

## DRAINAGE.

The State Board of Health of Massachusetts has lately made public the following useful information:

Local boards of health are reminded that, at this time of the year particularly, special attention is required to secure cleanliness about dwellings and throughout towns.

No decaying matter should be allowed in cellars. On the contrary, they should be kept sweet and clean, and as much exposed to fresh air and sunlight as possible. They should also be made dry, by draining if necessary. It should be remembered that the air of houses is supplied largely from cellars; so that the common practice of storing all sorts of rubbish there should be condemned. If the air of the cellar is impure, it often gives rise to various ailments in the persons breathing it in the rooms above; and not seldom becomes one predisposing cause of such diseases as typhoid fever, diarrhea, dysentery, cholera infantum, diphtheria, scarlet fever, sore throats, and numberless conditions of ill health which cannot be described under any particular name. If the air in the cellar is damp, neuralgia, rheumatism, and affections of the lungs and other respiratory organs are very apt to follow.

The air supplied to furnaces should never be from cellars, but from the outside atmosphere, and, if possible, on the sunny side of the building. This is a very important matter in schools, where there would generally be no difficulty in following the best methods. The air supply should never be drawn from shady back yards, or the vicinity of privies, sink-spouts, etc.

If kept clean ashes may be used to advantage in filling up low spots of land, making paths, etc.

Garbage should never be allowed to accumulate; all that is not fed to fowls or animals on the place should be kept in tight receptacles, and carried away frequently. Pig-pens should not be permitted in thickly settled places.

There should be no soakage into the ground near wells or houses permitted from stables and barns. It will often be found economical to save all the manure, liquid and solid, by receiving it in water tight vessels, etc., or mixing it with loam, under cover, and frequently carting it away.

Chamber slops, and sloopwater generally, should never be thrown on the ground near houses. They may be placed directly on the soil of gardens, etc., or pumped up from water-tight cesspools, or be used by distribution under the surface of the soil, in the manner described on p. 334 of the "Seventh Annual Report of the State Board of Health," and now introduced in the town of Lenox, Mass. The chamber slops alone can be easily disposed of by mixing them with ashes or loam, as at the Pittsfield Hospital, by the method shown on p. 87 of the "Ninth Annual Report of the State Board of Health." If the kitchen slops are discharged directly into a cesspool care should be taken that the pipes do not get clogged with grease.

Earth closets serve a good purpose, particularly for sick people and invalids, if carefully attended to, and if well dried loam be used for them in sufficient quantity; they are more easily managed if liquid refuse be kept out of them.

The ordinary privy should be abolished. It is dangerous on two grounds: 1st. It must be so far from the dwelling as to seriously expose children, particularly during bad weather. 2d. It corrupts the air, the soil, and consequently too often the wells. Instead of the common privy-vault, which is not safe even if cemented, it is best to use under the seat some receptacle which can be frequently removed and emptied. Galvanized iron tubs, barrels sawn through the middle, etc., answer the purpose very well. If kept thoroughly disinfected with dry earth or ashes, they can be near houses, connected by passageways, and will not corrupt the wells.

If water closets are used, and there are no sewers, the best disposal of the sewage is by the flush-tank, and irrigation under the surface of the soil, as described on p. 135 of the "Eighth Annual Report of the State Board of Health." If cesspools must be used, they should be tight, and often emptied by the odorless process, or else have their contents pumped out on the surface of the ground for fertilizing purposes, where that can be done without causing a nuisance. If the sewage is placed on the soil in the morning of a dry, clear day, when the sun is shining, and in places where it may be readily absorbed by the earth, the odors from it are the least offensive. In very loose soil, and remote from dwellings, ordinary loose walled cesspools may be used without danger for a short time; but even then the custom cannot be approved.

The evils arising from want of attention to the suggestions briefly given above are many, and undoubtedly much ill-health can be thus explained. Good water, from deep wells, is much better than rain water, which is soft, and does not contain the lime, etc., so beneficial to health. If the wells and springs are kept free from contamination, as they may be with some care, until houses and streets become placed closely together, the water furnished by them is of the very best quality. A few illustrations of the baneful effects, when contaminated, are given.

