

patient six years ago swallowed a boring of maple. He began to suffer in health and was sent to Denver and other health resorts. Specialists tried to reach the abscess by passing a trocar in some distance below the scapula. They did not find any pus. Just now the case is a typical one of abscess of the lung, coughing up fully a pint of pus every day. Very much can be done in a surgical way for the relief of this trouble, and I believe we should operate in all cases where we are able to make a correct diagnosis.

DR. FLINTERMAN—I would like to inquire of author if where there was a pulmonary abscess was there not sometimes a pleuritic effusion in the pleural cavity?

DR. INGALS—I have not seen the condition referred to by the last speaker. I was much interested in the statement made by Dr. Shurly, that inflammation of the brain was a common occurrence with abscess of the lung. Dr. Shurly's experience seems to correspond with my impression, viz., that as a rule the earlier we operate the sooner the funeral. The early evacuation of a pulmonary abscess does not seem to me as safe as tentative treatment, at least for a few weeks.

PURE WATER.

Read in the Section on State Medicine, at the Forty-seventh Annual Meeting of the American Medical Association, at Atlanta, Ga., May 5-8, 1896.

BY FRANK W. EPLEY, M.D.

NEW RICHMOND, WIS.

In the beginning God created the Heavens and the Earth, and he filled the Earth with pure water and surrounded it with pure air.

Then he made man and put him on the earth. And for a time he also was pure. Then he began to be restless and to invent. He has sought out many inventions.

The Allwise Creator provided means whereby all filth should be purified and resolved into its ultimate elements. Man has sought out many cunning devices for defeating God's plan of purification. The most potent purifying agents are heat, light and air. The most potent factors in the development of poisonous germs and gases are warmth, moisture and darkness. The offal of all living things except man is deposited upon the *surface* of the earth. The bird deposits his while flying through the air; the ox and horse upon the dry grass, or in the dry dust. The dog is wont to place his upon the top of a stump or stone, and all are left in the best possible condition for the action of nature's disintegrating elements heat, light, air, etc. Man alone, whom God made upright and in the image of Himself, has invented a *hole*. Two holes in the earth; nearly always close together, at least relatively, so that both shall be convenient. One he makes comparatively shallow but deep enough to accommodate himself and family for many years. In this he deposits his offal both liquid and solid and says, "Soul take thine ease," in this hole thou shalt lay up much goods for many years, "eat, drink and be merry," and if thou hast any other unclean thing which offends thy sight or smell, cast that also into this *hole* and it shall sink away into the earth out of our sight. Even so the rain falls upon the surface of the earth and sinks away out of sight, finding its way into the other hole which man has invented, and from this he supplies his family with pure (?) water.

If he, this Lord of creation, lives in a modern city which is embellished with all the improvements of our advanced civilization (?) he has a much handier method. He has a bottomless bowl, or one having one side wanting and with a small quantity of water

in the bottom into which his offal is deposited and which is washed away by a dash of water; *most* of it, out of his sight and into a tube which leads down into a subterranean passage, this passage communicating with a like tube from his neighbor's bath room and receiving the contents of tubes leading to thousands of other bath rooms until the filth of the whole city is coursing through it and is finally deposited into a pond of pure (?) water just without the city; or what is more likely, within the city.

I said *most* of the offal was washed off the smooth polished surface of the bowl in his bath room; some small quantity, however, frequently requires a vigorous rub to be displaced. When it reaches the inner surface of the tube below, it does not get this vigorous rub and remains stuck to the sides until the whole tube is, many times, full. From this a gas is found to arise finding its way in six out of ten cases directly into the living apartments, and when it has any odor, is very frequently termed the "smell of aristocracy." But pardon this digression, we were to speak of pure (?) water. However, we were very close to it when we left the end of the tube leading down from the bath rooms into the pond. We have now only to go a short distance further out into this pond to obtain an abundance of pure (?) water. Then we lay another tube along side of the first one, which leads up to the kitchen faucet. Will any one attempt to give us the chemist formula for the water obtained from this faucet? It is H₂ offal, contemplation. Can we reasonably expect to obtain pure water to drink from our abundant natural resources when we resort to such civilized (?), shall we say such outrageous, systematic methods of wholesale pollution. Can we while we do this lay any reasonable claims to rationality? I say "no."

