latter from his pedantry, and the former from his listlessness. Ventilation, again, should be so provided for as to admit of the prosecution of brain work with a normal supply of oxygen—many schoolrooms, in point of air, taking after the "forcing-houses" they resemble in other respects, and combining the heat of an oven with the fetor of a menagerie. Dr. Kuby recommends the introduction of leafy plants and shrubs at suitable intervals into every schoolroom, and attests the utility of the arrangement from experience. The shape, mode of ventilation, and internal appointments of all such rooms are suggestively illustrated by a series of drawings in Dr. Kuby's treatise. The detail of benches has not escaped the doctor's attention, and some notion of the interest the subject has evoked in Germany may be formed from the fact, that at the Vienna exhibition there were displayed no fewer than forty-seven different models of these—the Paris Exhibition displaying three. Dr. Kuby recommends a modification of the Rungesche school-bench—for an illustration of which we must refer the reader to his work. The posture the pupil habitually

assumes, whether at the desk or in full class, during school hours, is a matter of grave importance. No surgeon or physician needs instruction on this point; but Paterfamilias does, and he must not be allowed to turn the question aside with an appeal to "my young days." In this, however, as in all matters relating to public health, we shall have to wait, we fear, till physiology has become a part of popular education, and till a properly instructed national opinion shall insist on healthy schools as pertinaciously as it discusses the "twenty-fifty clause."—*Lancet, Lon., Eng.*

TYPHOID FEVER AND MILK.

A serious outbreak of enteric fever occurred at Crosshills about the middle of January of the present year, and did not terminate till the latter end of March. The extent and origin of the disease have been made the subject of an able report by Dr. Eben. Duncan and Dr. Littlejohn, and they have conclusively shown that the outbreak was caused by milk infected with enteric fever material, brought to Crosshills from the neighbouring village of Eaglesham. Dr. Duncan, finding that of the first eleven cases he was called on to attend, ten got their milk from a dairy which he designates A, the other from a dairy which he calls B, determined to examine more particularly into the sources and condition of the milk supply. He found that four dairies, A, B, C, D, took their supply from the same agent, who collected it from several farms in the neighbourhood of Eaglesham, but from two in particular —viz., X. and L. It was also ascertained that typhoid fever had been epidemic at Eaglesham for some months, and that two children were ill with the fever in the house of the farmer at X, farm, whose milk was sent regularly to the four dairies A, B, C, D; that the water-supply of this farm was derived partly from a well situated close to the midden into which the specifically infected excreta of the patients in the farmhouse were thrown, and partly from a brook which passed through the village, in close proximity to the middens of houses in which cases of enteric fever had occurred. In consequence of this evidence, the four dairies were interdicted from selling Eaglesham milk in Crosshills. The effect of this procedure on the progress of the epidemic was soon noticeable. In Dr. Duncan's practice, sixteen cases occurred in the week

ending Feb. 28th, eighteen cases in the week ending March 7th, and only two cases in the week ending March 14th. Dr. Littlejohn's report shows that the four dairies A, B, C, D, supplied 262 families, and that these families had ninety-four cases; the thirteen other dairies scattered over the district outside Crosshills supplied 242 families, and amongst these only eighteen cases occurred, and it was further shown that ten of these had occasional access to the Eaglesham milk. Forty families, who used condensed milk or had no milk-supply, escaped without a single case of fever.

