SUMMARY AND INTERPRETATION OF THE MEDICAL HISTORY OF THE PATIENT, [redacted]

The illnesses of this lady prior to October of 1969 are a matter of record, insofar as the time of their occurrence, the diagnosis made initially, and the therapy instituted following further medical investigation. They range from chronic cholecystolithiasis, followed by cholecystectomy in 1944, through eighteen other hospital admissions and medical investigations over the period of twenty-five years, and during which, four major surgical operations were performed for the relief of inflammatory and degenerative processes in abdominal, pelvic and skeletal structures. In other hospitalizations, such diagnoses as the following were arrived at: endometrial disfunction with an hemorrhagic condition of the endometrium; influenza with hysterical manifestations; acute states of anxiety; migrane; acute urinary retention; anxiety neurosis with conversion; gastritis and functional pylorospasm; probable pyelonephritis; subdeltoid bursitis; myalgia and arthralgia; cystic ovaries; multiple pelvic and abdominal adhesions; recurrent lumbosacral abnormalities of the spinal column; sciatic neuritis; and gastric ulcer.

It is evident that she has been in ill health over this period of years, and that, whether on this account or for other reasons, she has experienced repeated (perhaps continuous or nearly continuous anxiety states, and hysterical or seemingly hysterical) episodes from time to time.

The condition in which she was found on her admission to the Good Samaritan Hospital in October of 1969, appears, from the record, to be in keeping with much of her previous history. On her admission, she was suspected of being afflicted with diverticulitis, because of the nature of her pain, and because of the findings on examination of her abdomen. There was even some evidence of rebound tenderness and reaction which signify inflammatory involvement of the abdominal (or pelvic) peritoneum. In addition, she was nauseated much of the time, as well as febrile. At this time, for some reason which the hospital record does not reveal, the possibility of heavy metal

poisoning suggested itself, and for this reason, presumably, the urine was examined for its lead content, and for porphyrins, and a search was made for stippling. For some reason which, also, is not apparent from the records, the diagnosis of lead poisoning was welcomed, and, further, was considered to have provided a reasonable explanation of illnesses which had been encountered, without adequate explanation of their relationshi to previous disturbances.

A consideration of the basis for this diagnosis is certainly lacking in satisfactory criteria of the existence of this intoxication. First, is the clinical pattern of the illness of the patient. The colic of lead poisoning is indeed sometimes atypical (that is, it is a somewhat variable type of episode), but it is one type of abdominal pain which generally is relieved by the application of pressure to the area complained of as the site of the painful spasms. Such pain, of an excruciating type, comes and goes, and at the peak of the individual spasm, the distress is usually quite severe, inducing facial contortions, and sweating, and often grinding of the teeth. Episodes of lesser severity are not remarkably more disturbing to sleep and rest than mild aching. This patient was sedated almost constantly for pain, which is certainly not described as episodic. Moreover, the patient's illness was accompanied with fever, which is rarely present and never other than marginal in uncomplicated plumbism. The nurses' chart of this patient's fever alone is of such a character as to cast considerable doubt on the diagnosis.

As to the findings of the laboratory, none are even suggestive of lead poisoning. The lack of evidence of stippling may, of course, and especially in these days of the low incidence of lead poisoning in the general population (except among children from a certain type of surroundings), be not especially remarkable, because of the usual technical inexperience of searchers for the phenomenon. The inability to find abnormal quantities of porphyrins could, of course, have a similar explanation, but is unlikely, considering the frequency and non-specificity of this finding, but the lack of it in plumbism is, indeed, unusual. The final blow to the diagnosis of lead poisoning (so far as the somewhat inadequate

Let it be said, that the urine is by no means the best material to investigate in undertaking to arrive at a diagnosis, and the failure to sample and analyse the blood was, indeed, an important oversight in this instance. However, the findings of the quantities of lead in the urine of this patient (the other findings in hair, nails, etc. have not been recorded), as reported in the hospital records, either before or after the institution of chelation therapy with calcium, disodium versenate (or disodium, calcium edetate, as officially - A.M.A. - designated), with one exception, are not indicative of an unusual condition in this patient. (The analytical reports in the hospital records are deplorably inadequate, and the methods employed in collecting and preparing them and making the final determinations of their lead content, are in no wise reassuring as to their completeness and adequacy. However, taking them at their face-value, they simply do not provide results indicative of any unusual exposure to, or absorption of, lead by this patient.) Finally, let it be said, categorically, that the analytical findings, wi respect to the amounts of lead, in the body fluids or tissues of a human being, live or dead, or that of an animal, are not diagnostic of illness. They may indicate that the quantity of lead available is greater than usual, or even that it is in the range often associated with lead poisoning. However, they may be, and often are, found to be elevated in the presence of apparent good health. (The factor or factors which create o induce the toxicity of lead in the human body, under certain circumstances, and which fail to do so under other circumstances, are but vaguely - if at all - recognized. Some of us, who have had much experience, have some opinions, but there is no consensus on this point. The fact is, however, that two men working side by side at the same potentially hazardous job, and appearing to have little or no difference in their experience, may differ completely in effect, in that one may be acutely ill, while the other has every appearance of being well.) The additional (helpful) fact is that cases of poisoning never, in my experience, occur unless the urinary or blood lead are elevated beyond specifically elevated concentrations. Such levels do not justify the diagnosis of lead poisoning, but in an industrial population and setting, they point out

In summarizing the significance of the clinical investigation and the results of the laboratory analyses, it should be stated clearly that the clinical findings in the case of Mrs. Netzley were not such as to justify a diagnosis of her illness as lead poisoning. That is to say that they were atypical, and, hence, likely to lead to error. The analytical findings, on the other hand, were negative, in the sense that they were not of the order of magnitude that are associated with known cases of lead poisoning. They were, in fact, of such magnitude as to indicate that, at this time, Mrs. Netzley did not have sufficient quantities of lead in her body to be able, in terms of extensive background information, to induce intoxication by lead. What she may have had at some earlier (or later) time is subject entirely to speculation.

