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VOL. II.] [No. 7.

PUBLIC HEALTH

MAGAZINE

AND

LITERARY REVIEW.

by GEO. A. BAYNES, M.D., &c., &c.

JANUARY, 1877.

CONTENTS.

All Communications for insertion, and Books for Review, must be received before the 10th of each month.

Price, $2 per Annum, payable in Advance.

Montreal:

JOHN DOUGALL & SON, PRINTERS, ST. JAMES STREET.

1877.

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Original Communications.

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ON TOBACCO SMOKING.

By C. R. DRYSDALE, M.D., M.R.C.P. London, F.R.C.S., England, Senior Physician to the Metropolitan Free Hospital, and Physician to the North London Hospital for Consumption and Diseases of the Chest.

THE late "whiskey war" waged in the United States by some earnest women who had doubtless suffered either in their own families, or had seen much suffering among their friends, caused by that terrible foe to human happiness, drinking, has tempted me to reflect that a great deal which has been so justly urged against the drinking habits of men and women might also be urged against a vice nearly entirely confined to the male sex, tobacco smoking.

I do not mean, of course, for a moment to say that I have seen anything like the same amount of acute and chronic disease, or so many deaths, which could be set down to smoking as I have witnessed from the deplorable habits of intemperance, which seem now so diffused throughout society, and which, I agree with Dr. Murchison, in a recent lecture delivered at the College of Physicians in London, have been not a little brought into vogue by some medical fashions in England and Ireland with regard to treatment.

But tobacco, in my own experience, is guilty of causing a very great amount of suffering, and I wish I could see a crusade arise against this extraordinary vice of modern days, which is, unlike alcohol, never necessary (as far as I know) in any way, either in health or in disease, and which, I am certain, is very seriously undermining the stamina of modern civilized nations, and especially of the Males of England, France, and the United States of America, where the strongest kinds of tobacco are in fashion.

In England, too, cities are so large nowadays, and life indoors is so frequent among men of all classes, as well as among women, that a narcotic poison, such as tobacco, is especially debilitating, and its use ought to be loudly inveighed against.

Smokers who are not "made of iron" are not long in experiencing some of the many evil effects of this poison; sometimes these are rather rapid. Thus, I lately saw a young fellow of twenty-three who had nearly entirely lost his eyesight from chewing and smoking half an ounce of tobacco (Virginia) daily; and another case was published by myself lately in a medical journal of a man of twenty-seven similarly blind from smoking, for some years, an ounce of shag daily.

When quite a young man, I remember a case of an extravagant smoker, a gentleman related to myself, who died suddenly after smoking a great number of strong cigars; and of late I have noticed that coroners have, in more than one instance, given verdicts in this direction.

Palpitation of the heart is often bitterly complained of by smokers, and dyspepsia of all degrees, accompanied by constipation or diarrhœa. The injury done to the teeth by the use of tobacco, is best seen among men of the operative classes, who sometimes loose every tooth in their head before the age of thirty, from the filthy state in which the mouth is kept by continually smoking or chewing. How would such men like their young wives to be so careless of their looks?

Women ought, I contend, to dislike tobacco-smoking exceedingly. This habit annoys non-smokers, and the gentler sex is not as yet permitted to smoke by one of the unwritten laws of English society. It withdraws men from the society of women, and

tends to lower their habits of cleanliness, whilst smoking in the little rooms of cottages is often very injurious to both wives and children.

Paralysis of various kinds is, in my view, often caused by smoking or chewing, and with especial rapidity by the latter habit. Indeed, amaurosis is only one of the many kinds of nerve destruction caused by the use of tobacco, General paralysis and insanity are, therefore, perhaps rightly attributed to the use of tobacco, especially in France, where the amount of smoking is terribly on the increase. Youths and boys are continually damaged in health, almost irretrievably, by taking to tobacco in imitation of their fathers and tutors; and it is a great pity that smoking cannot be kept out of European courts, since the habits of royalty are so apt to become fashionable—

"Delirant reges, plectuntur Achivi."

Sir William Jenner used to teach that smoking tended to produce palpitation of the heart, prolapse of the lower bowel, and impotence; whilst Sir B. Brodie denounced tobacco as the most enervating of all modern practices, and ascribed the degeneration of the modern Turks to the national habit of great tobacco-smoking.

My main object in this letter is to introduce to English readers an article on tobacco from the pen of Professor Mantegazza, of Florence, a gentleman of European fame. The following facts are taken from an admirable work by that learned author, entitled "Elementi di Igiene," and what he there says may tend to prove that there are in Italy, as in England, France, and Germany, many medical men who are foes to tobacco:—

Johnston (says Mantegazza) has calculated that 800,000,000 people use tobacco.

Tobacco, introduced into Europe not many centuries ago, has an ample history, and figures as one of the principal sources of the revenues of European governments.

In 1496 Pietro Pane, one of the companions of Columbus, gave the first notice to Europeans about tobacco, which he called *cohoba*.

In 1519 tobacco was discovered by the Spaniards near Tabasco.

In 1531 the negroes cultivated it in the plantations, and it was used in Canada.

In 1559 it was introduced into Europe by Hernandez of Toledo. Nicot, French Ambassador at Lisbon, sent some seeds of tobacco to Paris.

In 1565 Gesner was acquainted with tobacco; Hawkins brought it into Europe from Florida.

In 1570 it was smoked in Holland in tubes made of the leaves of the palm-tree.

In 1574 it was cultivated in Tuscany.

In 1575 there is a drawing of the plant in the *Cosmografia* of Andrea Thevot.

In 1585 the first clay pipes were made in Europe.

In 1590 Schah Albas forbade the use of tobacco in Persia.

In 1601 tobacco was introduced into Java, and smoking commenced in Egypt.

In 1601 James I. of England imposed enormous taxes on tobacco.

In 1610 smoking began in Constantinople.

In 1615 tobacco was planted at Amersford, in Holland.

In 1616 the colonists cultivated tobacco in Virginia.

In 1619 James I. wrote his *counterblast*.

In 1620 ninety young men were sent from England to America, and were sold to the tobacco-planters for 2,000 livres each.

In 1622 the annual importation of tobacco from America to England was 142,035*l.* sterling.

In 1624 the Pope excommunicated all who took snuff in Church. King James restricted the culture of tobacco in Virginia.

In 1631 tobacco was smoked in Misnia.

In 1634 a court was established in Moscow to punish smokers.

In 1639 the Assembly in Virginia ordered that all the tobacco planted that year should be destroyed, as well as that to be planted in the two following years.

In 1653 smoking began in Switzerland, at Appezell.

In 1661 smoking was forbidden in Berne, adding an eleventh commandment to the decalogue: "*Thou shalt not smoke.*"

In 1669 adultery and fornication were punished in Virginia by a fine of 500 to 1000 pounds of tobacco.

In 1670 smokers in Glarus were fined.

In 1676 the duty on tobacco from Virginia into England was £120,000 sterling. Two Jews tried to cultivate it in Brandenburg.

In 1691 Pope Innocent XII. excommunicated all who used tobacco in St. Peter's.

In 1697 the palatinate of Hesse produced a great quantity of tobacco.

In 1709 there were exported from America 28,853,669 pounds of tobacco.

In 1719 the senate of Strasburg prohibited the culture of tobacco.

In 1724 Pope Benedict XIV. revoked the bull of excommunication of Pope Innocent.

In 1747 there were exported from America to England 40,000,000 pounds of tobacco.

In 1753 the revenue of tobacco of the King of Spain was about 31,000,000 francs.

In 1759, in Denmark, the duty on tobacco amounted to £8,000 sterling.

In 1773 the revenue of the kingdom of Naples from tobacco was about £8,000 sterling.

In 1775 the United States exported during the year 1,000,000 pounds of tobacco.

In 1780 the King of France had a revenue of £1,500,000 sterling from tobacco.

In 1782 the annual exportation of tobacco from America in the seven years of the revolutionary war, was 12,378,504 pounds.

In 1787 the tobacco imported into Ireland was 1,877,579 pounds.

In 1789 there were exported from the United States 90,000,000 pounds of tobacco.

In 1820 were cultivated in France 32,887,560 pounds of tobacco.

In 1830 England had a revenue from tobacco of £2,250,000 sterling.

In 1834 the value of the tobacco consumed in the United States was calculated at £3,000,000 sterling.

In 1838 the annual consumption of tobacco in the United States was 100,000,000 pounds.

In 1840 it was found that, in the United States. there were employed about 1,500,000 persons in the cultivation and manufacture of tobacco.

In 1854, Louis de Baudicourt published an essay on the production and consumption of tobacco in Europe, which is, perhaps, among the best on the statistics of tobacco. He mentions that in England there are consumed annually some 15,000,000 of kilograms of tobacco ; in Austria, 40,000,000 ; in France, 21,000,000; in Russia, 13,000,000; in Turkey, 14,000,000; in Belgium, 7,000,000; in Italy, 12,000,000; in Europe, about 203,000,000. "From the commencement of the century until now the consumption of tobacco has not followed a constant progress. In France, from 1811 to 1820, the average consumtion of tobacco was 400 grams per head. From 1821 to 1825, it fell to 390 grams, and to 350 from 1826 to 1830. It commenced to rise to 351 from the year 1831 to 1835; then to 470 from 1836 to 1841. From this time forward the consumption of tobacco has constantly increased to 500,600,750 grams per head, and everything appears to indicate that it will not stop at this limit. France consumes every year about 60,000,000 pounds of tobacco, the sale of which is entrusted to 80,000 tobacconists, each paying from 50 to 1,500 francs."

"The abuse of tobacco weakens the muscles. the stomach, and the genital organs, and, in this point of view, rich lords of harems in Turkey are quite right in hating it. At Oxford and Cambridge, the powerful boating-men, who train for the races, are not allowed to smoke.

"It has been found, by examining the statistics of a great number of years in the Polytechnic School of Paris, that the young men who did not smoke passed the most brilliant examinations. According to Fenn, the use of tobacco is especially dangerous during an epidemic of typhoid fever, since it relaxes the mucous membrane, and diminishes the vital force."

"Siebert also believes that many nervous diseases of men are caused by the use of the cigar, with which the smoker gradually swallows small quantities of nicotine, for which reasons he would advise the pipe. Some great smokers suffer from a true spinal irritation, they feel as if strangled, they have bronchial spasm, palpitation, pain in the chest, vomiting, and pain in the abdomen."

Sichel and Wordsworth have accused tobacco of producing blindness, and call one kind of amaurosis by the name of *tobacco-amaurosis*,

"Bean asserts that smoking may produce angina pectoris. Smoking has next, the grave inconvenience of being one of the most selfish pleasures in the world, since it annoys and drives away people who do not share this taste."

Professor Mantegazza concludes that "tobacco is never necessary; it is always hurtful to boys and young men, to weak people and those disposed to consumption."

He adds that "all ought to try to put a stop to the general invasion of tobacco, which threatens to involve the whole of Europe in a dense cloud of smoke, which poisons even those who do not smoke."

It is a pleasure to see that men of eminence, such as Jenner, Critchett, Brodie, Copland, Mantegazza, and so many more at the present day are striving to set themselves against that mad race after this injurious physical pleasure of smoking, which is doing so much harm.

The end of all science is to secure long life and health to the individual and the race; and it ought, I believe, to be a part of the rational *creed* of every good man and woman to abjure the use of tobacco, and keep others from falling into the vice of smoking.

ALCOHOL.

A LECTURE DELIVERED DEC. 7TH TO THE ST. GEORGE'S TEMPERANCE SOCIETY, BY DR. GEO. A. BAYNES.

MR. CHAIRMAN AND GENTLEMEN:—

According to Bartholomew Parr, one of our most learned scientific classics, the word alcohol was derived from the Arabic A'l-ka-hol, to designate a subtle essence or impalpable powder with which Eastern women used to tinge the hair and margins of the eyelids. As this powder (namely, the ore of lead) was impalpable, the same name was given to other subtle powders, and then to the Spirit of Wine in its highest purity and perfection as a subtle essence. The word employed in this sense merely tells us of a refined fluid substance, obtained by a subtle process of separation. But it was not applied to the special fluid now under consideration, until long after that fluid had actually been separated.

I shall not enter more minutely into this separation than to say that Alcohol is an inflammable liquor, lighter than water, of a warm, acrid taste, colorless, transparent and of a pungent, aromatic smell.

It is the product of the distillation of vinous liquors.

The practice of exciting fermentation, and of obtaining this coveted fermented liquor, once known, the knowledge soon extended, until from various vegetable substances, wine became a product of manufacture.

The use of the expressed juice of the grape, and other juicy fruits—such as the mulberry, the apple, the pear, and the peach—led to those juices which exude from trees; and from these to other substances, such as manna and honey; and from fruits the transition was easy to seeds; and from the seeds that were soft and succulent, to seeds that were hard and of the character of what we call grain.

This fluid was called wine, and was worshipped by the

ancients. The discovery was an epoch surpassed by none other and the heathen showed their wonder at it in their Mythology. Egypt claims the invention for her God Osiris, Greece for Bacchus, and Rome for Saturn. The Greeks assert that the very name belongs to them, for the drink was first discovered in Ætolia, by Orestheus, the son of Deucalion, whose grandson Oeneus was so called from Oinos, which was the old name of the vine. Thus Oinos, oinon, vinum, wine. Then, by these nations, the praises of wine and of the wine gods, one and all, were sung in the later times. It is not to the savage a mortal thing at all. It lifts the man who takes it into a higher sphere of life, or it degrades him to the lowest. It introduces him, as it were, to a new human organization, that is not to be a passing phenomenon, but for good or evil is to remain through ages. Much more might be said of the praises devoted to it by the ancients, but this will suffice to show with what reverence they held it.

We will, for a time, leave the consideration of wine and alcohol as drinks, and dwell briefly on the uses to which these fluids have been applied in other purposes. The study is peculiarly interesting, and I could easily carry you on for a whole hour with the narration of it. I shall refer only to the salient points, and to a few only of these. From the very first its preservative and antiseptic qualities were known, and it was used for preserving animal and vegetable substances.

The Roman butchers had their fresh and salt meats (as we moderns), curing the latter by pouring sweet wine over the flesh they wished to preserve. The Egyptians used it in their most costly processes of embalming the bodies of the dead, and we in our day preserve our specimens in our museums in a moist state by immersion in spirit. It was also used for extracting the active principles from plants and other substances possessing medicinal virtues.

Dioscorides, one of the fathers of medicine, made a vinous tincture from the mandragora, which has a romantic history.

In the Isles of Greece there has grown for ages a plant, called mandrake, of the same family as Belladonna, or deadly-nightshade. From the root of this plant the Greeks extract, by the means of wine, a narcotic possessing strong anesthetic power.