Last week we noticed at length the report of Mr. J. Netten Radcliffe and Mr. W. H. Power on the Marylebone epidemic of 1873, which originated from the same cause—viz., the employment of water for dairy purposes on the farm, containing specifically infected excremental matters. A consideration of these two reports leads us to reflect how much we are indebted to sanitary science for the knowledge we now possess as to the mode in which this disease may spread and be communicated. There is little doubt if sanitary legislation were as far advanced as is sanitary science, the recurrence of these outbreaks would be rendered impossible, and enteric fever, certainly in an epidemic form, would become almost unknown. Government ought at once to take the matter of the dairies and dairy farms in hand. No person should be allowed to sell milk, wholesale or retail, without a certificate from a Government inspector, stating that the water supplied to the premises was free from, and secured against, all possible sources of contamination.—*Lancet.*

VENTILATION OF CUPBOARDS.—In the sanitary arrangements of houses, even for the richer classes, the ventilation of cupboards is neglected. In places let as tenements, closets are the resceptacles for bread and the fragments of various other kinds of food. Often the dirty clothes are put away in these places, waiting for washing. It is therefore important that air should be plentifully passed through such corners, generally, however, there is but little arrangement made for this purpose. The doors are kept closed without any perforation. There are no ventilators in the walls, and, in consequence, those places become cases of polluted air, which, when the doors are opened, escapes over the apartments. This defect is visible in nearly all houses of old date; and while looking at some dwellings of recent construction, it is seen that, although

care has been taken to ventilate stair-cases and rooms, the cupboards are in this respect neglected.—*Sanitary Record.*

DISPOSAL OF SEWAGE.—A commission which was appointed some time ago to inquire into the best means of getting rid of the sewage of Paris without polluting the Seine proposes that the whole of the sewage shall be distributed by means of machinery over a plain many thousand acres in extent. The value of this land, on which fruit and vegetables are produced for the Paris market, will, it is calculated, be thereby increased tenfold. At the same time no deleterious effect will result, the porous nature of the ground being specially favourable to the operation proposed.—*Med. Press and Circular.*

MARRIAGE AND LONGEVITY.—M. Bertillon, in *London Med. Record* gives the results of a careful study of the statistical documents respecting the influence of marriage on longevity in France, Belgium, and Holland. He finds that marriage creates a remarkable increase of longevity in both sexes. Among widowers he finds the same mortality as among celibates of the same age; thence he concludes that the vitality of married persons is not derived from extrinsic causes, but is a directly beneficial result of marriage, which modifies the conditions of life favorably. To this general fact he found few exceptions. Thus, marriages contracted before the parties are twenty years old increase the risks of death.

DANGEROUS ARSENICAL DYES.—The *Frankfort Gazette* announces, on the authority of Professor Gintl, that a certain number of English and Alsatian manufacturers have lately in printing fabrics been substituting for albumen cheaper materials, such as compounds of arsenic acid, glycerine, and alumina. They do not scruple to sell fabrics containing two or three grammes of arsenical acid per yard under the combined form. This is especially the case with printed calicos and muslins presenting white designs on a violet ground, or calicos with a yellowish-brown or brownish d patterns, shades hitherto unsuspected, which the uninitiated buy without suspecting the danger incurred in wearing them. The arsenic is not in an indissoluble combination, for on the fabrics being placed in water for a few seconds they give off a considerable quantity of it. These productions are generally sold at a low price, and have evidently not been washed after being printed, as this would have removed a portion of the color.—*Ex.*

CARRIERS OF CONTAGION.—Of little noted carriers of contagion attention has been recently called to the laundry and

the clothes basket. Books from circulating libraries can, no doubt, convey infection. And one instance came to our knowledge where small-pox was unquestionably communicated at a hundred and fifty miles distant by a letter. The recognition of such dangers is not idle.—*Med. and Sur. Reporter.*

