HALF-YEARLY REPORT ON PUBLIC HEALTH.

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SANITATION IN THE UNITED STATES.

Until within a recent period very little attention was bestowed upon the subject of public hygiene by the governing bodies in the United States of North America. Notwithstanding the great prosperity and the rapidly increasing wealth of those States, only the most insignificant fractions of the public revenue were devoted to the purpose of improving the public health. This important subject is now, however, beginning to enlist the active sympathy of the State Legislatures; and before many years shall have elapsed there is little doubt but that public sanitation will be carefully and liberally attended to by the legislative and executive bodies throughout the Union.

In a former Report we described the Public Health Department which had been organized for the City of New York and its outlying districts. We now learn that this Department has been abolished, and that in its place another has been established for the City of New York alone. It is styled “The Board of Health of the Health Department of the City of New York.” We presume that the Act of the Legislature of New York which dissolved the connexion in sanitary affairs between the City of New York and the outlying towns and rural districts, provided a sanitary administration for the latter. It looks, however, very like a retrograde

* The author of this report will be glad to receive any books, pamphlets, or papers relating to hygiene, dietetics, &c. They may be forwarded through the agencies of this Journal.
step to split up a large sanitary district into fragments. In these countries almost every sanitarian would be glad to see the innumerable sanitary authorities which exist in each county merged into one comprehensive and thoroughly organized Board of Public Health. Why should not the Corporation of London and all the vestries of the Metropolis constitute one great health authority, instead of, as at present, a score of Boards of Health? The Metropolitan Board of Works has, during the last ten years, done more for the improvement of the appearance, public convenience, and health of the Metropolis, than all the vestries would have accomplished during the next century. In the City of Dublin, with a population of a quarter of a million, there is a Public Health Committee, with a large staff; in the eight townships surrounding the City, and embracing a population (mostly rich) of nearly 70,000 souls, the public health is cared for by two or three "Inspectors of Nuisances." Would it not be desirable to form the City of Dublin and the eight townships adjacent to it, into a Metropolitan Health District? Union is strength in sanitary, as well as in military, matters; and if the small townships which individually are unable to pay for the maintenance of an adequate sanitary staff, would unite with each other and with the City, their combined resources would then sustain an efficient sanitary organization.

The new Board of Health of New York consists of the Police Commissioners, the "Health Officer of the Port," and four "Commissioners of Health" appointed by the Mayor, and holding office for a period of five years. Two of the Commissioners of Health must have been practising as physicians for a period of five years previous to their appointment.

The new Board was created on the 11th April, 1870, and a large volume* just published by it details its operations during the first year of its existence. The staff of the Board consists of a "City Sanitary Inspector," and ten "Health Inspectors"—all Doctors of Medicine; a Sanitary permit Inspector, an Inspector of street cleaning (who is also a Doctor of Medicine), a Registrar and a Deputy Registrar of Records (both M.D.s too), a lawyer, an engineer, a chemist, an assistant chemist, a chief clerk, and a host of subordinate officials, including several medical men. The expenditure of the Board during the year amounted to nearly £34,000.

The operations of the Board were chiefly as follows. The streets were subjected to an extra amount of cleansing, as compared with former years. House garbage and all kinds of offensive rubbish were removed by contractors of the Board; and the house refuse was, whenever deemed necessary, disinfected before being removed. Stable manure and dead animals were expeditiously conveyed from the City. The tenement houses were constantly and minutely inspected. The population of New York is 943,842, of which less than one-half occupies the tenement houses. In 1868, 78 per cent. of the deaths in New York occurred in the tenement houses; in 1869 the proportion fell to 68, and in 1870 it was still further reduced to about 66 per cent. This remarkable decrease—9.5 per cent.—in the mortality of the inmates of lodging houses, the Board attributes to the sanitary reformation which it and its immediate predecessor (the Metropolitan Board of Health) carried out in these dwellings. The work done in this department is, we are informed, recorded in "twenty-five bound volumes, which are constantly open to the examination of the inspectors, aiding them in their duties, and proving invaluable for reference." We believe that the most important work of sanitary authorities is the thorough inspection of tenement houses, and the immediate rectification of any sanitary defects thereby revealed. This is the good sanitary work which in the City of New York is rewarded by the annual saving of 2,600 lives, and the prevention of a large amount of disease. The disinfection of the homes and clothes of those who had been affected by contagious disease, the compulsory removal of patients labouring under certain zymotic affections to hospital, the adoption of measures to rescue drowning persons, the chemical examination of petroleum, milk, and other articles, the supervision of dairy yards, abattoirs, &c., and the collection of vital statistics constitute, together with the duties already mentioned, the more important functions discharged by the New York Board of Health—an organization which we should indeed be glad to see imitated in every large town in the United Kingdom.

In New York the deaths in 1870 amounted to 27,175, being in the ratio of 28.79 per each 1,000 of the population—rather a high mortality. It is, however, maintained, and apparently with justice, that the registration of deaths is more perfectly carried out in New York than in any other City of the world. The City being built on an island—the avenues of egress to which are under strict surveillance—and the cemeteries being wholly under the control of the
municipal authorities, render it improbable that any interments could take place surreptitiously. In England and Wales it is estimated that no less than 50,000 deaths annually take place, which are not registered. In Ireland, as we have shown in a former Report, the vital statistics are collected so imperfectly as to be positively misleading.

More than 30 per cent. of the deaths in New York result from zymotic diseases. Small-pox, scarlatina, relapsing, typhus, typhoid, remittent, intermittent, and yellow fevers, measles, diphtheria, whooping cough, syphilis, and diarrhœal diseases are the chief zymotics. In New York, as in other cities, relapsing fever was almost invariably associated with poverty; it was found only in the most wretched purlieus, and amongst persons who were suffering from deficient nutrition.

The Board of Health of Massachusetts have published their Third Annual Report, a "Blue Book" of 329 pages. The sanitary authorities of Boston are not so liberally provided with funds out of the public treasury as the New York Board of Health. They do not appear to have a properly organized staff; and the sanitary work discharged by them during the year 1871 appears to have been chiefly in the abolition of nuisances arising from cattle slaughtering, melting fat, and bone boiling. We find, however, that the various towns of the Commonwealth of Massachusetts have their local public health authorities, who deal with the local nuisances; but we also infer from certain passages in the article on "the Health of Towns" in the report, that the local sanitary authorities are by no means efficient. One may easily imagine what a competent sanitary authority the City of Boston has when the secretary of the State Board of Health recommends that it should be remodelled so as to include two or more physicians, a lawyer, and a civil engineer. In the article on the health of towns we expected to find tables of the vital statistics of the state; but the only information of the kind given is the death-rate—23.5 per 1,000—of Boston during the year 1871.

Although the Report of the Massachusetts Board of Health does not contain anything like the record of sanitary reforms which we find in the New York Public Health Reports, still the volume includes a great number of interesting papers on various hygienic subjects; and though inferior in originality and importance to the

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reports issued from the Medical Department of the Privy Council, it somewhat resembles in its subject matter Dr. Simon’s valuable volumes. More than one reference to this Report will be found further on.

California is one of the states of the Great Republic in which we might least expect to find a public organization for the promotion of health and the prolongation of life. We learn, however, that there is a State Board of Health, the executive officer of which is Dr. Thomas A. Logan, President of the American Medical Association, and a most distinguished sanitarian. Its first (a biennial) report for the years 1870 and 1871 has been published by this Board of Health. It contains elaborate tables, showing the statistics of births, deaths, and marriages, and co-ordinate facts; and it includes a large number of articles on sanitary subjects. The death-rate in California averages 18.8, or one death in every 53 persons living. This mortality is low. In England the death-rate is 22 per 1,000 living. If the vital statistics of California are to be relied upon it must be one of the most healthy countries in the world. The birth-rate is very low—only 1 in 131.4 persons. The female population in California is relatively deficient in numbers; and the registration of births is stated to be defective: still the small number of births recorded is very remarkable. The Board of Health attributes the low birth-rate to some extent to the general and unnatural aversion of American mothers to the rearing of children, and to the ignorant, conscienceless abortionists and midwives who are permitted to ply their avocation. In most of the towns in the United States the birth-rate is very low; it is only 1 to every 87 of the population of New York. Dr. Logan shows by meteorological and other statistics that California is well adapted for phthisical patients. The mortality from pulmonary diseases is 16 per cent. of the deaths from all causes; but no considerable proportion of this mortality is amongst phthisical patients who make California a health resort.

