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The Committee has asked me to give some historical background on the human radiation experiments. The knowledge my researcher and I have of these experiments comes from the documents uncovered in three years of research into the life of physicist Ernest Lawrence. Two of the physicians involved in the radiation experiments on human subjects, Robert Stone and Joseph Hamilton, worked for or with Lawrence at the University of California in the 1940s and 1950s. During the Second World War and after, Dr. Stone exposed terminal cancer patients to whole body x-rays and high-energy neutron beams. Between May 1945 and July 1947, Dr. Hamilton injected three human subjects with a soluble form of plutonium at the University of California hospital in San Francisco.

There were three reasons for human radiation experiments. One was to discover new and better methods for the diagnosis and treatment of cancer and other diseases. Both Stone and Hamilton were pioneers in this area, dating from the mid-1930s.

Starting in 1942, a second motivation was to discover how radiation affected the body so that standards for exposure and, if necessary, methods of treatment could be devised for those working on the atomic bomb project. As of 1943, Stone reported to the Army, treatment of the victims of radiation accidents "consisted of vacations, transfusions and hope." Working first under contract for the Army's Manhattan Project, and later for the U.S. Atomic Energy Commission, Stone was most interested in the effect of direct radiation, from x-rays or neutron beams; Hamilton's primary interest was with the effect of radioactive isotopes, injected or inhaled.

A third motivation for the experiments--beginning in the Second World War, but becoming more prominent with the Cold War--was to identify the most effective killing agents and countermeasures for radiological warfare [RW]. As early as 1943, Stone and Hamilton discussed with Army representatives the possibility of poisoning enemy food and water supplies with radioactive isotopes. In January 1945, Hamilton reminded the Army that "almost all of our past and present efforts with fission products would be directly applicable...to the military needs of radioactive warfare." By 1946, Hamilton was an avid promoter of radiological warfare [RW], and subsequently became a consultant to the Army on the RW tests it carried out in the Utah desert between 1949 and 1953.

Although there is as yet no evidence that any of the human experiments conducted by Hamilton or Stone was directly connected

with their interest in radiological warfare, in reality all three motivations--therapeutic use, medical research, and military application--were so "intimately intertwined," in the words of one of Hamilton's co-workers, as to be virtually indistinguishable. Data gained from any one experiment would be useful in all three areas. Certainly Hamilton and Stone, as other researchers, welcomed the financial support of their research by the Army, and later the AEC, as furthering the concerns of science. In turn, the Army and AEC had an interest in the work of physicians like Hamilton and Stone that was multifaceted, and included the peaceful as well as the military application of atomic energy.

Beyond the question of motivation, another element of interest in the radiation experiments is the secrecy under which they were carried out. From the evidence thus far available, none of the three human subjects injected by Hamilton was informed in advance that the material to be used was plutonium; nor was any informed of the characteristics of plutonium. In May 1945, when the first subject was injected by Hamilton, plutonium and its application remained a military secret. That was no longer the case, however, by the time of the second and third injections, in April 1946 and July 1947 respectively. Documentary evidence indicates that as early as February 1945, Hamilton and Stone were attempting to keep the human experiments shrouded in secrecy not out of a concern with security, but because of an awareness of the unorthodox and controversial nature of the experiments, were they to become more widely known.¹

Related to the question of secrecy, as well, is the matter of consent. In the first two plutonium injections by Hamilton, the subjects were evidently informed only that they "were to receive a radioactive substance having certain properties." (Ironically, such a disclosure might have been more misleading than informative, since prior to these experiments, the principal use of radiation on human beings was for diagnostic or therapeutic purposes.) In the third plutonium injection, reportedly the "experimental nature of the...injection of the radioactive tracer sample was explained to the patient, who agreed on the procedure." In none of the three plutonium injections was signed consent for the procedure sought or obtained.

There is incomplete documentary evidence that the question of consent came up between the AEC and the University of California, with the AEC seeking signed consent, prior to the third and final plutonium injection. In April 1947, the Commission yielded to a request from the University's doctors that a written release not be required of the subject. Instead, a written certification by at least two doctors as to the subject's mental competence and willingness to accept the treatment after it had been explained was substituted for a signed release.² This was, in fact, the arrangement for the third human subject, Elmer Allen.

Apparently at the April 1947 meeting, and certainly on subsequent occasions, Hamilton and Stone defended past human experiments and justified future ones on the grounds that they conducted such experiments in their capacity as independent physicians in the employ of the University, and not as AEC contractors.

The matter of consent, in turn, raises the question of the AEC's role in continuing to authorize radiation experiments with human subjects. In December 1946, one week before yielding its authority to the AEC, the Manhattan Project put a sudden stop to the human radiation experiments. The following April, as previously noted, the AEC gave conditional approval for resumption of the experiments. By July 1948, however, Dr. Shields Warren, the director of the AEC's Division of Biology and Medicine (DBM), which approved the experiments, had begun to express reservations about them. That fall, Dr. Alan Gregg, the chairman of the division's Advisory Committee on Biology and Medicine likewise informed Stone that he and his colleagues no longer had confidence in Stone's judgment, on account of the latter's human experiments.³ In July 1949, Warren informed Stone that he was "taking an increasingly dim view" of the human experiments. "Consequently, record me as voting against human experimentation," Warren wrote.

The documentary record of human radiation experiments, even the relatively small portion dealing with only Stone and Hamilton, is both fragmentary and scattered. While the extraordinary "openness" initiative of Secretary of Energy Hazel O'Leary deserves high commendation, the records of perhaps greatest interest--the files of the Division of Biology and Medicine, and its Advisory Committee on Biology and Medicine--still remain closed to researchers lacking a security clearance.

Without access to the documents contained in these files, many of the questions which surround the radiation experiments are likely to remain unanswerable. Among them: How many other injection experiments using human subjects were there? How much control did the AEC itself exercise over the human experiments? What role did military-related research--and, specifically, the AEC's Division of Military Application--play in the experiments? And, perhaps most importantly, why did the experiments continue in the face of opposition from the heads of the Division of Biology and Medicine and its advisory committee?

Accordingly, one of the priorities of the current investigation into government-sponsored human experimentation should be the immediate opening of these Department of Energy files.

1. Hamilton, for example, rejected Stone's choice of a collaborator at UC hospital on the grounds that the latter was "an individual of more than average ability and I think he would soon realize that something very peculiar was going on." Hamilton to Stone, 6 Feb. 1945. Document in possession of Patricia Durbin, Lawrence Berkeley Laboratory.

2. 16 Aug. 1974, AEC Division of Inspection Report, p. 5. U.S. Department of Energy Archives. "Sanitized" copy obtained from Eileen Welsome.

3. Earlier, in the report of the AEC review board which recommended creation of the advisory committee, Gregg had warned: "A policy of secrecy in science is neither personally courageous nor politically wise." 20 June 1947, "Report of the Board of Review," Record Group 77, File 319.1, National Archives.