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The Free Press,
LONDON, ONT.

Friday, July 10, 1885.

THE PURIFICATION OF SEWAGE.

In Bradstreet's last issue the danger from sewage water is very fully discussed, and this journal says:

The danger to several of the larger cities from the poisonous waste carried to the rivers has become very great, greater with our hot summer climate than it is in over-populated London, and the first necessity is to provide for a system of defecation by settling and cleaning the drainage water. The same authority considers now is the time to awake public attention to dangers which, even if developed in the small mining town of Plymouth, are seen to be a deadly scourge. An experimenting commission that subjects its members to severe diarrhoea from a visit to the nauseating water surface of the Thames would be likely to develop typhoid fever on any river shore, in July or August of our scorching hot summers. The cumulative progress of population brings on new conditions every year. What is removed from the streets by better drainage goes only the more rapidly into the great open sewers, the adjacent rivers. There it floats on the surface until it decays, filling the air above it with the worst combination of offensive gases. Although ultimately purified, as all organic matter does and must decay, it renders the whole surrounding dangerous to human life.

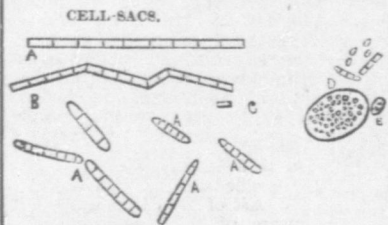
It is absurd to say that civilized energy cannot cope with the dangers its own existence creates, even in London and on the Thames. If there is a danger that must be removed there can be machinery enough erected to remove it. At Birmingham and Manchester the defecation system, by the use of lime and settling vats, removes the dangerous mass completely. In America it would be requisite to carry the sewage beyond the limits of large cities, for such treatment, the climate being more extreme. But it would be entirely practicable to carry the waste by deep-laid conduits to other parts, where the treatment could be safely made and the solid matter be of the greatest value as a fertilizer. The saturation of soils in England, resulting from a too free use of sewage, could not occur in our dry climate, and on the porous soils of which we have so many tracts available. The whole belt of these lands along the Atlantic coast invites this high fertilization, and under it would yield the richest returns in vegetable gardening. Absorbent earths, lime, and possibly other fertilizing materials are abundant enough as vehicles for the fertilizing waste, and could be handled cheaply direct to the lands where they would create a value not now found.

Under the present condition of urgency there would scarcely seem to be any question more pressing than that of municipal purification and the defecation of sewage. Any city can apply the requisite tests of what will become practicable, and private enterprise might contract for the erection of defeating works, the usual appropriations for sewer construction and street cleaning constituting a part of the cost of conducting them, and the salable fertilizers making up another part. The direct duty of the city is the first thing to be considered, for the sewage must be removed. The preparation of a valuable product is incidental, but it is also certain if we follow the examples set by Birmingham and Manchester.

Toronto World.—Mr. Blake's latest speech only occupied six hours, which shows that he is getting a little tired himself. His hearers and the Globe's readers were fatigued long since. In all seriousness, those long dry speeches are mistakes, and none know it better than the orator's own friends. The age of long editorials, long sermons and long speeches is past. The man who does not recognize this fact is not to degenerate into a bore, but he is at times tempted to do so.

WHAT ARE BACTERIA?

This word is in common use just now, but most people appear to have a vague notion of what it means. And it should be borne in mind that this bacteria question is getting to be a serious one, for, according to the latest developments of science, we have more to dread from these little plants than anything else, for it is said that bacteria cause all kinds of true putrefaction and most of those decompositions which are of a kindred character; they regularly decay, are the direct cause of many diseases, and floating in the air they cause epidemics and epizootics. Bacteria is the plural of Bacterium, a name given to a very low form of plant life, which is never seen except with the microscope, as they are only one twenty-thousandth of an inch in diameter. The engraving shows the



BACTERIA, HIGHLY MAGNIFIED.

appearance presented by the different forms as seen under the microscope. A single bacterium is shown at C. A number are most commonly joined end to end, as in A and B, to form rod-like bodies. They get their name from this peculiarity: the Greek name for a rod or a cane, is bacillus, and thus these rod-like forms of microscopic life were named bacteria.

