in force along the still pervious bronchi and towards the pleural surface of this lung, just as it would do if one placed the lung under water and blew in the air from the main bronchus. If the lung were sound the aspiration would expand it again; but what happens instead—what must happen under the conditions supposed—is that the perforation is opened up again and the kindly veil of lymph which nature was interposing is torn before it has had time to become organised and to seal up the opening. Apart from the theoretical questions raised by Dr. Sutherland, this seems plain enough; but I am not setting it forth as a theoretical risk, but as one which *I have known to occur*, not, indeed, in pneumothorax—for I have never aspirated in pneumothorax—but in pleuritic or empyematous effusions. I have known the aspiration of these *immediately* followed by pneumothorax, indicated by a succussion sound, which was not present before the operation. I therefore beg to repeat that in my opinion aspiration in pneumothorax is not a desirable or a safe practice, even in cases of urgency, and that if there is not pressure enough to cause the air to rush out spontaneously when a cannula is inserted fairly into the cavity there is no case for employing aspiration. If there is no urgency, it is better to leave well alone.

I am, Sirs, yours faithfully,

Glasgow, July 25th, 1892.

W. T. GAIRDNER.

"A NATIONAL DANGER."

To the Editors of THE LANCET.

SIRS,—Referring to my paper under the above heading which you kindly published in your last Saturday's issue, and to your leading article regarding the same, the widespread interest in the subject was manifested by leading articles in important north-country dailies and by an almost complete recapitulation of your leader and the contents of my paper. Your able editorial article, however, scarcely seems to me to grasp the situation as it at present exists in the manufacturing centres of the north. In these districts water is used for two purposes—viz., domestic and manufacturing, and by "chalking" the water as you suggest the industries of the districts would suffer. Then, again, even if the water were hardened, as you suggest and as proposed by many chemists, would its dangerous properties in relation to lead be destroyed? Personally I think not.

I remember some years ago walking through a field where there were some cows, in which a distinguished teacher of chemistry from a northern university had a financial interest. Coming upon the water trough, which was very large and lined with sheet lead, it was found coated with a sooty looking precipitate, which easily rubbed off on to one's fingers and stuck like blacklead. I ventured to suggest the danger of this water both to the cows themselves and also to consumers of their milk, and was met with the rejoinder that "it did not matter, the 'blacklead' did not mix with the water and did no harm unless stirred up." He said he would not hesitate to supply water for domestic purposes from leaden cisterns, provided they were not agitated, and that water containing less than one-tenth of a grain of lead to the gallon need not be condemned as unfit for drinking purposes. I regard the foregoing as a fair example of a non-medical chemical opinion. In considering the action of water on lead I believe we have to approach the subject from both a chemical and physical aspect, and I am not prepared to say the latter is not as important as the former. At the present moment (July 26th) I have standing before me a specimen of water from a neighbouring district, where lead-poisoning was said to be rife. I am informed that this water is now hardened with chalk; whether this is a fact or not I cannot say, but it acts like many other so-called hard waters. First let me state the test to which this water was subjected. On July 11th, to about half a pint of water was added a polished roll of metallic lead. To-day, July 26th, the lustre has left the metal, and there is a glistening white deposit at the bottom of the glass, about half an inch deep, which under the microscope, with a $\frac{1}{4}$ in. Swift's objective, looks very much like epithelium plates, but apparently has no crystalline characters. The supernatant water is perfectly clear. This is what I call the physical examination of the water, and the results observed are characteristic of nearly all soft and many hard waters. Whether the action causing the disintegration of the lead is purely chemical or simply mechanical, or perhaps both, I will leave to the chemist and expert in metals to decide, but that this

action takes place no one can doubt who has studied the subject with simply his unaided eyes and the microscope. What the exact nature of the deposit is, except that it is lead, I do not know, but I get the following results by chemical analysis:—1. On sucking up a small quantity of the deposit with a pipette and adding distilled water I find a feathery looking material very readily held in suspension. It takes some time to settle and when a solution of potassium iodide or potassium bichromate is added no reaction takes place. The deposit is, however, immediately dissolved by hydrochloric acid, and the solution then gives a thick yellow characteristic precipitate with either of the foregoing reagents. 2. On testing the clear supernatant water I find this to contain barely a trace of lead; according to my colour standards about equal to $\frac{1}{2}$ of a grain of acetate of lead to the gallon.

From the foregoing observations I am driven to conclude, therefore, that there are two dangers in using leaden piping for the service of water: (1) With soft water the lead is taken actually strongly into solution and also exists in a state of minute suspension; (2) with hard water, while not taking as much lead into actual solution, its disintegrating action is quite equal to soft water and its power of holding lead in suspension is greater.

With regard to the action of water on leaden piping I have before me at this moment several specimens of lead piping removed from houses where poisoning existed. These show conclusively that lead is a non-resilient soft metal. Several of these specimens have been subjected to a considerable pressure, having been removed from districts where water is supplied at high pressure. They show irregular dilatations and internally are deeply ploughed, giving evidence of gradual dilatation, and as a result a never-ceasing alteration in the surface of the lining of the pipe for the water to act upon.

To summarise:—1. Is it not imprudent to spoil good water and endanger industry by adding chalk? 2. If the foregoing remarks be correct deductions from facts, should not lead be absolutely and for ever condemned as a means of conveyance for water? 3. Lead, except for its ductility, is the most unsatisfactory metal for water-supply—bursting under frost, dilating and splitting under pressure, and, more than all, poisoning the water. 4. Iron piping is capable of being used everywhere, only requiring rather more time and skill in laying it than lead. It is harmless to the water. I have had for years at my house iron-service pipes, which have been again and again frozen, and have never burst. 5. Considering the fearful amount of human suffering entailed by lead poisoning, would it not be wise, as I suggested in your valuable journal on January 25th, 1890, to erect iron stand-pipes in every street where houses are known to be supplied through long leaden pipes, to give the inhabitants an opportunity of at least pleasing themselves whether they were poisoned or not? 6. And lastly, for the future to prohibit the use *in toto* of lead piping for the service of water for drinking and dietetic purposes.—I am, Sirs, yours faithfully,

July 26th, 1892.

ALFRED SWANN, M.D.

* * We may point out, with regard to Dr. Swann's valuable comments, that water is also used in London for both domestic and manufacturing purposes; yet, in spite of this, it is invariably hard, and cases of lead poisoning are of rare occurrence. When soft water is required for the purpose of manufacture—as for the making of steam—it is softened by preliminary treatment. The "chalking" process, after a fair trial, was reported upon favourably and regarded as satisfactory by the Sheffield corporation and also by authorities in other places where this remedy was adopted. Dr. Swann's experiments, however, are not in accordance with these practical results, for he reports that while hard water does not take as much lead into actual solution, yet its disintegrating action is quite equal to soft water and its power of holding lead in suspension is greater.—ED. L.

THE HUNTERIAN LECTURES.

To the Editors of THE LANCET.

SIRS,—In your last issue you published a letter from Mr. Roger Williams, hardly polite in its tone and bristling with inaccuracies. When appointed to be a Hunterian lecturer nearly a year before, I selected duct cancer as one of