Gentlemen of the AMERICAN MEDICAL ASSOCIATION: We are the logical keepers of the public health. We all know these two systems of disposal of filth are abominable. Shall we sit quietly down, fold our white clean hands, and say, this is too dirty a subject to handle? They are wrong, but they are old established customs and it is too great a task to undertake such a revolution. For shame! There is no task too great for Saxons to undertake.

There is no wrong, however grievous, too great for Americans to try at least to rectify.

The *death knell* of our American vault and sewage systems should be sounded, and it is incumbent upon *this* ASSOCIATION to hurl the fatal shaft.

DISCUSSION.

DR. HIBBERD—I desire only to call attention to the inference that I think might be drawn from the verbiage of the paper—that man made all that is bad on the earth in spite of the Beneficent Providence, which created it pure and good in the early arrangement of the universe. All I want to say is, so far as my knowledge concerns, everything of the kind takes place in the world as precisely according to the laws of the Creator, as though they were made in the beginning; therefore, man did not invent them, and if they are not salutary in their effect, it is simply because there is a lack of observation of what is good, as the Creator intended. I think God is good, and that He has made the world good. I think the laws by which we grow, and progress are all good, and if we fail in recognizing what we should do to maintain the operation of these laws in a sanitary direction it is a failure, but not on the part of the Creator. All I want to do is to raise the idea that God is Supreme and has made everything good primarily; and that if we do not obey

His laws and receive the benefits which He intended us to derive, then we are at fault and should not throw the blame on Him.

DR. MCINTYRE—Of course we can not all see the value of the paper and appreciate the ideas brought forth therein regarding pure water; and while there may be mistakes contained in it I will simply speak on the line suggested by the author, rather than suggest any corrections. It seems hard to suggest anything that will take the place of our present sewage system, or exactly meet the requirements; but will the correction of the evil be found in purification? I think that is being done. I think the demands of modern civilization require two things: First, thorough purification of sewage before it contaminates the streams and lakes, and secondly, thorough purification of the water itself before it is pumped into the mains to be distributed into the city. The manner in which this is done at Lawrence, Mass., has demonstrated that as the solution of the difficulty. The experiments tried in the last cholera epidemic at Hamburg show the difference between filtered and unfiltered water. These experiments all show that this can be done and at the same time that the sewage of the city can be cared for in the convenient manner in which it is generally disposed of. And then, by proper ventilation, there is no odor in the house, and the water in the house is kept clean.

DR. JEROME COCHRAN, Montgomery, Ala.—Having something to do with practical sanitation, I am naturally interested in it. Filth, doubtless, is a very undesirable thing to have about a place, and it is especially undesirable to have it in the water supply; but I would like to emphasize that there is a great deal of filth that is offensive to the senses that is not detrimental to health. I would insist that that filth which is detrimental is a sort that is not offensive to the sight or taste. The things which produce diseases in water supplies are bacteria. We have disclosed the filth so far without reference to its organism. The fecal matter in itself, when it is not filled with the bacilli of typhoid fever, is perfectly innocuous to health. I think the remedy is to purify the sewage before it enters the waters, and purify the water after it is taken away from the lakes; fortunately for us nature has shown us how to purify water. The great method of purification is by filtration. That is the way nature purifies water, but there are practical difficulties in the way of getting rid of those pyogenic organisms that do not seem to have attracted the attention of sanitarians. The city of Lawrence, Mass., has made a study of the filtration of water, but you find that all the bacteria are not eliminated in that way nor all the organic matter. It is this matter going to any water—these pyogenic bacteria already taken out of it that will soon multiply again. You can not thoroughly purify by filtration. It is in a very much better condition than before so that if you want to get water that is practically free from bacteria there is only one way, and that is to re-filter it.

