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INTERVIEW WITH DR. K. T. BAINBRIDGE ON MAY 11, 1943

On October 8, 1941 Dr. E. O. Lawrence, who had come east for a Microwave Committee meeting to be held in Washington on October 17 and 18, came to Harvard and sounded out Professor Bainbridge about his willingness to undertake some important secret research. He was, he said, embarking on a tour of important universities to pick out key men for the job; these, in turn, were to propose the names of four or six others whom they recommended for the work. These men, E. O. Lawrence said, were to go to a central laboratory, as yet undesignated, where they would be familiarized with the principal problems. After a brief period of training, they would then return to their respective institutions to undertake a selected portion of the secret problem.

On October 14, Dr. Bainbridge went to New York, where he had a discussion with E. O. Lawrence and Alfred Loomis on the character of the secret microwave program. On October 16 Bainbridge's clearance, which had been arranged for much earlier without his knowledge, finally came through and on the same day he left for Washington with Loomis and Lawrence. On the 17th of October they visited NRL where Bainbridge learned for the first time of the Navy's radio detection devices. A meeting of the Microwave Committee was held at 10:00 A.M. of the 18th at the Carnegie Institution of Washington. Bainbridge was present and E. G. Bowen of the English Mission presented his recommendations and specifications for 10-cm AI. At this meeting there was much discussion as to who should be selected as director of the microwave laboratory. Lawrence himself was proposed, but he refused, feeling that he had too many commitments in Berkeley with his cyclotron development, and he suggested the name of Dr. Lee DuBridge. There was also an extended discussion

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as to where the proposed laboratory should be located. It was not proposed to build a new building, but to use the existing facilities of some institution. It was first suggested that the laboratory be placed in the Carnegie Institution of Washington's Department of Terrestrial Magnetism on Broad Branch Road in Washington. This was the most appropriate place within the Carnegie's organization, for a nuclear research center was being established there. A cyclotron building had just been completed, though the cyclotron itself had not been installed. It was also pointed out that the laboratory should if possible be near an Army or Navy airfield, and Bolling Field was suggested. Dr. Bush was not favorable to having the laboratory on Broad Branch Road, chiefly because he felt there was not enough space. Bolling Field, on the other hand, was out by the very nature of the NDRC's contractual practices, where the laboratory could only be set up by means of a contract with some university or institution. For a number of reasons, M.I.T. seemed a logical choice.

On October 24 a meeting was held in Cambridge at President Compton's house to discuss the organization of a microwave laboratory at M.I.T. Among other matters, the space that might be available was talked over. It was believed, for example, that the space occupied by the Blind Landing Group in Building 4 would be appropriate, that the group itself would finish its work in another month and their space would be available. As it turned out, the group remained longer than expected and the space was shared for the first months.

On October 29 Dr. Barrow gave what Bainbridge called his "first induction talk". This was a lecture on microwave transmission and propagation, given in the physics auditorium. On the following day, Dr. Barrow gave a second

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*Dr. John T. ...  
recollections of the  
meeting.*

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lecture and there was a M.I.T. meeting of the Loomis committee, where the problems of space, of costs and of personnel were thoroughly gone over.

During the first days of November, Dr. Bainbridge was chiefly active in selecting the personnel, inducting new members, making salary arrangements, investigating the rooming and housing facilities of Cambridge, and making necessary preparations for the laboratory itself. On November 2nd, he inspected the available M.I.T. space with Dr. DuBridge and Mr. Eastham. They discussed the apportionment of space to the shop, the glass blowing department, the guard, and the blind landing group. He made preliminary arrangements for library equipment, a drafting room, a vacuum system for making tubes, and the necessary power supplies. On the following day he talked with E. C. Kemble of Harvard concerning the availability of the Harvard group he had selected: Street, Purcell, Getting, and Hamilton. On November 4 he met with Bowles and Eastham at M.I.T. and an actual beginning was made in taking possession of the laboratory space in Rooms 4-133 to 4-137. Dr. Bainbridge's notebook recalls the following items for the next few days.

November 5: Preparation of glass list with aid of the Harvard Physics Department glass blower. Discussed the new laboratory with Getting and made salary arrangements.

November 6: Discussed laboratory power requirements and space with W. Hall.

November 7: A.M. - Spent at Harvard cleaning things up.

P.M. - Inspection of blind landing laboratory. Discussion with  
Kerr and Weiss

Evening with Rabi and Condon.

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On November 8 an important meeting was held in Rm. 7-188 of M.I.T. for an initial discussion of pulse systems. The details of the work of the Pulser Group from this point on can best be reconstructed from the reports and from the notebooks of the members of the group. Dr. Bainbridge, in his conversation, nevertheless, noted some high points. He recalled that in accordance with the general laboratory personnel policy, his group was composed of physicists, not radio engineers. It was inevitable, as Bainbridge put it, that "we should rediscover a lot of things, such as the cathode following circuit known to radio engineers." He pointed out that it was difficult to assign credit for developments in which everyone had a part. He pointed out, however, that Dr. Street was, as he put it, a "tower of strength" for the group. It was Street who urged the use of a pulse-forming line and who invented the boot strap type of cathode follower circuit. He considered that Dunnington and Whitford's development of an oxide cathode output tube which later led to the 715A was a development of considerable importance. The earliest sets used on the roof were a Westinghouse pulser using the strobatron that was the first <sup>type</sup> tube completed by the group. A month or so later, arrangements were made with the Raytheon Company to build the first five improved pulsers. Bainbridge considers his choice of Raytheon a recommendation that he is very proud of in the light of their subsequent contributions to the work of the laboratory. The engineering of the Raytheon pulser was the work of S. Cook. As completed, it included the pulse-forming line, Kanner's thyatron cut-off and Street's boot strap driver.

Dr. Bainbridge remained as head of the Pulser Group until February , 1941. About this time, he was designated to go to England as the laboratory's first representative. For several weeks before his departure

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he traveled about the United States gathering together as much radar information as possible. At the same time the laboratory personnel compiled a list of questions, many of them far too comprehensive for Bainbridge to investigate on his trip to England. He left the country on March 3 with Warren Weaver and E. J. Poitras. In England they made contact with President Conant and Carroll Wilson who had arrived earlier on an NDRC mission to set up the London liaison office. Bainbridge and his group visited the principal places where RDF information was to be obtained: TRE, various CH and GCI stations and the like. He prepared a series of reports on his observations and collected together all the available British reports that he could lay his hands on to be sent to the laboratory. This led Bainbridge upon his return in , 1941, to devote his energies toward organizing a document room for the laboratory, the nucleus of which consisted the English reports. He stayed on this job until September, 1941, at which time he became head of Group G. Dr. Bainbridge recalls that with the relatively small number of reports that were available at that time, the director of the document room was supposed to read all the reports carefully and give a summary of their contents to the members of the laboratory.