A clergyman living in one of our towns reports as follows:

"About a year ago my son, thirteen years old, was taken sick with diphtheria. It was quite a severe case, and was very obstinate, resisting, day after day, all treatment; medicines did not have their usual effect. By and by we thought of the water (which was found upon chemical examination to be polluted with organic matter like that found in drains and cesspools). We immediately stopped using the water, concluding that the impure water was the probable cause of

the boy's sickness, and the probable reason why the medicines would not work; for they had been mixed in this water, and he had used it for a gargle.

"With change of water, the sick boy at once began to mend, and was soon about the house again. This was the third case of diphtheria in our family within the space of some two years, and they were the only cases in the neighborhood, which led us to suspect something was wrong.

"I had myself been subject to a chronic irritation in my throat, often amounting to soreness and serious trouble, and also to frequent attacks of diarrhea, especially through the warm weather; but, for a year past, or since we ceased to use that water, I have had no trouble worth speaking of in either of these ways.

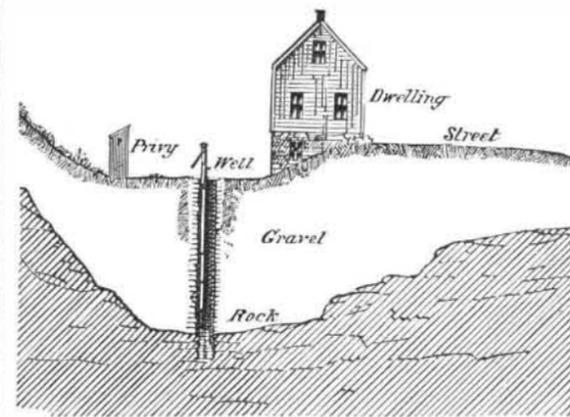
"The well is in the cellar, almost directly under the sink, 3 feet only to the right of it. The top of the well is 2½ feet from the cellar wall. The drain, originally of plank, was 16 feet long, so that the cesspool was within 17 or 18 feet of the well. But this was not the worst feature of the case. This plank drain, after a time, rotted away, so that the filthy water began to soak into the ground just outside the cellar wall, and within 6 or 8 feet of the well, and almost directly over it. The earth, when we removed it to lay a new tile drain, was good manure as deep down as we dug, and I know not how much deeper.

"The water looked clear, except just after heavy rains, and had no ill smell or ill taste about it. We now use cistern water and leave the well untouched."

This case shows what great danger to health may exist unsuspected, when the rules suggested above are not followed out. It is impossible to say that a well is safe at any ordinary distance from a source of constant pollution of the neighboring soil, like a privy, cesspool, barnyard, etc. Often the filth goes a long distance, sometimes not very far. There is always a risk; and, even if well marked sickness does not occur as narrated above, more obscure affections are probably not uncommon.

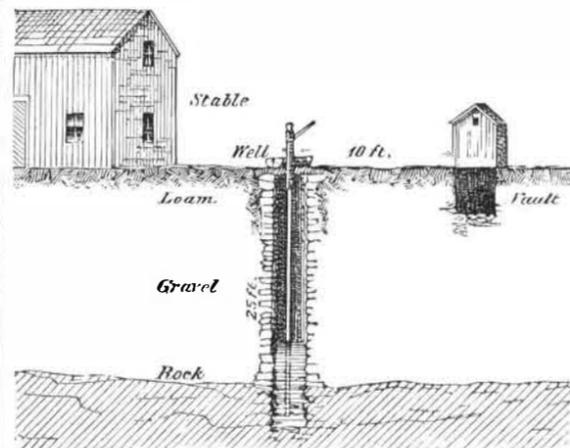
Dr. J. G. Pinkham, in his "Report on the Sanitary Condition of Lynn," published in the "Eighth Annual Report of the State Board of Health," reports the following two cases, the illustrations in which are most clear and convincing:

CASE No. 1.—The diagram explains the position of the well, and shows the certainty of its pollution. The soil and subsoil are loose; contamination occurs both by surface drainage and from soakage. Five cases of typhoid fever oc-



curred in 1875, in the family living in the house, and seven more, with one death, among other persons using the well water. This house became the center of infection for a whole neighborhood.