PLANTS AS DOCTORS.—In addition to the pleasure that may be derived from floriculture, the sanitary value of flowers and plants is a feature of the subject so important as to call for special mention. It was known many years ago that ozone is one of the forms in which oxygen exists in the air, and that it possesses extraordinary powers as an oxidant, disinfectant and deodorizer. Now, one of the most important of the late discoveries in chemistry is that made by Professor Mantogazza, of Pavia, to the effect that ozone is generated in immense quantities by all plants and flowers possessing green leaves and aromatic odors. Hyacinths, mignonette, heliotrope, lemon, mint, lavender, narcissus, cherry-laurel, and the like, all throw off ozone largely on exposure to the sun's rays; and so powerful is this great atmospheric purifier, that it is the belief of chemists that whole districts can be redeemed from the deadly malaria which infests them, by simply covering them with aromatic vegetation. The bearing of this upon flower culture in our large cities is also very important. Experiments have proved that the air of cities contains less ozone than that of the surrounding country, and the thickly inhabited parts of cities less than the more sparcely built, or than the parks and open squares. Plants and flowers and green leaves can alone restore the balance; so that every little flower-pot is not merely a thing of beauty, while it lasts, but has a direct and beneficial influence upon the health of the neighborhood in which it is found.—*Appleton's Journal.*

NEW ANTISEPTIC AGENT.—Herr Knopf writes to inform us that Herr Lewin has been making several experiments with thymol, from oil of thyme, from which it would appear that this body is a most effectual and agreeable antispeptic, possessing in high degree the power of arresting putrefaction, confervoid, or fungous growths, etc., and gifted with the additional advantage of not arresting the natural digestive processes when taken into the stomach. Filtered egg-albumen, which, in the natural course of things, putrefies in three or four days, if mixed with a small portion of thymol water, resists putrefaction for several weeks. Even putrid pus lost its offensive smell, and remained without taint until it dried up, after five weeks exposure.—*Ibid.*

VENTILATION.—Mr. Robert H. Griffin, in a sensible letter on ventilation, anent the greatly overrated Tobin system, proves that there is nothing new in the adaptation of this modern Columbus of ventilation.—*Sanitary Record.*

THE ENGLISH CONTAGIOUS DISEASES ACT.—The British House of Commons, on June 23, at the close of an animated debate, rejected the bill to repeal the contagious diseases act, by a vote of 308 to 126. The Government opposed the bill on the ground that the act it sought to repeal afforded great protection to the army and navy.

POISONOUS DYE IN SOCKS.—Another case of inflammation of the feet, caused by the wearing of socks with orange-red stripes, has occurred. The victim this time is Mr. Hart Dyke, the Conservative Whip. We presume the offending dye is coralline, which gained such notoriety a year or so ago. It is impossible to avoid asking whether the sale of such dangerous articles should not be stopped. The color is attractive, and just now is fashionable; any one, however, who has respect for his 'poor feet' would certainly be very wise to avoid it.—*Lancet.*

CASE OF POISONING FROM WALL-PAPERS.—A remarkably fine boy, aged ten weeks, at the breast (mother healthy and strong), after being about ten days in a large airy room, the walls of which were almost wet with a new green, unglazed paper, began to sicken as follows:—Cried frequently, as if in pain; refused the breast, or, if he took it, was sick; looked pale and pinched; the whites of the eyes were pearly and glazed; the surface of the body was chilly, with clammy moisture; the bowel was irritable, and the motions were green and scanty, mucoid. He had been given castor oil, prior to my seeing him, without relief of symptoms, and was much depressed. Considering that the symptoms were due to arsenical paper, I at once had the child moved into another room, from which time, without the aid of medicine for either mother or infant, the symptoms subsided, the little fellow by degrees resuming his usual health and appearance, thus leaving no doubt whatever on my mind that the case was one of arsenical poisoning, and that if the child had remained longer in the room the issue of the case would have been very different.—A. E. T. LONGHURST, M.D., in the *Lancet.*

AMATEUR PHYSICIANS.—If a layman is recommended by any one to take or do something for an ailment and it is promptly

followed by the removal of the thing complained of, he forthwith, from that single instance, becomes enthusiastic, and the very next time he meets with one who has similar "symptoms," he prescribes with great confidence and if that is also successful, he in a very short time will be found giving the same prescription for every thing, it at once becomes in his estimation a panecea, a universal remedy, a cure for everything. It would require scores of such successes and a whole year's, or even five years' observation, for an experienced physician to have a hundredth part of the confidence in any remedy, simply because he knows the uncertainties of remedies, and how rare it is that the some conditions are found in two cases.—*Hall's Journal.*