Apropos of Dr. Logan’s phthisis statistics, we find in a recent number of the Gazette des Hopitaux a report of a lecture upon the mortality from this disease, delivered by M. Constantine Paul. The lecturer stated that the deaths from phthisis per 100 deaths from all causes were 6 at Rome, 8 at Naples and Venice, 9 at Turin, 9.7 at Genoa, 12 in England, 13.4 at Paris, 16 in Belgium,

17.5 in Berlin, 20 at Vienna, 21.7 at Hamburg, 25.6 at Frankfort, and 28 in some parts of America. If these statistics be correct, England is not after all the "home of consumption," as so many writers have stated it to be.

**HYGIENE IN SCHOOLS.**

No inconsiderable proportion of the life of the inhabitants of civilized countries is expended in schools and colleges; the hygienic condition of these places, and the physical culture of the bodies of those who spend their time in them are matters of great importance to the community. A large number of educational institutions exist on very unhealthy sites; and in too many of them there is a serious deficiency in the arrangements for ventilation. They are also frequently supplied with water of bad quality; and, in numerous instances their sewerage system is out of order. We have lately inspected the sanitary condition of several public schools, and in each we found the most serious hygienic defects. The case of Mercer's endowed school for girls at Ashtown, in the County of Dublin, will serve as an illustration. In this institution, which is situated in the open country, the girls are extremely well fed and comfortably clothed; they are provided with ample playground, and they sleep in well-ventilated dormitories. Notwithstanding these advantages their health is not nearly so good as that of the inmates of another school under the same management, who are not supplied with equally good food, and who live in one of the most densely populated parts of the City of Dublin. On examining the state of Mercer's School we found quite sufficient to account for the delicacy of some of its inmates. The main sewer was choked up; and an untrapped opening in the bath allowed the sewage gases to enter into the bath room, and from thence to diffuse themselves throughout the house. The well water, too, was impregnated with sewage, which escaped from the blocked-up sewer. It contained 56.56 grains of solid matter per imperial gallon (70,000 grains weight), of which 22.6 grains consisted of organic and volatile matters. There were large quantities of free ammonia, albuminoid nitrogen, nitrous acid, and nitric acid in it. In this case the school authorities (one of whom is the Most Rev. Dr. Trench, Archbishop of Dublin, and who for nearly three hours was present at one of our examinations) did their duty in making a thorough investigation into the cause of the unhealthiness of the institution; but we fear that in but too many instances those in
whom the management of scholastic and eleemosynary institutions is vested never think of ascertaining whether or not their sanitary condition is satisfactory.

The recent removal of some of the large endowed schools from towns to suburban or rural districts is literally a move in the right direction, which we hope will ere long become general. Could there be a more unhealthy site for example than that of the Dublin Marine School, situated as it is on the banks of a river into which the sewage of a city of a quarter of a million inhabitants is discharged, and supplied with air contaminated with the exhalations of chemical, ammonia, coke, tar, gas, and artificial manure works? Children are less able to resist the effects of excess of cold, or heat, and of deficiency of food than adults; they also are more seriously affected by an impure atmosphere. A young man may endure without permanent injury a few years exposure to insanitary influences; but if the period between infancy and adolescence be passed under conditions unfavourable to the vigorous development of the body, then indeed it is rarely that the child attains to a strong and healthy manhood.

The malign influence which schools exercise on the health of children attracted attention many years ago. Carmichael, in his work on scrofula, published in 1810, proved that the excessive amount of phthisis which he found in many of the Dublin schools was caused by defective ventilation, and not by insufficient nutrition.

In the children’s department of the House of Industry, the cases of scrofula were so numerous that the disease was believed to be present in a contagious form. In one of the wards, 60 feet long by 18 feet broad, there were no fewer than 38 beds, each containing four children! The amount of square feet allowed to each child was, therefore, only \( \frac{6 \times 14}{38} \). The height of the ward is not given in
Carmichael's work, but assuming it to have been 15 feet, that would have given to each child 102 cubic feet.*

Neil Arnott and other authorities have placed on record cases of defective ventilation in schools almost as bad as those discovered by Carmichael; and if a careful inquiry were instituted at the present time, we have no doubt but that, even in the matter of ventilation, a large proportion of our schools would be found in a bad condition. The amount of carbonic acid gas in pure air is 0·04 per cent. When this proportion is doubled the state of the atmosphere is unsatisfactory. Roscoe found in the air of a school-room containing 22,141 cubic feet, and in which 164 boys were studying for 2½ hours, 0·2371 per cent. of carbonic acid; and in another school-room he found 0·31 per cent. of this gas. Da Luna found in a room of a girls' school, at Madrid, the enormous amount of 0·723 per cent. of carbonic acid, or eighteen times the normal proportion of that gas.

Physical exercise is now a feature of school and college life, and more especially so in these countries. A friendly emulation amongst the scholars of the same educational institution, and between rival schools and universities in the performance of rowing, cricket, and other robust games, does much for the improvement of the physique of the rising generation. And it is in favour of these competitions that they have not a brutalizing tendency, like some of the pastimes of our forefathers. The drawback to the system of competition in athletic exercises is the undue strain which it so often imposes upon the muscular system, and which sometimes occasions permanent injuries, and even fatal lesions. Cricket is, perhaps, the game which is most unlikely to do violence to the important muscles; whilst it has the advantage of being, at least, a semi-intellectual game.

With respect to the ordinary gymnastics in boys' schools, they are, on the whole, well contrived to produce a healthy development of the muscles. In France this kind of physical education has been brought to a high degree of perfection—thanks to the teachings and efforts of A. Thierry, Berard, Colonel Amoros, Beclard, Bouvier, Londe, and Milne-Edwards.

That veteran sanitarian, Mr. Edwin Chadwick, C.B., has, in a

* In Dublin the minimum cubic space per head in the registered lodging-houses is 300 feet. The engraving (page 400) shows the relative sizes of a man, of the quantity of air which hourly passes out of his lungs, and of an apartment in which there is the minimum sleeping space for five persons.
recent communication to the *Journal of the Society of Arts*, pointed out the more common defects of the ordinary schools of these countries. He maintains that the chief sanitary defects of our schools are—1. Defective ventilation; 2. Defective warming; 3. Bad drainage and foul latrines; 4. Want of means of maintaining personal cleanliness; 5. Bad lighting; 6. Bad arrangements of desks and seats; 7. Want of proper means of gymnastic exercises; 8. Insufficient and ill-paved play-grounds. He submits that it is important that school boards should require, in the competition for plans, that these evils should be first considered and provided for, and that the architectural designs and elevations be made of secondary consideration.

It is painful, he says, to observe the condition of children in the common schools in winter time, going there in cold and wet, in driving sleet and snow, frequently ill-shod, and commonly ill-clothed—kept in the school during excessively long hours under any conditions for children, with feet and hands painfully cold—fingers often so benumbed as to be scarcely able to hold their slates and pencils; the open fires at one end of the school not freely to be approached, and, when approached, the warming or heating on one side, “roasting in front and freezing behind,” so as to give inflammations or colds, from the disturbed and unequal circulation. The confinement of children for five or six hours under such conditions, overtasked mentally, and painfully constrained bodily, surely requires active intervention for their relief.