CASE No. 2.—The well is 25 feet in depth, a portion of it being dug into the rock. The vault is 10 feet distant on the same level. There is a cesspool in the garden below, and a stable on the left. The buildings and well are on a side hill. The premises are kept clean, and the water, which is clear and of good taste, has been used for many years. The occurrence of typhoid fever in the family led the physician in



attendance to suspect the water, which, upon chemical examination, proved to be very much contaminated. There were five cases of typhoid fever in the family, and several others, with one death, among neighboring persons using the water.

Where wells are not in use the corruption of the air from foul privies, and by the emanation from the soil of the pro-

ducts of decomposition of filth, becomes a prominent factor in the spread of such diseases as typhoid fever, dysentery, diarrhea, diphtheria, etc. In towns, sources of filth on some premises may be more injurious to the health or more offensive to neighbors than to the occupants of the place itself. Different people are differently susceptible to disease, too, so that the filthiest places are not always necessarily those where there is most sickness.

A marked illustration of disease due to polluted air, when the drinking water was pure, occurred in a school in this State, in 1864, where 51 out of 77 young ladies in the institution were attacked with typhoid fever, of whom 13 died; 3 servants also died of the fever. The vaults of the privies were shallow, filled to overflowing, and emitted a very offensive odor, which at times pervaded the whole building. The kitchen drain discharged its contents on the surface of the ground, and a few rods from the school there was a foul barnyard.

Where filth has accumulated, and it is necessary to use a disinfectant, or if for other reasons it is desirable to do so, earth, lime, or chloride of lime will serve a good purpose. If it is wanted in liquid form, it may be made by adding to a pailful of water three pounds of copperas (sulphate of iron), with a pint of Calvert's carbolic acid, one pound of chloride of lime, or one half pound of lime.

For use inside of houses, a solution of nitrate\* of lead or chloride of zinc† (Burnett's disinfecting fluid) is recommended. Whitewashing in cellars, sheds, etc., is a most excellent means of purifying the air. Prevention of the accumulation of filth, however, is better than the use of disinfectants. "To chemically disinfect (in the true sense of that word) the filth of any neglected district, to follow the body and branchings of the filth with really effective chemical treatment, to thoroughly destroy or counteract it in muck-heaps and cesspools, and ashpits and sewers and drains, and where soaking into wells, and where exhaling into houses, cannot be proposed as physically possible; and the utmost which disinfection can do in this sense is apparently not likely to be more than in a certain class of cases to contribute something collateral and supplementary to efforts which mainly must be of the other sort" (prevention of filth).

Directions for soil pipes, drains, etc., will be issued in a succeeding circular. At present it need only be said that sewers are of the first importance where the water carriage system is generally used for removal of sewage. Where for any reason they cannot be introduced, the greatest consideration should be used before it is decided to introduce water-closets, if the result must be to drench the soil with filth and water by means of cesspools.

It is in the highest degree important that each town should have an independent board of health to devote their attention to these matters. It is desirable that at least two thirds of such a board should be composed of persons not otherwise connected with the town government, and that there should be at least one physician on the board.