It is supposed that influenza, scarlet fever, cholera, and other "catching" maladies are caused by them, also that contagious ailments among animals come from the same source. Foot and mouth disease, hog cholera, chicken cholera, rump, Texas fever, pleuro-pneumonia, and many other diseases of animals are supposed to be caused by different kinds of bacteria. Consumption in man is of similar origin, caused by bacteria.

It is only necessary to add a few leaves or stems of hay or shreds of meat to a glass of water and allow it to stand for a day or two to produce myriads of these organisms. Those who prepare them in this way for microscopic examination would do well to examine the infusion at stated intervals after the time of preparation, for there are very many species of bacteria, and each species has its own time of generation. In about twenty-four hours after the infusion has been made, a small drop of it placed under the microscope will usually be found to be teeming with exceedingly minute organisms of a spherical shape. Twelve hours later many others of a rod shape, either straight or wavy, will probably appear. In the course of two or three days still others of a spiral or cork screw shape will be present.

Not less remarkable is the exceeding rapidity with which these organisms multiply. A correspondent of the Country Gentleman writing from Union College, Schenectady, last week, says:—
It has been calculated by Cohn, the eminent German investigator, that a bacterium divides into two (they multiply by self-division) in the space of an hour and that each one thus formed, itself divides at the end of a like time, and so on. At this rate, at the end of twenty-four hours a single organism will have amounted to about sixteen millions and a half; and at the end of a week it will have multiplied to the incredible extent of requiring a number of fifty-one figures to express it. The same observer has expressed the results of his calculations in another way, by saying that "the bacteria issuing from a single germ would fill the ocean in five days."

The question arises, why these organisms do not overwhelm us with their abundance, seeing that they increase with such great rapidity. The answer is, that their increase is limited to their supply of food. As soon as the food material in a liquid containing them is exhausted, they perish. "Beside multiplying by self-division, they increase by means of spores. These are minute bodies, comparable to seeds, which form in the substance of a bacterium and subsequently develop into new beings. These spores remain alive after the death of the bacterium containing them, whether death be caused by the drying up of the water in which they are living or by subjecting it to a boiling temperature. It is this fact of the resisting power of the spores to all ordinary destructive agencies that has caused so much difficulty in determining whence bacteria arise, whether, as in the case of all ordinary living things, from parent organism or, as many for a long time supposed, by a process of spontaneous generation out of the organic matter of the infusion. For it was found again and again, that while all bacteria were destroyed by boiling the infusion containing them, yet, even if it were hermetically sealed before cooling below the boiling point, in a few days it would again become teeming with life.

"These spores are known to be present in all ordinary atmospheres, floating about like a fine dust. It is they which cause all forms of putrefaction, whether of animal or vegetable matter. No sooner is any dead organic matter left exposed to the air than these spores settle upon it, and by their active vital processes cause that fermentation called decay. So that it has been well said that "putrefaction is a concomitant, not of death, but of life." As is well known, decay is prevented by cold; this is not due to any preservative quality in a low temperature, but simply to the fact that bacteria are not able to thrive except under moderate warmth."

The London Advertiser says:—
"The people of this country as well as the members of the House are tired of the session. All are anxious to see it come to an end."

Our contemporary begins to see the mistake which was made by Messrs. David Mills, G. E. Cassy & Co. in offering such continued obstruction to the Franchise Bill. So far from having had the effect intended, namely, of bringing legislation to a dead halt, and converting Parliamentary proceedings into a farce, it has served but to disgust the people at large, and make even the Opposition wish themselves out of it.

AMERICAN WINES.

The following statistics are taken from the report of the Chief of the Bureau of Statistics of the Treasury. They do not include the smaller quantities of so-called wines which are made upon many farms, etc. The imports, of course, may be regarded as accurate.