HYDROPHOBIA—A SIMPLE PRECAUTION. — Dr. Locke Johnson suggests that in cases of injury from cat or dog-bite—whether the animal be in a rabid state or otherwise—a roller (garter, piece of cord, handkerchief, &c., will answer the purpose in an emergency) should be at *once* tightly applied above and below (and also close to) the seat of injury, and should not be removed for some hours subsequent to cauterization. When the rollers cannot be effectively employed on account of the position of the seat of injury, compressing *all round* the wound should be made by firm pads, pieces of card-board perforated, gutta-percha, or other substances, and the security of such compress maintained by means of a roller drawn tightly over and fastened. Thus the tendency to absorption of the virus will be lessened, and the pain usually produced by cauterization—especially if the wound or wounds be extensive—very much decreased.—*Med. Press & Circular.*

A GOOD deal of laughter was occasioned in the French Chamber the other day, when Dr. Teslin, in demanding a school of medicine for Lile, in addition to those proposed for Lyons, etc., declared that the number of doctors had decreased in the town that he represents, while the population had increased. The doctor appeared astonished at the amusement caused by this statement.

CHILDREN'S CLOTHING.—A sensible mother writing of children's clothing, says: "I see many children whose legs are too much exposed for health or comfort. It is a curious fact that in the statistics laid by teachers of public and private schools of this city before the ladies who have recently lectured on the subject of dress, it was proved that the children of a mission school in the lower part of the city wore more underwear and were more comfortably dressed than those of an uptown private school. The wife of the Scotch and German mechanic, and even the hard-working Irish wash-woman, will contrive to get hoods, leggins, and mittens to keep her darling warm, while your little Miss Gentility will be bountifully supplied with sashes and beads, though shivering with cold for want of proper winter clothing.—*Religious Intelligencer.*

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DEVOTED TO PUBLIC HEALTH.

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SANITARY LEGISLATION AND THE ONTARIO MEDICAL COUNCIL.

There could not well be a more fit and desirable source of emanation for united and decided action in the matter of urging upon the Government the absolute necessity of some practical sanitary legislation than the Council of the College of Physicians and Surgeons of Ontario, which held their annual meeting during the third week in July, in Toronto. And the action taken by the Council was very good evidence that the medical profession is deeply interested in the question of public health. And why, we may ask, *en passant*, should it be? The profession is not paid for preventing disease, but, meagerly enough often, for treating and curing the diseased.

During the second day of the session, Dr. Brouse, M.P., drew attention to the fact that he had at the two last sessions of Parliament drawn the attention of the Federal Government to the necessity of establishing a Bureau of Sanitary Science. In 1874, the Government had promised that at a more convenient season the matter should be taken up. Last session, when the question was again brought up, it was stated that there might be difficulties in arranging the power belonging to the General and Local Governments. The Government was very anxious, he (Dr. Brouse) stated, to have Bureaus of Agriculture and Emigration, and the question was whether or not sanitary matters should be represented in the same way. He argued that the question was very important to Canada as

affecting emigration. Dr. Brouse moved "that a committee composed of Drs. Lavell, D. Clarke, Bogart, Lynn, Campbell, Aikins, Berryman, Hodder, and the mover, be appointed to consider the matter and report thereon, urging upon the Dominion Government the necessity of establishing such a Bureau." The resolution was carried, although some opposition was manifested, chiefly on account of the desire of some members of the Council that the Local and not the Dominion Government should be approached and take action in the matter. This, no doubt, is a point entitled to a great deal of consideration, but the matter is not one of a local or sectional nature, but one affecting the entire Dominion, and indeed the whole civilized world, and the more extended the field of action in it the greater the power conferred upon the centre. Might not a Central Bureau be established at Ottawa, and each Province have its Provincial and Local Boards, under the supervision of local administration? Somewhat upon this principle sanitarians in the United States are desirous of having a Sanitary Bureau established, a central power or head at Washington, with State Boards of Health working in co-operation. Dr. Brouse's motion received some opposition on the ground that it was a political question and not one for the Medical Council; but Dr. Berryman contended that they were the guardians of the public health, and such measures should be taken by them as would conduce to the health of the people. He further urged that the matter affected the whole Dominion, and should not be confined to the Provinces In the afternoon the committee brought in the following resolution, which was carried:

