

So the sodium was not displaced or repelled under the influence of the magnet, as it would have been had it been a *conductor* of electricity.

There has been considered the possibility that metallic particles thrown off from the electrodes might be the conductors of the current. To determine if this were the case, Mr. Goldstein made use of a tube with platinum electrodes, in which the light from the cathode was deflected by a second cathode. The light alone underwent this deflection, while the minute particles torn off from the platinum, which lodged on the opposite wall of the tube and formed a sort of mirror there, went exactly to the same point after the deflection of the light, as before. There was thus no connection between the light of discharge and the abraded metallic particles.

But the most elegant demonstration in this matter has been furnished by the experiments of De La Rue and Müller: they arranged that the discharge of 2,400 chloride of silver cells should pass through a circuit consisting of a vacuum tube and a large variable resistance,  $R$ —; now with different resistances  $R_1$ ,  $R_2$ , the resistance of the vacuum tube formed a varying fraction of the whole resistance; and, according to Ohm's law for the fall of potential along a conductor, the fall of potential along the vacuum tube should have been variable, had its function been that of a conductor. It was found in fact, however, that the fall of potential along the tube remained constant, no matter what resistance was introduced in the remaining part of the circuit between the poles of the battery, showing that the discharge was not a case of true conduction, but that even at the lowest pressure it was disruptive.

#### THE AMERICAN CHEMICAL SOCIETY.

The February meeting of the American Chemical Society was held on Friday evening, the 3d inst.

Dr. Orazio Lugo was elected a regular member.

The first paper of the evening was "On Crystallized Anhydrous Grape Sugar," by Dr. Arno Behr.

It was customary in the preparation of the anhydrous grape sugar to crystallize it out from an alcoholic solution, particularly from that of methyl alcohol, but Dr. Behr was lead to believe it possible that a simpler method could be devised. After some experimenting, he found that it could be obtained from the ordinary hydrated solution. A solution with 12 to 15 per cent of water gave the best results. In the description of its properties, Dr. Behr stated that when dried in a current of dry air, the crystallized sugar would not retain more than two or three per cent moisture, its reaction was neutral, its melting point is between  $141^\circ$  and  $145^\circ$  C. When tested by the polariscope it showed birotation. Dr. Behr then briefly referred to its economic uses, how by its cheapness it would be largely used by the confectioner, the druggist, and by those who manufacture wines. He also stated that as regards its sweetening qualities, instead of requiring twice as much or more to make it equal to cane sugar, he had found that one and two-thirds as much was sufficient. Mr. Nelson H. Darton followed with a short paper "On the Precipitation of Tannic Acid as Tannate of Copper." This paper was a supplementary description of Mr. Darton's method, already read before the Society. It consists in the precipitation of tannic acid by the ammonia sulphate of copper. The precipitate was tested for ammonia with negative results, and therefore it was contended by Mr. Darton that the precipitate was composed of copper tannate and not the double salt as has been elsewhere claimed.

The final paper of the evening was by Dr. E. Waller, of the School of Mines, Chemist to the New York Board of Health. Its title was "On the Water Supply of New York City. The object of this paper was to contradict certain statements made by Prof. Leeds in his recent paper read before the Society and also published in the

*Chemical News*. Dr. Waller produced the analysis made by Dr. Booth in 1843, then by Dr. Chilton running between the years 1843 and 1859, Dr. Chandler's results from analysis in 1869-72, and finally his own, which have been regularly reported since 1872. These latter were represented by means of curved lines on diagrams which showed exactly the amount of each constituent for any time during the past nine years. These we may condense and show by the following table:

	PARTS IN 100,000.		
	Maximum.	Minimum.	Average.
Mineral matter.....	8.44	3.20	5.702
Org. and vol. matter.....	4.40	1.67	0.04
Total solids.....	11.07	4.80	7.38
Hardness .....	5.40	1.88	3.21
Oxygen by permanganate method.	0.383	0.047	0.180

The results obtained by Prof. Leeds in comparison with those showed from the above table were in several instances quite different. Thus, Prof. Leeds finds the total solids to be higher than any result obtained by the New York Board of Health during the past fourteen years. In other determinations similar discrepancies were shown by Dr. Waller. The statement that the Croton water was contaminated by tanneries and other factories was objected to as incorrect, the tanning having long since ceased on account of the scarcity of trees. A statement from the Chief Engineer of the Water Department was read, in which he claimed that the water shed of the Croton River was the cleanest of any from which the supply of drinking water was obtained, either in this country or abroad. The population of the country through which the Croton flows does not exceed 20,000 inhabitants, or about one person to every ten acres. In comparison with other cities, the number of inhabitants to the square mile residing along the water shed of Croton, was stated to be extremely small, thus:

	Population to the Square Mile
London .....	270
Boston .....	229
Brooklyn .....	119
Schneectady, Cohoes, West Troy, { Drawing their supply from the Mohawk River. }	103
New York.....	65
Rochester.....	36
Albany.....	77
Poughkeepsie, supply from Hudson River.....	86

By arguments such as the above, Dr. Waller maintained that the conclusions reached by Professor Leeds were erroneous. In the discussion that followed certain of Dr. Waller's modes of analysis were criticized by Dr. Endemann, but his remarks were merely on a side issue, and had no bearing on the results. M. B.

#### To the Editor of "SCIENCE."

DEAR SIR:—I am sorry to find that I have been misled as to one important fact stated in my paper upon Standard Time which appeared in "SCIENCE" for January 21st. The Signal Service has not applied for an appropriation of \$25,000 for the purpose indicated in the paper, but a bill introduced in the house by Mr. King of Louisiana, asks this amount to enable the *Naval Observatory* to establish and drop time-balls at the principal ports of entry; and this was confounded with the Signal Service bill in the mind of my informant.

I supposed I had good authority for what I wrote, but as the result shows I ought to have looked into the matter more closely before trusting the statement to type. I regret exceedingly to have aided in giving currency to an erroneous statement.

C. A. YOUNG.

PRINCETON.