Mr. Chadwick considers that of the modes of warming, those by hot-water pipes and iron surfaces are of inferior, and sometimes, when for high heats, of pernicious, effect; besides they are very expensive. They are apt to warm only the sides of the rooms, or the upper parts of them, and to leave the feet cold, unless an inconvenient and objectionable degree of heat is created over the whole room. It is, moreover, matter of considerable experience that warming by earthenware substances, or stone substances, especially by heat diffused over wide earthenware, or concrete surfaces, is more agreeable and more salubrious than any warming by iron surfaces.

In Germany, attention has been called to the poisoning of the air of school-rooms by carbonic acid passing into it through the sides of iron stoves. Dr. Oidtman, in a pamphlet on this subject, published in 1868, states that chronic poisoning of children by carbonic oxide is very common. We agree then with Mr. Chadwick in considering the principle of floor-warming, which he has so long
advocated, as the best. In some of the public schools, too, such a plan would prevent the tyranny of the larger boys excluding, as we know they do, the weaker and more delicate children from snug places beside the stove or fire-place.

In the large institutions, where children are boarded, the effects of progressive sanitary improvement have been distinctly marked. In one, where the death-rate had been about twelve per thousand, the foul air from cesspools and bad drains was excluded, the latrines were mended, and the ventilation was improved, when the death-rate was reduced to eight in a thousand. Next, regular tepid ablution, and, in summer time, cold water bathing, and careful skin-cleanliness was introduced, and the death-rate was reduced to four in a thousand.

Mr. Chadwick advocates the washing of children at schools, for various reasons, hygienic and otherwise. There is, in well-appointed schools in Holland, usually a female attendant on the school-mistress, who takes the dirtied children into an apartment and washes them, the schoolmistress herself being above such a service.

The celebrated Rudolph Virchow, Professor of Medicine in the University of Berlin, has written (in 1869) a valuable treatise* on the diseases incidental to schools, which we should be glad to see translated into English, and circulated amongst the school authorities of these countries. Virchow agrees with those orthopedists who maintain that the school is largely to blame for distortions of the spine, and more especially for that form of spinal curvature termed Scoliosis. He quotes several eminent authorities, amongst others Guillaume, who found amongst 731 scholars whom he examined, no fewer than 218 with distortion. The great majority of cases of scoliosis are amongst girls. In 72 cases noticed by Knorr, of Munich, there were 60 females. As girls spend less time at school than boys, and fewer girls attend at school, it has been urged that scoliosis is not most frequently induced by bad postures whilst studying. To this objection it may be answered that boys during their hours of play counteract by vigorous exercises involving the play of nearly all the muscles of the body, the evil influence of the school-room postures. On the other hand, girls, as a rule, do not practice any kind of gymnastics.

In almost every school the children in each class, no matter their heights, have to sit at desks of the same size; why could not

* Ueber gewisse die gesundheit benachtheiligende einfliisse der schulen.
the desks for each class be made in short lengths, and of different heights so that no child would be placed at one either too low or too high for him or her? The bad position caused by writing at too high a table is shown in the engravings.

Virchow attributes a large proportion of the pulmonary consumption of childhood to over-crowding in school-rooms, to sudden changes of temperature in passing from hot school-rooms into the cold outside air, to the dust of the school-room, and, lastly, to impaired respiratory movement induced by prolonged sitting.

Short sight is the commonest disease in Germany. Dr. Cohn found that 60 per cent. of the students of the University of Breslau were near sighted. He blames the school-room for a large proportion of this disease. The rooms are not properly lighted, which obliges the scholars to stoop over their books. This causes a strain upon the muscles of the eye, producing an increase of hydrostatic pressure on the posterior portion of the eye-ball, and a lengthening of the axis of the eye. This state of tension, if prolonged, produces a permanent elongation of the axis of the eye. Besides, the stooping position determines an increased flow of blood to the eye-ball, and thereby augments the pressure on the back part of the eye. Virchow gives a list of various other diseases which originate in, or are aggravated by, the insanitary condition of school-rooms.

The Lancet for March 30th, 1872, calls attention to the deplorable condition of the children in pauper schools. At Mitcham, Islington, Anerly, and other schools of the same class, there are from 10 to 15 per cent. of the children suffering from ophthalmia. The government inspectors attribute the ophthalmia to constitutional defects, but the Lancet very properly remarks, why is it that the very same classes of children "running about naked and shoeless in the streets escape?" The cause of the ophthalmia is unquestionably due to overcrowding and impure air.

All our schools should be as regularly inspected by public officers as workshops and factories are. There are many laws on our statute books which relate to the health of men, women, and children employed in mines, factories, and other places; why should there not be equal provision for ensuring the health of the millions of children at school in these countries? Amongst Her Majesty's Inspectors of Schools there ought to be a few Medical Inspectors. Let us not forget the old adage, mens sana in corpore sano.
BAD POSITION CAUSED BY SITTING AT TOO HIGH A TABLE

BAD POSITION WHEN WRITING
THE ALCOHOL QUESTION.

An important joint declaration respecting the medical use of alcohol has been published by a large number of the leading medical men of London, and by some provincial and Irish and Scotch practitioners. The declaration is signed by the Presidents of the Colleges of Physicians and Surgeons, London, by the medical attendants of the Royal family, and by a large number of the most distinguished physicians and surgeons in England. The following is the document:

"As it is believed that the inconsiderate prescription of large quantities of alcoholic liquids by medical men for their patients has given rise, in many instances, to the formation of intemperate habits, the undersigned, while unable to abandon the use of alcohol in the treatment of certain cases of disease, are yet of opinion that no medical practitioner should prescribe it without a sense of grave responsibility. They believe that alcohol, in whatever form, should be prescribed with as much care as any powerful drug, and that the directions for its use should be so framed as not to be interpreted as a sanction for excess, or necessarily for the continuance of its use when the occasion is past.

"They are also of opinion that many people immensely exaggerate the value of alcohol as an article of diet; and since no class of men see so much of its ill effects, and possess such power to restrain its abuse, as members of their own profession, they hold that every medical practitioner is bound to exert his utmost influence to inculcate habits of great moderation in the use of alcoholic liquids.

"Being also firmly convinced that the great amount of drinking of alcoholic liquors among the working classes of this country is one of the greatest evils of the day, destroying—more than anything else—the health, happiness, and welfare of those classes, and neutralizing, to a large extent, the great industrial prosperity which Providence has placed within the reach of this nation, the undersigned would gladly support any wise legislation which would tend to restrict, within proper limits, the use of alcoholic beverages, and gradually introduce habits of temperance."

Dr. Ainstie, the editor of the Practitioner, and one of the most accurate investigators relative to the use of alcohol in health and disease, was requested to sign the above declaration, but he refused to do so, because whilst approving of the concluding paragraph, he entirely dissented from the views given in the first and second. He says:

"It is, in the first place, both a false and a mischievous idea that any
considerable percentage of the drinking habits of any class of English society springs from the improper prescription of alcohol by medical men. That such improper prescriptions may, and occasionally do, cause drunken habits, I have not merely admitted, but elaborately proved on more than one occasion. But I protest now, as I have protested before, that in nine-tenths of the cases in which doctors have been blamed as the occasion of the evil habit, the accusation has been the mere invention of a lying drunkard anxious for a scapegoat to bear a portion of his disgrace. But the first paragraph of the declaration will undoubtedly be read by the public as a distinct admission that the medical profession has had a relatively considerable share in the spread of intemperance. I believe such a statement to be ridiculously false; and I would further suggest that, were it true, the eminent physicians signing this document, among whom are included a large majority of the teachers who have educated the recent generations of medical practitioners, ought to cast dust upon their own heads for having reared their pupils in such scandalous and mischievous ignorance of their duties.