## Chloride of Magnesia in Gas Meters.

Owing to the difficulty and expense of obtaining a good dry meter wet meters are still largely in use, and the question of what shall the liquid be is an important one. Water is, perhaps, the worse possible filling; it freezes in winter and evaporates in summer. Alcohol is free from the former disadvantage; but not from the latter. Glycerine, the use of which was first proposed by Prof. H. Wurtz, is better than either. A solution of chloride of magnesium has also been tried and found to be excellent, when the gas is free from ammonia, which is, unfortunately, seldom the case, as the white spots on our argand chimneys tell us. Goebel has tried chloride of magnesium, and found that when there is only 0.3 gramme of ammonia in 100 cubic meters of gas serious results follow in a few months. A part of the salt is decomposed, forming sal ammoniac, which combines with a second portion of the former to form a double salt, magnesia being precipitated as white powder on the clockwork and wheels. The double salt subsequently decomposes, liberating hydrochloric acid. Chloride of magnesia is most effective in purifying gas from ammonia.

## Amyl Nitrite in Ague.

Dr. W. E. Saunders, of Indore, India, regards the nitrite of amyl as the most powerful diaphoretic, and uses it in all cases of fever to produce sweating. In a report of several cases of ague treated with this drug, printed in the *Indian Medical Gazette*, he claims that in no instance did the amyl fail to remove the attack in about one-third the usual time, and in most cases the fever did not return. The drug may be mixed with an equal part of oil of coriander, to make it less volatile and to cover its odor, and administered as follows:

Four drops of the mixture or two of amyl are poured on a small piece of lint, which is given into the hands of the patient, and he is told to inhale it freely. He soon becomes flushed, and both his pulse and respiration are much accelerated; and when he feels warm all over, the inhalation is discontinued, as the symptoms continue to increase for some time afterward. A profuse perspiration now sets in, which speedily ends the attack; in some cases, however, the cold stage merely passes off without any hot or sweating stage.

\* One part in one hundred of water. Cloth soaked in such a solution, and hung up in a foul air, quickly destroys bad odors.

† One part in two hundred of water for foul liquids, etc. This is used by order in the German navy for bilge water. Labarraque's disinfecting fluid (chlorinated soda), one part to four of water, may be used with soap in washing floors, etc.

**May Meetings.**

During the first week in May the American Medical Association, the National Board of Health, and the Sanitary Council of the Mississippi Valley, were in session at Atlanta, Ga. Their meetings were largely attended. The epidemic of yellow fever last year, and its possible outbreak during the coming summer, naturally gave great prominence to questions relating to quarantine methods and general sanitation. The Medical Association chose New York as the place of its next meeting in June, 1880. Dr. Lewis A. Sayre, of this city, was elected president. The National Board of Health will meet again in Nashville, Tenn., next October.

The annual session of the American Institute of Mining Engineers was begun in Pittsburg, Pa., May 13. Over one hundred prominent metallurgists were present at the first session. The closing session was set down for Friday, May 16.

The sixth annual convention of the National Millers' Association began in Chicago, May 13, six hundred members present. In his annual address, the president, George Bain, proposed that the association be organized as a corporation on a legal basis for the purpose of carrying on suits regarding patents; that an attorney be appointed to look to the interests of the association as against the encroachments of patentees; that the success attending their efforts against the impositions of the Cochrane patent should encourage them to wage uncompromising warfare against the Denchfield patentees, and that a better system and practice of grading and inspection should be adopted.

The annual meeting of the Silk Association of America was held in this city May 13. The secretary reported that while there had been no great failures in the silk industry during the year, there had been, on the other hand, no instance of remarkable prosperity. The prices of silk have steadily declined during the year from 20 to 30 per cent, and in February fell lower than at any time during 30 years. More silk was consumed in this country last year than in preceding years, the imports being 38 per cent over those of 1877, and there has been a large increase in the receipt of raw silk from Japan and China. European raw silks have been cheaper than the Asiatic product. With the decline in the value of the raw material, manufactured goods have become cheaper. The lowering of prices and the absence of tariff excitements have also enabled manufacturers to make costly experiments and improvements during the year. The general tendency in woven goods has been toward work of the higher grade. The mills have been fully employed, but great expense has been incurred in the improvement and alteration of machinery. A decided advance has been attained in the production of dress silks, and more of them are made, and of a higher class, than ever before. If they are kept up to the standard there is every prospect of their displacing the loaded silks of Europe in our market by supplying a better and cheaper article. Nearly all the weaving mills are producing broad goods. The number of paying members of the association has been doubled during the year, and includes among its members nearly every silk manufacturer in the country. The following officers were chosen for the coming year: President, Frank W. Cheney, Hartford, Conn.; Vice-Presidents, A. B. Strange, New York, William Ryle, New York, Robert Hamil, Paterson, N. J.; Treasurer, S. W. Clapp, New York; Secretary, William C. Wyckoff, New York.

