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Millard Smith, M.D.,
472 Commonwealth Ave.,
Boston, Mass.

Dear Dr. Smith:

I have carried out a number of spectrographic analyses on the material contained in the ampoule submitted by you, and have read the first few chapters in the monograph by Koch which you sent.

I consider his statements pertaining to matters of physical chemistry, spectroscopy, and the interaction of matter and radiation indicative of a basic knowledge of the subject. There are a number of points which are still the subject of controversy, such as mitogenetic radiation, but numbers of recognized biologists hold to the side which Koch accepts. His thesis may not be correct, but I see no way of proving from internal evidence that it is incorrect.

I first measured the absorption curve of the ampoule material in a quartz cell, and found it to show no distinctive absorption bands, but only a rather linear increase in density through the ultraviolet until it became sensibly opaque in a 1 cm. layer at 2200 Angstroms. This type of absorption curve at once rules out several large classes of substances.

I then analyzed the liquid with the electric arc for metallic constituents and found that it was apparently an aqueous solution of an organic substance in moderate concentration. To make this analysis it was necessary to destroy the material.

A search through the absorption curves given in the International Critical Tables narrowed the possible materials down to a group of a dozen or so. One of the curves most nearly approximating that found was that of glyoxal in water.

To carry the hunt further than this spectrographically would be time-consuming and costly, since it would be necessary to mix duplicating solutions to reproduce the exact curve found. I assume that you do not require this, since it seems to me that the evidence points to the probability that the solution is what Koch says it is, or at least the equivalent.

You will appreciate that while glyoxal in water gives a curve similar to that of the ampoule material, this does not necessarily mean that the latter is this. It merely gives presumptive evidence that similar molecular bonds are present in the two materials. My conclusion is that the spectrographic analysis, as carried out so far, makes it appear very probable that the material is what Koch says it is.

Very sincerely yours,

George R. Harrison