DR. EPLEY—I only hinted at the subject to call attention to the disposition of filth and the obtaining of what is termed "pure water."

We have all of us recognized the difficulty in the disposition of human offal. As I said, man has invented a hole, and for that reason I have for many years been endeavoring to create a disposition among people where they have no sewerage to dispose of offal in a dry condition. But they say "I have dug a vault, and it will last me a great many years. I shall never have any more trouble." I have for years advocated the keeping the human offal dry and letting the water fall off on the top of the ground. It is very easy to do that when a system of closets are used. I have seen them used for eighteen years without any trouble at all. I have encouraged their use in the community where I live, where they had no sewerage. In fact I have encouraged it where they have sewerage. The sewerage system has many faults, and it must sometime be cor-

rected. We have no right as intelligent beings to deposit our offal in all conditions, whether benign in its character or filled with diseased germs, into running water, our pure sources of running water that we must have for our sustenance. So far as the purification of water before it reaches our streams is concerned, I am not conversant with any system which promises anything substantial or reliable in this line that can purify water that is one-third or one-fourth or 10 per cent., or 5 per cent. fecal matter, while it is still in the sewer and before it reaches the water course. It seems to me to be an impracticable plan. I do not understand how it can be done.

DR. MCINTYRE—It is done by filtration at sewage farms, by the use of the lime and iron process.

DR. EPLEY—It is purified, but at what expense? The disposition of it as a fertilizer is right, and should be used, but at the same time it is truly impracticable to attempt to dispose of offal in the current of water and have so much more to destroy; it is much harder to destroy a quantity of water that is one-half or a very large percentage solid matter, than it is to have the solid matter and the water separate. But this process would not exclude sewer gas; and if I understand the gentleman who spoke of sewer gas correctly, he said proper ventilation would prevent it from entering the house. I was investigating this matter in Milwaukee a few days ago, and I asked an inspector, who was testing for sewer gas (and his test responded beautifully, in a large percentage of houses in Milwaukee, a well ventilated and well sewered city) what percentage of houses would respond to that test, and he said nine out of ten. The gas was entirely without smell, but it was deleterious in its effect upon the inmates of the household.

The method of filtration is satisfactory, if it is executed as it should be; but what I state is that to keep the solid matter separate from the liquid matter is much easier and can be done with much less expense than purifying the whole mass after it has become thoroughly mixed.

DR. KOBER—I would like to ask how he considers it feasible in a large city. The plan he speaks of is very applicable to small communities and is, perhaps, the best method of disposition; but the dry earth system is scarcely applicable to a town of over twenty-five thousand inhabitants. Indeed, it has been considered quite expensive in every way, and if he has any data on the subject I would be glad to hear it read.

DR. EPLEY—I have not a thoroughly matured plan, indeed, I do not profess to be an inventor or civil engineer; but I believe that it is an evil to which our inventors and civil engineers should turn their attention, and I have no doubt but that a system can be provided whereby this solid matter can be kept from the lake by a system of dry closets, or keeping the offal dry in some way.

DR. MCINTYRE—I think, in parts of Birmingham and Glasgow there is no sewage system. There are places where the pail system prevails. My impression is that the cost per capita of removing the pails in this way is larger than the system of purification. It is in small towns where it has been used on a small scale.

DR. EPLEY—You have not disposed of the sewer gas.

DR. MCINTYRE—I refer you to the report of the committee appointed by the London Commissioners of General Works on the air of sewers, where it is shown that the air of the sewer is better than the outside air.

New Jersey County Hospital Law Amendment.—The law passed in New Jersey in 1886, entitled "An act to enable counties which have no free county hospital to assist in maintaining hospitals located in such county," was amended in May, 1896, making it lawful for the board of chosen freeholders of any such county to make an appropriation therefor of a sum not exceeding \$8,000 a year, instead of \$1,000 as heretofore, and providing that the act shall not apply to counties of the first class.