

part of the face, this is placed in the end of the piece of rubber tubing which is attached to the aspirating tube, by first introducing a thin metal tube, whose internal diameter is slightly larger than the diameter of the valve. The latter is then dropped into the tube, and by means of a small rod, pushed into place just beyond the metal tube which is then withdrawn. The rubber tube embraces the valve so securely that it is impossible to displace or disarrange it. This method is superior to the older one of cementing the valve in the aspirating tube.

A pump actuated by water-pressure has some advantages over the Bunsen Pump which are worthy of attention. It is less expensive, less difficult to place in position, the degree of vacuum is easily regulated by turning on just sufficient water to secure the desired result, avoiding pinch-cocks which injure the rubber tubing, it is not liable to freeze, because there is no great length of pipe to be exposed, an attachment for producing a blast can be added with less trouble and expense.

PLATINIC IODIDE AS A TEST-REAGENT FOR DELETERIOUS ORGANIC SUBSTANCES IN POTABLE WATERS.

BY ALBERT R. LEEDS.

In the *Chemical News* 43, p. 180, M. Field has proposed to employ the reaction of certain organic substances upon a very dilute solution of platinum iodide in solution of iodide of potassium, and by their effect in the removal of the rose-color of this solution, to determine the fact of their presence in greater or less amount. Although the author proposes to employ the test only, or chiefly to establish the fact of the freedom of the water under examination from sewage contamination and from albuminous matters, yet the establishment of this fact alone is of the highest importance. The introduction of specific tests for the various kinds of organic matter, fresh or partly decomposed, which might possibly be present in potable water, would mark an advance in the practice of water analysis, and any proposition looking in this direction merits careful study.

After verifying Field's statements as to the decolorising effect of

certain of the most important organic substances upon platinum iodide solution, I compared the results arrived at by the use of platinum iodide and those obtained by the customary methods of water analysis. Moreover, regarding it probable that the platinum salt would undergo reduction in presence of organic matter when exposed to sun-light, I exposed the tests in a duplicate series of determinations to the action of sun-light, and found my anticipation confirmed. The experiments were made upon a series of samples, the other constituents in which had been determined with exceeding care. In the first series a test solution was made of the same strength as that employed by Field, or one part of platinic chloride in 500,000 parts of a very dilute solution of potassium iodide; 50 c.c. of this solution was added to 100 c.c. of the natural water under examination, and allowed to stand in diffused light for 24 hours. In the second series, 1 part of platinic iodide was dissolved in 200,000 parts of a dilute solution of potassium iodide, and 100 c.c. of this solution added to 100 c.c. of the samples of water, and the solutions exposed in wide comparison-tubes for 48 hours to the sun-light. The results were as follows:—

	In diffused light	In sun-light
Sample No. 227*	Very faint pink	Light rose
“ 230	Pink just visible	Pink
“ 231	No color	Smoky pink
“ 234	Decided pink	Rose
“ 235	Faint pink	Rose
“ 228		Dark rose
“ 232		Faint pink
“ 233	with deposit of platinum	Smoky pink

It will be noted that in the second series, samples 231, 233 and 232 were so far reduced that a grayish deposit of platinum was formed on the walls of the tubes. In the last, this deposit was tested first with concentrated nitric acid, in which it would not dissolve, and afterwards with aqua regia, in which, after heating, it dissolved to a deeply-colored yellow solution. Since the 100 c.c. of platinic iodide solution was nearly decolorised, the amount of metallic plati-

* These laboratory numbers refer to a series of samples taken from the Schuylkill River in the month of January, 1883, when the water-supply of Philadelphia became so nauseous that I was requested by the water department of that city to investigate the causes of its temporary non-potability.

num precipitated amounted to nearly 5 mgrms. In other words, in badly polluted waters the reduction of the platinum salt in sun-light might be employed as a means for estimating the relative amounts of those organic bodies which are capable of effecting such a reduction in sun-light. It was noted, however, that 100 c.c. of a solution of 1 part of platinum iodide in 500,000 parts of a very dilute solution of potassium iodide in *distilled* water became perceptibly lighter in tint when exposed along with the others for the same period of 48 hours. Inasmuch as the solutions were somewhat warmed by the sun-light, and heat has some effect in the removal of the color, this disturbing element would have to be guarded against.

Since this time, an actinic method of determining the putrescible organic matter in potable waters has been regularly employed, and proven so satisfactory, that further experiments with platinic iodide in this direction have been abandoned. But the new ground broken by Field in the domain of water-analysis, deserves to be sedulously cultivated, and the search for specific tests for particular contaminating substances should be carefully followed up.

ON AN APPARATUS FOR RAPID ANALYSIS OF GASES.

BY A. A. BRENNAN, S. B.

The apparatus here described is designed for rapid analysis of gaseous mixtures where only a moderate degree of accuracy is required. It is possible nevertheless to secure very good results with it, if it be carefully handled and if its known source of error be guarded against. As an example of the results that may be obtained with it, two analyses of air may be quoted which yielded respectively 21.04% and 21.13% by volume of oxygen instead of 20.96% which is probably a fair average for the most accurate analyses. The oxygen was absorbed by a solution of pyrogallie acid in caustic potash, in the proportion of 2 grms of the solid acid to 5 c.c. of a solution of KHO (sticks) in twice its weight of water and 10 c.c. of water were further added to the solution. The absorption of oxygen in each case, occupied about 12 minutes. The excess of oxygen indicated is probably to be accounted for by the solution of part of the gaseous mixtures in the water used for rinsing, but the error belongs to all absorption-methods of analysis, where the gas is measured over water.