marked increase in solubility in the case of solid bodies. The following diagram (see Roscoe and Schorlemmer's Treatise on Chemistry, vol. ii., p. 45) will serve to illustrate graphically this point. You will observe that while the rate of increase in solubility for increased temperature varies with the specific nature of the salt, it is pretty generally true that the solubility increases as the temperature rises. In the case of sulphate of soda we have a peculiarity in that the maximum of solubility is found at about 90° Fah. In common salt we find another interesting peculiarity in that for temperatures between the freezing point and boiling point of water the solubility is practically constant at about four pounds of salt per gallon of water. In the case of sulphate of lime we find the very slight solubility of this salt in cold water is even lowered as the temperature reaches the boiling point, although the decrease in solubility is too small to be well marked. However, did this diagram indicate temperatures as high as those found in steam boilers, where water boils under artificial pressure, we should find that at 270° Fah., a temperature which corresponds to the boiling point of water under a pressure of two and a half atmospheres, or about 40 pounds per square inch—a very ordinary boiler pressure—the solubility of gypsum is reduced to one-twentieth part of its solubility at 212° Fah.; and as a consequence of this nineteen-twentieths of the sulphate of lime in solution in a feed-water is deposited as a coherent and very hard crust on the inner surface of the boiler.

The remaining condition which affects the solubility of solids in water is the presence of other substances in solution. There is probably no exception to the statement that the solubility of a solid is influenced more or less by the presence of other dissolved bodies. All the phenomena of precipitation depend upon this principle. I shall have occasion to illustrate this in the course of the evening, but I may now ask you to observe how promptly chlorides are thrown out of solution by salts of silver, salts of iron by ammonia or other alkali, lead salts by carbonates or sulphates, all of which reactions are of great value to water consumers, whether the water be used for household or manufacturing purposes. I can only make detailed reference to two cases of great importance in this connection. The first is the solubility of lead in water, and is of great importance from the extensive use of lead