

## EXAMINATION OF AN UNUSUAL FORM OF SPRING WATER.

BY JAMES H. STEBBINS, JR.

A short time since a sample of spring water was handed to me for examination, and as it possessed some remarkable properties, I have thought that a brief description of the results obtained would be of some interest.

The spring is located in New Jersey (the exact locality being at present unknown to me) and the water has for a number of years been known as the "sweet spring water." The water is clear, without taste, is neutral to test paper, but has a slight smell when the bottle is uncorked. So far the water does not differ materially from any other good spring water. It however possesses one peculiarity, which I have never met with before, namely, quite a pronounced viscosity, which is even quite suggestive of the viscosity of glycerine.

This unusual phenomenon immediately suggested to me the presence of gelatinized silica; but a few tests soon showed that the viscosity is not due to the presence of silica. The only plausible explanation is that the viscosity is due to some organic matter, in the shape of either algae, bacteria or other form of growth. This hypothesis was found to be the correct one, as was at once seen by determining the total solids, which were found to be 8.2 grains per gallon. On ignition, the solids turned black at first and then burned to a white ash, leaving 3.2 grains per gallon of inorganic matter. We thus see that the water contains:

Inorganic matter.....	3.2 grains per gall.
Organic matter.....	5.0 " " "

Having now determined that the larger part of the solids is composed of organic matter, the next question to be determined was the nature of this organic matter. For this purpose the mi-

roscope was brought into play, with very satisfactory results. If a drop of the water be placed upon a slide, and then examined under a microscope, nothing of any importance will be revealed. But, if evaporated to dryness, and then examined, it will be found that the slide is literally covered with little rod-shaped bodies; very much resembling some forms of bacilli. Some of these bodies were in the form of short chains, others were scattered in every direction, and some were bent up in the shape of a letter S. I have made a photo-micrograph of these, magnified to 400 diameters (see cut). Whether this organism is vegetable or animal I am at present unable to say, but it is evident that the remarkable viscosity of the water is due to its presence.

It is also probable that this organism has the same index of refraction as the water itself and is therefore invisible. The water, on standing, seems gradually to undergo decomposition, as indicated by the smell. On trying the action of precipitants, it was found that alum failed to precipitate the organic matter; but an alcoholic solution of lead acetate completely precipitates it, in the shape of a white, stringy coagulum. The water is free from nitrates and chlorine, but contains traces of sulphates and nitrates. The amount of inorganic matter being so small, it was not deemed necessary to make an analysis of the same. As the nature of the organisms found is unknown to me, I would be obliged for any information which may throw more light upon the subject. I have been informed that the water has been drunk for years by the natives of the locality, without producing any serious results.