"That, in view of the fact that great ignorance exists throughout the community in regard to the important matter of sanitary science, and seeing that it is a vital question of public health, it is advisable that some legislation should take place to put the investigation in regard to it on a more satisfactory basis." Also, "that a memorial be transmitted from this Council to the Government of the Province of Ontario, urging the appointment of a commission to enquire into the avoidable causes of disease, and with special reference to the diminution, if possible, of the alarming prevalence of insanity in Ontario."

In the first number of the SANITARY JOURNAL we expressed a hope that an effort would be made by the profession towards sanitary legislation, and believed it could bring to bear great influence in regard to the establishment of a Sanitary Bureau, and we need hardly say we are very much pleased at the action taken by the Council in this matter.

SANITARY MATTERS IN GREAT BRITAIN.

The people Great Britain appear to fully realize the great and absolute necessity of placing the country generally, as soon as possible, in a better sanitary condition. While they appear to be watchfully and vigorously carrying out past Public Health measures, a large number of new bills of this nature are now before Parliament, and are likely to become law. A general *Public Health Bill*, containing 340 clauses, introduced by the Government chiefly to amend and consolidate the existing laws, over twenty in number, has been read a second time, June 28. In moving the second reading, the Duke of Richmond said it was not to be taken as a permanent settlement of sanitary legislation, or else the Government might be open to criticism, for not redeeming the pledges they had given to use all their efforts to deal with sanitary questions.

A stringent *Polution of Rivers Bill*, in discussing which the Marquis of Salisbury said he was astonished at the wide interest in the subject, has passed through committee, and is certain to become law in some form. Among other things, it provides that after a limited period corporations and public bodies must cease to allow sewage to pass into rivers; or if compelled by circumstances to cast it into rivers, they should apply the best available means to purify the sewage before it entered the river. A Sale of Food and Drinks Bill, to prevent adulteration of these, as far as possible, has passed the second reading. An Artisans' Dwellings Bill, an Agricultural Laborers' Dwellings Bill, Land Drainage Provisional Order,

Chimney Sweepers' Bill, to prevent the employment of climbing boys, and a number of others of like character have been introduced, some of which have received the Royal Assent. Money is being loaned for sanitary purposes at a low rate of interest, by the Public Works Loan Commissioners.

STATE MEDICINE IN GEORGIA, U.S.

A correspondent, Dr. C. S. Strother, of Barnesville, Georgia, sends us some interesting information on the progress of State medicine in that part of the Union. They have evidently awakened there to a sense of the importance of the subject of Public Health, and are prepared to work. At the last session of the Legislature, Dr. J. G. Thomas, President of the Medical Association of Ga., and member of the Legislature, introduced a Bill for creating a State Board of Health, which has become law. It provides that the Board shall consist of one physician, appointed by the Governor, from each Congressional District, the State Geologist, Attorney General, and Comptroller General. It is to hold stated meetings at the Capital. The Governor has made the following "very judicious selection" of medical men :—Drs. Thomas, Savannah ; Nottingham, Macon; Logan, Atlanta; Cooper, Americus; Campbell, Augusta; Holmes, Rome; Stanford, Columbus; Carlton, Athens and Cromwell; Dr. Little, of Atlanta, is State Geologist: Certainly a good array of medical men.

Pursuant to the call of the Governor, the Board has assembled in Atlanta, and organized, electing Dr. Thomas President, and Dr. Talliferro, of Atlanta, Secretary.