"In regard to the second paragraph, I insist that it will convey to the public an entirely false impression as to the state of competent scientific opinion. It will undoubtedly be taken as a confirmation of the now obsolete doctrine of Lallemand, that alcohol is treated by the organism as a merely foreign stimulant, and is not decomposed therein. Now, I appeal fearlessly to Dr. Parkes (the only one of the signers of the declaration who has done recent experimental work regarding alcohol) to say whether his latest experiments have not strongly confirmed the refutation by Schulinus, Dupré, and myself, of Lallemand's doctrines regarding elimination of unchanged alcohol. In a letter which Dr. Parkes was kind enough to send me some few months since, he confessed, with that candour and high-mindedness which have ever distinguished him, that such was the case. I therefore believe that Dr. Parkes must have neglected to consider carefully the sense in which the declaration will inevitably be read by ignorant persons."

Messrs. Gilbey, the eminent wine merchants, were the first to popularize—if we may use the term—the use of cheap wines amongst all classes of society. They are naturally interested in the alcohol question; and, therefore, they have published a statement which, to some extent, is intended to counteract the impression which the late medical declaration on alcohol is likely to make upon the minds of a large section of the public, and of Messrs. Gilbey's customers. They say that the way to combat intemperance is to provide the public with a cheap and abundant supply of wholesome liquor—discretion would then be the guide in

alcohol drinking. Anything that is cheap and easy to procure is not eagerly sought for. It is, however, a well known fact that in those colonies, such as, for example, Demerara, where alcohol is very cheap, drunkenness is an extremely prevalent, indeed almost a universal, vice; but the colonists have not probably lost the habits of their spirits-loving ancestors. The remedy for intemperance must be sought for in other directions as well as in that proposed by Messrs. Gilbey. Probably better education, and a cultivation of refined pleasures, will yet do much towards lessening the amount of intemperance which at present is a national reproach to the British people.

The Third Annual Report of the Board of Health of Massachusetts contains a mass of correspondence and statistics relative to the "use and abuse of intoxicating drinks throughout the globe." The information given is very interesting. It would appear that intemperance is, to a great extent, governed by a cosmic law. At the Equator there is very little intemperance, whilst the quantity and strength of the alcoholic beverages consumed increase steadily as we approach the North or the South. Between the isothermal lines of 77° Fahrenheit and 50°, there is some intemperance, but not of an excessive or a brutalizing nature. Wine, mostly "light," is the common alcoholic beverage used; and under its influence a man will occasionally "reel, staggering home, supported by wife and friend on either side. He is mild, and only unduly elated. His excitement bursts out into flashes of drunken wit or joviality. Rarely or ever does he become malicious or cruel. He is 'jolly drunk,' not 'crazy drunk.'" When we pass northwards of the isothermal line 50° Fahrenheit, we find brandy, gin, whiskey, and other strong distilled spirits taking the place of wine. Russia, the Scandinavian States, Holland, a small portion of Germany, and nearly the whole area of the British Isles lie north of the isothermal line 50° of mean annual temperature. The people here "drink deeply, and of more fiery liquor than the men of the south. Instead of simple exhilaration, such as is generally seen on the shores of the Adriatic and the vine-clad hills of Southern Germany and Spain, the dwellers along the Baltic and the Northern Seas drink even to narcotism, and lie in beastly intoxication, perchance in the very gutters of many a northern city."

As the United States lie equatorially from isothermal line 50°, we might naturally expect to find the people as temperate as the Southern Germans are; such however is not the case, for
intoxication is a widespread and enormous vice in every part of the Republic. The writers in the Report of the Massachusetts Board of Health say that these habits of intemperance have been imported from the British Islands by the early immigrants, and that they are maintained simply because the vine was not cultivated in the country. If vine culture had been introduced into the States two centuries ago, the native Americans would probably now be a temperate people, as they are constitutionally disposed to be in obedience to the cosmic law already referred to.

That the European immigrants retain the customs of their fatherlands is rendered painfully evident by the Police Statistics of Boston. In that city there are 56,900 Irish, of whom 14,673, or 25.78 per cent. were sent to prison in one year. The Germans number 5,606, and of these 364, or 6.49 per cent. were imprisoned in one year. Of course drunkenness was the prime cause of the offences committed by both the Irish and the Germans. The native Americans are not superior in point of temperance to any of the European immigrants: but they have the tastes for intoxication "which climatic law and long years of habits of intemperance on the part of our English ancestors have engendered;" and these influences are increased by the stimulating nature of the climate. The chairman of the Board of Health, and who is also the editor of the correspondence relative to intemperance, believes that the evil will always exist; but he contends that it might be greatly mitigated by encouraging the use of light wine and mild ales. On the other hand he (Dr. Bowditch) claims for alcohol high medicinal attributes, believing that physicians "do at times save human life by using various stimulating drinks with the utmost freedom."

ADULTERATION AND THE ADULTERATION LAWS.

Mr. Muntz, the Member for Birmingham, has introduced into the House of Commons a Bill for the Prevention of the Adulteration of Food, Drink, and Drugs. It differs very little from the present defective law relative to adulteration. At present a person convicted for selling as pure an adulterated or impure article of food or drink may be fined £5 and charged with costs; and on a second conviction the magistrate may order his name, address, and offence to be advertised in a newspaper, or in some other public manner. In Mr. Muntz's Bill it is provided that a person convicted of adulterating any article of food, drink, or drugs, may be fined £50, and on a second conviction for a similar offence be imprisoned
for six months with hard labour. A person convicted for merely selling an adulterated article may be fined £20, and on a second conviction his name, address, and offence may be advertised at his own expense. The Public Health authorities are empowered to appoint persons to collect samples of food for analysis, and to prosecute the vendors of the articles proved to be impure; nor need the persons appointed for this purpose notify to the vendor that they intend to have the articles analysed, as all purchasers are now obliged to do, if they intend to prosecute the vendors in the event of their purchases proving to be adulterated. These are the only changes which Mr. Muntz proposes to make in the existing law.

Since the year 1862, we have had considerable experience in the working of the present Food Adulteration Act, which, notwithstanding its many defects, has certainly proved of great utility in Dublin. The Corporation of Dublin are very anxious to fully carry out every measure relative to the suppression of the traffic in unwholesome and adulterated food, and their efforts, in relation to this object, compare favourably with those of the other municipal authorities in the United Kingdom.

The laws relating to the traffic in diseased and unsound food being very clear, and very stringent, the Dublin civic authorities have been able to almost completely prevent the disposal of the flesh of diseased animals, and of food in a putrid state, in this city. With respect to the sale of adulterated food, their efforts have not been so successful, because of the defective condition of the present law relating to that species of fraud. The defects which appear to be most glaring are as follow:

1st.—The inadequacy of the punishment when convictions are obtained.

2nd.—That the officers of the civic authorities have not the power to seize upon articles which they have reason to suspect are adulterated, so that they may be submitted to analysis. At present the medical officer of health, or the inspector of nuisances, is empowered to seize upon any kind of food which appears to him to be unsound or diseased, and unfit for the food of man. Why, therefore, should not the officers of civic bodies, appointed for the purpose, have the power to take specimens of food exposed for sale,

* More than 100 persons have been convicted in Dublin for selling adulterated food, and several fraudulent dealers have had their names, addresses, and offences publicly advertised.
and have them examined by the public analyst? In Dublin the sanitary officers of the Corporation are so well known to the dairy owners, that when they purchase milk for analysis, it proves as a rule to be pure, though the vendor may be notorious for the poor quality of his milk. Out of thirty-two samples of milk collected in one month for analysis, no fewer than eight proved to be cream! We do not suggest that the municipal officers should have the power to seize articles of food on sale in the markets and shops, but we do insist that they should be empowered to purchase compulsorily those articles that to them appear likely to be adulterated. In the present state of the law, the vendors of food may and do refuse to sell food to the sanitary officers. They should be punished for refusing to sell to the officers appointed for inspecting food.

