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TREATMENT.

The primary indication for the treatment is found in the parasite. That is the cause of the disease, and must be removed before permanent results can be obtained. Parasiticides, such as corrosive sublimate, carbolic acid, thymol, acetic acid, boracic acid, tincture of iodine, ethylate of sodium, sulphurous acid, hyposulphite and sulphite of sodium, and sulphur, should be applied to the affected spots, and the indicated remedy given internally. The fungus could not exist unless in a congenial soil, and to remove the condition of the system which allows of the existence and proliferation of the parasite will require the administration of the remedy or remedies indicated by individual peculiarities. The remedies which have been used by various authors are, Antim. crud., Arsen., Aurum, Baryta carb., Calcar. carb., Carbo anim., Carbo veget., Caustic, Cicuta, Clematis, Dulcam., Graphit., Hepar, Iodium, Ledum, Lycop., Mangan., Mercur. præcip. ruber, Nitrum, Nitric acid, Oleand., Petrol., Phosphor., Rhus tox., Sarsap., Sepia, Silic., Staphis., Sulphur, Tartar. emet., Tellur., and Thuja. I have cured a case of trichophytosis corporis (a mild one) with Dulcam. internally and a two-grain solution of corrosive sublimate externally.

On hairy parts it will be necessary to apply a poultice to loosen the scabs if they are thick, and then, with a good epilation forceps, denude the affected patches of hair, taking several sittings to accomplish it, and after each sitting apply one of the above-mentioned parasiticides.

In conclusion, its extreme contagiousness should never be forgotten. Patients who are affected with the disease in question should be prohibited from using combs, brushes, towels, etc., which may be used by others, and above all wearing others' hats, and sleeping with persons not affected with the malady, should never be allowed.

KENSINGTON WATER SUPPLY.

BY W. W. VAN BAUN, M.D.

(Read before the Philadelphia County Homœopathic Medical Society.)

AN absolute necessity to the health, growth and prosperity of a city is an adequate supply of pure and wholesome water. Philadelphia may have the requisite number of gallons, but the purity of these gallons is not such as is conducive to good health. We do not expect, nor is it necessary, that the water

we drink be actually pure. Theoretically water is made up of two elements, without taste, color or odor; nature, however, never supplies it chemically pure. Practically, we always have foreign matter, in greater or less degree, gathered from many sources, added to the oxyhydrogen combination. When these impurities exceed a certain percentage they become dangerous to the health of the community. To remedy this evil it becomes imperative to subject the supply to a purifying process, or to secure it from a new source. Practical purity is the great question with commissioners and engineers of to-day; the means of acquisition may be true happiness to them, but the end in possession by the public will be health to the people.

The purpose of this paper is to briefly call your attention and consideration to the fact that the water supplied by the Kensington works is impure to an offensive and dangerous degree. We will give concisely some of the causes of the impurities, together with a short history of an epidemic of diarrhœa, from water pollution, occurring in this district some twenty-one years ago.

The Kensington water-works are situated just above a sharp bend in the river, at the foot of Otis Street, opposite the lower end of Petty's Island. The supply-pipe runs a short distance out into the river, and bends slightly to the north. A few hundred feet above the works the Aramingo Canal empties; in the Nineteenth Ward, at Cambria Street, midway between Lemon and Cedar streets, Gunner's Run unites with it, and together they pass on to the river. These vents are what may aptly be termed sinks of corruption, into which drain an extensive district, covered not only by dwellings but by various kinds of factories, dye-houses, slaughter-yards, etc. Southwards, in the immediate vicinity, we find emptying their vile contents, the outlets of two or three sewers of sub-drainage areas.

It is estimated that the incoming tide will convey surface sewage and organic matter in solution, four miles, so sewerage emptying anywhere along the river front, from the Old Navy-yard up, is probably carried to and beyond the works. The bend of the river directs the current over the supply-pipe; slack-water being about fifteen minutes, allows the soluble matter to sink and to be drawn directly into the pipes.