Dioscorides, in speaking of this preparation of the mandragora, says—"Those in want of sleep may take one cyath (a wineglassful) of the decoction;" also, he says that three cyathus of this are given to those who are cut or cauterized, when, being thrown into a deep sleep, they do not feel any pain." Again, he speaks of a preparation of mandragora called *morion*, which causes infatuation and takes away reason. Under the influence of this agent, the person who takes it, sleeps, without sense, in the attitude in which he took it, for three or four hours afterwards. Pliny, the Roman historian, bears evidence to the same fact, and adds that persons seek sleep from the smell of this medicine. And again, Lucius Apuleius, (the author of the book called the "Golden Ass"), who lived about 160 A. D., says that if a man has to have a limb mutilated, sawn, or burnt, he may take an ounce of mandragora in wine, and while he sleeps the member may be cut off without pain or sense.

It is to this wine, undoubtedly, that Shakespeare refers in his half-imaginary, half-legendary, middle-age history. This is the wine of that insane root, which, says Macbeth, "takes the reason prisoner." This is the wine that Juliet drinks, and the action of which Friar Lawrence describes:—

> "Through all thy veins shall run
> A cold and drowsy humour, which shall seize
> Each vital spirit."

And further on, he says:—

> "And in this borrow'd likeness of shrunk death,
> Thou shalt remain full two and forty hours,
> And then awake as from a pleasant sleep."

You will perceive that our great modern advance of removing pain during surgical operations, is, if not as old as the hills, as old almost as wine. Thus, the first use of wine to man was amongst the most noble and beneficent of blessings, and if it had been used *only* in this way, and in nothing worse, Pater Lenæus might have retained his supremacy in the good opinion of all the world.

After the distillation of wine was discovered, the middle-age chemists kept this new spirit long a secret. They found in it a solvent for many things that before were insoluble—such as oils, resins, gum-resins, balsams, &c. The commander's balsam, or balsam for wounds, or better known as Friar's balsam, was soon the reputed healer of every injury.

Beauty was next remembered. Alas for the female face divine! cosmetics and the subtle washes that should veritably make young faces old, and assumably old faces young, were soon in process in the laboratory of the adepts who made wine.

The artist came in for a share of the discovery—the once insoluble and useless resins were dissolved for his brush, and gave him preservative coatings and washings. Then the spirit-lamp in due time was invented—a trifle, say you? nay! it was as great an advance to the chemist who first used it, as the gas in the Bunson burner is to us.

Adepts soon attacked the mineral world—the green stone crystal found in the earth, and called green vitriol, was submitted to distillation, and yielded in the retort a heavy, oily, corrosive fluid called sulphuric acid. In the course of time they began to combine other fluids with the corrosive sulphuric oil, in the hopes of discovering something new. The experiment did not deceive them; it gave a useful and most wonderful liquid that floated on water and floated on spirit. They poured it on the hand—it boiled there; it escaped from them into an invisible air before they could well bottle it. It burned and exploded, and caused after evaporation from the body intense cold. Many other things this infinite marvel was able to accomplish. It was the lightest thing known they called it *Ether*.

We all know the use of this magic fluid in suspending sensation and sensibility after being inhaled by the lungs. Professor Benjamin W. Richardson has invented the *ether* spray, by which you can benumb the body in part, and so operate without destroying consciousness. To the photographer it is invaluable as the volatile solvent of collodion, and in other branches of refined and useful art it is equally serviceable. But I have already dwelt too long upon this part of my subject, and shall proceed to the description of the actions of some of the different alcohols:—

First, then, the action of methylic alcohol, pyroxylic spirit or wood spirit. You can use this alcohol in the usual way, hot or cold,—in fact, some say it is more pleasant than the ordinary alcohol when made into toddy with sugar, and while it is as pleasant to take as an ordinary drink, it is less injurious.

This being admitted by the profession, it is prescribed in preference to the heavier or ethylic spirit, and with better results Without doubt, the lighter the alcohol, the less injurious the action ; methylic alcohol being the lightest, we can put it down as the safest for administration. But it is not without potency, as the phenomena it produces will sufficiently demonstrate.

They are developed in four distinct stages:—Excitement of the nervous organization inaugurates the first stage; the pulse and breathing are quickened, the surface is flushed, the pupils dilated, and then ensues a sense of languor, the muscles falling prostrate, the movements being irregular.

The second stage is ushered in by increased muscular prostration, respiration labored, accompanied by a sighing movement, followed by increased prostration, rolling over of the body, and other signs of intoxication.

The third stage is demonstrated by entire intoxication, insensibility to pain, unconsciousness, voluntary muscular power being entirely absent. The breathing is embarrassed and blowing, but the heart and lungs retain their functions, and therefore recovery will take place if the conditions are favorable to it. Reflex action is still present.

The only phenomena which is very marked, is the reduction of the animal temperature, which begins in the first stage, till in the third the loss of heat becomes actually dangerous.

Considering that the third degree is reached, and the administration continued, the last stage is ushered in by death.

The action of this spirit somewhat resembles chloroform and ether in its ultimate action, but the recovery from the two last is much more rapid.

Butylic alcohol is one of the heavier substances of this group. Applied to the lips and tongue in a pure state, it creates a burning sensation of great intensity, followed by a numbness of the part where the fluid is applied. The knowledge of this latter effect has given rise to its use for the relief of pain.

There are four distinct stages of action of butylic alcohol, but the period required for producing these stages is greatly prolonged. They are similar to those of methylic spirit. But in the

third stage after the depression of the temperature, butylic alcohol produces distinct tremors, which we designate as delirium tremens. The nature of these muscular movements, and what relationship it has between the nervous system, muscles and blood are still unsolved questions.

Recovery rests entirely on the maintenance of the organic nervous power, so that a body must be sustained by external heat and by internal nourishment.

The appearance after death I will speak of further on.

Amylic alcohol is obtained by the fermentation of potato-starch. It is believed to be largely in use for the adulteration of wines and spirits. Its action on the human body is the same as butylic alcohol.

The alcohols of sodium and potassium are not much in use, but they act on the body as caustics, and will be found of great service in surgery.

Mercarptan or sulphur alcohol. The vapor of this produces somewhat similar effects when inhaled. It is not irritating to the breath. It soon produces a desire for sleep, with a strange, unhappy sensation, as if some impending trouble were at hand. This is succeeded by an extreme sensation of muscular fatigue. There is still a sensibility to pain, and no intoxication. The pulse is feeble and slow; recovery is rapid, especially in the open air.

We will now proceed to examine the influence of common or ethylic alcohol on animal life.

Alcohol may be made to enter the body by many channels. It can be introduced by injection either under the skin or into a vein. Exalted by heat into a form of vapor, it may be inhaled by man or animal, when it will penetrate into the lungs, will diffuse itself through the bronchial tubes, will pass into the minute air vesicles of the lungs, thence into the arterial canals, and so throughout the body. Or, again, the spirit can be taken by the more ordinary channel, the stomach. Through this latter channel it finds its way into the circulation by two modes. The greater portion is absorbed direct by the veins of the alimentary surface, finds its way straight into the larger veins, to the heart and onwards with the course of the blood. The other portion is

picked up by those small structures called *villi*, which proceed from below the mucous surface of the stomach.

Thus we see that which ever way the alcohol is introduced, it enters the blood. As all the modes of introduction, except the latter, are only used experimentally, we will not consider them more fully but proceed to exemplify the effects upon the system when taken as a fluid by the mouth.

As it enters the blood it becomes mixed with the water, which it readily diffuses through it, then comes in contact with the other constituent parts; with the fibrine, that substance which clots or coagulates when blood is drawn; with the albumen, the salts, the fatty matters, and lastly with those minute round bodies called corpuscles or blood globules—of which there are two kinds, red and white. The red give the color to the blood and occupy the centre of the stream; the white are near the outside of the vessels and move less quickly.

The red perform the most important functions in the economy —they absorb the oxygen which we inhale and carry it to the extreme tissues of the body; they also absorb the carbonic acid gas on the extreme tissues, and bring the gas back to the lungs to be exchanged for oxygen,—in fact they are the vital instruments of the circulation.

Alcohol, when in contact with these corpuscles or cells, cause them to run too closely together, and to adhere in rolls; it may modify their outline, making the smooth, defined edge irregular or crenate, or even starlike; it may make it oval or truncated in form, in fact hardly recognizable. All these changes are due to the action of the spirit on the water in the corpuscles. During every stage of modification of the corpuscles their function to absorb the fixed gases is impaired, and when the aggregation of the cells in masses is great, other difficulties arise—for the cells unite together and pass less easily through the minute blood vessels of the lungs and general circulation, and impede the current, by which local injury is produced. This is the only point that we have time to touch upon in respect to the physical action of alcohol upon the blood, and shall now proceed to describe the different stages of the action of alcohol up to the poisoning point.

If you attend a large dinner party, you will observe after the first few courses, when the wine begins to circulate, a progressive change in some of those about you who have taken wine. The face begins to get flushed, the eye brightens, and the murmur of conversation becomes loud. What is the reason of that flushing of the countenance? It is the same as the flush from blushing, or from the reaction of cold. It is the dilation of vessels following upon the reduction of nervous control, which reduction has been induced by the alcohol. In a word, the first stage, the stage of vascular excitement from alcohol, has been established. The action of alcohol extending so far does not stop with the disturbance of power in the extreme vessels; more disturbance is set up in other organs, and the first that shares in it is the heart. With each beat of the heart a certain degree of resistance is offered by the vessels when their nervous supply is perfect, and the stroke of the heart is moderated in respect both to tension and to time. But when the vessels are rendered relaxed, the resistance is removed, the heart begins to run quicker, like a watch from which the pallets have been removed, and the heart-stroke losing nothing in force, is greatly increased in frequency, with a weaker recoil stroke. It is easy to account in this manner for the quickened heart and pulse which accompany the first stage of deranged action from alcohol.

There are four stages of alcoholic action in the primary form.

1st. A stage of vascular excitement or exhaustion.

2nd. A stage of excitement and exhaustion of the spinal cord with muscular perturbation.

3rd. A stage of unbalanced reasoning power and of volition.

4th. A stage of complete collapse of nervous function.

The first stage, or that of vascular excitement, lasts for some time, but at last the heart flags from over-exertion, and requires more stimulus to carry on its work. This stage can be seen from the flushed appearance, as described before, and let me remind you that this injected appearance is not confined to the parts seen *only*, but to the lungs, brain, spinal cord, stomach, liver, spleen and kidneys; this vascular engorgement is manifested in every organ. This has been proved by Dr. Richardson, who

once had the opportunity of examining the brain of a man who had committed suicide while suffering from vascular excitement, by being decapitated by a railway train running over him.

The brain exhaled the odor of spirit, and its appearance was as if it had been injected with vermilion; this appearance was complete through the whole brain, in both hemispheres.

The action of alcohol carried further, brings us to the second stage, or that of excitement and exhaustion of the spinal cord. Through the nerve power of the cord we are enabled to carry on the ordinary automatic acts of a mechanical kind. Under alcohol these acts cease to be carried on correctly. The higher intellectual centres must be invoked to make the proceeding secure, for the hand to reach an object, or the foot to be correctly planted. Then follows quickly upon this, a deficient power of co-ordination of muscular movement.

The nervous control of certain of the muscles is lost, and the nervous stimulus is more or less enfeebled, and if the administration be continued, the third stage, or that of unbalanced reasoning power and of volition, is soon reached. As these centres are unbalanced and thrown into chaos, the rational part of man gives way to the emotional, passional, or organic. The reason is now off duty, and "*In vino veritas*" expresses the true condition, the coward is more craven, the braggart is more boastful, the cruel is more merciless, the untruthful more false the carnal more degraded.

Finally, the action of alcohol still extending, the superior brain centres are over-powered, sensibility is lost, and the body lies a mere log, dead by all but ½, on which alone, life depends. But the heart still remains true to its duty, and while it yet lives, it feeds the breathing power. It is happy for the inebriate that, *as a rule*, the brain fails so long before the heart, that he has neither the power nor the sense to continue his process of destruction up to the act of the death of his circulation. Therefore he lives to die another day.

MORTALITY OF THE CITY AND SUBURBS OF MONTREAL, FOR OCTOBER, 1876.

Class.	Order.		Diseases.	Total by Sex. Male.	Female.	Total both Sexes.
I. Zymotic.	I. Miasmatic.	1.	Small Pox	57	52	109
		2.	Measles		1	1
		3.	Scarlatina			
		4.	Diphtheria	9	8	17
		5.	Quinsy			
		6.	Croup	2	8	10
		7.	Whooping Cough		2	2
		8.	Typhoid Fever, (Infantile Remittent Fever)	4	6	10
		9.	Typhus, and Infantile Fever			
		10.	Relapsing Fever			
		11.	Fevers		2	2
		12.	Erysipelas	3	1	4
		13.	Metria, (Puerperal Fever)		1	1
		14.	Carbuncle			
		15.	Influenza			
		16.	Dysentery			
		17.	Diarrhœa	2	2	4
		18.	Pyœmia			
		19.	Cholera Infantum	1		1
		20.	Cholera			
		21.	Ague			
		22.	Remittent Fever			
		23.	Cerebro-Spinal Meningitis	2		2
	II. Enthetic.	1.	Syphilis			
		2.	Hydrophobia			
		3.	Glanders			
	III. Dietetic.	1.	Privation			
		2.	Purpura and Scurvy			
		3.	Delirium Tremens } Alcoholism			
		4.	Intemperance }			
	IV.—Parasitic.	1.	Thrush			
		2.	Worms, &c.			
II. Constitutional.	I. Diathetic.	1.	Gout			
		2.	Rheumatism	1	1	2
		3.	Dropsy and Anæmia	3	1	4
		4.	Cancer	1	1	2
		5.	Noma (or Canker)			
		6.	Mortification			
	II.—Tubercular.	1.	Scrofula			
		2.	Tabes Mesenterica	1	1	2
		3.	Phthisis (Cons. of Lungs)	13	23	36
		4.	Hydrocephalus	1		1
		5.	Tubercular Meningitis	1		1
			Carried forward	101	110	211

MORTALITY OF THE CITY AND SUBURBS OF MONTREAL—(Con.

