

∞ The Ward M. Canaday Center ∞  
for Special Collections  
The University of Toledo

Finding Aid

➤ Robert Tyner Papers ◀

MSS-302

**Size:** .25 linear feet

**Provenance:** Donated by Robert Tyner

**Access:** Open

**Related Collections:** MSS-147, Delos Palmer Jr. Papers (Box 1, Folder 20)

**Collection Summary:** One folder contains photographs of the bubble chamber being constructed. The second folder contains an information pamphlet for Argonne National Laboratories where the bubble chamber built by Delos Palmer was installed. In addition, one microfilm reel of the project files is included.

**Subject(s):** [Business and Commerce](#)

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**Completed by:** Savannah Xaver, October 14, 2015

## **Robert Tyner Papers**

### **Biographical/Historical Sketch**

These papers were collected and donated by Robert Tyner who was an engineer at Delos Palmer's laboratory. Delos M. Palmer was the first dean of engineering at The University of Toledo.

The "Bubble Chamber" was designed to allow scientists to photograph atomic particles that would otherwise be too small to see. With this machine, they will be able to see the track made by an atomic particle as it travels through a vapor chamber; this track is a track of bubbles and is therefore used as information about the subatomic particle.

Scientists will first accelerate atoms close to the speed of light, then shunt them into the bubble chamber. The bubble chamber features an electromagnet that directs the atom through the vapor chamber which will then allow the bubble track to be created, then photographed. This process allows for millions of pictures to be taken over the course of a few days or weeks. Many pictures are necessary in this process since most only reveal a single track. Photos of collisions of two atomic particles are what scientists are looking for because it shows the existence of subatomic particles.

According to Robert Tyner, the bubble chamber developed by University of Michigan professors had a 1 ½ inch diameter viewing area for photographs. For these photos to be useful to the scientific community, they had to be scaled up to a 40 inch diameter, which was a monumental amount of work. These two professors contracted with the firm of Delos M. Palmer in Toledo to design a full size bubble chamber in the mid 1960s. It was then installed and used at the Argonne National Laboratories near Chicago.

The bubble chamber worked for twenty to thirty years in Chicago. While there it made numerous advancements to the understanding of subatomic particles and their functions. Then, the bubble chamber was moved to the CERN facility in Switzerland along with all of its equipment. Since then, Robert Tyner imagines that plenty of changes have probably been made to this machine. Yet, he would like to stress that the first viable, full sized bubble chamber was designed in Toledo.

## **Robert Tyner Papers**

### **Scope and Content Note**

The first folder contains information on the Argonne National Laboratories and the bubble chamber as it was while it was there.

The second folder contains photographs of the bubble chamber being designed and built. Some, but not all, of the photographs contain information on the back of the photo such as the date or what the photo depicts.

A microfilm of the projects is also included in this collection.