We hope to read reports of the State Board of Health of Georgia, and expect to find valuable work done.

In the House of Commons, London, Eng., on July 2nd inst., Mr. Butler-Johnstone called the attention of the House to the desirability of introducing physical education in the public elementary schools of the country. He urged that physical education was as necessary as reading, writing and arithmetic.

FLOWERS FOR THE SICK.—"Whatever may be said for or against the revivalist, Mr. Moody," says the *Sanitary Record*, there can be no question as to the great good which has resulted from the 'Flower Mission,' which was started at his suggestion, we believe." The work, it appears, of sending flowers to the sick is increasing. Many agencies have been started for the purpose of supplying the patients in the different London hospitals with flowers at regular intervals. One Flower Mission Agency supplies five hospitals and several other institutions with bouquets of flowers every week. Flowers are also sent to the large metropolitan workhouses. Six hundred bouquets are supplied each week to the City of London Infirmary; "the aged and infirm being especially noticed and cared for by the ladies who distribute the bouquets." Each bouquet is placed in a holder, upon which a text is legibly written." "To give some idea of the interest taken in this labor of love," says the *Record*, "it may be mentioned that not less than 3,000 bouquets are issued weekly from the Spitelsfield agency alone." And "surely every suburban village should have its flower agency." If some one would make a move in the matter we believe there would be enough ladies to render sufficient aid to have such agencies established in Toronto and other places in Canada.

DRAINAGE IN INDIA.—A correspondent in the *Medical Times and Gazette* proposes to try the experiment on some of the malarious districts in India of regularly tile-draining the whole station, and to the extent of say a mile on every side. Being aware that draining is thought to have banished malaria from Britain, he asks, Why should it not do as much for India? He urges that an experiment should be made with one station.

INFANT HYGIENE.—According to the annual report of the Standing Committee on Infant Hygiene, recently read before the Academy of Medicine of Paris, the mortality among infants was greatest during the first month, and especially during the first week, of life, and more infants died from diseases of the

digestive organs than from any other form of illness, and this was especially noticeable in the central and northern districts, where hand-feeding with solid foods at too early an age was habitual. This fully agrees with a statement in the last annual report of the Massachusetts State Board of Health. Will some parents in this country take from this a hint and abstain from the practice of feeding to infants improper, solid food, as many are in the habit of doing? There are but few medical men probably in Canada who, when a mother has been asked what food she has been in the habit of giving her infant, have not heard a reply like the following:—"Oh! just a little such as we eat ourselves." Such feeding is attended with danger.

CONTAGION OF TYPHOID FEVER AND HEAT.—During the investigation as to the cause of the severe outbreak of typhoid disease last autumn at St. Mary's Hall, New Jersey, U.S., a school for the education of young ladies, and which disease was, as in most cases, traced directly and unmistakably to water contaminated with fecal matter from a privy vault, the following interesting fact was developed: While numerous cases of the disease occurred among the girls, and a small proportion among the teachers, *not one* of the servants was affected. These last drank only tea and coffee, and hence the water they used was *previously boiled;* while the girls frequently drank the cold water. It was found that out of seven absolute water drinkers, who did not use tea, coffee, or milk, six had suffered with typhoid.

POISONOUS CANDIES.—Much caution should be exercised in giving candies to children. In cheap confectionery the coloring matter is nearly always poisonous; analine, a very poisonous substance, is said to be in very common use to give a high color. Uncolored candies of the cheapest sort are sometimes half plaster Paris, and no doubt often give rise to diseases of the stomach and bowels. Many of the flavorings, too, are of a pernicious character. Not long ago, says the New York *Sun*, one child died and two others were made alarmingly ill in Wheeling, from eating candy apples, colored with analine.

SANITARY MATTERS IN MONTREAL.