Class.	Order.	Diseases.	Total by Sex. Male.	Female.	Total both Sexes.
		Brought forward	101	110	211
III. LOCAL.	I. Brain and Nervous System.	1. Cephalitis	1	7	8
		2. Apoplexy		1	1
		3. Paralysis			
		4. Insanity			
		5. Chorea			
		6. Epilepsy		1	1
		7. Tetanus			
		8. Convulsions	4	1	5
		9. Other Brain diseases &c.	5	3	8
	II. Organs of Circulation.	1. Carditis, Pericarditis and Endocarditis			
		2. Aneurism			
		3. Other Heart diseases, &c	4	6	10
	III. Respiratory Organs.	1. Epistaxis			
		2. Laryngitis and Trachitis		2	2
		3. Bronchitis	6	8	14
		4. Pleurisy			
		5. Pneumonia	4	5	9
		6. Asthma		1	1
		7. Other Lung diseases, &c.	4	3	7
	IV. Organs of Digestion.	1. Gastritis		1	1
		2. Enteritis		3	3
		3. Peritonitis	1	2	3
		4. Ascites			
		5. Ulceration of Intestines			
		6. Hernia			
		7. Ileus and Intussusception			
		8. Stricture of Intestines			
		9. Fistula			
		10. Diseases of Stomach and Intestines, &c.	2	2	4
		11. Pancreas Diseases, &c.			
		12. Hepatitis			
		13. Jaundice			
		14. Liver Disease, &c.		2	2
		15. Spleen Disease, &c			
	V. Urinary Organs.	1. Nephritis		1	1
		2. Ischuria			
		3. Nephria (Bright's Disease)	2		2
		4. Diabetes			
		5. Calculus, (Gravel, &c)			
		6. Cystitis and Cystorrhœa	1		1
		7. Stricture			
		8. Kidney Disease, &c		1	1
	VI. Generative Organs	1. Ovarian Disease			
		2. Disease of Uterus, &c.			
	VII. Organs of Locomotion.	1. Arthritis			
		2. Joint Disease, &c.			
		Carried over	135	160	295

MORTALITY OF THE CITY AND SUBURBS OF MONTREAL.—(*Con*).

Class.	Order.		Diseases.	Total by Sex. Male.	Female.	Total both Sexes.
			Brought over	135	160	295
V. VIOLENT DEATHS. IV. Developmental Disease	VII. Integumental System.	1	Abscess			
		2.	Ulcer			
		3.	Skin Diseases, &c			
	I. Of Children.	1.	Stillborn	7	7	14
		2.	Premature Birth	6	1	7
		3.	Infantile Debility	14	7	21
		4.	Cyanosis			
		5.	Spina Bifida and other Malformation	1		1
		6.	During Dentition		4	4
	II. Of Woman	1.	Paramenia			
	III Old People.	2.	Childbirth			
	IV. Of Nutrition.	1.	Old Age	3	3	6
		2.	Atrophy and Debility	1	2	3
	I. Accident or Negligence.	1.	Fractures, Contusions, Wounds			
		2.	Burns and Scalds			
		3.	Poison			
		4.	Drowning	1		1
		5.	Otherwise	4	1	5
	II. Homicide.	1.	Murder, Manslaughter			
		2.	Execution			
	III. Suicide.	1.	Wounds			
		2.	Poison			
		3.	Drowning			
		4.	Otherwise			
	IV.	1.	Chirurgici	1		1
			Not known	1	2	3
			Infection purulente			
			Emesis			
			Lock Jaw			
			Total	174	187	361

FOREIGN HEALTH STATISTICS.

United Kingdom of Great Britain, during four weeks, ending October 21st, 22,851 births and 12,100 deaths were registered in London and twenty other large towns, and the natural increase of the population was 10,751. The mortality from all causes was, per 1,000: in London, 18.25; Edinburgh, 15.50; Glasgow, 20.75; Dublin, 20.25; Portsmouth, 19.25; Norwich, 22.25; Wolverhampton: 21.25; Sunderland, 17.50; Sheffield, 21.75; Birmingham, 19.75; Bristol, 19.75; Liverpool, 22.25; Salford, 27.50; Oldham, 26.75; Bradford, 18; Leeds, 20.75; Hull, 18.50; Newcastle-upon-Tyne, 16.25; Leicester, 22; Manchester, 24; Nottingham, 17.50.—Other foreign cities at most recent dates, per 1,000, Paris, 22; Rome, 23; Vienna, 23; Brussels, 19; Berlin, 22; Hamburg, 23; Calcutta, 27; Bombay, 24; Madras, 42; Amsterdam, 19; Rotterdam, 23; The Hague, 26; Christiana, 20; Breslau, 22; Buda-Pesth, 27; Turin, 23; Alexandria, 59; Copenhagen, 21; Munich, 30; Naples, 22.—*The Sanitarian.*

TOTAL MORTALITY BY AGES.

Under 1 year	89
From 1 to 5 years	108
" 5 to 10 "	34
" 10 to 15 "	12
" 15 to 20 "	13
" 20 to 40 "	52
" 40 to 60 "	26
" 60 to 70 "	11
" 70 to 80 "	10
" 80 to 90 "	6
" 90 to 100 "	...
100 years and over	...
Not known	...
Total	361

TOTAL MORTALITY BY NATIONALITY.

French Canadians	219
British Canadians	98
Irish	29
English	5
Scotch	6
Other Countries	4
Not known	..
Total	361

TOTAL BY WARDS.

St. Ann's Ward	50
St. Antoine "	67
St. Lawrence "	30
St. Louis "	29
St. James "	73
St. Mary "	81
West	...
Centre	3
East	5
Not known	..
	338

City Hospital	1
Hotel Dieu	11
Montreal General Hospital	8
Other Institutions	3
Foundlings	34
Outside City Limits	85
Total	480

N. B.—The foundlings and deaths outside city limits are not included in classification of diseases, ages or nationalities.

Mortality per 1,000 *inhabitants, annually, from all causes and certain special causes.*—(THE SANITARIAN).

POPULATION AND REGISTRATION AT MOST RECENT ESTIMATES AND DATES.	Deaths under 5 years.	Total No. of deaths from all causes.	Per 1,000.	By Violence.	Small-Pox.	Diphtheria.	Scarlatina.	Measles.	Croup.	Whooping Cough.	Typhoid Fever.	Typhus Fever.	Puerperal Diseases.	Diarrhœa Diseases.	Consumption.	Lung Diseases other than Consumption.
New York, 1,066,350—4 weeks ending Oct. 21	932	1397	17 03	103	3	105	22	7	50	[illegible]	39		19	135	324	194
Philadelphia, 825,500—4 weeks ending Oct 28	379	1252	19.71	46	22	62	14		34	7	78	3	5	16	202	105
Brooklyn, 606,000—4 weeks ending Oct. 28	267	675	17.33	20	1	43	22		23	15	41	3	3	37	116	66
St. Louis, 498,000—4 weeks ending Nov. 4	162	451	11.77	18		20	3		9	6	11		1	18	57	30
Chicago, 420,000—4 weeks ending Oct. 28	501	994	36.42	20		99	139	1	70	5	43		7	39	83	37
Baltimore, 350,000—4 weeks ending Oct 28	175	463	17.19	16		15	26		27	2	16	1	1	11	83	31
Boston, 352,000—4 weeks ending Oct. 28	211	568	20.6	18		40	22		12	6	23		3	40	101	48
Cincinnati, 265,000—4 weeks ending Oct. 28	129	333	16.33	19	3	17	1		13	2	13		4	15	50	32
San Francisco, 272,345—month of Sept	201	548	24.14	27	77	54	12		5	8	15		2	22	52	39
Washington, 160,000																
Pittsburgh, 142,000—4 weeks ending Oct. 28	89	203	18.58	23	4	9	4	2	15	3	6			12	25	31
Newark, 126,000—2 months ending Oct. 31	237	537	25.55	10		51	7		5	3	31	2		27	65	28
Providence, 101,500—month of Oct	70	176	20.86	4		32	7		15		3		1	5	28	16
Milwaukee, 100,781—month of Oct	108	178	21.19	7	33	12	18			5	5		3	6	12	5
Rochester, 70,000—month of Oct	47	142	24.34	2		18			6		6		1	4	17	10
Richmond, 72,500—4 weeks ending Oct. 28	57	122	21.87	3		8			5	2	4			7	17	6
New Haven, 60,000—month of Oct	23	65	1.3	3		7	1		2		1		3	1	13	4
Charleston, 57,000—2 weeks ending Oct. 14	35	86	39.22			11			1		2			1	10	9
Toledo, 50,000—month of Oct	28	56	13.44	2					4		1			2	4	14
Dayton, 36,000—month of Oct	12	34	11.33			5			2					1	3	3
Nashville, 27,000—month of Oct	42	80	38.22	3		28	1		2					8	11	7
Wheeling, 28,000																
Buffalo, 170,000—month of Oct	50	142	10.02	10		4			4		10			5	26	9
Knoxville, 13,000—month of Oct	6	11	10.15											1	3	1
Paterson, 33,000—month of Oct	47	99	30.46	4		27	1		6		2			4	12	7
Petersburg, 20,000—4 weeks ending Oct. 28	20	46	29.9	1		1			3	1	2			4	9	5
Selma, 8,000—month of Oct		12	18.00	1										1	2	1
Elmira, 20,000—month of Oct	3	21	12.6	1								3			4	3
Hudson Co., N. J., 170,859																
Yonkers, 17,500—month of Oct	0	25	17.25	1										1	8	4
Memphis, 45,000—month of Oct	50	124	33.06	3		2	2						2	16	13	13
Erie, 26,037																

Reviews.

ON TRACHEOTOMY, ESPECIALLY IN RELATION TO DISEASES OF THE LARYNX AND TRACHEA. By W. Pugin Thornton, Surgeon to the Hospital for Diseases of the Throat and to the Marylebone General Dispensary. J. & A. Churchill, New Burlington, Eng.

We have perused with a great deal of pleasure this neat little work, which is of a thoroughly practical character, and a careful study of which will repay the reader. In the introductory part the author gives reasons for preferring tracheotomy to the simpler and safer operation of laryngotomy, and pays a tribute to the valuable aid afforded by the laryngoscope in recognizing with precision conditions of the larynx interfering with respiration. Contrary to most other writers and authorities on the subject, he avoids the use of anæsthetics, and prefers freezing the part by means of the ether spray. Even in the case of children he does not use chloroform, but has the patient wrapped up in a sheet and held down. After a short resumé of the anatomy of the trachea, the subject of instruments and apparatus is taken up, and here we get much useful information; the right-angled, or Durham's Canula, being the one most recommended owing to the ease with which its length is regulated. In the operation itself the author recommends, after making the primary incision through the skin, that most of the subsequent dissection should be done with the handle of the scalpel, the operator always remembering not to make the wound "funnel shaped," *i. e.* that it should be of a uniform length from the skin down to the rings of the trachea. The after treatment is carefully dwelt upon, and much practical information is given upon this, perhaps the most important part of the whole subject. In referring to dangers during and after tracheotomy, the risk entailed by the passage of blood down the trachea and into the bronchial tubes is fully recognized, and in common with most other writers on this subject,

the author insists that, unless it is absolutely necessary from the state of the patient, the trachea should not be opened while bleeding is going on to any extent. In the management of those cases where hemorrhage occurs after the insertion of the canula, a simple and very effectual mode of withdrawing the blood is by the introduction of an elastic catheter, through which the blood may be sucked out, and we think this means might have been mentioned, and a suitable catheter added to the list of instruments enumerated.

Other complications are alluded to, and their management clearly indicated, not the least of which is the breaking off a portion of the inner canula. A photograph is given of such a case where the tube broke away from the shield and falling down the trachea lodged in the right bronchus.

The book finishes with an account of diseases and injuries requiring tracheotomy, and includes several very interesting cases, especially some in which tracheotomy was performed on account of syphilitic webs in the larynx.

The woodcuts are good, and there are three photographs which are better than most photographs that we have seen of morbid specimens, and altogether the work will prove a useful one to the student and to the busy practitioner, to whom we would cordially recommend it. We would suggest that in a future edition the author should include some results of the operation in a tabular form for reference, knowing the many excellent opportunities he has for so doing.

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Books and Pamphlets Received.

"Twenty-first Annual Report upon the Births, Marriages, and Deaths in the City of Providence for the year 1875." By Edward M. Snow, M. D., Superintendent of Health and City Registrar.

"Vennor's Almanac for the Year 1877." By H. G. Vennor, C. E., F. G. S., &c., &c., Author of the "Birds of Prey of Canada."

PUBLIC HEALTH MAGAZINE

AND

LITERARY REVIEW.

JANUARY, 1877.

SMALL-POX.

By request we reproduce His Worship's lecture on vaccination, much having been added to it. It will pay our readers to reperuse it, as there is much evidence brought out that before was omitted. As this formidable disease is now so prevalent, and much discussion has been held upon the subject of small-pox, we think a short history of the disease itself, and the means used for its prevention up to the period of vaccination, will be of interest.

Without doubt, small-pox is one of the most ancient, as it is one of the most frightful diseases which ever afflicted humanity. Ancient Chinese and Brahmin manuscripts 3366 years old, are said to refer distinctly to epidemics of small-pox. The Chinese call it the "bean disease," and trace it to the reign of the first Emperor of the (eastern) Han dynasty, Kwang Wu, who reigned A. D., 25-28. It is said to have been imported from some portion of Central Asia, or from some part of South Western China, by some Chinese troops returning from a foreign campaign. The earliest Chinese work on small-pox is a treatise called "Wan-jin-shi-tau-chin-lun," published in 1323, from which it appears that they had practised inoculation more than a thousand years. Allowing that it entered Europe from the East, the exact date of its introduction is unknown, but it is certain that the Arabian army was attacked by it at the siege of Mecca in A. D. 569, and that in 570 it was both in France and Italy. In the eighth century all Europe was infected with it, the virus having

been in many cases disseminated by the Saracens; and in the same century it was introduced into England, where it soon became naturalized.

The history of small-pox in England, naturally divides itself into three parts, viz., the first period from the eleventh and twelfth centuries to 1721, in which period it was altogether unchecked; the second epoch, from 1721 to 1802, during which it was palliated by inoculation; and the last, from 1802 to the present time, during which it has been partly prevented by vaccination. The first period was one of the utmost severity; it raged from time to time throughout England, in a horrible manner, the most fatal of all contagious disorders. Sir Gilbert Blane estimated that small-pox destroyed 100 for every one that perished by the plague; and Dr. Black estimated the annual mortality from small-pox during this period, in Europe, to be 494,000.

In the second period, inoculation was introduced from Constantinople, by Lady Wortley Montague (1721). This operation had, as we have mentioned, been practised from a very remote period, by the Chinese, who inserted a small-pox scab, or crust, in the nose. It had also been practised 100 years before this date, in Wales, the method there being known as that of "buying the small-pox."

The effect of inoculation was to induce a milder disease, the mortality from natural small-pox in those times being one in five; in inoculated small-pox first one in fifty, and then, when greater care was taken, and operators became more skilful, one in five hundred. Its value as a sanitary measure, in those times, was great, and this, Dr. Guy proves, by taking the ratio of deaths reduced to the common standard of a million for three decades—one ending 1719, in which no inoculation was practiced; a second decade ending 1749 of partial inoculation; a third, ending 1799, of general inoculation. For the first, the figures are 31,416; for the second, 28,282; and for the third, 22,863.