The sewage from about 167,500 people is carried into the Delaware daily; this does not include that from the immense shipping wharves on both sides of the river. We

must also not lose sight of soil pollution as a source of contamination, for it eventually finds its way into the river. In order to give some idea of soil pollution it has been reckoned that in the improved sections of the city nearly 500,000 people make no use of underground drainage, but store up their alvine excretions in privy-wells, which are cleaned only when filled and after saturating the surrounding earth with the liquid. To get at the magnitude of this pollution of the soil, let us consider that 10,000 permits are yearly taken out for cleaning wells, which, being less than 200 cubic feet, gives a gross quantity of filth removed of less than 2,000,000 cubic feet; as one person discharges one cubic foot in twenty days, or at least 18 cubic feet per year, 500,000 will discharge 9,000,000 cubic feet, therefore, at least 7,000,000 cubic feet drain yearly into the soil beneath our habitations. Thus we cannot but perceive that Philadelphia has the most execrable sewerage system of any city in the world.

Taking our subject again in hand, it may be asked, How does all this affect the water supply? Why is it that this objectionable material is not carried off promptly to the sea? We can best answer these questions in the words of a master in civil engineering; we will, therefore, take the liberty of quoting Mr. Rudolph Hering, acknowledging at the same time that a number of the figures and facts of this part of our paper are drawn from his writings.* "The minimum daily flow of the Delaware at the head of tide is recorded as being 173,300,000 cubic feet, which would represent the amount of water daily pushing seaward in front of the city during a long drought, as it takes twenty to thirty days for this quantity to pass through the distance which the river flows at one tide, and supposing that the daily discharge of sewage is sufficient to contaminate this daily addition of pure water, then we may assume that if the drought lasts about a month the entire body of water passing the city will have become polluted.

"The fact that the sewage does not commingle uniformly with the river water in the short distance of our city front, but remains in greater abundance near the shore, tends to make this time even shorter.

"If the daily sewage is discharged into the Delaware evenly during twenty-four hours of a day, we find a population of 65,000 would pollute its waters in twenty or thirty days of

* Hering, *Sewerage Requirements of Philadelphia*. Trans. Engineers' Club, Phila., vol. xi., No. 1.

drought. The entire population living on the Delaware slope is 553,000, but, as seen, the sewage from only about 167,500 is conveyed into the river, therefore, less than two-fifths of this number, neglecting the refuse from ships, would, if our premises are sufficiently accurate, cause the Delaware to become unwholesome at certain times."

Sewage discharged into tidal rivers is a fruitful source of pollution owing to slack-water, which as stated above is about fifteen minutes, permitting much of the sewage to sink to a depth where the current is at all times weak, especially along the docks, to deposit permanently; here it attracts other organic matter, and during the summer months putrescent fermentation takes place, which in turn is swept into the general current by storm water and freshets.

To have pure water we must maintain the purity of the source of supply; common-sense teaches that it is false in principle to first pour all manner of filth into our water supply, and then attempt to get rid of it by an elaborate, and usually an inefficient purging process. The advice of an eminent hydraulic authority is, "If any water intended for domestic purposes is found to be charged with organic matter in solution, the very best plan of treatment is to let it alone, and take the required supply from a purer source."

The following simple experiment will go far to convince any one that something is radically wrong with the water of Kensington and Richmond. During the greater part of the year if a pitcher of water be drawn from a hydrant supplied from the Kensington Works, it will have an unpleasant smell, and if it is allowed to stand in an apartment overnight it will by morning impart an offensive odor to the entire atmosphere of the room.

It is only natural to suppose that the conditions which affect the Kensington water supply, should express themselves ultimately in those forms of disease which we usually ascribe to organic impurity in potable waters. The records of health offices indicate that these are chiefly intestinal in their essential character, and statistics strongly corroborate the opinions of the best sanitary authorities, and the observations of multitudes of physicians, that the use of drinking-water charged with ordinary town-sewage is a most fruitful cause of diarrhœa, cholera, and typhoid diseases. In numerous instances, we know that epidemics of these maladies, varying in their prevalence, in their malignity and in their extent have been directly traceable to such causes. It not unfrequently appears that the virulence

of these outbreaks is directly proportional to the percentage of the contaminating material, though it may require but a minute quantity of typhoid fever excreta to beget an epidemic of appalling malignancy.