3rd.—According to the present condition of the law, the purchaser of an article of food, who wishes to get it analysed, must at the actual time of the purchase give notice of his intention to the vendor. The object of this procedure is to allow the vendor to accompany the buyer to the public analyst, in order to see that the article was not tampered with in transitu. Now, when a person purchases an article of food, surely it is not ordinarily with the desire of getting it analysed, but with the intention of eating or drinking it? It is, therefore, only when the food is being about to be consumed, that the suspicion of fraud comes into the purchaser’s mind. Of course, it is then too late to take the article to the analyst.

4th.—There is a looseness in the definition of the word “adulteration” as applied to food. For example, can skimmed milk be considered an adulterated article, seeing that nothing is put into it? Tea-leaves from which the soluble ingredients are extracted are sometimes re-dried and sold as genuine tea. In this case no foreign matter is mixed with the article. At a late milk adulteration case heard in Dublin, it was contended by counsel that milk deprived of a portion of its cream was not an adulterated article of food, whatever else it might be—an argument that appeared almost to convince the magistrate who heard the case. In the new measure for the amendment of the Food Adulteration Act of 1860, a careful definition of adulteration should be given. An adulterated article should be defined as follows:—Any article of food, or drink, or drugs, to which any unessential, foreign, or other substance is added, which has the effect of lowering the value of such article; and any article of food, or drink, or drugs to which is added any
ingredient or material calculated to be injurious to the health of persons who might use the same; and any article of food, or drink, or drugs from which a portion of its essential ingredients is or has been abstracted, shall be deemed to be articles which are adulterated, and not pure.

Mr. Muntz's Bill should be also amended, so as to enable counties and small county towns to appoint as their "Public Analysts" chemists residing in the larger cities. It is not likely that an analytical chemist would locate himself in such a town as Ballinasloe or Westport, or even in such a district as the county of Donegal, or the county of Clare. Samples of food might be purchased in the smaller towns, and sent to a chemist in London, Dublin, Glasgow, or other large towns; and his certificate should be received as evidence in court. Even under the existing law, the certificate of the public analyst is sufficient evidence without his sworn testimony. We have submitted to Mr. Muntz several amendments which, if adopted, would render his Bill a really practicable piece of legislation.

The Pharmacy Act is now incorporated with the Adulteration of Food Act; and consequently the sophistication of drugs is a punishable offence. We believe that adulteration of drugs is practised to a far greater extent than the sophistication of food. It is the poor who most suffer by reason of the fraudulently made-up drugs from which their medicines are dispensed in hospitals, dispensaries, and asylums. In the United Kingdom the exposures of the falsifications of medicinal substances, which have from time to time been published, are almost innumerable. Now a complaint of drug adulteration reaches us from beyond the Atlantic. At the recent Pharmaceutical Congress, held at St. Louis, United States, Mr. J. H. Remmington, of Philadelphia, read a paper on the adulteration of drugs. He showed that this practice prevailed extensively throughout North America. In many of the large wholesale houses special departments under particular managers are wholly devoted to the preparation of spurious and sophisticated medicaments, spices, chemicals, &c. Flour, starch, woody fibre, sawdust, sulphate of barium, and white clay are mixed in enormous quantities with more costly substances, and the compounds palmed off upon the public, and on the retail traders too, as the genuine articles. According to Mr. Remmington, spices are the articles most frequently and largely adulterated—an observation which applies with equal exactness to the spices vended in the United Kingdom.
It may be said of drugs, as of other articles of commerce, that whilst there is no absolute certainty of procuring them in a state of purity, yet that if a fair price be paid for them, and if they be purchased from respectable persons or firms, who have got good reputations in their business, there is every chance of obtaining them pure. The abominable contract system, under which the drugs supplied to most of the charitable institutions of the country are those offered at the lowest price, should be abolished. Respectable firms do not like to bind themselves to supply medicines at a fixed rate during a year, because the prices of those articles are constantly fluctuating. It would be far better if poor-law guardians and hospital authorities purchased good medicines just as they were required, paying the well-known current prices for them, and dealing only with the most respectable houses.

INFLUENCE OF MARRIAGE ON HEALTH.

In the elaborate treatises on hygiene, which have been written by such distinguished men as Levy, Motard, Londe, Tracy, and Broussais, the influence of marriage on health is treated more or less fully. These writers agree in attributing to matrimony a beneficial effect on life and health.

At a meeting of the French Academy of Medicine, held on the 14th of November, 1871, M. Bertillon read an elaborate paper on the influence of marriage on the duration of life, and on intellectual or moral diseases. His statistics chiefly apply to France, Belgium, and Holland. From 25 to 30 years of age, the married men die at the rate of 6; the unmarried 10; and the widowers 22 per 1,000 per annum. From 30 to 35 years, the deaths amongst these classes are respectively 7, 11, and 19\frac{1}{2} per 1,000; and from 35 to 40 years, 7\frac{1}{2}, 13, and 17\frac{1}{2} per 1,000. At greater ages the same favourable difference exists in the case of the Benedicts versus the Celibates. It is curious that widowers are more likely to die than men of the same age, who have never been married. The exceptions to the low mortality amongst Benedicts are only in the case of those who marry very early in life. It is rather startling to youthful worshippers at the shrine of Hymen to be informed that married men from 18 to 20 die as fast as men aged from 65 to 70. Amongst women marriage is not quite so favourable to longevity. No effect is observed until after the age of 25 years. Spinsters from 30 to 35 die at the annual rate of 11 per 1,000; wives in the ratio of 9 per 1,000. The mortality is greater in the case of wives under 25
years than of spinsters below that age. After 40 years the longevity of married women is much greater than that of unmarried females of corresponding ages. Middle-aged widows do not live so long as middle-aged spinsters or wives. M. Bertillon shows that, according to the doctrine of chances, or rather probabilities, a man who marries at 25 years is likely to live 40 years longer, whilst his chance of living so long, if he does not marry, is reduced by five years. On the other hand, a woman who marries at 25 years is likely to attain the age of 65, whilst if she remain single she will only attain the age of 56 years.

According to Bertillon, crime is most rife amongst the unmarried, and least amongst the married. The widowers and widows are not nearly so bad as those who are unwedded, but they are not (of course we are speaking of averages) quite so virtuous as those who are actually in the holy estate of wedlock. On the whole, M. Bertillon's statistics are most cheering to the intending Beneditks.

In the manufacturing districts of England the bad influence of early marriages is rendered painfully evident by the wretched stunted children who are to be met with in every direction; for there children are the mothers of children, and couples are to be met with whose united ages do not exceed thirty years.

In the third Morisonian lecture, delivered in March last, by Dr. Austen Mitchell, before the Edinburgh College of Physicians, the subject of marriages between persons of consanguinity was treated at great length. The lecturer disapproved of marriages between near relatives. He did not, however, believe that the evil resulting from such unions arose from any mysterious influence intrinsic in the consanguinity itself. The danger, in his opinion, was due to the increased risks in such marriages of the transmission of abnormal peculiarities. For example, if a deaf-mute is married to a person endowed with the attributes of hearing and speaking, the chances of their having a deaf-mute child will be as 1 is to 135; but if deaf-mutes intermarry the chances that their offspring will be equally defective will be as 1 is to 20.

INFLUENCE OF THE USE OF SEWING MACHINES ON HEALTH.