In 1801 Dr. Jenner's discovery of the prophylactic properties of vaccination began to be widely known (vaccination was actually introduced in 1797, and Jenner published the results of

his experiments in 1798), but it was not practised to anything like a general extent for a few years. The actual number of the vaccinated in 1801 is said to have been about 6,000; but its marvellous power was soon felt, and is imperishable in the records of humanity. Dividing the last forty unvaccinated years of the eighteenth century into four decades, and taking six decades of the vaccinated nineteenth century, up to 1860, by calculating the ratio of deaths from small-pox to deaths from all other causes we get the following remarkable series: For the four unvaccinated decades 108, 98, 87, 88; for the six vaccinated decades, 64, 42, 32, 23, 16, 11. These figures alone, show what vaccination can do. That vaccination properly carried out, all over the world, would actually extinguish the disease, there can be little doubt; but on the other hand, that vaccination slovenly performed (and that only once) imperfectly protects a nation, is proved by the recent epidemics in England, Europe, and America.

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TOBACCO—ITS EFFECTS.

We give this month, a paper on tobacco, from Dr. Drysdale, but as his conclusions are entirely too sweeping, we cannot forbear giving counter authority. Not that we wish the use of it to increase, for as a habit, it is, to say the least, a selfish one and unnecessary. But in justice to the plant, we must give our readers both sides, and then let them choose for themselves, either its disuse or use. First of all, we may add to the other evidences that Dr. Drysdale has cited one from M. Decroix, recently published in the "Bulletin de l'Association Française contre l'Abus du Tabac et des Boissons Alcoholiques," a paper in which he enumerates no fewer than 16 diseases—the list commencing with cancer of the tongue, and ending with idiocy and premature old age, as resulting from the use of tobacco.

A fact that goes far to show the error of so extreme a view, may be deduced from the careful observations of Thackrah, Parent-Duchâtelet, and D'Arcet. We learn from them that workers in tobacco factories—men who are usually great smokers

—are exceptionally healthy, and suffer less from contagious diseases than other workers whose hygienic conditions are similar.

Looking impartially at the little *reliable* evidence we have on the effects produced by tobacco smoking, we may conclude that juvenile smoking is in *all* cases, and under all circumstances, bad, the effects produced being tobacco amaurosis, impaired eyesight, thinning of the hair, and other symptoms of excessive draughts on the tropic nerve centres; that to all constitutions it is hurtful in excess, and to many, pernicious in any degree, however small, inducing dyspepsia, muscular tremors, and nervous palpitation, and that it is, in many instances as we said before, a selfish indulgence, and one likely to produce habits of dreamy, listless indolence; but that, on the other hand, to the poor man, living and working hard, to the soldier ill-fed during a campaign, to the literary man, the artist, and others whose occupations demand great mental effort (more especially if the individual possesses a highly excitable nervous organization), tobacco is useful, soothing, and comforting. That tobacco in moderation is a brain-destroying agent, is sufficiently disproved by the fact that many of our most eminent writers have been votaries of the pipe, and some of the most acute statesmen, confirmed smokers.

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GEORGIC LIBRARY.

Among the free libraries of this State one of the most useful and valuable is the "Georgic Library," founded by Dr. T. A. Cheney, at Starkey, in Yates County, not far from the famous Watkins Glen. The Hon. H. Boardman Smith, of Elmira, in a memoir of Dr. Cheney, says of him: "He accomplished his proposed studies at Oberlin, and in 1849 returned to Leon, where he soon after established the 'Georgic Society'—composed mainly of graduates of academies who proposed to pursue the higher studies—of which he was President. This society instituted the 'Georgic Library,' which is now established upon a permanent basis, and has become, particularly in its rare collections of historical and scientific works, one of the most valuable free libraries in Western or Central New York." Its establishment is highly creditable to the public spirit of Dr. Cheney and his friends.—W. C. BRYANT,

[We hope it will not be long before Montreal may boast of a similar institution.—ED. P. H. M.]

Miscellaneous Selections.

SANITARY EDUCATION.*

Public Sanitation in this country is in the paradoxical condition of being in strong manhood and infancy at the same time. The feeling of insecurity caused by the warnings of Southwood Smith, Chadwick, Arland, and others, has created a school of men who have made Public Hygiene, Conservative Medicine, and Sanitary Engineering sciences which have reduced vague theories to substantial practicalities, which have a literature bristling with maxims hewn from common sense; and it may be safely stated, that though a vast amount of knowledge has yet to be attained on each of these subjects, we are in possession of certain reliable facts which, if acted upon, would do a great deal to reduce the death-rate and disease-rate, and raise the living humanity of poverty from the low state of vitality it has fallen into in all large cities to a much higher standard. We see how some of these, the teachings of sanitarians, have in some degree stayed the hand of pestilence, and there is every reason to believe if the advice thus given had been acted on thoroughly, and without regard to trouble or money cost, we should have had a diminution in the death-rate of all towns over 40,000 souls during the past quarter of a century, instead of an increase, as we have—while, however, there is this class of professional sanitarians earnestly endeavoring, day by day and hour by hour, to awake the authorities to a due sense of their heavy responsibilities—a class, we may say, in advance of its times, and fully capable of dealing with the question.

We have populations crowding together thick, and thicker every year, so avowedly ignorant of the elements of healthy con-

* "On the Education of the People with reference to Sanitation." A paper read in the Health Section, Social Science Congress, Liverpool, October, 1876, by E. B. Ellice-Clark, Assoc. Inst. C.E.

ditions that they are often worse than the brute beasts of the open fields: only those who are brought into personal contact with the very and refuse poor, know to what an extent this ignorance prevails; and it is not with the poor alone; the middle and commercial classes, the aristocratic and wealthy, are as badly off for instruction or information. It commences with the peasant town-housed Irishwoman, who never washes the head of her infant offspring, leaving a scalp of dirt to prevent cold, and runs through the professional and commercial classes whose education does not embrace one single element of sanitation except personal cleanliness; finally reaching the aristocracy, who, with few exceptions, look upon the question as filthy, and too disgusting to be tolerated for conversation, much less to discuss openly, as the first great principle of existence. A personal examination of the dwellings of all classes, in nearly every large town in the country, has convinced us, that unless something is done by way of educating the masses of the people in sanitary matters, all the scientific research and practical teachings of experts will be valueless.

Sanitarians may labor for ever with little result for good without the assistance of the people. Individual responsibility should be insisted on. Little can be effected with the adult populations; but through the School Board there is an opportunity of inculcating knowledge at an age when it is never forgotten. Controversy, loud and deep, has been heard throughout the country as to teaching religion in schools, but there can be no question of doubt here for Churchman or Nonconformist. The author would insist on classes being formed to teach children the use of the water-closet—the necessity of daily washing—how filth is removed from towns, and why—what is the use of pure air and water—the objects of the scavenger's cart, the dustbin and ashpit—why the streets are paved, swept, and watered—the reason there are drain-traps in the court—that the refuse of our food becomes unwholesome, and must be removed from the air we breathe—the responsibility of the individual, and many other such matters. There need be no technical language or long

words; let them be in short, easy phrases, and if in rhyme and sung by the children the better; impress these in early youth; they will not in all cases be acted upon, but they will expand the minds of those for whom sanitary laws were made; and sanitarians are working, and must assist in such work. Indeed, without it, build up a sanitary edifice by Parliamentary standard ever so, ye will labor in vain that build it unless you insist on fixing on individuals the responsibilities that individuals produce.

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THE VENTILATION OF HER MAJESTY'S SHIPS.

The Construction Department of the Admiralty must be having just now rather a bad time of it. A very protracted enquiry, commenced more than a year ago, and the results of which are but just published, goes to show that, as sanitary science afloat is understood at Whitehall, the proper ventilation of a ship is utterly incompatible with her safety. H.M.S. "Vanguard," supposed to be one of the most perfect ironclads in existence, seems, from the report now before us, to have been put hopelessly under the sea because the entirety of her water-tight bulkheads had been destroyed by some officer in the Controller's Department at Devonport, who conceived the (to their Lordships apparently insane) notion that comparative health at sea was, generally speaking, preferable to absolute safety, and so incautiously ordered ventilating openings to be cut through certain of these bulkheads. In this particular case the ship now practically ceases to exist; and it is perhaps immaterial to discuss whether, if she had not gone down in consequence of the imperfect state of her compartments, she might not have gone up from a gaseous explosion, the result of imperfect ventilation of the coal-boxes. But, as it appears that this piercing of bulkheads to promote ventilation (not to increase the risk of sinking) has been going on in no fewer than fourteen ships of the Royal Navy, it is incumbent upon us to ask on whom the responsibility rests of advising and seeing as to the sanitary condition of ships that are being continually planned onstructed, and launched, at a vast cost to the nation. We as k

the question, but can answer it very promptly indeed. There is no sanitary officer in the Constructor's Office at Whitehall. The Medical Department of the Navy is never, and has never been, consulted as to the sanitary requirements of a ship, until she has been commissioned for some time, and her gross unhealthiness is demonstrated by some sort of epidemic. The sickness (quite irrespective of the mortality) caused by culpable carelessness in this matter is very large and wholly inexcusable. We have here, in this case of the "Vanguard," a notorious instance of a Queen's ship, constructed most expensively, but with an entire disregard of all sanitary principles. A lame attempt is made to obviate the inevitable and evil result, which attempt, as we glean from the official report, causes the destruction of the ship.

We remarked some months ago, for the third or fourth time, that these expensive events will continue to occur until a skilled officer from the Medical Director-General's Department is attached to the Constructor's Office at Whitehall, whose duty it shall be when the lines of a ship are drawn, to show in detail how each and every part of that vessel ought to be ventilated.—*The Lancet*

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A VERY REMARKABLE CASE.

The New York papers contain an account of a strange case of convulsive seizure which has baffled the skill of more than sixty medical men of high standing. The subject of the attack, a well-to-do farmer residing at Springfield, was suddenly taken on the 15th November, 1858, with convulsions, which lasted until the 28th. Every year, for eighteen years, he has been similarly attacked. Medicines are of no avail whatever. He is as healthy and strong as ever, and entirely well, except for these attacks. His convulsions are terrible to witness. He experiences no pain while they are upon him, and is perfectly conscious all the time. His violence is such that it requires the united strength of five men to hold him. His contortions are described as simply horrible—every muscle in his body seems to writhe and twist, his limbs and arms are flung about convulsively, his face is contorted

to a hideous degree, and, as one informant said, he "would assume all manner of shapes, actually tying himself into a knot, until it seemed as though every bone in his body must break." The superstitious attribute it to the devil's machinations, and believe that the man is veritably "possessed." The people of Springfield and numerous other persons have witnessed the patient's contortions when the "spirit was at work."—(*Medical Examiner.*)

Editorial Notes and Answers to Correspondents.

[To the Editor, PUBLIC HEALTH MAGAZINE.]

DEAR SIR,—

The enclosure is from the inside band of my felt hat, and I am under the impression that poison is in the leather, from the fact of my forehead, which is always clear, being covered with pimples. Since the enclosure was cut out, the pimples have been disappearing. Look into this matter, please, and if you think it of sufficient importance, take notice of it in your PUBLIC HEALTH MAGAZINE, which I will see.

MONTREAL, 28th October, 1876. EDINA.

[We have examined the enclosed hat-band, and find that it has been colored by a poisonous aniline dye. It is not an uncommon occurrence, as may be seen from the fact that many of our professional journals have reported cases similar; some persons, in fact, having suffered very severely from its effects. —EDITOR P. H. M.]

SYNOPSIS OF METEOROLOGICAL OBSERVATIONS IN NOVEMBER FROM McGILL COLLEGE OBSERVATORY.

Mean temperature of month, 34.146. Mean of maximum and minimum temperatures, 34.48. Greatest heat was 54.0 on the 3rd; greatest cold was 7.7 on the 30th,—giving a range of temperature for the month of 46.3 degrees. Greatest range of the thermometer in one day was 17.4, on the 3rd; least range was 1.2 degrees on the 2nd. Mean range for the month was 8.51 degrees. Mean height of the barometer was 29.9632. Highest reading was 30.400 on the 18th; lowest reading was 29.373, on the 3rd, giving a range of 1.027 inches. Mean elastic force of vapor in the atmosphere was equal to .1725 inches of mercury. Mean relative humidity was 83.4. Maximum relative humidity was 100 on the 2nd and 8th. Minimum relative humidity was 51, on the 29th. Mean velocity of the wind was 10.76 miles per hour; greatest mileage in one hour was 30 on the 3rd. Mean direction of the wind, N.W. Mean of sky clouded was 73.0 per cent. Rain fell on 12 days. Snow fell on 5 days. Total rainfall 1.76 in. Rain or snow on 16 days. Total snowfall 0.07 in. Total precipitation, in inches of water was 1.83.

REMARKS

ON

VACCINATION

BY

WM. H. HINGSTON, M.D., D.C.L., L.R.C.S. EDINR.

Member of the Imperial Leopold Academy; Société Médicale All. of Paris;
Pollichia of Bavaria; Hon. Mem. Gynecological Society of Boston.
&c, &c.,
Surgeon to Hotel-Dieu Hospital; Consulting Surgeon to
Woman's Hospital and Montreal Dispensary;
President Canadian Medical Association;
V.-P. Internat. Medical Congress.

Chairman of the Board of Health.

MONTREAL:

PRINTED BY LOUIS PERRAULT & CO.

87 ST. JAMES STREET.

1876.

VACCINATION.

Address by His Worship the Mayor, Wm. H. Hingston, M.D., Chairman of the Board of Health, to the Public Vaccinators, and other Physicians and Citizens, on Friday the 20th October, 1876:

Gentlemen: The prevalence of small-pox in this city, disturbing its tables of mortality; affecting its reputation; and injuring its trade; has rendered it necessary that more than usual efforts should be made to eliminate it from our midst. Large and airy hospitals are established, where every care and attention are secured to those who are admitted. It is hoped personal and selfish, (if not patriotic motives alone) will induce those afflicted with the disease to isolate themselves, and seek comfort and alleviation within their portals; and not continue to be sources of danger to others. But such isolation as can be secured is unequal to arrest the progress of the malady without the prophylactic means which science has secured to us. Your services, gentlemen, have been invited for that purpose, and to you is entrusted the important task of vaccinating throughout the city generally.

While having every confidence in your thorough fitness for the important work; that you may pursue a common course of action I have prepared a few rules for your guidance. They have received the sanction of the Board of Health to which I submitted them at our meeting two days ago; and will, I venture to hope, be found sufficiently clear and distinct for the purpose for which they are intended.

BOARD OF HEALTH.

INSTRUCTIONS TO VACCINATORS.

1. Do not act by deputy, but vaccinate, either by yourself, or by some fully qualified medical practitioner as your substitute.
2. Vaccinate only subjects who are in good health, with prima via in good order; and with no eruption behind the ears, or elsewhere on the skin; nor any febrile state.
3. Do not vaccinate a subject to whom, from the state of health, vaccination may prove injurious.
4. The Board is responsible for the purity of the lymph furnished in the first instance; but as you are strictly responsible for the quality of whatever lymph you gather for further vaccination, be careful to take it only from subjects who are in good health, and free from eruptions on the skin.

