

MIT Radiation Laboratory

From its beginning on October 11, 1940, to its official termination on December 31, 1945, the MIT Radiation Laboratory, in the process of performing its primary function of developing microwave radar, left a permanent imprint on science, technology, education, laboratory operations, radar and microwaves.

To commemorate that effort and to honor the people who worked there, we have chosen as the theme of this MIT-S Symposium, the 50th anniversary of the MIT Radiation Laboratory. As part of the celebration, this special session, devoted to the MIT Radiation Laboratory, has been organized, in which three papers will be presented. The topics chosen are Theory, Components, and Systems. It was felt that these topics are general enough and broad enough to give an overview of the work done at the Laboratory. We have asked each of the invited speakers to discuss the work done at the Laboratory and to relate that work to today's technology.

In organizing the session, it was difficult to identify the ideal individuals to make the presentations. It was difficult, because there were so many possible candidates. The problem was to reduce the number to a maximum of three. Fortunately, we had the 28 volume set of the MIT Radiation Laboratory series to assist us.

For Theory, we invited Dr. Nathan Marcuvitz, who was the editor of volume 10 of that series, *The Waveguide Handbook*, which, for many years, has been an invaluable tool for the people attending this symposium. For many in our Society, his book has been a key reference in the field of microwave technology.

For Components, we invited Professor Robert V. Pound, who was the editor of volume 16, on *Microwave Mixers*. That volume, along with volume 10 and others of the series, provided many of us with the basic information that enabled us to perform as microwave engineers in our early working days. For some of us, they helped to put us in business.

For Systems, we invited Dr. Ivan I. Gettling, who was the head of Division VIII at the Laboratory. This was the division that dealt with microwave fire control systems. It was in that division, under Dr. Gettling's supervision, that the famous SCR-584 was developed, which, along with a small group of Division VIII members, became the star of the NOVA program "Echoes of War," which was shown on Public Television on October 24, 1989.

We selected our three topics keeping in mind that theory is the foundation for component and system design, and components are the building blocks of systems. Yet, when the Radiation Laboratory began, the order was somewhat reversed. The initial goal of the Laboratory was to develop three specific systems. The theory and the components were then developed to realize the system functions. And the systems that were developed then, have had their influence even today. In particular, the 584 could probably be identified as the great-grandfather of the Patriot system, since it was during World War II that the 584 was so effective in destroying V-1 "buzz bombs" that were being rained on London.

These three papers will give a somewhat limited view of what was accomplished at the Radiation Laboratory. On the other hand, this Symposium, with its many technical sessions, industrial exhibits and related activities, is an excellent measure of how successfully we have built on that outstanding heritage.

Session Organizer and Co-chairman,
Theodore Saad,
Sage Laboratories