During the last dozen of years many articles and reports on the effects of the sewing machine (worked by foot power) on the health, have been published. Dr. Vernois, in the *Annales d'Hygiène Publique*, Vol. VIII., 1862, ascribed to the use of these
machines irritation of the sheaths of the flexor and extensor muscles, inducing severe attacks of cramps, occasionally followed by partial paralysis. He further maintained that females whilst learning to work with these machines often laboured under a peculiar nervous excitement. On the other hand, Dr. William Ord, in his report on the sanitary conditions of the needlewomen of London, states that on the whole the sewing machine proves beneficial rather than injurious to them. It enables them to add 50 per cent. to their earnings; whilst the exercise of the muscles of the legs and trunk renders less injurious the effects of a sedentary occupation. He admits, nevertheless, that the cramped position of the operator sometimes occasion thoracic pain, and produces indigestion; and also, that occasionally, delicate women become exhausted by the unaccustomed physical exercise, just in the same way that a clerk, if not robust, would become over-fatigued by working all day with a spade. Dr. Guibout, Physician to the Hôpital St. Louis, Paris, and Dr. Fournier, shortly after the publication of Dr. Ord’s report, published papers which gave a very bad account of the use of the sewing machine in the case of factory operatives. Dr. Espagne stated in the Montpelier Medical Journal, May, 1869, that although it would be desirable to work the machines by artificial motive power, yet when used by foot power they do not produce any general malign influence upon the health of those operating with them. In 1870, Dr. G. Decaisne published a very exhaustive memoir on this subject in the 35th volume of the Annales d’Hygiène Publique, second series. He showed that sewing by means of machines exercised no more deleterious influence upon the health than arose from long-continued needle-work of any kind. In the third annual report of the Massachusetts Board of Health there is an elaborate article on the hygiene of sewing machines, written by Dr. Arthur H. Nichols. The following query was addressed to a large number of persons:—

"Have you observed any injury to health from the use of sewing machines moved by foot power? If so, please to send us all the information you may have on the subject." 138 replies were sent in from 120 towns in the State of Massachusetts. In 80 of the replies one or more instances of ill effects produced by the machine are recorded, and in 58 returns the answers are in the negative, or are doubtful. In the 58 returns, however, the information given relates chiefly to towns where the machines are only used in private families. Dr. Nichols, having carefully analysed the returns,
and made due allowance for exaggerations on both sides, evolves the following conclusions from them:

"First."—That the sewing-machine may be used by a healthy woman of average strength for three or four hours daily (a length of time sufficient for the work of an ordinary family) without causing excessive fatigue, nor any appreciable ill effect.

"Second."—That the illnesses which most frequently prevail among professional operatives making use of the treadle are:—

"a. Indigestion, attributable to the unhealthy conditions in which they pursue their occupation, particularly the impure atmosphere of the work-rooms, the sedentary employment, and want of open-air exercise.

"b. Muscular pains, affecting the lower limbs and trunk, produced by the long-continued, frequent use of the same muscles.

"c. Diseases peculiar to women, aggravated by, rather than caused by, the plethoric condition of the pelvic organs, induced by this exercise.

"d. General debility. By this is meant a state of physical deterioration and nervous prostration brought on by overwork.

"Third."—That other ill effects, such as neuralgia of the feet, from contact with the iron treadle, affections of the spine, as well as the nervous effects described by M. Guibout, are worthy of mention only from their extremely rare occurrence.

"Fourth."—The unhealthy tendencies of this occupation may be greatly diminished by the substitution, if practicable, of some other motive-power than that of the feet, or the adoption of one of the improved treadles above described. It is, moreover, of very great importance that, in those establishments where large numbers are congregated, attention should be directed to the proper ventilation of the work-rooms."

**THE PUBLIC HEALTH IN 1871.**

The recent severe illness of his Royal Highness the Prince of Wales has been the means of directing public attention to the sanitary condition of the towns and dwelling-houses of these countries. It has had the effect of literally making thousands of people put their houses into good order. Many local sanitary authorities have for the first time in their corporate existence given a thought to the state of the sewerage system within their respective jurisdictions. Greatly as we regret the sufferings which the Prince of Wales has lately endured, yet the illness of that illustrious personage cannot be regarded as an unmitigated evil, since it has served to call attention to those sanitary defects which annually occasion an enormous waste of human life in these countries, and which are to a great extent easily remediable.
Although very careful inquiries have been made with the object of ascertaining the source of the typhoid poison which infected the Prince of Wales, the matter has not been satisfactorily determined. The sanitary condition of Sandringham, the Prince's country residence, has been favourably reported upon, with the exception of the water. The water which supplied the Mews was exceedingly impure, and perhaps from this source the Prince's groom became infected with the poison of typhoid. At the village of Sandringham there have for some time past been more cases of enteric fever than we might reasonably expect to find in so small a community.

Londesborough Lodge, where the Prince actually sickened, is situated on the outskirts of Scarborough, and it is drained by the main sewer of the town. The Lancet and the British Medical Journal published, during the Prince's illness, special reports upon the sanitary condition of Londesborough Lodge; and both reports agreed in condemning the sewerage arrangements. Scarborough being a port, the contents of its sewers are discharged into the sea, and during a portion of the day the mouths of the sewers are sealed by the tide, and the sewer gases are forced back into the town and into the houses. The main drain at Londesborough Lodge runs right under the house, which is very objectionable. After the publication of the reports of the medical journals, Lord Londesborough had the sanitary condition of the Lodge re-investigated, when it was discovered that the sewers were provided with ventilating shafts, which carried any gases that might be generated in the sewers to points higher than the chimney-tops. The sanitary condition of Scarborough being called in question by the Builder and by several writers, the local authorities requested Mr. Bazell-gette, the well-known engineer, to investigate into the sewerage of the town. His report, dated the 18th March, is favourable. There are in the borough 21 miles of roadway built upon, whilst the sewerage extends to 22 miles. He suggested a few improvements which might be effected at a trifling cost. The Special Sanitary Committee of Scarborough have issued a report, dated 28th April, 1872, in which they state that their engineers have established the fact that for the last year the district in which Londesborough Lodge is situated, and which contains one-sixth of the inhabitants of the borough, has had a remarkably low death-rate. They further affirm that no death from a zymotic disease occurred in that district during the year. Under those circumstances, those
valetudinarians who intend to make Scarborough a health-resort, need be under no apprehension that they will incur unusual risk from zymotic diseases whilst sojourning in that pleasant watering-place.

During the year 1871 the death-rates per 1,000 persons living in the 20 principal towns of the United Kingdom were as follow:—Portsmouth 19, Hull 23, Bristol 23, London 25, Birmingham 25, Norwich 26, Bradford 26, Nottingham 26, Dublin 26, Leeds 26, Edinburgh 27, Leicester 27, Wolverhampton 28, Sheffield 28, Salford 30, Manchester 31, Newcastle-on-Tyne 32, Glasgow 33, Liverpool 35, and Sunderland 37. The average mortality in the 20 towns was 27 per 1,000 persons living. In the 17 largest towns of England small-pox carried off nearly 16,000 persons during the year.

Mr. Robert Lawson, F.R.C.S.L., at a recent meeting of the Epidemiological Society, read an interesting paper on the spread of cholera through European Russia last year. The chief points of interest, with regard to this epidemic were brought before the Society, illustrated by charts, showing at a glance the march of the cholera, and the degree of intensity with which it prevailed in the several governments of European Russia. The whole of the official returns, so far as yet published, were also shown, arranged, and tabulated according to the various governments, giving averages of mortality per 1,000 of deaths to cases (or attacks), and of percentage of cases to population. The census returns quoted were those of 1870, just published at St. Petersburg, together with the meteorological and other tables. The comparative method should be always used by way of crucial test in all epidemiological study; one should never rely solely upon, singly, the pathological, physico-chemical, statistical, or meteorological aspects of the question.

The co-incident phenomena or favouring conditions observed at the local “spring” outbreak at St. Petersburg, with tables of disease, statistics arranged in daily and in weekly periods, showing its “epidemic vital force,” were then reviewed in detail.

The summer heat diarrhea should always be eliminated, being entirely distinct from epidemic Asiatic cholera. The relation and connexion between an epidemic of enteric fever already existing over a defined area, with that of an invading wave of cholera, with their correlation and influence on each other, as met with in other zymotic diseases; and the prevalence in 1871 and previous years of
epizootic and epiphytic diseases in Russia were then succinctly treated.

The other points brought forward were:—

The rapidity and almost day coincidence in point of time with which the cholera appeared at different places in so wide an area as European Russia. On this head remarkable facts were brought out clearly by chronological and geographical charts of epidemic cholera, not only in Russia, but also in India, Persia, Zanzibar, &c.