The average annual production and importation of wines from 1877 to 1884, inclusive, is as follows:—

Produced in U.S. Gallons. Per Cent.
Imported. 18,944,439 75.8
From 1870 to 1876, inclusive, the average was as follows:—

Produced in U.S. Gallons. Per Cent.
Imported. 8,973,547 36.4
In order to show the rapidity of the development of this industry, the following statistics of importation by decades since 1840 are given:—

Decade. Gallons imported. Per cent. of total consumption.
1840-1849. 4,748,302 37.4
1850-1859. 6,994,422 46.5
1860-1869. 9,199,133 53.3
1870-1879. 13,985,149 75.9
1880-1884. 18,944,439 75.8

The production in 1880 was abnormal, the annual average for 1881 to 1884, both inclusive, was 5,584,184 gallons imported, which was 23.3 per cent. of the total consumption.

The total consumption of wine in the United States has increased since 1840 fully 400 per cent., while the average annual importation during the past four years has been but 174 per cent. greater than it was in 1840, and is about 40 per cent. less than it was in 1860 and 1870. It appears, therefore, that domestic wines are not only meeting all the demands of increased consumption, but have already displaced a very large percentage of the wines hitherto imported.

In 1880 returns were obtained by the Department of Agriculture from thirty-five States, giving the acreage in vines, the production of wine, and value.

The aggregate was 141,563 acres. Wine produced, 2,453,827 gallons. Value, \$13,426,175.

The smallest acreage was fifty-five acres, in Rhode Island; the largest was 32,383 acres, in California.

The largest yields were as follows:

California. 14,657.155 32,383
Missouri. 1,234,207 7,273
Illinois. 1,023,073 9,725
New Mexico. 908,500 3,159
Georgia. 802,294 2,961
New York. 684,118 12,648
Alabama. 675,672 1,111

It will be seen that in those States, as California, New Mexico, Georgia and Alabama, in which the crop is used chiefly for the production of wine, the average yield is about 400 gallons per acre. According to the 'Dictionary Technologique,' the annual produce of a hectare of vineyard in the district of Volnay was for 113 successive years, 1,779 litres, approximately 196 gallons per acre.

IMPORTED PAPER AND RAGS.

Owing to the prevalence of cholera in different parts of Europe, restrictions were laid upon the importation of paper and rags, and consequently the conclusions of the International Sanitary Conference recently held in Rome, Italy, have been watched for with much interest by paper manufacturers and importers of rags on this side of the Atlantic. The conference was composed of some of the most eminent students of sanitary science in the world, and the question of disinfection was discussed in all its bearings. In a letter from Rome, published in the British Medical Journal of June 13, the findings of the conference were given. Paragraph 5 reads:—"Disinfection of goods, letters, and postal packages is superfluous." "Disinfection of merchandise and of the mails is unnecessary. Steam under pressure is the only reliable agent for disinfection of rags."

This takes for granted no suggestion was made during the Rome conference that any danger existed of spreading cholera or any other disease by means of rags which are shipped as merchandise. The opinion of the principal authorities of the Health Congress during their stay in Naples was that the cholera microbe does not exist in textile fabrics or in old dry linen, where it cannot find its necessary aliment unless there is a strong fermentation caused by moistening the articles with water charged with the microbe. The transportation of dry rags from an infected locality to another place does not present any danger. Water is the true propagator and moisture the rapid multiplier of the microbe. If cities pay attention, therefore, to the purity of the water which they inhabit, and when they drain and make wet localities obnoxious, the cholera will disappear never to return.

THE FAILURE RECORD.

The record of failures for the first six months of the current year, presents a strikingly favorable contrast to that of the two preceding years. The figures for Canada are:—

Number. Liabilities.
1885. 560 \$ 5,196,165
1884. 732 10,742,600
1883. 497 \$ 8,549,090

In the first quarter of the year the total number of failures was 393 with liabilities of \$2,827,782; in the second quarter 297 failures and liabilities of \$2,338,383, the details by provinces being:—

First Quarter. Second Quarter.
Ontario. 296 \$1,651,912 157 \$1,078,114
Quebec. 125 1,451,510 75 1,192,520
Nova Scotia. 32 62,650 24 29,300
Manitoba. 22 29,085 16 107,099

The only province in which the amount involved in failures in the first six months of 1885 is greater than in the same period of 1884 is Manitoba. The figures are, 1884, \$460,560, against \$488,654 in 1885. The decrease in the liabilities of insolvents, the measure of the disasters, is very marked, the amount for the last six months being less than one-half that in the corresponding period of 1884, and more than three millions less than in 1883.