N.B.—Good lymph is liquid, clear, limpid, translucent, sometimes slightly yellow, and moderately viscid, and should flow slowly from the punctured vesicle as a syrup, and collect into a globule.

5. Take lymph only from well characterised uninjured vesicles, and not from cases of re vaccination.
6. Take it when the vesicles are plump, (this is usually on the 8th day) and within twenty-four hours after the areola has begun to form.
7. Avoid draining any vesicle which is punctured.
8. If any undue local irritation arises in more than one case vaccinated from the same lymph, desist from employing it any further.
9. If the supply of lymph ceases or becomes unsuitable, procure a new supply from the cases already vaccinated, or from the Board of Health.
10. Vaccinate from arm to arm when practicable.
11. If the crust be used, it should not be taken from the arm before the 21st day: or better still, wait till it is quite loose.

N.B.—The crust should be of a dark amber color, and semi-transparent. It should not be too thin nor brittle, but should cut easily, and without fracture, and be the product of an undrained or uninjured vesicle.

12. The Lancet used for vaccinating must not be employed for any other surgical operation.

13. Note particularly, in each case, the source from which vaccination is done.

14. The system should be throughly protected by the production of at least four vaccine vesicles.

15. Carefully fill up the blank Certificate furnished, of those vaccinated; or furnish a card to be forwarded to the Health Office for those willing to be vaccinated, but who prefer their family Physician; or note name and address for the information of the Board of those unwilling to be vaccinated by any one.

WM. H. HINGSTON, M.D.,
Chairman.

I. C. RADFORD,
Secretary.

It has been suggested to me by some of your body, that, in addition to the above, something might be said to meet the objections urged by those active, but mistaken writers, against the practice of vaccination. Had similar articles been written against the practice of setting fractures; of reducing dislocations, or of removing dead parts from living bodies, I should have thought it useless to reply: for if surgeons contend that a dislocated bone should be reduced, the profession —I speak of its more experienced members—is almost equally unanimous in favor of the practice which some so persistently, and so unfortunately, denounce. It is something to array oneself against the general belief. To follow quietly in the footsteps of those who, in all things else, medical, are our guides, brings with it, to the mind, less *éclat*, than to take up arms in what may be considered a safe warfare—safe, perhaps, to the combatant, but fraught with terrible mischief to those most interested. To prove to the unprejudiced that vaccination exerts a protective influence over the economy would be an easy task, for the writings of thousands, from the time of Jenner to our own day, are before us for the purpose; but to attempt to convince those who persistently close their eyes to the overwhelming evidence of almost every country and government in the world, including our own, would be as fruitless as was the effort to convince the disbeliever in matter of the reality of the missile which almost knocked off his too unyielding head. In deference, however, to wishes expressed, and suggestions offered at a meeting on Wednesday last, I venture some observations on this disease, now unhappiely too prevalent, and on the means which science has furnished for its prevention.

Small-pox has its periods of dormancy, and its

periods of activity, at one moment overspreading a district, and at another disappearing. It is fatal in direct ratio to its epidemic character. Cases occuring sporadically (here and there in spots), are not so fatal. It is the most contagious of all diseases; and this is a point on which I wish to insist; for some industriously endeavor to circulate the belief that small-pox drops upon individuals as rain drops from heaven—touching this one and sparing that! It is communicable in every way: by inoculation, by breathing a contaminated atmosphere, by the contact or vicinity of fomites. It is infectious in the early febrile stage; infectious before and during the eruption; and infectious "so long as any of the dry scrabs resulting from the original eruption remain adherent to the body" It may be caught, therefore, from the living body; it may be caught from the dead body; or it may be caught from clothing and furniture near the living or the dead body. So much has this foul disease been dreaded, that different nations in times past endeavored to mitigate the malady by communicating it artificially. The Brahmins in India engrafted the virus; so also did the Turks; and the Chinese were in the habit of putting some of the crusts into the nostrils. The practice of inoculating with small-pox virus became more or less general in Europe; and its efficacy in mitigating the severity and the danger of the disease was considered to be very great. While it is estimated that one third of those who take the natural small-pox die, not more than three or four in a thousand are destroyed by the ingrafted disease. (Carschman states it to have been about two per cent.) But the time for small-pox inoculation is past, the law having wisely forbidden it.

Eighty years ago a chance observation was matured into a rational and scientific form by a mind deeply imbued with the best principles of sound philosophy; and a disease, mild in form, and safe in character, was substituted for the inoculation of the Turks and Chinese. In 1798, Jenner published his first important paper. In 1799 the first public institution for vaccination was established in London; in the following year it was introduced into France and Germany, and the practice of vaccination has now become general over the whole educated world. Here and there, as might be expected, it has met with opposition; but every objection that has been urged by the anti-vaccinator has been answered again and again by the leading minds of the profession. So much is this the case that I feel I owe something like an apology to my medical brethren for writing affirmatively of a practice which most of them endorse. I spoke a moment ago of Jenner as a discoverer; but Jenner did not discover vaccine any more than Watt discovered steam. He noticed the prevalent belief among the peasantry in the immunity from small-pox enjoyed by farm servants and milk maids; and little by little he drew the conclusion which has been so pregnant with benefit to mankind. The belief in the existence of a vaccine virus was not confined to England. Cow-pox and its relations to small-pox had been noticed long before on the continent of Europe; * and in France and Germany numerous experiments had been made, prior to the time of Jenner, to show that persons affected by natural

*Doctor Michea published an article some years ago proving that Vaccination was known to, and practised by the Hindoo physicians; and gave an extract from the Satega Grantham (a sacred book attributed *to Dhanwantari) in support of his assertion.*

vaccine virus were not susceptible to the small-pox influence. Jenner's merit consisted chiefly in *producing* the virus at will, and in diffusing it, at pleasure, for our advantage. And how slowly and how cautiously he advanced his every statement, may be gathered from the fact that twenty two years elapsed between his first experiment and the promulgation of his theory. He was assailed then, as his memory is to-day; but with more excuse then than now, for no one having the leisure and the disposition to read, and having access to the records of medical observers, has now the shadow of an excuse for rejecting the theory then advanced, the critical acuteness of which, says Curse'im una, *may serve as a model.* But we do things differently now a days, and a harangue in a market place or public square, by gentlemen who may, 'tis true, be authorities in *law*, but cannot be accepted as such in medicine, is deemed sufficient to introduce the uninitiated to a knowledge of one of the most difficult and abstruse subjects in the whole range of medical science. I shall not allude to the members of my own profession who have chosen so far to forget what is due to their own dignity, and the dignity of their calling, as to select *such an arena for the dissemination of their fatal* errors.

As the times are as pregnant with mischief, as the air is with the disease, I proceed to ask and to answer questions asked and answered a thousand times:

1st. Does vaccination confer a certain degree of protection against small-pox?

2nd. Are the effects of vaccination permanent?

3rd. Is there risk of lighting up local inflammatory action?

4th. Is there risk, when vaccinating, of inoculating the system with scrofula, or other hereditary disease?

5th. Is there risk of contaminating the system with syphilis, or other acquired disease?

The answers to these questions will, I think, cover the ground gone over by the anti-vaccinists.

1st. A simple assertion that vaccination does confer a certain degree of protection against an attack of small-pox would at once be met by a counter assertion that it does not. The question, therefore, will be answered inferentially, and from authors the most trustworthy, though a desire to economize space prevents me from citing them at length.

And first for *England*. In the first thirty years of the last century, when inoculation of small-pox was unknown, the mortality in London from that disease was 7.4, and at the close it was 9.5 per cent, inoculation having been introduced in the interval. A Committee of the Epidemiological Society have compiled tables to show the ratio of mortality from small-pox in London before and since vaccination was introduced, and the following are the results: For the fifty years, from 1759 to 1800, the average number of deaths from small-pox, out of every 1,000 deaths from all causes, was 96 or nearly ten per cent; while during the first half of the present century (the half century *succeeding* the introduction of vaccination) the mortal ty was 39. In the whole of England, accord ing to official returns, the estimated death rate from small-pox alone at the end of the last century was 3,000 per million, while from the same returns the present death-rate from the same cause is only 200 per million! An analysis of the latter is most interesting. Vaccination has, in Great Britain as elsewhere, had its

opponents, but the practice has become more and more general, (and the opposition to it less and less,) till now it is quite general. What is the result? During the first ten years of the present century, the mortality from small-pox in every thousand deaths from all causes was 64; in the second decade, 42; in the third, 32; in the fourth, 23; and in the fifth decade it was 16. Let the anti-vaccinators explain this as best they may. Not only has the average of deaths from small pox diminished in the above ratio, but epidemics of the disease have become less frequent. Before vaccination it was as 48; during vaccination it was as 14. The inference from all this is thus drawn by Sir Thomas Watson (the ablest medical writer in London): "Where vaccination is, the contagion of small-pox need never come."

Dr. Robert Thomas, author of the "Practice of Physic," which serves as a text book for students and physicians, after a long and careful analysis of the vaccine question, and giving to every objection the most patient consideration, thus sums up: "the introduction of vaccination, notwithstanding all the abatements which must be made in the estimate of its powers, is still one of the greatest boons that science ever conferred upon mankind. Compare the ravages committed by small pox, before and after this important epoch; and we may in the first place, appeal to general experience in the words of the Report of the National Vaccine Establishment, where the rarity of an example of disfigurement by small pox now to be found in theatres, in churches, or any large assembly of the people, is adduced in proof of the continued protective property of the lymph employed." After a long and laborious analysis of the bills of mortality, and of the observations of Christian of

Liverpool, Percivall of Manchester, Monro, Ceely, Gregory, Thomson, Curtis and others, he says: "if these conclusions, derived as they are from somewhat extensive data, be at all near the truth, they will go far to prove Mr. Curtis's assertion, where he says of vaccination, that its value is much greater than that of any known remedy for any known disease at all comparable to small pox in mischief to the human race.

How is it in *Wales?* Dr. Hughes, of Mold, states: "no child born in the Mold district, and alive at the date of the registration of its birth, has died of small-pox during fourteen years, yet small-pox has prevailed on various occasions all around it."

How is it in *Ireland*, where vaccination has been compulsory for the last fifteen years? The immunity afforded by vaccination there has been such as to induce a wide-spread belief in its efficacy among the people. Vaccination is practiced generally all over that country, and the children of the soil carrying with them an entire confidence in the practice, are always the most willing to be vaccinated. The results are seen in the following figures, from which it appears, says an official document, that the Irish physicians have banished small-pox from their island, as Saint Patrick is said to have banished the snakes. In the periods 1830 40, 1840-50 and 1850-60, before vaccination was general, the respective annual average mortalities had been 5,800, 3,827, and 1,272. In the years 1864, 5, 6, 7, 8, they were 854, 347, 187, 20 and 19, respectively. In the first half of 1869, the whole number was three! The remarkable immunity from small-pox conferred by vaccination, induced a laxity in the practice, and a few cases occurred subsequently to 1869, but they were supposed to have been imported. In Montreal there are comparatively few

children of Irish parentage unvaccinated, and our tables of mortality—to which I beg to refer—show how very few of that nationality die of small-pox.

What is thought in *Scotland* of the protective influence of vaccination? I quote again only our medical teachers—those from whom we are content to receive our medical knowledge. One of the most distinguished medical philosophers that Scotland—and Scotland is prolific in medical philosophers—has produced; and one who graced, for a great number of years, the chair of medecine in the University of Edinburgh, writes thus: "The first question is whether or not we have, at this time, in the matter of cow pox, a power at our command capable, if duly employed, of depriving the poison of small-pox of all fatal influence over an immense majority of mankind. And on this subject there has been quite sufficient information collected, since the date of the papers which were held decisive of the question fifty years ago, to show that the same inference is still inevitable, and that he who disputes it is equally unreasonable as he who opposes, in like manner, any proposition in Euclid. Of course, when I say there has been ample evidence to decide this question statistically, I mean to refer to cases where we have not only the negative evidence of large numbers of persons duly vaccinated, having been subsequently, most of them repeatedly, or for a long time together, exposed to the contagion of small-pox—*i. e.*, placed in the same circumstances in which unvaccinated people have been generally affected, and many of them died of small-pox; these vaccinated persons have nevertheless escaped, most of them without any indication of disease. To show that this is the light in which I have always regarded such collections of facts, I quote

one sentence from my own lectures, written as long ago as 1820-1821, and repeated almost every winter since then .— You will remember that the question is, not how many vaccinated persons never take small-pox, but how many vaccinated persons are fully exposed to the contagion of small pox and escape without any disease , and our assertion is that, so far as is yet known, absolute protection of the human constitution is the rule, and the occurence of any disease is the exception." Those who, like me, have had the advantage of listening to that most profoundly logical and conscientious medical teacher, well know the care and thought he gave to his every utterance. Dr. Alison has passed away, and what says Dr I. Hughes Bennett, his successor in the professorial chair ? " We have no remedy (for small-pox) but vaccination ! "

Let us now proceed to the Continent, and what do we find ? And first to *France*— ever foremost in all researches having science for their foundation. M. Bousquet, in his *Traité de la Vaccine*, gives most accurate and interesting details of an Epidemic of Small-Pox which visited Marseilles in 1825 The population of Marseilles amounting to 40,000, might be divided into three classes, of which the respective numbers stood thus : 30,000 vaccinated ; 8,000 neither vaccinated nor variolated ; and 2,000 variolated—that is who had the small pox either naturally or by inoculation. Of the 30,000 vaccinated, about 2,000 were seized with the prevalent small pox epidemic, of which number 20 died or 1 for every 100 affected. Of the 2,000 variolated, 20 were attacked and 4 died , or 1 in every five cases. Of the 8,000 non-vaccinated, 4,000 were affected, and of this number 1,000 died or 1 out of every 4 cases. From this it follows

that one-half of the non vaccinated, 1-15th of the vaccinated and only 1-100th of the variolated took the disease. But such was the difference in the comparative severity of the attack in the vaccinated and variolated, that while the variolated part of the population were cut off in the proportion of 1 out of every 500, the vaccinated part of the population only lost 1 out of every 1500, or in other words, of an equal number of variolated and vaccinated cases, 3 variolated died from the second attack, for every one who died of the disease after vaccination!

Gaultier de Glaubry states—and his statement is confirmed by others—that while, in 1841, small-pox in France carried off more than a seventh of those attacked by it who had not been vaccinated, the mortality was only one in a hundred among those who had contracted the disease after having been vaccinated.