Its apparent localization, as at Kieff since 1868; thus waiting for the next and succeeding years before vitalizing into its epidemic and spreading form.

The condensation, over-crowding, and the insanitary condition of inhabitants either in town or country, always found to be a constant factor, and to exert a vast and overwhelming influence on the existence, spread, and death-rate of cholera.

Cholera has not this year lived or become vitalized in any of our ports. Important questions for the epidemiologist to consider are: Will it behave in like manner in 1872? Or will there be "spring cholera" in 1872 in Northern Europe? Is there a "wave of typhoid" in advance of it? Will this direct, influence, or modify in any degree the progress of cholera westward?

The *Medical Times and Gazette* gives the following resumé of a communication made in January, 1872, to the French Académie de Médecine, by M. Fauvel:—

"The cholera, then, the invading progress of which towards the North-east of Europe has for the time been suspended, still prevails with some intensity at Constantinople, menacing thence all the basin of the Mediterranean, which to the present time has remained intact. On the other side, the disease, advancing through Arabia to the holy places of Islamism, threatens the invasion of Egypt, and consequently the shores of the Mediterranean, as in 1865. This is the present position of Europe with regard to the cholera: and it follows that, if we have some chance of escaping a scourge which presses on us on several sides, there is also a strong probability that we shall be subjected to its invasion. This the year 1872 will decide.

"There is, however, some compensation in this perspective. If we cast a comprehensive glance on the invasion of the cholera in 1871, we perceive, without any doubt, that at no epoch has the disease prevailed over so vast a space; for we find it prevailing with varying intensity along an undulating line, which is scarcely interrupted, from Archangel to the southern extremity of Africa. But, then, in compensation, never has an epidemic of cholera shown itself so benign in Europe as that of
1871. It is not that the malignity of the disease has diminished, for the gravity of the attacks has continued the same; but, with certain exceptions, their number has been much more limited than usual. In other words, individual resistance opposed to the action of the morbific principle has been more extended than in former epidemics. The progression towards Western Europe has also been less active, and—a fact to be noted—it would seem that, wherever the means of disinfection have been employed with energy and intelligence, they have greatly contributed to the extinction of epidemic foci, and, consequently, to attenuate their effects. The conclusion to be drawn from this last fact is, that if the cholera should unfortunately visit our country, it ought to find us prepared beforehand to oppose it with those prophylactic measures which experience has proved to be of service.”

The Secretary of State for India has just issued a large Blue Book on the sanitary condition of that extensive region. It includes a large number of official reports from the authorities in the different presidencies; and it contains elaborate directions for the performance of water analysis, by Drs. Macnamara, Parkes, and Angus Smith. In this report the etiology of cholera is discussed at considerable length. Dr. Cunningham concludes from his observations and information that the spread of cholera in India is not altogether in harmony with either Pettenkofer’s (the soil water) theory, or with Dr. Bryden’s (air spreading) hypothesis. The water-carriage theory is not fully supported by the facts referred to in Dr. Cunningham’s review. On one point, however, the writers in the report are fully agreed, and that is, that whatever may be the materiae morbi of the cholera, and the vera causa of its epidemics, the spread and fatality of the disease are greatly influenced by the insanitary conditions of the district which it invades. “The degree in which inhabitants of a given area are likely to escape will depend greatly on their sanitary condition, on the purity of the water supply, the excellence of the drainage, and the completeness of all other such arrangements.”

SOME LESSONS TAUGHT BY THE PRESENT SMALL-POX EPIDEMIC.

In the year 1870 small-pox, which had long been declining, became almost extinct in Ireland, and we were beginning to flatter ourselves that this pest would never return to afflict the people of this country. The steady diminution of variola since the
introduction of compulsory vaccination and the cheerful conformance of the vast majority of the people with that beneficial law seemed to imply that the great Jennerian prophylaxis would for ever rid Ireland of small-pox. Dr. M. Burke, however, said very sagely, when examined before a recent Parliamentary committee on vaccination, that no safe conclusion could be arrived at relative to the protective influence of vaccination in Ireland until it was tested by the occurrence of an epidemic. The epidemic came last year, and in Dublin alone nearly ten thousand cases of small-pox (out of a population of 310,000 persons), have occurred during the last twelve months, and more than a thousand persons have fallen victims to the disease. At first the cases of small-pox were confined to the poorest and most crowded localities; but latterly it has invaded the most fashionable quarters of the city, and is attacking persons amongst the highest as well as the lowest ranks of society. We propose to give a few statistics relative to the present small-pox in Dublin and to the recent outbreaks of that malady in other places, and to indicate some of the lessons derivable from them.

The city of Dublin is divided into two poor-law unions, each of which includes a few suburban districts. Dr. Burnside, one of the physicians to the South Dublin Union Small-pox Hospital, informs us that from November the 15th, 1871 (at which time the epidemic was beginning to assume large proportions), until the 11th April, 742 cases of small-pox were admitted into that hospital. Of these, 152 died, nearly 17 per cent. of the cases of admission. About 80 per cent. of the total cases were "modified," and 20 per cent. confluent, at least on the face. Of purpuric cases, the percentage was between 5 and 6, and although in a few of these cases there was recovery, the great majority rapidly terminated fatally. Out of the 742 cases, 596 were vaccinated in some way, and of the latter 64 terminated fatally. "Of re-vaccinated cases," says Dr. Burnside, "I cannot say I saw the disease occur in one when I could positively state that re-vaccination had been thoroughly performed prior to infection." Dr. Burnside states that he has seen mild cases of small-pox amongst the unvaccinated, but they were exceptional; the mortality amongst the 146 unvaccinated cases amounted to 88 per cent.

Dr. Joseph E. Kenny, Visiting Physician to the Small-pox Hospital (Sheds), established by the North Dublin Union, has kindly furnished us with the following statistics:—
Total number admitted into North Union Small-pox Sheds from 28th October, 1871, to 20th April, 1872, 544.

Vaccinated, - - - - 442
Unvaccinated \{certainly, - - 71\} 102
\{probably, - - 31\}

Total, - - - - 544

Died 113, or 20.77 per cent.

Number of deaths in unvaccinated and doubtful classes, 70, or 68.62 per cent.

Number of deaths in vaccinated class, 43, or 9.72 per cent.

The total is thus divided as to sexes—

Males, - - - - 313
Females, - - - - 231

Total. - - - - 544

Died, males, 76, or 24.2 per cent.
,, females, 37, or 16.08 per cent.

There was a greater number over than under 14 years of age. The proportion of purpuric cases was very large, and in all such cases, when well marked, the result was fatal.

With regard to those cases which are marked as doubtful as to vaccination, Dr. Kenny says:—“I mean by that to express that I could not discover any marks, and the history given by patients or friends was too uncertain to be reliable. The weight of evidence in those cases is, in my opinion, in favour of their not having been vaccinated. In four cases the attack of small-pox was the second experienced by the patients. In no case have I seen a third attack. The intervals in the above four cases varied from 12 to 65 years. In only two cases has re-vaccination been performed, or, what amounts to the same thing, primary vaccination done within a period of three or four years. In both these cases the disease was in its very mildest form. I have seen seven cases where re-vaccination was performed within ten days of the attack of small-pox, but after, in each case, full exposure for several days to not only the infection, but also contagion of small-pox. In two of these cases the disease was very severe, and in one it proved fatal. My experience of vaccination as a prophylactic against, or a modifier of, an impending attack of small-pox, does not coincide with that of Dr. Furley, as published by him some time ago. The cases I
quote above, and about eight others in which I vaccinated the patients myself, do not support his theory on the subject, viz., that vaccination, if done either in the incubating stage of an attack, or even when the papules have appeared, tends to cut short or otherwise favourably modify the type of the disease. I do not think, as far as my experience goes on the matter, that this most desirable result is produced by his operation. I had tried it last November, several months before he had made public his observations. The subject, however, is, I think, worthy of further investigation. I cannot too strongly express myself in favour of re-vaccination, which I believe should be at least a decennial operation."