**American Mutton.**

We must be prepared to hear shortly that American sheep are subject to no end of hideous diseases, and that the use of American mutton is hazardous in the extreme. The exportation of sheep to England increases rapidly, and the profits of English breeders are seriously threatened. Something will have to be done; and we shall not be surprised if an epidemic of tape-worms, or something equally distressing, is soon reported among eaters of American mutton. It is not possible that American sheep can be wholly exempt from the numerous maladies to which all flesh is heir—when exported!

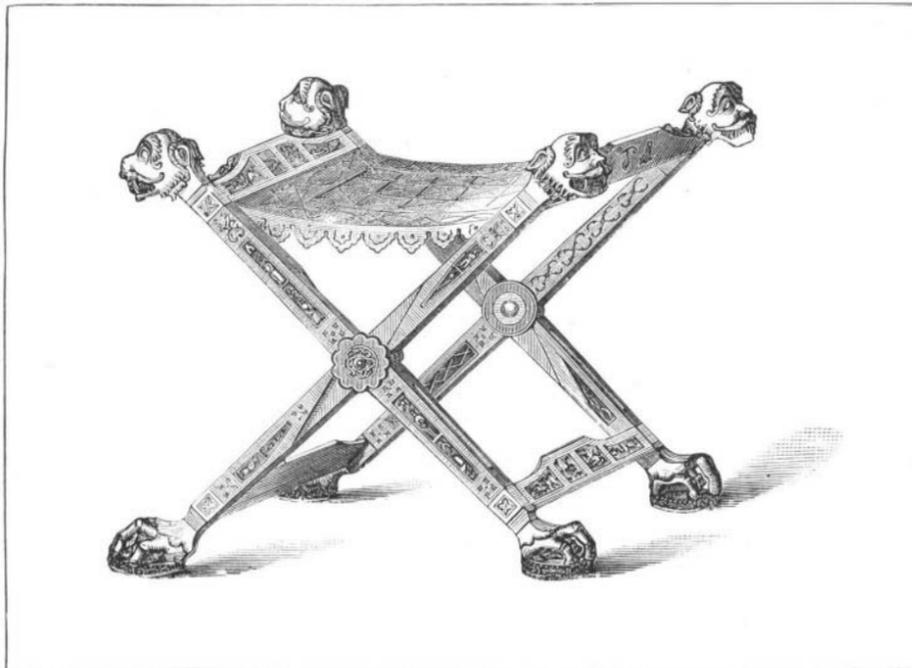
**Quick Work with Wool.**

The exploit of the English baronet, Sir Roger Throckmorton, has been bettered by an Austrian clothier. Sir

Roger wagered that between sunrise and sunset a coat could be made for him out of wool from the back of a sheep. Accordingly the sheep was sheared at dawn, the wool was dressed and dyed, woven into cloth, cut and made to fit before nightfall. An Austrian clothier has done all this in eleven hours, so that he really has outstripped the Berkshire baronet, who allowed himself from 4 A.M. to 9 P.M.

**STOOL OF INLAID WOOD AND EMBROIDERED CLOTH.**

The design shown in the accompanying engraving is by J. Androuet du Cerceau, who lived from 1515 to 1558. It contains grotesque masks and other fanciful decorations.



**STOOL AFTER AN ELEVENTH CENTURY PATTERN.**

Many choice works of this artist are known, his refined taste having a large share in the art embellishments of the Renaissance period.

Bacon, in his instruction, tells us that the scientific student ought not to be as the ant, that gathers merely, nor as the spider, that spins from its own bowels; but rather as the bees, that both gathers and produces.