CURRENT TOPICS.

A new company has been started in Montreal entitled "The American Clean Towel Company." For twenty cents, payable weekly, they furnish every morning a clean towel of their own, delivered to any part of the city.

The Canada thistle is causing no little worry to Morris County (N.J.) farmers, who are to hold a meeting to devise measures to eradicate it. The seeds of this thistle are said to have been introduced in baled hay, brought into the county from New York and Canada.

Analysis has been made of a list of three hundred graduates and pupils of the Philadelphia Normal School, for the purpose of discovering the favorite names of American girls. There were 30 Marys, 34 Annas, 17 Elizabeths, 16 Laurels, 13 Margarets, 12 Katharines, and among the remainder of the three hundred was distributed a large variety of names.

Toronto News.—One episode of the debate put Mr. Blake in an awkward position. When the Premier read the Brown Blake correspondence he played a trump card. * * * Mr. Blake has learned nothing from his experience with the "speak now" and "friend Moore" letters. The incident is well calculated to give fresh impetus to the agitation for Mr. Shaw's promotion to the Ottawa leadership.

Portage la Prairie Tribune.—The ranch prospects of Alberta this year are brighter than they have ever been since ranching was introduced into the country. The round-up south of High River is showing a calf crop of 80 per cent. The sheep interests north of High River seem to be equally prosperous. The deer are averaging 7 lbs. and the lambs have all done well. Alberta seems to be rapidly taking its place as the leading grazing state of the American or Canadian states or territories.

Many house-owners in Washington have tastefully decorated their house fronts by growing vines of various kinds. The Virginia creeper, one of the most popular plants for this purpose, is usually selected, owing to its bright green color in summer and its scarlet leaves in the fall. This is as harmless as well as a beautiful plant. A lack of botanical knowledge, however, seems to be shown by many citizens who have selected the similar but very poisonous plant known as the poison ivy for this ornamental purpose.

In answer to a question put to Fred Douglass in regard to his earliest remembrances and his first questionings, he replied that he remembered the lizards on his grandmother's fence, the well sweep, etc. "But my first questionings," he added, "those I remember well enough. Why am I a black boy and why is Dan Floyd white? Why can he strike me and why must I never strike back? Why do some of us live in the cabins and go to school, while some live in the big houses and have money to eat? If God is good, why did he make me a slave?"

Two Indians in a village near Quebec were recently discussing the form of the earth. One affirmed that it was round because men had travelled in a straight line and come back to the same place. To this it was replied that men were apt to travel in circles, as they often do when lost. Then it was urged that white men said so, and they knew more than the Indians; but it was answered, white men often lied, as the Indians very well knew. A practical philosopher solved the whole difficulty by driving a stake into the ground and placing an apple on it at night. In the morning the apple was still there, to his great satisfaction; whereas, he said, if the earth had revolved in the night the apple would have fallen off.

The cock fight is the great national amusement of Mexico. "Nearly every town of any size," says a correspondent, "has a cock pit, and mains are fought in some places every day. But Sunday is the great day, when the finest birds are brought out; when money clinks the log drums, and the most motley crowds gather around the pit. Then the men of business, who could not find time for the fights on secular days, are now on hand with their money and their birds. Perhaps the priest, who has swung the censer in the morning, seeks his mental rest in the excitement there afforded, or the judge relaxes his overstrained mind and feels no loss of dignity as he buys a chicken to match the favorite bird of the doctor, who has postponed a call upon a patient to attend to this important business."

The colony of Queensland, says the St. James Gazette, is threatened by the plague which smote the fruitfulness regions of the American Union with impotence for generations; which led directly and inevitably to the most sanguinary and destructive civil war of modern times; which broke up an old and organized society; and which at this day perhaps constitutes the greatest menace to the social and political future of the United States. The report of the Royal Commission on the labor traffic in that colony shows that the suspicious which have been long entertained as to the true nature of the trade have been only too just. The "black labor" system of North Queensland is a system of disguised slavery. It is slavery limited by time; but, with that single exception, it would seem to involve all the worst horrors of the worst days of the South African slave trade.