La vaccination peut être pratiquée avec succès, says Bouvier, en toute saison, en tout temps d'épidémie on doit vacciner les enfants le plus tôt possible après leur naissance, les re-vaccinations sont nécessaires pour mettre à l'abri de la petite vérole; elles sont sans danger et particulièrement utiles pendant la durée d'une épidémie quelle que soit l'époque de la précédente inoculation du vaccin.

There are, in every country, men who stand out in bold relief even among their compeers; and high among the ablest medical writers of France, or of the world, is the name of Grisolle—*cette ame à la vieille marque.* There are some so bold,—and I am one of them—as to place his "*Pathologie Interne*," among the greatest productions of genius—a work in which no unstable theories however brilliant—no baseless speculations, however fascinating—find place—a work

which reached its 9th edition in about twice as many years, and which, during that period was, and still is, the standard authority upon a most important department of medicine. M. Grisolle says: "Les recherches de Jenner lui ont assigné une place éminente parmi les plus grands bienfaiteurs de l'humanité. La vaccine a donné lieu en France à des travaux importants. On peut vacciner dans toutes les saisons et à tout âge. On attend généralement que les enfants soient agés de deux ou trois mois pour les inoculer; mais cette pratique, *que rien ne justifie*, n'a aucun avantage; ce retard a été cause que beaucoup ont eu une variole presque toujours mortelle, et qu'on aurait pu leur épargner. J'ai inoculé mes deux filles dès la fin de leur première semaine. C'est ainsi que nous devons agir pour nos enfants, plus exposés sans nul doute que les autres à la contagion médiate. On devrait même inoculer aussitôt après la naissance, si l'on était en temps d'épidémie varioleuse, ou si les individus vivaient dans un milieu infecté; c'est ce que j'ai fait maintes fois à l'hôpital sans aucune espèce d'inconvénient. Il n'y a aucune préparation à faire subir aux sujets qu'on doit vacciner. L'opération de la vaccine est fort simple. Il est certain, en effet, que *la plupart des vaccinés sont définitivement à l'abri d'une atteinte de variole. Il est certain du moins que la vaccine rend la variole bénigne que la mort en est rarement le résultat.*" I have quoted at length from Grissolle; as he may be said to bear the relationship to medicine, in France, that Blackstone does to law in England. In *Copehagen*, the fatality from small-pox is but an eleventh part of what it was before the introduction of vaccination, "in *Sweden* it is a little over one-thirteenth; in *Berlin*, in Prussia, and in large parts

of *Austria*, but a twentieth; in *Westphalia* but a twenty-fifth!!" In *Bohemia*, *Moravia*, and *Silesia* it has been reduced from 4,000 in every million of deaths to 200 per million! Not only is it satisfactorily established that vaccination is an effectual safeguard against small-pox, it is, according to some, more effectual in preventing small-pox than is small-pox itself. This was thoroughly tested in Hanover, where it was found that out of a hundred soldiers re-vaccinated, sixty-two per cent failed altogether in producing a vaccine vesicle; and twenty-seven per cent were only partly successful. Soldiers who had already had small-pox were operated upon in the same way, and with precisely the same result.

Taking Europe as a whole, the conclusion arrived at by Berard and DeLavit, of Montpelier; Hodenpyl, of Rotterdam; and Thompson, of Edinburgh, after a close observation, and especially of the epidemic of small-pox in 1816, 17 and 18, in (1) the vaccinated; in (2) the variolated; and in (3) those who had neither been vaccinated nor had small-pox was, according to Dr. Stark, thus: Of those who had neither had cow-pox nor small-pox, one out of every four who were seized with the disease, died; of those who had small pox naturally, or by inoculation, one of every twenty-five to one in seventy-five died; while of those who had been vaccinated, and were afterwards seized with small-pox, not more than one in three hundred and thirty cases died; thus showing the great superiority of vaccination, even to the small pox itself, in protecting the system from the fatal effects of a second attack.

Such information as I could glean from different sources leads me to the conclusion that an attack of small-pox and vaccination confer the same degree of

immunity from an attack of small-pox; but that subsequent *fatal* small-pox follows more frequently after small-pox than after vaccination.

How is the practice of vaccination regarded in the *United States?* Gentlemen: it would be an endless matter to quote the opinions of the many medical observers in the adjoining Union, but I shall introduce the substance of everyone's remarks as furnished to the State. Several of the States of the adjoining Republic have their State Board of Health; and each Board may be considered to reflect the opinion of the medical minds in the State. The State Board of Health for 1871 says:—"No amount of disinfectants can cope with this dire disease. The only way to thoroughly drive it from the United States is by a national law, as in England, requiring every parent to duly register his child after having been duly vaccinated." The experience of Massechusetts is summed up in the report from which I quote: that small-pox has appeared here and there, but where it has appeared sporadically it has always been in places where vaccination had been neglected. The town of Holyoke, in the Connecticut valley, was an illustration. One-fifth of all the deaths from small-pox occuring in the whole State took place there. The people in Holyoke had not been vaccinated as elsewhere. Dr. Geo. Darby, of Boston, Secretary of the State Board of Health, summarises for his Board as follows (and his summary receives the sanction of the Board); vaccination "invests the human body with an armour which may hardly be penetrated by this subtle poison." A year later (an epidemic of small-pox having passed over Connecticut) he writes: The present epidemic is of such intensity, that it is quite common for persons who have had small-pox in former years to now have it

again. Such occurrences have been previously rare. Vaccination, whether from the cow or from the human body, "takes" readily; and re-vaccinations prove abundantly the extraordinary susceptibility to the vaccine disease now prevailing, and *never before existing*. In view of these facts, with which physicians and intelligent persons, of whatever calling, are now familiar, let us thank God for Jenner's great discovery, without which our homes would be desolated, and our peace and happiness destroyed. The imagination can hardly picture the horror which would to day pervade Massachusetts, were the present epidemic unchecked by vaccination." A year later (1874)the epidemic being over, the same authority, and the same Board, report *inter alia*: One year ago * * we were in the midst of an epidemic of small-pox of extraordinary intensity * * * the protective power of vaccine has been proved beyond all question, and the absolute need of *careful vaccination* is equally evident. From September 6th to the close of the year, not a single death from small-pox has been reported to us from the cities or state." I received the last "State Board of Health" report, a few days ago, an interesting document of nearly four hundred pages, and so completely had vaccine done its work that the report contains no allusion to the dreaded disease. Thankful for the immunity afforded, the reporter from whom I quote writes: "Vaccination needs no defence from us. Nothing, however beneficent, can escape the criticism of the times in which we live. But this criticism of vaccination, often passionate and violent, relates chiefly to points which, however interesting they may be, leave the main question unaffected. Let any one read the history of the ravages of small-pox before Jenner's discovery, and compare

it with the mortality of Massachusetts from this cause in the present generation, and ask himself the reason of this change. There can be but one answer. We may speculate about the possibility of the potency of vaccine being exhausted in the human family: we may be surprised to find that people with good vaccine scars sometimes have small-pox: we may dispute as much as we please about the average period when re-vaccination may be considered a prudent safeguard: we may even conjecture (what no man has proved) that other diseases than that of the cow may be communicated by humanized vaccine; we may turn the vaccination question with ingenious skill, so that its many facets shall reflect a multitude of curious lights, and after all we find that we rest in a security against this most horrid pestilence unknown to former generations. The disease is the same now as then, for we see its effect among barbarous tribes; but because Dr Jenner lived, and made the greatest of all discoveries in preventive medecine, we are almost completely safe." I have quoted from a public document which received the sanction of a learned deliberative body – and the approval of the Government of the State—the most generally intelligent State in the adjoining Union. What says the Ohio Board of Health? "While sister cities of Ohio have been recently afflicted with small-pox, Cleveland has enjoyed an exemption far exceeding that of former years. * * * * Our comparative immunity from this loathsome and terrible disease conclusively demonstrates the preventive power of vaccination, and must impress every thoughtful mind with the munificence of the legacy the immortal Jenner left the human race."

I have purposely quoted at greater length from Continental than from British authorities, because it has been asserted by a certain orator who inveighed against vaccination at public gatherings in this city, that it was an "English remedy, and that Englishmen had a pride in engrafting their "beastly" virus on the Christian children of fair Canada"—an assertion reflecting but little credit upon the head, and less upon the heart of the one who advanced it. But American authority, *quo ad* the vaccine question, cannot be suspected of partiality. I have singled out no individual writer on the subject (I might have quoted a thousand American writers in favour of the practice of vaccination) but have confined myself to State documents containing the deliberate expressions of deliberative bodies, reflecting the condensed thoughts of the best medical minds in the United States. I turn with little pleasure to this my own country, and especially to this my own city, and I find anti vaccination views advocated, and disseminated by a small but ceaselessly active section of medical and legal thought. I find from personal knowledge a deeply rooted prejudice against what the scientific world generally has sanctioned; and I find disease, disfigurement, and death following in the wake of those teachings; teachings to the dissemination of which a portion of the daily press has lent its columns. I readily admit that small-pox has its periods of dormancy and its periods of activity, and that, every now and then, at irregular intervals, it overspreads a district or country as if epidemic, but why should it press so lightly elsewhere? Dr. Russell, President of the College of Physicians and Surgeons, residing in Quebec, gives the reason:—"We have very little small-pox here. We are all vaccinated." The table prepared by the skilled House

Surgeon of the Marine and Emigrant Hospital, of Quebec, Dr. Catellier, is a crushing and unanswerable argument against the anti-vaccinators. There were 131 cases admitted into the establishment between the months of May, 1874, and July, 1875, and of these the vaccinated numbered 54, *one alone* died. In 69 cases of un-vaccinated patients 32 were discharged cured, but somewhat disfigured, and 37 died. In 8 cases where it was doubtful if vaccination had or had not been performed, 6 were cured and 2 died. These computations afford us the following startling percentages, which every man and woman valuing the healthy future of their progeny ought to carefully note. The death-rate in *vaccinated* cases, is only 1.8 per cent.; in *unvaccinated* 53.6 per cent.; in doubtful cases 25 per cent. Can anything tend to expose and confirm the claims of this practice upon the people better than these data? Why does small-pox pass so lightly over Three Rivers? Dr. Badeau, the Doyen of the profession there, explains:—"*On n'a pas de picote ici. On se fait vacciner*," The same may be said for Toronto. And why does the disease visit Montreal so severely? *We nurse it.* In Quebec, Three-Rivers and Toronto no one writes against, or attacks the principles of vaccination—the only prophylactic for small-pox. That the converse is true in Montreal is evident from the circumstance that the mortality is immensely greater among that nationality whose beautiful language has been made to serve as a vehicle for the dissemination of a most fatal error. Dr. Osler has kindly handed me the records of the Small-pox Department of the General Hospital from Dec. 14, 1873, to July 21, 1875, the period during which it was under the charge of Dr. Simpson and himself There were admitted during that period 261 cases,

and there were 75 deaths. But how was the death-rate distributed? In the unvaccinated, 58.8 per cent.; in the vaccinated 17.09 per cent.! Dr. Simpson furnished the following additional facts: "All the unvaccinated small-pox patients, except two, had the confluent form i. e. the serious form of the disease. Of the whole number of the vaccinated admitted with small pox only two had more than two good vaccination marks upon the arm, and only two had been successfully re-vaccinated. These latter two were so slightly affected by the disease, that except as a precautionary measure, they might have continued to follow their daily occupations." We have now two civic hospitals in Montreal for small-pox; one presided over by the Sisters of Providence; the other by Miss Chambers. What is the experience of these ladies? I give the questions put to the matrons of both establishments, and their answers:— "Have you noticed my difference between the vaccinated and non-vaccinated inmates of the hospital?" Sister Nativity states, in French:—"There is no comparison between the effects of small-pox on the vaccinated and non-vaccinated, the vaccinated, as a rule, are not affected; and when they are they have it slightly; the deaths are among the unvaccinated." Miss Chambers' experience is precisely to the same effect. What more convincing evidence than this, coming, as it does, from sources whose trustworthiness is beyond doubt or question. But the register of the Civic Hospital, (and for the accuracy of which I can vouch) is even more painfully eloquent;

Patients admitted from 7th November 1874 to 1st November 1876, 564.

	Protestant	Catholic
Of these were.....	168	396
Of the above, recovered.....	134	269
" died	34	127
	168	396
The deaths among non-vaccinated...	25	89
" with 1 vaccine mark.....	7	32
" " 2 "	2	6
" " 3 or 4 "	0	0
Total,.....	34	127

Of the patients who had three, four or five vaccine marks (and there were many in each institution) *not one* died in either!!

Dr. Larocque obligingly analysed the above for me, and gives the following as the percentage of deaths in the various divisions.

DEATH RATE PER CENT.

PROTESTANTS.

Total received 168. Died 34 or 20-23 per cent.
Unvaccinated " 54, " 25 or 46-29 "
Vaccinated " 114, " 9 or 7-89 "

CATHOLICS.

Total received 396, Died 127 or 32-07 per cent.
Unvaccinated " 165, " 89 or 53-93 "
Vaccinated " 231, " 38 or 16-45 "

IN BOTH HOSPITALS.

Total received 564, Died 161 or 28-54 per cent.
Unvaccinated " 219, " 117 or 53-42 "
Vaccinated " 345, " 17 or 4-92 "

Surely Gentlemen, comment is unnecessary on the above.

I do not quote from the physicians of the city, who, with a very small exception, have again and again expressed, and may yet again express, their entire belief in the prophylactic power of vaccination. Volume after volume has been written to establish the claim of vaccine, and my table, as I write, is covered with documentary evidence, the magnitude of which alone prevents its introduction here. Sufficient, however, has been adduced to warrant an answer to the first question in the affirmative: "that vaccination confers a greater or less degree of protection against small-pox."

2nd. *Are the effects of vaccination permanent?*

As a rule the answer may be: *yes*; but the exceptions are so numerous that I must admit the partial truth of what is claimed by some writers "that the protection which vaccination affords against small-pox is only of limited duration." During what time is there absolute immunity? This varies in different individuals; but I have long been of opinion, and that opinion is shared by those who have given attention to the matter, that the manner in which vaccination has been done in the first instance has much to do with the degree and period of that immunity. Although ten or twelve years are said to be the average period, the thoroughly vaccinated have an immunity of much greater duration. In a large, a very large number, unfortunately, vaccination is not performed with anything like approximate thoroughness.

