NOTES.

Mineral Residues in Sprayed Fruit.—Dr. R. C. Kedzie, of the Michigan Experiment Station, has examined fruit sprayed with two insecticide mixtures containing copper and arsenic. Strawberries sprayed excessively June 18 and 23 and picked June 24 contained, per pound of fruit, arsenic 0.044 grains, and copper 4.87 grains. Gooseberries sprayed June 18 and 29, July 8 and 22, picked August 2, were washed with hydrochloric acid (ten per cent.) and the washed fruit contained per pound 0.0047 grains arsenic and 0.138 copper. "In these experiments extending through two years, the minerals used in spraying the fruits were found in appreciable quantities in every instance though the amount was small in all cases except where the spraying had been purposely excessive. * * * The use of poisons in horticulture in my opinion is largely in excess of the amount required for a fungicide. One-half or even one-third of the amount usually employed would probably give as good results. * * It is safe to refuse all fruits which have been sprayed with these poisons (especially arsenic) during the period of ripening."

It was found that a small part of the poison sprayed upon the surface of the fruit was absorbed into its substance.—*Bulletin, 101, Michigan Agricultural Exp't. Station, 19.*

Estimation of Chlorine in Water.—When the standard silver nitrate solution is employed, with potassium chromate as an indicator, it is often very difficult to decide just when the red color begins to appear, even with the comparison dish of water tinted with the chromate at hand as an aid to the eye. One sufficient reason therefor is that it is hard to compare a clear yellow liquid with one turbid from precipitation of silver chloride.

Following a suggestion of my assistant, Mr. V. H. Gridley, it is now my practice to roughly determine the chlorine present, and then to make a second determination using for comparison 100 cc. of distilled water to which has been added not only the chromate indicator, but also an appropriate amount of standard sodium chloride solution and an amount of silver nitrate solu-

tion just short of that necessary to satisfy the chlorine present. Of course if the chlorine ran so high as to render concentration unnecessary, then 100 cc. of the water itself with the indicator and the partial dose of silver nitrate would be the proper contents for the comparison dish. By these means the eye is greatly aided in noting the slightest appearance of red tint, for in respect of turbidity both dishes are alike. The results are very satisfactory.—*W. P. Mason, Rensselaer Polytechnic Institute, January 20, 1894.*

The Phenolsulphonic Acid Process for Nitrates in Water.—The interference of chlorides with this process, resulting in readings decidedly lower than the truth, is well known, but the method of determination is so easy and convenient, that it occurred to me to try the addition of sodium chloride to the comparison standards rather than abandon the process.

The "chlorine" in the water under examination having been previously determined, an appropriate volume of standardized sodium chloride solution is added to each evaporation of standard potassium nitrate solution. Thus the water to be examined, and the nitrate solutions with which it is compared, all contain the same quantity of chlorine. The results are very satisfactory. —*W. P. Mason, Rensselaer Polytechnic Institute, Jan. 18, 1894.*