The history of the Kensington works presents us with two facts, either of which alone should be sufficient to condemn it to immediate destruction. They are: *first*, the epidemic of diarrhœa in 1862, and secondly the numerous cases of the same disease occurring in the chronic form, from the date above mentioned down to the present.

The epidemic of 1862 was sufficiently prevalent to remind us of some of the outbreaks of plague in the Middle Ages. It spared but few, in some families none at all, and it is doubtful if, in the whole vast district, a single family escaped its ravage. The disease began to manifest itself late in the autumn of 1861, attained its almost universal prevalence in the early months of 1862, and raged with fury for many weeks. As already mentioned, there was probably not a single house in which the disorder did not find from one to a half-dozen or more subjects. The epidemic marked out for itself a distinct and sharply defined boundary, corresponding with the limits of the district supplied by the Kensington works. The cases occurring outside this district, and there were many of them, could in nearly all instances be traced to the use of the Kensington water. Many of the cases were fatal, many more were dangerously severe, and not a few resulted in chronic intestinal disorder. In a large proportion of the cases the diarrhœa was colliquative, accompanied by vomiting, extreme prostration, depression of temperature, muscular cramps, and all the indications of a mild type of cholera. A marked feature of numerous cases was the tendency to relapses. These cases were mostly found to exhibit a profuse watery diarrhœa, together with the discharge of more or less flatus. This would continue for a few days and then subside. The patient would begin to rally, but in a few days the symptoms would recur, and the patient pass through a second attack of precisely similar character, which in its turn was followed by a third, and so on.

These last-mentioned cases are particularly interesting, because they present the same characteristics, as a class of cases occasionally met with in the Kensington district at the present time. The writer has on record a number of such cases, all of which he believes were caused by the use of water pumped from the Delaware River at Otis Street wharf. The details of these cases would require us to transcend the proper limits

of this paper, but the fact that they all occurred in the Kensington water district, and the even more significant fact of their close resemblance to many of the cases occurring during the winter of 1862, furnish pretty forcible evidence of the impurity of the Delaware River water as now supplied by the Kensington pumping-station.

The conclusions these few facts and statements lead to are:

First. The pollution, at all times of the Delaware water, as supplied by the Kensington Works, is such as to render it unfit for drinking or domestic purposes.

Second. At certain seasons of the year, especially during droughts, it is of such a character as to be absolutely prejudicial to health and life, and increases greatly the mortality of the district.

Third. The existing condition of things at the Kensington Works is such as to demand their immediate removal to a site more suitable for the purpose for which they are intended, *i. e.*, to furnish an adequate supply of good and wholesome water.

Finally, on good authority, we understand that these works are to be abandoned at the earliest practicable moment; if by any means, what we have said or cited to-night could be the cause of hastening their removal by at least one month, we feel assured the result would be the saving of valuable lives to the city.

APPENDIX.—Since this paper was written, we have noticed in to-day's news, That on recommendation of Chief Engineer Ludlow, the Committee on Extensions of the Councils' Committee on Water Works, have authorized the construction at the Kensington Works of a wooden trunk from the supply-pipe to a point further out in the river, so as to draw the water from there. This may answer as a partial, temporary relief, but for reasons already apparent it will fail to supply potable water.

Miscellaneous Contributions.

DEVELOPMENT OF THE EYE.

(Translated from *Traité des Maladies des Yeux*, par X. Galezowski, Dr. en Médecine de la Faculté de Paris, etc., Paris, 1875.)

BY W. H. WINSLOW, M.D., PH.D., OF PITTSBURGH, PA.

I. *Development of the Brain and Optic Centres.*—When an ovum is fixed exactly in the womb the blastodermic vesicle shows a spot called embryonic. It is the germinative area, which takes the form of a lyre, and divides itself into two