This has been noticed in the Small-pox Hospital here, where an examination of the arms of the inmates has *rarely* discovered marks of a true Jennerian vesicle. But if there is doubt as to the continued immunity afforded by vaccination, there can be none when it has been *properly* performed a second time. Re-vaccination, when successful, affords *entire* immunity, and in support of this assertion I shall cite but one or two proofs from among a thousand. It has been an imperative rule for the last thirty-five years at the London Small-pox Hospital that every nurse and other servant of the Hospital should, on entering the service, be vaccinated. In their case it is generally re-vaccination; and it is never afterwards repeated. These nurses live in the closest daily and nightly attendance upon small-pox patients; and the other servants are constantly exposed to the profuse contagion: yet in no single instance, during these thirty-five years, has any one of these servants and nurses been affected with small-pox. Surely no stronger proof than this can be imagined, that re-vaccination, in the adult, is an absolute protection against small-pox, and need not be repeated. Up to the age of puberty, a child *properly* vaccinated may be considered safe,—but so many of those vaccinated have cicatrices deficient in number, and of a character not strikingly good, that re-vaccination should be resorted to where there is more than usual exposure to small-pox. I have instanced the London Small-pox Hospital as evidence of the advantages of re-vaccination, and shall cite from official sources evidence of the immunity conferred by it on some of the continental armies of Europe. In five years, says Seaton, there occurred in 14,384 re-vaccinated soldiers in Wurtemburg, only *one* instance of varioloid; and among 30,000 re-vaccinated

persons in civil practice only two cases of varioloid (one of which was probably really a case of chicken-pox), though during these years small-pox had prevailed in 344 localities, producing 1,674 cases of modified or unmodified small-pox among the not re-vaccinated, and in part not vaccinated, population of 363,298 persons, in those places in which it had prevailed. In the Prussian army, since the introduction of systematic re-vaccination in 1834, the cases reported as "varioloid," and still more those called "variola," have been, nearly all of them, among that portion of recruits whose term for re-vaccination had not come, or whose re-vaccination had not been successful, or who were incubating small-pox when they were re-vaccinated. In the 20 years which immediately succeeded the adoption of this system there occurred altogether but forty deaths from small pox in this large army—(or an average of two deaths per annum)—only four of the entire forty being in persons, who, it is said, had been successfully re-vaccinated. So also in the Bavarian army, in which there had been compulsory re-vaccination since 1843, there had not, from that date up to the time of a report made by the Minister of War in 1855, been a single case of unmodified small-pox; and only a very few cases of modified small-pox, without any deaths. While, therefore, I answer the second question in the negative, as to the invariable permanency of primary vaccination, the statistics quoted from official sources, with the almost universal collateral concurrence of medical practitioners, warrant the statement that, after successful re-vaccination, small-pox, even of the most slight or modified kind, is *rarely* met with; and that when the post vaccinal small-pox is met with, of a severe character, it is due to the want of care in the performance of

vaccination in the first instance; or to want of preparedness in the system when primary vaccination had been performed. From what has been said, a question of vast moment to adults necessarily presents itself. As all those who have been vaccinated but once run more or less risk of contracting the disease, and as it is admitted that re-vaccination renews, or adds to, the security against small-pox, common prudence would suggest the course to be pursued by those who wish to guard against this malady.

Grisolle, in advising re-vaccination, says:

La pratique des re-vaccinations est généralement adoptée dans les pays du Nord; elle tend aussi à se répandre en France. On peut invoquer en sa faveur qu'une foule d'épidémies de variole, sévissant chez des vaccinés, se sont tout à coup arrêtées dès qu'on eut soumis à la re-vaccination les individus exposés à la contagion. Ces faits sont désormais acquis à la science. C'est à l'aide de la re-vaccination, appliquée comme méthode générale, qu'on a presque complètement éteint la variole dans les armées Prussienne et Wurtembergeoise." *

Although it forms no part of my present subject, yet, as an impression prevails with some, that persons exposed to small-pox contagion incur additional risk in being vaccinated, and of having one disease engrafted on another, it is well to state that such a view

* Dr. Cuignet recently made the following statement at the Société des Medecins du Département du Nord. "With regard to the influence of revaccination as a preservative against small-pox, I will direct your attention to the quite special condition in which the soldiers of the Guard of Paris are placed in this respect. There is not a corps in the entire army in which revaccinations have been so frequently and so carefully performed; and during seventy years no case of variola has been met with among them, in spite of the epidemics which have on several occasions decimated the populous quarters of Paris."

is entirely erroneous. If vaccination is performed sufficiently early, so that the areola may have time to form, it will prevent small-pox; if later, it will modify that disease. M. March illustrates this rule thus: – "suppose an unvaccinated person to inhale the germ of variola on a Monday, if he be vaccinated as late as on the following Tuesday, the vaccination will be in time to prevent small-pox from being developed If it be put off till Thursday, the small-pox will appear, but will be modified. If the vaccination be delayed till Friday it will be of no use." Sir John Watson, p- 888, adds :—"Should the person have been formerly vaccinated, re-vaccination will be effectual two days later than this, because in re-vaccinated persons the stage of areola is reached two or three days sooner than in persons vaccinated for the first time.

3rd. *Is there risk of vaccination lighting up local inflammatory action?*

When we consider the disposition, the temperament, the condition of health, of those vaccinated; and the period of life at which vaccination is usually—and the period of the year at which it, is sometimes—performed, it is a matter of surprise that local irritation, or erysipelatous action, is not more frequently lit up. At certain seasons of certain years any abrasure of the skin, however slight even without vaccine lymph, is apt to cause erysipelatous inflammation. What medical man has not sometimes seen erysipelas to follow a slight bruise, or the scratch of a needle or of a thorn? The accidents of this kind following vaccination are very few—not by any means as many as have been seen to follow the pulling of a tooth. Yet who ever advised that an aching tooth should be left alone because it had happened sometime, somewhere, and in the hands

of some one, that hemorrhage from the tooth socket had taken place; that erysipelas—fatal erysipelas—had sometimes followed; or that the bones of the jaw had been splintered? These are accidental; and so rare are they that they should not enter into one's calculations. So convinced am I of the safety of vaccination, that I have no hesitation in saying that a vaccinator, who knows his business, would vaccinate a thousand children with fewer unpleasant results, than a competent dentist would have in extracting the same number of teeth * There are, 'tis true, precautions to be taken, just as there are common sense precautions to be used by every one in eating, in drinking, in travelling. But these occurrences would be rare indeed if vaccinators exercised care and judgment in the selection of the lymph (which should be pure, taken at the proper time, and without admixture either of decayed epidermis or of pus) and in the selection of their subjects (who should be neither too young, too feeble nor too sickly); and with these precautions, severe local inflammation would be rare indeed. But it is not to be expected that some degree of irritation will not be produced. On the contrary, children vaccinated with the purest lymph will manifest, during the few days that the pustules are at the highest development, a certain febrile disturbance of the general system, during which the temperature of the body sometimes reaches 104° F. But

* As this is passing through the press some time after its actual delivery, I have the satisfaction of stating in illustration, that upwards of 6000 children have been vaccinated in this City within the past few weeks by the gentlemen named by the Board of Health; and that the *alleged* cases of severe irritation following, were only two, in that large number. They were both seen by me and presented nothing unusual—the children being now quite well. Emphlysis coniformis occurred in one house where vaccination had recently been performed, and *all* the children had it, but vaccination had nothing, whatever, to do with it.

in certain constitutions, and in certain states of the atmosphere, and especially when the crust is decayed and with it there happens to be, either through carelessness or ignorance, decayed epithelium or dried pus or both; or even the purest lymph with an unclean instrument, the constitutional derangement above alluded to, and which was still within the range of health, assumes a morbid character, and more or less severe local or constitutional disturbance is the result. The third question, therefore, may be answered thus: moderate local inflammatory action may sometimes be lit up, but the severer forms are, as a rule, due to want of care in the selection of the crust; to inattention to the age or health of the subject; to carelessness in the use of the sacrificator; or to atmospheric influence; or to all combined.

4th. *Is there risk, when vaccinating, of inoculating the system with scrofula, or other hereditary disease?*— If my answers to the previous questions were necessarily qualified, this one is not, and I emphatically answer: *no.* It would be an utter waste of time to proceed to discuss what has already been disposed of to the satisfaction of every unprejudiced mind. That vaccination induces scrofula, or other new disease, is an absurdity, notwithstanding the wonderful tales of a *Verde de Lisle*, that it has caused mental and physical degeneration of the human species; diminishing men's stature; incapacitating them for the fatigue of military service; or even of the exercise of dancing. One word as to the first: the tallest, strongest and heaviest men in Europe, according to Professor J. D. Forbes, are the Irish; yet Ireland is one of the, if not the, most thoroughly vaccinated countries in the world.

And as to the second, if vaccination induces disease, where are the results of those diseases?

Instead of vaccination inducing scrofula or other hereditary disorder, it is claimed to diminish that tendency. Universal death, it is not denied, is the law of our nature. Though we must all die, yet life may be prolonged in particular instances; and particular instances go to make up the general result. The tables of mortality of a country are the data on which Life Assurance is built It is upon a knowledge of these tables that the premium rate or percentage to be charged in different countries is regulated. Mr. Babbage in his work on Life Assurance, says: "it has been shown by Mr. Davillard, (a french writer) that the introduction of vaccination has *increased* the mean duration of human life by about three years and a half." And the premium rates are influenced accordingly. At the end of the last century the rate of mortality in London was one in every thirty.—One half century later, and the rate of mortality was one in forty-one! Yet during that interval vaccination had been introduced, and the practice had become general. It greatly strengthens, says Thomas, our argument in favour of vaccination, to find that the general mortality, in comparison with which that from small-pox has undergone so marked a diminution, has itself also notably decreased in proportion to the existing population.

In this connection I am happy to be able to cite Dr. Henri Cotin, author of the *Guide Medical*, who says: "On se préoccupe beaucoup dans le monde de l'idée que le vaccin pris sur des enfants malsains peut communiquer la maladie de l'individu. Cette idée est complètement erronée; *jamais aucune maladie n'a été inoculé avec le vaccin*, et ce dernier pris sur l'enfant le plus malingre, pourvu qu'il ait les qualités physiques que nous avons indiquées, est tout aussi bon que celui qui provient du plus bel enfant."

I shall not do more than allude to that absurd paradox advanced by a mathematician, and supported by two or three physicians as paradoxical as himself, that vaccination has transformed small-pox into typhoid fever! and that, in causing the disappearance of the former, it had increased the frequency and virulence of the latter! There may be an excuse for a mathematician—knowing nothing of medicine—to hold such a view; but there can be none for physicians, as it could only be the offspring of profound ignorance of the merest elementary literature of the profession. Every physician should know that typhoid fever is not a recent disease—but that for centuries before the introduction of vaccine it had the same hideousness it has now—and will have so long as sanitary laws are set at defiance.

5th.—Is there risk, when vaccinating, of inoculating with syphilis or other acquired diseases? The allegation has been made by some in the affirmative; but when it is borne in mind the strong temptations to employ false pretexts, it is a matter of surprise that vaccination has not been more generally "pitched upon by persons in search of an apology for their syphilitic children." For my own part, not only have I never seen a case of vaccination of syphilis, but have never met a medical practitioner who had seen a case, either in his own practice or in that of another. We all know how the slightest scratch or cut is apt to develop intractable ulceration in a child having latent syphilis; and how the ulceration thus produced requires the local and constitutional treatment of a syphilitic sore. A slight scratch, required for vaccination, may assume a specific character with the purest lymph, when conjugal infidelity, and not the vaccination, is the cause. Sores somewhat resembling syphilitic sores

have occasionally appeared after vaccination, and even in this city have been taken for syphilis. But their early healing without specific treatment, apart from their appearance, forbids the assumption that they were syphilitic sores These are what are called by Rayer, Auzias Turenne and others *vaccinelle* or *vaccinoïde*, and may arise from: 1st the vaccination of a syphilitic child, or 2nd the vaccination of a child who had already been vaccinated, or who had had small pox or who manifested an inaptitude for the vaccine influence That vaccine lymph does not carry with it the syphilitic virus, even in cases of undoubted syphilis, may be fairly inferred from the experiments which have been performed on a large scale on the continent of Europe, where, in not one of those experiments, has anything like syphilis resulted. The British Public Health Report published by authority of Government, and presented pursuant to act of Parliament is so germane to this part of my subject that I shall quote from it at considerable length. M. Taupin, of the Children's Hospital in Paris, in order to settle such questions as these, had, in a large number of cases, deliberately vaccinated from the arms of children who (while under vaccination) were sick with all other sorts of communicable diseases, including syphilis; but had never, on any occasion, seen any of these affections communicated in his vaccinations: "*dans aucun cas, nous y insistons à dessein, le virus n'a rien communiqué que la vaccine toute seule.*" Dr. Schreier of Ratisbon had similarly, on two occasions, experimented with vaccine lymph from syphilitic children and, like M. Taupin, had got no syphilitic results. Professor Heim of the Wirtemberg military service, had done similar experiments, with similarly negative results. Dr Heymann had, as seen the habitual

practice in Java, that children having scrofula, syphilis, itch, the endemic frambœsia, and other complaints, were used indifferently with others as sources of vaccine lymph, and that no evidence ever appeared of any of the complaints being so communicated. And to this former negative testimony, from several independent experimenters, I may now add the similar testimony of Professor Bœck of Christiania; testimony which has peculiar value because of Dr. Bœck's very eminent relation to contemporary studies of syphilis. Dr. Bœck reports that, having under his observation two men affected with elephantiasis, two men who had never had syphilis, and whom their elephantiasis of course would not have rendered insusceptible of it, he, on three different occasions far apart, vaccinated these two men from children having well developed hereditary syphilis, that in one of the six vaccinations, five normal vesicles resulted, but in the others, none, nor any other local change; that "these two patients were observed daily during three years, and never presented a single symptom of syphilis."

With well attested experiments like the above standing on record, we are obliged to doubt whether vaccination (*i.e.* genuine and simple inoculation with vaccine lymph) from however syphilitic a subject, can, possibly communicate syphilis; or, at the very least whether some stage of the vaccine vesicle more advanced than vaccination rules allow to be proper for lymph supply, or some admixture, which fastidious vaccinators never permit, of blood with the vaccine lymph, must not be a condition for such possibility. That some ignorant quack salver, pretending to vaccinate, but neither knowing the aspects of a vaccine vesicle, nor caring from what sort of body he draws

his supposed lymph, may take as his "healthy source for lymph supply" an infant all maculated or ulcered with syphilitic skin disease, and may from its *spots* or *sores* transfer infective material to some victim of his mis-called vaccination, is of course evident; for syphilis does not cease to be syphilis because noodle or knave calls it vaccinia; but facts of this kind cannot in any reasonable sense be counted against vaccination, any more than we should count it a fact against Quinine that some grocer had dispensed Strychnine in mistake for it. Finally, too, I permit myself this general remark: that, in proportion as any alleged fact contradicts an otherwise universal experience, the individual witness must be regarded as making larger and larger demands on us for belief; and that in matters like the present, where sources of fallacy are so abundant, the witness's accuracy of observation requires to be most thoroughly guaranteed.