**SPECIMENS OF TURKISH POTTERY.**

The specimens of Turkish pottery shown in the engraving are of modern manufacture, but in strict resemblance



**TURKISH POTTERY.**

to the oldest ware produced at Gallipoli, near Constantinople. It is green and gold, and is almost identical with forms of pottery in common use in Persia and India.

**The Oldest Mine Map.**

Dr. Gurlt, a German metallurgist, who has devoted much attention to the study of the history of mining and metallurgy, exhibited recently, before a German society, a copy of what appears to be the oldest map of a mine known. It is the plan of an Egyptian gold mine from the time of King Seti I., or about 1,400 B. C. The original, drawn on papyrus, is at the museum of Turin, Italy.

**Some Aspects of Labor.**

Reports coming in from all parts of the country indicate a greater demand for skilled labor than has existed for several years. And the redistribution of labor during the years of depression threatens in some instances to work no little temporary inconvenience to reviving industries. From New England, for example, there comes the curious report that several cotton mills find it impossible to go on for lack of hands. A large number of the more thrifty and forehanded cotton operatives left the East for the West when work failed in the mills, and now cannot be recalled, having taken up farming on their own lands, or engaged in some other occupation. This readiness of American workmen to leave one calling for another when occasion demands is one of the most encouraging features of our industrial classes, since it prevents any long continued distress among any class of operatives, when their special business fails, and equally prevents any protracted lack of labor in any field when a demand for it arises. The New England cotton mills will not have to wait long for hands if they can offer the average inducements in the way of wages, and if they cannot do that it is evident that there is no urgent demand for their products, in which case the world will not suffer from their suspension.

The demand for unskilled labor, even in this city where the glut of day laborers was supposed to be greatest not long since, is manifestly quite up to the supply. On this score a city daily remarks in a recent issue:

"It is commonly supposed that there are thousands of destitute and unemployed working men in New York who are anxious to get work at any wages which will support them. The steamship companies, it seems, would be glad to find some hundreds of this presumed multitude. They have failed, although they required only unskilled labor and have offered at least the means of daily subsistence in return for it. How much of the apparent and undeniable destitution in this city is a real consequence of a real lack of employment, therefore, and how much proceeds from the habit of promiscuous almsgiving without inquiry and from the growth of a positively vagrant pauper class in this country, are questions worth looking into."

Touching the same general topic a well-informed Philadelphia paper says: "The iron and steel trade was one of the very first to succumb to the pressure of the times, but even that is now exhibiting more activity than at any previous period since 1873; other trades are doing even better, and the number of mills and works which remain shut down for sheer want of remunerative business are exceedingly few. That any should stop, however, for want of hands, is most remarkable, in view of some of the speeches that are occasionally made in Congress and out of it by the self-styled labor reformers. According to the statements of these gentlemen, there are at the present time in the neighborhood of a million industrious skilled workmen vainly seeking employment; but we are afraid that after deducting, say nine tenths of the number (as imaginary?) the other tenth is largely made up of the vicious tramps who vagabondize through the country to the terror of the agricultural population, and who would not work if they were ever so well paid for it. If work is wanted some of them can certainly find it among the mills of New England, which so greatly need operatives as to stop for want of them."

Existing and widely threatened strikes for higher wages still further testify to the increased demand for labor. How far these strikes will retard reviving industry and delay the better times coming for American labor remains to be seen. We are strongly inclined to believe that the good sense of the vast majority of our industrial classes will forbid their making haste thus to kill the industrial goose that is beginning to lay golden eggs, at the dictation of a misguided few who are determined to rule or ruin. Strikes are unprofitable at all times; at this stage of industrial revival they cannot be other than suicidal.

A SYSTEM of pneumatic tubes took the place of telegraph lines in Paris on May 1, for the transmission of messages from one part of the city to another. The charge is 50 centimes, or 10 cents, for open, and 75 centimes for sealed messages.