

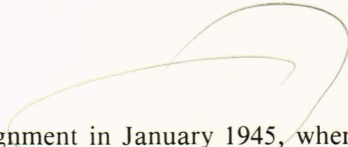
## EDITORIAL

APL is recalling this year events that occurred during the four decades after a contract was made between the Office of Scientific Research and Development (OSRD) and The Johns Hopkins University to support and administer a large applied physics laboratory. The contract was signed in March 1942. It was the low ebb in the fortunes of war of the Allied powers. The Laboratory was then almost exclusively engaged in the crash development of a radio-activated proximity fuze for use in the defense of ships against hostile aircraft attacks. In less than a year a working fuze was in production and use. The first assignment to the Laboratory had been accomplished with record speed.

This issue of the *Technical Digest* contains several reflections on that 40-year period. Included is a set of recollections, a "bouquet of reminiscences," by colleagues and friends of Merle A. Tuve (p. 207). Tuve, the founder and first director of the Applied Physics Laboratory, joined the Department of Terrestrial Magnetism of the Carnegie Institution of Washington in the 1920's. He carved out a brilliant career in experimental physics, searching for explanations for the anomalous propagation of radiowaves in the ionosphere and for the forces (then only dimly perceived) within the nuclei of atoms.

Fourteen years later, when the conflict between the United States and the Axis powers became well-nigh inevitable, and the inadequate state of U.S. military preparedness became clear, if only to a few, Tuve gave up his career in basic research and became a key participant in the program of the National Defense Research Council (NDRC). It was set up by Franklin D. Roosevelt in June 1940, and placed under the direction of Vannevar Bush, then the president of the Carnegie Institution of Washington. The aim of NDRC was to bring to bear the insights of physicists and chemists on building up the U.S. war effort. Tuve selected the fuze project, which had been discussed earlier in military circles as a desirable ordnance device but never seriously pursued. He soon showed its feasibility by a convincing field demonstration. Important tasks to provide acceptable reliability and to supervise large-scale production remained to be solved. His Applied Physics Laboratory was the vehicle to bring the project to fruition.

A substantial part of the *Technical Digest* is given over to a description of a subsequent APL undertaking, the development of a Fleet defense missile system that became known as Talos. Much more complex and chancy than the fuze program, it was first seriously thought about early in 1944. It became a



formal technical assignment in January 1945, when the outcome of World War II was no longer in doubt. It laid the groundwork for guided missile technologies yet to come. More than ten years went by before the system became operational and part of the Fleet armament.

Talos demonstrated the powers of a dedicated technical team to design and develop a complex mechanical system. Tuve, on the other hand, will be remembered as an individual with consummate skills in his profession, who, in time of need, had the ability to inspire his colleagues to push on into unexplored fields.

President Steven Muller recently summarized his thoughts on the relationship of the Applied Physics Laboratory and The Johns Hopkins University in words that Merle Tuve would have been pleased to hear:\*

If there is a dominant ethos in modern science and modern learning, it is that we are rational. Therefore, as a rational institution that fosters reason, it makes sense to conclude that the use of force to resolve disputes is not rational and that the use of nuclear weapons as part of the employment of force is, in fact, insanity.

But we do not live in a purely rational world. We live in a world that is imperfect spiritually and rationally. In that world, rational analysis must conclude that security and defense are a precondition of peace and the avoidance of force. Because of that, a deep commitment to reason and to peace and an equally deep commitment to national security and national defense are not inconsistent or opposed to each other.

I regard them as twin missions of this institution. I regard them as complementary, and I see in this Laboratory and in this University the mirror image of the problems that face the world and our nation where there is an overwhelming commitment on the part of the most rational and civilized people to peace, and an equally firm commitment, until that day when peace can be assured by other means, to defense and security as the best investment we can make to avoid the use of force.

WALTER G. BERL

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\*Speech given at the APL 40th Anniversary Dinner for the Principal Professional Staff, March 8, 1982.