CONSIDERATION OF THE ALLEGED SOURCE OF THE LEAD ALLEGEDLY ABSORBED BY THE PATIENT, MRS. [redacted]

The examination of the pots which are alleged to have been defective, in that they yielded unduly large quantities of lead to tea which was brewed therein (assuming that these were, in fact, either those used by Mrs. [redacted], or that they were identical in their behavior to those used by Mrs. Netzley), has not supplied evidence of any risk to the user of these pots in the brewing of tea and of consuming such tea thereafter.

Two sets of tests were performed, one of which was reported by the Bowser-Morner Testing Laboratories, Inc. The other set was reported by the undersigned physician, as being the result of the performance of staff members of the Kettering Laboratory, with himself and under his direction. This association in the day's work of investigation and analytical technique has continued over the period of many years, during which the results have been published and the details of the work subjected to the critical examination of experts in the field, for more than a third of a century. During this period, the American Pottery Association has provided many items of pottery to the Kettering Laboratory for the investigations of its staff. It should be said, therefore, that the Laboratory is familiar with the facts, with reference to the hazardous character

of certain items of domestic and foreign pottery, and is generally (not specifically, in all cases) cognizant of the features of certain of these items of pottery and of the manufacturing techniques,which render them dangerous. I do not consider the specimens of teapots submitted to us for examination to be in the category of dangerous items, from the aspect of their susceptibility for yielding up lead to the tea which is brewed therein. Moreover, I do not believe that these pots, or others identical to them, would have provided a source for the absorption of dangerous amounts of lead by Mrs. Netzley or any other consumer of tea brewed therein.

It is true that the amount of lead reported as having been extracted from the pots by Mr. Jenkins, a chemist in the employ of Bowser-Morner Testing Laboratories was more than that which is allowable by the standard adopted by the American Pottery Association, as approved by the United States Food and Drugs Administration. The latter, however, was established to prevent any risk to public health from this source of exposure. Moreover, the standard does not imply that the failure to meet this standard will certainly result in lead poisoning on the part of the user of the product. Assuming, therefore, that the analytical finding of Mr. Jenkins was valid (which is by no means assured), the mere finding relates to the unsuitability of the teapots for commercial distribution, and not to the results of its use in any one specific case. The writer of this report makes no attempt to assemble evidence that the analytical report of Bowser-Morner Testing Laboratories was incorrect. He merely states that the methods of analysis for minute quantities of lead in materials, in inexperienced hands, are tricky. It is also true that there is a tendency toward relatively high results in articles of glazed pottery (or glass), when the surface to which such an extractive agent as acid is applied has been undisturbed for some time, as contrasted with the molecular arrangement of an extractable glazed surface which is subjected regularly to the action of some solvent or some washing procedure. The lead-containing glaze continues to yield up some of its substance but the amount tends to diminish. Articles of this type also develop a "patina" which tends to resist extraction. On this

account, somewhat unpredictably (since we do not understand, completely, the mechanisms involved), a standard is set arbitrarily (necessarily) at such a level as to cover all situations with a margin of safety, which is always a matter of personal judgment (or committee consensus). The writer does not, by these comments, intend to depreciate the necessity of establishing official, or regularly used industrial, standards of various kinds in relation to articles used in the households of the country, nor to suggest that an item of household pottery which yields, regularly, to a standard method of extractive, quantities of lead such as those reported by Bowser-Morner Testing Laboratories, Incorporated, may be suitable for commercial distribution. Nevertheless, actually dangerous articles of this type, in our experience, are found to have defective glazes which continue to yield (to extraction) unduly large quantities of potentially toxic metals (including lead) for as long as the layer of lead-containing glaze continues to be visible. We have found quantities of lead in such extracts, time after time, which have varied from 24 to 40 parts of lead per million (24 to 40 milligrams of lead per liter -- approximately per quart) of the liquid extracts. The important fact which emerges from this discussion is that the testing of pottery for its suitability for human use is not a "one shot" affair, by any analyst or set of analysts, but that, for a reasonably satisfactory interpretation of the findings, there must be reliable, repetitious analyses which tend, at least, to reveal the extractability (and the persistence of the extractability) of the lead-containing glaze, as a clue to its adequate solubility or insolubility. (High temperatures up to a certain point as a minimum, are essential in the firing of glazed pottery, to convert all of the lead in the glaze to lead silicate, i.e., to convert the glazing material to glass, which is not absolutely insoluble in hot acid, but only slightly so.)

Signed: Robert V. Kelley