"WATER REPORTS—A DILEMMA."

BY DR. MATTHEW ADAMS.

(Read at Meeting, July, 1888.)

THE subject of "Polluted Drinking Water and the Closure of Wells," brought forward for discussion by Dr. Hill at the June meeting of our Society, is of sufficient importance to warrant my placing before you a correspondence which passed between me and the Urban Sanitary Authority of Rochester.

This correspondence shows a position of affairs the very reverse of that which Dr. Hill found himself placed in. He fell upon the legal horn; I was impaled by an equally tormenting official horn. In such a dilemma what can be done?

WATER ANALYSIS.—REPORT.

To Richard Prall, Esq., *Town Clerk.*

	No. 1. 61, Morden Terrace, St. Margaret's.	No. 2. 48, Morden Terrace, St. Margaret's.	No. 3. 78, 80, John Street, St. Margaret's.	No. 4. 8, Hooper's Place, St. Margaret's.
Total Solid Matter	77.3	57.1	71.4	46.6
Loss on Ignition	5.1	3.4	4.6	2.2
Chlorine	7.7	5.4	7.0	4.3
Nitrogen, as Nitrates and Nitrites	1.14	1.14	1.43	.95
Phosphoric Acid				
Free Ammonia	.02	.00	.00	.00
Albuminoid Ammonia	.05	.04	.02	.02
Oxygen absorbed in 15 minutes	.025	.005	.028	.013
Oxygen absorbed in 4 hours	.044	.056	.036	.028
Total Hardness (Clark's Scale)..	27.5	24.0	26.0	20.0
Permanent hardness after boiling	12.0	11.1	13.5	9.0
Appearance in 2-foot tube	gr. blue	p. blue sus. mat.	pale cl. blue	pale cl. blue
Smell	Slight	Slight	Slight	None

☞ All results are given in Grains per gallon, except Free and Albuminoid Ammonia, which are in parts per million.

OBSERVATIONS.

County and Borough Analyst's Laboratories,
Ashford Road, Maidstone.

SIR,

31st May, 1883.

Herewith I hand you results of my analyses of four samples of water recently received from you for analysis, from all of which data I judge that Nos. 1, 2, and 3—especially Nos. 1 and

THE ANALYST.

175

2—are more or less tainted, and my advice is they should not be used for drinking purposes if better is at hand. At the same time I am bound to say there is not much indication of *ACTIVELY dangerous* pollution. The polluting matter is for the most part oxidized and so rendered inert, but this oxidation is not to be always relied upon, therefore such waters must be considered treacherous and dangerous.

I am, Sir,
Yours obediently,
MATTHEW A. ADAMS.

Local Government Board,
Whitehall, S. W.
September 4th, 1883.

SIR,

I am directed by the Local Government Board to advert to your letter of the 8th ult., stating with reference to certain wells in the town of Rochester, that the U.S.A. do not consider that they could obtain orders to compel the closing of such wells.

The Board direct me to state that having regard to the fact that the wells in question derive their supply from a soil which is much befouled by cesspools in near proximity to them, they are of opinion that measures should at once be taken by the S.A. to secure their closure, an opinion which appears to the Board to be fully borne out by the statements of the Analyst to whom the waters were submitted.

I am, however, to point out that, quite apart from the positive evidence as to pollution which chemical analysis has in this case afforded, the Board in forming an opinion as to the wholesomeness or not of a water have regard rather to a full knowledge of its sources and of the local conditions by which it is liable to be affected than to its mere chemical ingredients. In this connection I am to direct the attention of the Sanitary Authority to pages xvii. to xxi. of the accompanying print of the recent report of their medical officer with especial reference to the opinion expressed on page xxi., "that we must go beyond the laboratory for evidence of any drinking water being free from dangerous organic pollution."

I am further to state that the expressions used by the Analyst, and especially with reference to the polluting matter being "for the most part oxidized," appear to show an inadequate view of the conditions under which water can safely be used.

In the present case it appears to the Board that if the Authority are still of opinion that their action might be hindered by some qualifications expressed by the Analyst they should procure fresh analyses of the waters by some well-known chemist, and if necessary the analysis should be repeated until any varying qualities of the several well waters have been fully ascertained, and conclusive inference has been drawn respecting the risk to these sources of supply.

With regard to the soakage from cesspools, the Board would call the attention of the Sanitary Authority to their powers under Section 47 (3) of the Public Health Act, 1875, but they think it proper to add in this connection that to prevent for the future the contents of a privy or cesspool to soak therefrom will not render wholesome the water derived from a soil into which such contents have already soaked in notable quantity.

I am to add that under Section 62 of the Act, the Sanitary Authority might compel the Brompton, etc., Waterworks Co.'s water to be laid on in any case where it appears on the report of the Surveyor that any house within the district is without a proper supply of water, and that such a supply of water can be furnished thereto at a cost not exceeding the water rate authorised by the Local Act in force within the district.

I am, Sir, your obedient servant,
ALFRED D. ADRIAN,
Assistant Secretary.

To Richard Prall, Esq.,
Town Clerk, Rochester.
September 10th, 1883.

DEAR SIR,

Having regard to my report of May 31st on these four samples of water, and the letter from the Local Government Board of the 4th inst., I have to remark: that it is not for me as your chemical adviser "to go beyond the laboratory." It is my duty to form an independent opinion derived from chemical data alone; others, such as your Medical Officer of Health and Inspector of Nuisances, must advise you as to local surrounding circumstances; moreover, you have a right to expect practical and not theoretical advice, such as may reasonably be expected,

successfully to stand the test of opposition in court ; all this you have and no one having respect for his chemical reputation could say more than I have done, viz., that Nos. 1, 2, and 3 are treacherous and dangerous, and should not be used for drinking purposes.

I am, dear Sir,

Yours obediently,

MATTHEW A. ADAMS.

To Richard Prall, Esq.,

Town Clerk, Rochester.

September 10th, 1883.

DEAR SIR,

I beg to return Local Government Board's letter and printed report of their Medical Officer, together with my remarks thereon. With regard to the "expressions" in my original report referred to in that letter, to the effect that the polluting matter, being "for the most part oxidized," showed (on my part) an inadequate view of the conditions under which water can be safely used, I have simply to say that to the best of my belief, Dr. Dupré, the Local Government Board's own analyst, would endorse every figure and word I have used, and to my mind it would be an undoubted proof of inadequacy and incompetency to lead your authority to overlook the all-important distinction between oxidised and unoxidised organic matter. Their suggestion that the analyses should be repeated until any varying qualities of the several waters have been fully ascertained, etc., is a good one. If on repeated analyses, changes in the constituent parts can be shown to occur, that together with the evidence already attained would put the case in a much stronger light as against the wholesomeness of the waters.

But there is no occasion for this, especially after the Local Government Board's letter ; the water ought to be condemned, and if it is necessary I will come over and support this advice in the witness-box.

Yours faithfully,

MATTHEW A. ADAMS.

(Conclusion of the Society's Proceedings.)