Dans le monde, says Grisolle, les parents se préoccupent beaucoup de l'idée que leurs enfants pourraient être vaccinés avec du mauvais vaccin, c'est-à-dire provenant de sujets malsains. Quoiqu'il n'y ait pas plusieurs qualités de vaccin, quoique le virus qu'on retire d'un enfant fort ou faible, d'un individu ayant le syphilis, les scrofules, etc., ait en général la même efficacité, cependant il y a toujours intérêt à prendre du vaccin chez des sujets vigoureux, attendu que, chez les individus faibles, on voit le virus dégénérer promptement ....

Relativement à la syphilis, il est certain aussi que le vaccin fourni par un vérolé *ne peut transmettre que la vaccine lorsqu'il est pur, c'est-à dire sans mélange de sang*: il n'en est plus de même lorsque la pointe de la lancette qui est chargée du vaccin, est salie par la plus minime quantité de sang.

The cases of supposed inoculation of syphilis with the vaccine virus are not many, and an analysis reduces them to very few—and those few are still further reduced by the fact that the grossest ignorance and misconduct were, in some instances at least, imputed to the vaccinators. The few cases that have been published in the past seventy years, chiefly from Continental sources, are utterly insignificant in numbers and importance, and lead us to ask the same question as Mr. Simon: "if our ordinary current vaccination propagates syphilis, where is the syphilis that it propagates? Who sees it? The experience of the department is an entire blank on the subject. For the last ten years we have been in incessant intimate communication with the different parts of England on details of public vaccination, and during these years, every one of the about 350 vaccination districts into which England is divided has been visited three or four times by an inspector specially charged with the duty of minutely investigating the local practice of vaccination; yet from this systematic and extremely detailed search for all that has to be said on the subject of vaccination in England, no inspector has ever reported any local accusation or suspicion that a vaccinator had communicated syphilis. Again, our national vaccine establishment has been in existence for more than 60 years, vaccinating at its own stations every year several thousands of applicants, and transmitting to other stations supplies of lymph, with which every year very many (at present 50 or 60) other thousands are vaccinated, who in their turn, become sources of vaccination to others; but this vast experience does not, so far as I can ascertain, include knowledge of even one solitary case in which it has been alleged that the lymph has communicated

syphilis. Is it conceivable that these negative experiences could be adduced if the vaccine lymph of children with latent hereditary syphilis were an appreciable danger to the public health? Thirteen years ago it devolved upon me (as medical officer of the Board of Health), to make the widest possible enquiries, both of scores of public departments and institutions, and also of many hundreds of individual practitioners, in our own country and on the continent of Europe, with a view to elicit all existing experience on the validity of objections which had been alleged against vaccination; and on that occasion I, of course, gave great prominence to the point which is here raised. One of the four questions which I circulated was the following:—"Have you any reason to believe that lymph from a true Jennerian vesicle, has ever been a vehicle of syphilitic, scrofulous, or other constitutional affection, to the vaccinated person; or that unintentional inoculation with some other disease, instead of the proposed vaccination, has occurred in the hands of a duly educated medical practitioner?" The answers which I received on this, as on each of my other points, from 542 members of my profession, are, as regards syphilitic inoculation, only just short of being an absolutely uniform "No." The alleged cases (of inoculation) were thrown into real insignificance by their relation to the main body of testimony. Men of the oldest and largest consulting pratice in the United Kingdom; men who were believed to have seen every variéty of disease and accident to which the human body is liable; our leaders who had taught medicine and surgery to the mass of the profession; physicians and surgeons of our largest metropolitan and provincial hospitals, in England and Scotland and Ireland; physicians who

specially studied the diseases of infancy; surgeons who had specially studied the inoculative diseases; pathologists of distinguished insight and learning,—men of all these sorts, scores on scores of them, had never in their experience "had reason to believe or suspect any such occurrence as my question described." In the alphabatical series to which I have referred there may be read all the most eminent British names of thirty years ago, certifying to such negative experiences: there may be read, too, that equally negative in Paris had been the vast experience of Chomel and Moreau, Rayer and Ricord, and Rostan and Velpeau; equally negative at Vienna that of Hebra and Oppolzer, and Sigmund. And in here recurring to that very remarkable mass of testimony. I may repeat the remark which my former review of it suggested to me: "Obviously one at least of two conclusions is inevitable; either it is that with reprehensible carelessness as to the source of lymph, vaccination (so long as in any sense of the word it is vaccination) cannot be the means of communicating any second infection; or else it is the case that in the world of vaccinators care is almost universally taken to exclude that possibility of danger. To the public, perhaps, it matters little which of these conclusions is true. Though it would be the merest idleness to take again, now, the sort of formal census of medical opinion which I took thirteen years ago, I may state that ever since that time I have felt it among my strictest duties to be generally watchful and interrogative on the present subject; all the more so as the period has been one of extraordinary pathological progress, and especially has brought to light very important new knowledge concerning syphilis; and I have every reason to believe that a

present census of personal experience in this country *would give just the same practical results as those* which accrued from the former enquiry. Indeed, in a few very important directions I am satisfied myself that it does so. I may mention, for instance, that the Army Medical Department has, during the last eleven years, had cognizance of 151, 316 (adult) vaccinations and re-vaccinations *performed on the soldiers* and recruits of Her Majesty's service, where, from the nature of the case, the subjects of the proceedings are persons who afterwards permanently remain under medical observation, and in whom, therefore, no syphilitic consequences of vaccination could possibly escape notice; where, moreover, the chances of latent constitutional syphilis in subjects furnishing the lymph must be about the same as among our civil population, but in all this vast and critical experience, so far as is known to Dr. Balfour (the eminent and laborious reporter on the diseases of the British army) *no single case has ever been alleged of a soldier syphilized by vaccination!* Indisputable certainties, which any one can verify for himself, are:—first, that year by year millions of vaccinations are performed in Europe with scarcely a solitary accusation transpiring that syphilis has been communicated by any of them; and, secondly, that physicians and surgeons who could not fail to see such cases in abundance, if such abundance were a reality, concur with almost absolute uniformity, hundreds of them together, in declaring that they had "never in their experience seen even a single case of the kind." Surely for every practical purpose, certainties like these are our best guides; and with such certainties in our knowledge it would be the merest pedantry to insist on infinitesimal speculative uncertainties."

One terse observation from the Board of Health of Ohio, and I have done; "*When properly vaccinated* by an intelligent physician, no disease could be produced by inoculation other than vaccinia, the one to be desired."

It may be some satisfaction to the learned and laborious writers, from whom I have quoted above, to learn that their views are fully coincided in by most of the leading minds of the profession in Montreal. On Friday, of last week, I submitted the following questions to the members of the Medico-Chirurgical Society of this city. Doctors are said to differ, but the unanimity of view on the following was most noteworthy. The meeting was an unusually large one, called for another purpose, and the secretary (Dr. Bell) has kindly furnished me with the accompanying extract from the minutes, with the permission of the Society for its publication:

Meeting of the Medico-Chirurgical Society of Montreal, on the 13th October, 1876.

Twenty three members present.

Moved by Dr. HINGSTON, seconded by Dr. R. P. HOWARD.—1st. That vaccination confers a certain degree of immunity from small-pox, by either preventing or modifying that disease.

2nd.—That such immunity is not always permanent, but may be rendered so by re-vaccination.

3rd.—That vaccination may produce, in some instances, a certain degree of inflammatory action, which may be modified, increased, or diminished, by the age, constitution or condition of the patient, or by the state of the atmosphere.

4th.—That vaccination does not, in any instance, produce scrofula or other hereditary disease.

5th.—That neither the evidence hitherto furnished to, nor the experience of, the members of this Society, is of a character to lead to the conclusion that syphilis is ever inoculated with vaccine lymph. *Carried unanimously.*

In concluding I may add: As it will be somewhat difficult for you to obtain a sufficient supply of lymph to *continue* your vaccinations, owing to the circumstance that many mothers, while solicitous regarding the physical condition of the child who has the honour of furnishing vaccine lymph to *their* children, refuse, in turn, to render the same service to others, under a pretext that it disturbs or fatigues their precious offspring. Explain to such mothers, please, that they do an act of injustice; that as they received immunity on the one hand, they are obliged, in justice, to dispense it on the other; that had other mothers acted as selfishly, the supply could not have been kept up for *their* advantage. Some mothers refuse, under the belief that puncturing a vaccine vesicle, and receiving a portion of its contents, will diminish the protective influence intended to be gained by the vaccination in the first instance. But this is an error, and should not be permitted as an excuse to those who are slow to do for others what has been done for them. A mother should never hesitate to permit her child to be the source of safety to other children, not less dear to their mothers. You can assure them moreover, with confidence: that the removal of a portion, or even of the whole—(which is never done—see Clause 7 of *Instructions*) of a vaccine vesicle, in no way impairs the protective influence, or produces any, even the slightest inconvenience or suffering

Gentlemen: I have detained you much longer than I intended, and beg to thank you, and my many medical friends and fellow citizens who have honoured me with their presence this afternoon, for their and your most patient attention.

APPENDIX.

Since the foregoing was delivered, many of my medical friends, some not members of the Medico-Chirurgical Society of Montreal, and some not present at the meeting in question, expressed a desire to have an opportunity afforded them of recording their opinion on the questions submitted to, and unanimously adopted by that Society on the 13th October last, and referred to on page 42. I willingly acceded to their request, and have been furnished with the following list, not at all complete, I am informed, of medical gentlemen practising in this City supporting those resolutions. Their names are published *in extenso*, as it has been industriously circulated that those who practice vaccination are unsustained by medical opinion here. The reader will perceive the remarkable unanimity of thought, as expressed by the very large number, on a matter of such vital moment; and will recognize among that number our most distinguished physicians—French and English; nearly all the physicians at our hospitals; nearly all the physicians at our dispensaries; nearly all the professors in our medical schools and colleges; nearly all our oldest and ablest men in private practice, with a life long experience to appeal to, and without motive to mislead; nearly all our middle aged practitioners engaged in large and lucrative practice; nearly all our young men fresh from their studies, and familiar with the most advanced views of trans-atlantic medical minds—some of them just returned from Europe where they have had opportunities of learning the thoughts and opinions of the most eminent in our

profession there; not, perhaps, the views of such men as might well be astonished to find themselves quoted as authorities three thousand miles away. I thank my medical friends for their readiness in expressing their opinion on this important question; and much doubt if there is any other topic or point in controversy on medicine, surgery or pathology upon which so unanimous an expression of medical thought could be obtained in this city. In matters of *law*, judges differ; but the decision of the majority is, after all, the decision of the court, and litigants must abide by it. Respect for a majority, so well pronounced, of competent *medical* judges will, in this instance, I hope —considering the contingency in events —lead to a cessation of those ill timed attempts to interfere with the efforts that are now being made to check a loathsome disease by the only prophylactic which science has yet discovered

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Pronunciamento of Physicians of Montreal, in favour of Vaccination.

G. M. Abbott,	M.D.	S. Lachapelle,	M.D.
T. J. Alloway,	"	L. Laberge,	"
P. A. Allard,	"	Jos. Leduc,	"
G. Archambault,	"	B. H. Leblanc,	"
P. Beaubien,	"	A. Lamarche,	"
J. Bell,	"	H. Lemery,	"
F. Barnes,	"	J. A. A. Léonard,	"
D. Baynes,	"	J. L. Leprohon,	"
G. A. Baynes,	"	D. C. MacCallum,	"
J. E. Berthelot,	"	A. C. Macdonnell,	"
J. G. Bibaud,	"	W. Macdonald,	"
A. Bondy,	"	D. McCallum,	"

R. Brodeur,	M.D.	J. H. A. Matte,	M.D.
F. Buller,	"	L. J. A. McMillan,	"
G. O. Beaudry,	"	W. H. Mondelet,	"
W. E. Bessey,	"	E. P. Mount,	"
A. A. Browne,	"	F. Müller,	"
G. A. S. Brunelle,	"	R. L. Macdonnell,	"
E. J. Bourque,	"	J. B. McConnell,	"
W. H. Burland,	"	G. W. Major,	"
W. B. Burland,	"	A. W. Marston,	"
G. W. Campbell,	"	A. Mathieu,	"
F. W. Campbell,	"	G. H. Merrill,	"
P. F. Casgrain,	"	H. Merrill,	"
J. C. Cameron,	"	A. Meunier,	"
R. Craik,	"	P. B. Mignault,	"
A. Chamberland,	"	W. A. Molson,	"
J. D. Cline,	"	C. J. Morse,	"
J. O. Coutu,	"	J. W. Mount,	"
A. H. David,	"	W. Nelson,	"
F. Demers,	"	J. Nichol,	"
S. Duval,	"	P. O'Leary,	"
J. J. Dugdale,	"	W. Osler,	"
P. L. J. Desrosiers,	"	H. Peltier,	"
G. H. Desjardins,	"	E. A. Paquet,	"
A. A. Duhamel,	"	Jas. Perrigo,	"
L. A. E. Desjardins,	"	A. Piché,	"
Th. E. D'Orsonnens,	"	Jos. C. Poitevin,	"
J. M. Drake,	"	E. K. Patton,	"
A. Deschamps,	"	P. E. Picault,	"
W. A. Duckett,	"	P. E. Plante,	"
Chas. Dansereau,	"	Alex. Proudfoot,	"

Chs. Dansereau, Jr.	M.D.	J. P. Rottot,	M.D.
C. Dubuc,	"	J. Reddy,	"
O. C. Edwards,	"	A. Ricard,	"
J. Eneas,	"	T. H. Richelieu,	"
O. P. Etu,	"	T. G. Roddick,	"
E. G. Fenwick,	"	T. D. Reed,	"
J. T. Finnie,	"	Ed. Robillard,	"
W. Fuller,	"	N. Robillard,	"
A. Fisher,	"	Thos. A. Rodger,	"
R. T. Godfrey,	"	G. Ross,	"
G. P. Girdwood,	'	F. Rourk,	"
J. Gagnon,	"	G. F. Slack,	"
W. Gardner,	"	S. B. Schmidt,	"
F. L. Génand,	"	F. J. Shepherd,	"
R. F. Godfrey,	"	T. Simpson,	"
F. H. Girard,	"	W. P. Smith,	"
Thos. E. Hayes,	"	G. B. Shaw,	"
R. P. Howard,	"	W. E. Scott,	"
T. Hughes,	"	E. H. Trudel,	"
W. H. Hingston,	"	F. X. Trudel,	"
H Howard,	"	F. Z. Tassé,	"
E. H. Hurtubise,	"	R. Thompson,	"
R. Kennedy,	"	E. H. Trenholme,	"
W. J. Kearney,	"	Ls. Turgeon,	"
A. H Kollmyer,	"	J. R. Wanless,	"
A. B. Larocque,	"	J. Wanless,	"
J. A. Laramée,	"	Jos. T. S. Webb,	"
A. Latour,	"	M. O'B. Ward,	"
H. T. Latour,	"	Th. Wheeler,	"
N. Loverin,	"	Geo. Wilkins,	"
P. E. Lachapelle,	"	W. Wright,	"