Dr. William Moore, King's Professor of Medicine in the University of Dublin, informs me that he had 37 cases of small-pox under his care at Sir Patrick Dun's Hospital. Of these, one (a middle-aged woman) was re-vaccinated, 31 were vaccinated, 2 had previous attacks of small-pox and had also been vaccinated, and 3 were non-vaccinated. The re-vaccinated patient died from confluent small-pox; one of the patients (a woman aged 44), who had previously suffered from small-pox, recovered after a mild illness: the other case, that of a man aged 20, was severe, being semi-confluent and purpuric. Of the 3 unvaccinated cases, 1 (a child aged 5 years), died, another had a severe attack, and the third (a child aged 3 years), appears to have a mild attack, as it remained in hospital only 5 days. Of the 31 vaccinated cases, 1 (a woman aged 38), was confluent and purpuric, and terminated fatally; the remaining 29 were modified, and for the greater part mild.

We learn from Dr. Moore's cases, although they are not numerous, that small-pox is rendered less fatal by vaccination, for, including the re-vaccinated cases, only 2 deaths occurred out of 31; whilst out of 3 non-vaccinated cases, 1 died. It is remarkable that the only case of small-pox after re-vaccination admitted should have proved fatal; but it appears that this woman had been attending her husband, who was ill with small-pox, and had been re-vaccinated whilst exposed to variolous infection. When admitted she had vaccinia and small-pox at the same time, and it is more than probable that the virus of the latter disease had entered her blood before she had been vaccinated. It is also rather remarkable that amongst 37 cases of small-pox there should be 2 patients who had previously suffered from the disease. We need not therefore be surprised to find cases of small-pox occurring amongst those who have been thoroughly re-vaccinated, for surely an attack of variola
Dr. Moore says in the statement which he has kindly given to us—"I may take this opportunity of mentioning that I believe in the antiseptic properties of the sulphides, and especially of sulphurous acid, which I have given in almost every case, both public and private, I have been called on to treat. In addition, where one case has occurred in a family I have given it to the other healthy members as a "prophylactic," which, coupled with other due quarantine precautions (I believe), has tended to prevent the spread of the disease."

Dr. Grimshaw, one of the physicians of Cork-street Fever Hospitals, has favoured us with the following statistics relative to the admission of small-pox patients into that institution. From the 1st April, 1871, until the 31st March, 1872, the admissions amounted to 425. Of these, the vaccinated patients were 334, of whom 35 died; and the non-vaccinated cases number 91, no fewer than 70 of which terminated fatally. No case of small-pox after undoubted re-vaccination was admitted. These statistics having been made out in the latter part of April may be regarded as a full account of the termination of the cases admitted during March.

Dr. Lyons, one of the physicians to the Hardwicke Fever Hospital, read a paper on the statistics of small-pox, at a meeting of the Medical Society of the King's and Queen's College of Physicians in Ireland, held on the 17th April, 1872. In this paper, which is published in full in the present number of this Journal, the protection afforded by vaccination is clearly shown.

Of 541 vaccinated patients admitted into the Hardwicke Hospital, only 61, or 11.44 per cent., died; in 3 re-vaccinated cases there was no death; and of 66 non-vaccinated, and 4 doubtfully vaccinated, cases, 53, or 76.19 per cent., terminated fatally.

Dr. A. O. Speedy, one of the medical officers of a large dispensary district in one of the poorest localities of the city, treated nearly 400 small-pox patients at their own homes. Not one of these had been re-vaccinated. Dr. Thomas Purcell, another of the poor-law medical officers, who treated several hundred cases of small-pox, did not meet with a single case after re-vaccination.

The statistics of small-pox and vaccination relative to the present epidemic of small-pox which we have collected plainly show that vaccination is unquestionably a protection against small-pox. It is idle...
to assert that persons thoroughly vaccinated enjoy perfect immunity from this disease: all that can fairly be claimed for vaccination is that it greatly lessens that "receptivity" which appears to be a factor in contracting the disease.

"The experience of the public schools in the city of New York, the past year has shown that in the midst of an unusually severe and widespread prevalence of small-pox, and which attacked upwards of 2,000 persons in more than 1,400 houses, the 240,000 school-children of the city have remained so secure from the contagion that scarcely a death, and only a very few cases of the disease, have occurred. Not a case, indeed, has been ascertained in which a child, with approved vaccination, has died of the disease out of this vast number of pupils. But in a single ragged school, containing 150 pupils, only 50 of which were found to bear any mark of vaccination at the first inspection, more cases of small-pox occurred in a single fortnight after the first case, than have occurred in all the well-vaccinated school-children in the city in a year."—Bulletin of the New York Academy of Medicine, No. in 1870.

In his annual report on the health of Liverpool for the year 1871 Dr. Trench traces the recent epidemic of small-pox in that city to the arrival of a ship from Galicia. Two Spanish sailors had sickened at sea with small-pox in this ship, and on her arrival at Liverpool they were sent to hospital. From these patients the contagion appears to have been propagated throughout the city; but the supply of contagion was kept up by fresh arrivals of infected ships. At first 30 per cent. of the cases of small-pox were amongst seamen. The influence of vaccination as a prophylactic was clearly shown in Liverpool. Amongst the cases of small-pox where there was doubtful vaccination the mortality was 56·4 per cent.; where the patients had one visible cicatrix the deaths amounted to 14·9 per cent.; where two cicatrices were visible the mortality was 9·8 per cent.; and lastly, in the case of those who had three cicatrices, the deaths were at the rate of 7 per cent.

The Lancet for March 30th, 1872, contains a report by Dr. J. Harris Ross, on the recent epidemic of small-pox in Brighton. 271 cases were treated in the Workhouse Hospital, and careful notes were taken of 258 of them: of these 105 were unvaccinated and 153 were vaccinated. The mortality was 28·9 per cent. amongst the unvaccinated, and 1·99 amongst the vaccinated patients. 146 unvaccinated patients were treated at their homes, and of these 38·3 per cent. died. Of 247 post-vaccinal cases treated at private houses, 32 (12·9 per cent.) proved fatal.
It would appear that re-vaccinated persons are less liable to contract small-pox than persons of the same age who are only protected by primary vaccination. This to a great extent may be due to the second operation being more carefully performed, for it is generally conceded that some years ago vaccination was often very imperfectly carried out. Since the early part of 1870 many thousand persons have been re-vaccinated in Dublin, and yet we rarely hear of re-vaccinated persons contracting variola, although at least 3 per cent. of the whole population has suffered from this disease. There are several thousand soldiers stationed in Dublin, and there has been only a few cases of small-pox amongst them, although they are of an age which is favourable to the reception of the disease. No doubt the exemption of these soldiers from the epidemic is to a great extent due to the fact that they are, with few exceptions, re-vaccinated.

We learn from the *Gazetta Medica Lombardia* for February 17th, 1872, the following statistics relative to vaccination and small-pox in Milan during the year 1871:

The total number of vaccinations performed under the auspices of the Milan municipality ("animal" vaccine virus being employed), between January 1 and December 31, 1871, was 17,069. Of these 1,504 were vaccinations of children, of which 1,270 were successful in their results, 4 were spurious, 35 failed, and 195 were not verified. There were also 15,565 adults re-vaccinated, the results being successful in 5,039, spurious in 435, and unsuccessful in 3,814, while in 6,277 they were not verified. Among these 15,565 re-vaccinations there were only 68 cases in which variola in a mild form, or varioloid, appeared.

The following statistics relative to small-pox in Hamburgh—where the disease was very prevalent in 1871—have been officially published, viz.: 3,301 vaccinated persons took small-pox, and of these 347 died, and 2,954 recovered. On the other hand, of 710 unvaccinated persons who suffered from small-pox, 700 died and 10 recovered! If these figures are reliable, who, in future, can doubt the efficacy of vaccination?