The Japan Weekly Mail calls attention, at considerable length, to the present distress in Japan and its causes. The breaking away from the old patriarchal system has not been without evil. The old system never witnessed such extreme poverty or destitution as exists at the present time. Taxation, though low, is rigid and never remitted, though in former times taxes were even abolished during bad seasons. Now, too, taxes must be paid in money instead of kind, which adds to the hardship. The present distress has also been largely brought about by extravagance, which appears to be a national characteristic. Other financial factors operating towards the same end have been the fall in prices through the contraction of the currency, reduced crops, a decline in the value of Japanese products in Western countries, the effort to substitute silver for paper money, and finally the sinking of so much of its limited capital in fixed investments.

Ethnologists will have another hard nut to crack when Lieut. Holm returns to Denmark next fall with the information he has collected about the isolated east Greenlanders. He has just spent his second winter among them, and news of his expedition up to the beginning of last winter has recently been received. He says the East Greenlanders have nothing whatever in common with the Esquimaux. The west coast natives from Cape Farewell to Smith Sound speak the same language with small dialectic differences, but the language of east Greenland is entirely different, and the people, unlike the short-stout Esquimaux, are as tall as the north Europeans. Lieut. Holm has found them very friendly and obliging, and they have rendered his expedition much service. He is sure that they are not descendants of the Norsemen, who are said to have found colonies of east Greenland in early times, and to have wintered at a large settlement in 65° north latitude, which Europeans have never visited. In all his wanderings along the coast he had not found the slightest trace of any European colonization.

When the true history of the late campaign in the Eastern Sudan comes to be written, says the London Globe, it will be found that the Sikhs played a most distinguished part in the fighting. A letter before us makes mention of several heroic exploits. A Sikh subadar cut down three of the enemy with his own hand, thus saving the life of an English soldier, and the writer himself saw a non-commissioned officer rush to the front and kill three Arabs with the bayonet before he was speared during the five months' voyage he learned on the 22nd of March the side-de-camp to General McNeill would have 1½ his life, being wounded in the sword hand, had not a Sikh soldier shot the Arabs who were surrounding him; and it is asserted that on this occasion several Sepoys belonging to the Fifteenth Sikhs accounted for seven or eight of the enemy apiece. Too valuable stuff, truly, to be left to waste away with disease and homesickness on the horrible Red Sea littoral.

Rev. Myron W. Reed, in a sermon on physical culture, in the First Congregational Church of Denver, Col., lately, said:—
"Selwyn, late Bishop of New Zealand, was an oarsman at Cambridge. He was the founder of a swimming association. Only those who were in the river five days in each week were admitted to full membership, and the ceremony of admission must be performed in the water. All this early training at the University came well into play in New Zealand, and enabled him to endure the hardships of a missionary life. He swam the rivers, pushing before him his clothing in a rubber sack. During the five months' voyage he learned the new language, and was able to preach to the natives the first Sunday after landing. He could do anything a native could do, and do it better. It cost him as much to raise a scrub as a thoroughbred. What an economy there is in raising such a man as Bishop Selwyn!"

Sir Stafford Northcote's change of name to Earl of Iddesleigh, a village in Devon with about 600 persons, will not be so marked as that of Mr. Gladstone's would have been had he accepted a peerage. Mr. Gladstone's refusal was a wise one. Other great commoners are better remembered by the names of early days than the titles of a vanced years. The merest tyro in political history regards the name of William Pitt with greater interest than the title of Earl of Chatham. It is easier to speak of Disraeli by this name than to refer to him as Earl of Beaconsfield, though no doubt the change harmonized with the ambition and love of pomp and splendor of the dead leader of the Tory party.

The steady falling off in the proportion of marriages in England celebrated according to the Established Church is sufficiently remarkable to be the subject of special comment in the Registrar-General's report. Up to 1841, nearly 934 in every hundred marriages came under this description; but since then the decrease has gone on year by year, until the percentage has fallen to a trifling fraction over 71 per cent.—the lowest point yet recorded. The figures show also a further decrease in the proportion of marriages by license, and a corresponding increase in marriages by banns, the comparative number of which has been rising continuously since the quinquennial period 1856-60.

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