Dr. LaRocqe, Public Health officer, Montreal, informs us that sanitary matters are steadily progressing there. They are waiting the adoption of a code of health by-laws to enable them to carry out sanitary improvements, he writes:

"Two very respectable tenants were much annoyed by a most horrid stench exhaling from under their basement floor. A young person aged 16 years was threatened with cerebro-spinal meningitis. The stench was caused by impregnation from the contents of an undrained privy-vault used by four families. The vault is of wood, clay bottom. The privy could easily be removed into a shed on a back lane; but we have no laws as yet to meet such cases.

"Here is another case showing the worthless value of some of our by-laws. From St. Lawrence to St. Dennis streets the main sewer is not at a sufficient depth to drain the cellars, which are a cause of diseases. One family has lost within two years four children by bronchial affections and fever. Another proprietor, whose children have all been sick with measels and fevers, one having died a week ago, tells me that he will have to sell his house at a great loss. Notwithstanding all these evils, we have no power to have the sewers constructed; the law requiring the consent of the majority of the proprietors. A petition was in vain presented to be signed—only a few would sign. Buildings in the suburbs are constructed contrary to all sanitary rules, in the most barbarous way, best calculated to kill people. We have provided against all those abuses in our sanitary code."

A Committee on Vital Statistics has been appointed by the Health Association, which, Dr. LaRocqe says, is wishing the people in Toronto "would adopt a similar plan in order that we might unite in carrying out our views,"—that is with regard to the Governments.

SECOND ANNUAL REPORT OF THE SECRETARY OF THE STATE BOARD OF HEALTH OF MICHIGAN, for the year ending Sept. 30, 1874.

The subjects of the contained pages are the following: "Entailments of Alcohol," by H. O. Hitchcock, M.P., President of the Board; "Draining for Health," by H. F Lyster, M.D.; "Impurities and Adulterations in Table Syrups;" "Resuscitation of the Drowned;" "Poisonous Wall-paper, and Sanitary Inspection of Certain State Institutions," by Prof. R. C. Kedzie; and the "Relation of Schools to Health," by the Rev. J. S. Goodman, Superintendent Schools.

The author of this last paper thinks there can be no doubt that to "lack of proper ventilation, and want of suitable heating apparatus, three-fourths of the lung diseases which affect our school population may be traced."

REPORT ON CEREBRO-SPINAL MENINGITIS TO THE STATE BOARD OF HEALTH OF MICHIGAN, by H. B. Baker, M.D., Secretary of the Board, Lansing, Mich.

This appears to form a part, and a large part, of the report above noticed. It is very interesting; the author discusses several possible causes of this disease, but does not arrive at any very satisfactory conclusion. A large portion of the report is devoted to the consideration of the possible share which goods containing poisonous fungi—ergot, smut, rust, &c.—have in causing the disease; and it is remarked that the symptoms of ergotism are very like those of cerebro-spinal meningitis. In summing up, the author says: "I conclude that: 1. There does not seem to be sufficient evidence to prove that the disease is contagious, in the ordinary sense of the term. 2. I am not satisfied that it has a general atmospheric cause. 3. It does not seem probable that epidemics of this disease are caused by over-crowding, imperfect ventilation, bad drainage or sewerage, or by any of the ordinary unsanitary conditions acting alone, although the death-rate may undoubtedly be increased thereby when the disease occurs under such conditions. * * As regards ergot, smut, and all fungi which cause great contraction of non-striated muscles, they are probably capable of being prominent causes of this disease, and further evidence is very desirable as to whether epidemics of this disease usually owe their violence in great degree to the presence of such substances in the food. The writer has been directed to continue this investigation: he will be duly grateful for any material evidence relating to the subject."

MUSIC contributes to happiness, and therefore to health, and we take pleasure in noticing a new piece, "No Friendly Voice to Greet Me," which is said to be already a general favorite, and which is certainly good, by H. P. Danks, author of "Don't be Angry with me, Darling," &c.; the words, too, are beautiful and touching. Mailed, free of postage, for 35 cents. W. H. Boner & Co., 1102 Chestnut street, Philadelphia, U.S.