



Berkley History & Museum Happenings

June 2025



## The Berkley High School Atom Smasher

by Don Callihan

In the summer of 1957, while browsing through his collection of Scientific American magazines, Karl Singer, soon to be a junior at Berkley High School (BHS), came across "The Amateur Scientist" feature in the September 1953 edition. One of the items described in the article was a cyclotron built by a group of high school students from El Cerrito, California. Karl, being a science-minded person, read the article and said to himself, "I bet we could do that."

### What Is A Cyclotron?

A cyclotron is a device used to accelerate charged particles to a speed equivalent to a few percent of the speed of light, which is approximately 186,000 miles per second. If we pick 3% as a few percent, then the particle would emerge from the cyclotron with a speed of 5580 miles per second. That would be equivalent to traveling from Detroit to Lima, Peru, in 1 second. Cyclotrons were initially used for nuclear physics research. Today, they are used for radiation therapy and the

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### Upcoming Exhibit

*The History of  
Alliance Radio Temple  
and its pastor, the  
Rev. Earl Weinzierl -  
Note: This Church is  
Currently St. Mary's  
Christian Orthodox  
Church*

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production of radioisotopes for medical imaging (PET Scan).

Karl began discussing the idea with his friend, Bob Langley, also a soon-to-be junior at BHS. When the 57-58 school year began, the two of them recruited other science students (David Barnett, William Baugh, Donald Callihan, David Forman, Richard Kesti, Joel Sharkey, and Stephen Winer) for the project. They approached chemistry teacher John Farrell and physics teacher Darrell Watson. With their help, they found two advisors to assist with the project: Dr. James Tallboy and Dr. Bill Jordan. Tallboy worked for Bendix Corporation but did research for the original Detroit Edison nuclear power plant, Fermi I. Jordan worked on the cyclotron at the University of Michigan.

## The Sputnik Effect

The project gained momentum when the Soviet Union launched Sputnik 1, the first artificial Earth satellite, into orbit on October 4, 1957, shocking the United States. The initial reaction was to blame the education system for not adequately stressing science.

As pressure on education was building, the students and their advisors developed a project plan. The basic components of a cyclotron are a strong electromagnet, a direct current generator to power the magnet, a vacuum chamber where hollow electrodes known as “dees” will accelerate a nuclear particle, an oscillator to power the “dees,” and miscellaneous other equipment.

## Constructing the Magnet

The first item on their list for construction was the electromagnet. This would require a massive steel structure and a large quantity of copper wire, costing nearly \$1,000 (approximately \$11,500 in today's dollars). Seeing that dollar figure, the students realized they would need outside help in the form of money and materials.

## The Berkley Student Research Program

Armed with their plans, the group presented its proposal to the Berkley Board of Education in January 1958 and received enthusiastic approval. In addition to the cyclotron, the Science Department wanted to support other students and their projects with financial and technical aid. This led to the creation of the Berkley Student Research Program (BSRP) in the spring of 1958, and the establishment of a nine-student executive committee to oversee it. While the cyclotron was the first project, other projects followed.

## Seeking Donations

Having received board approval, Superintendent M.P. Anderson prepared a “To Whom It May Concern” letter on school district letterhead for the group to present to potential donors of materials. With the letter in hand, members of the cyclotron group, dressed in their best suits, dress shirts, and ties, began approaching companies in the metro-Detroit area for material donations.



Karl Singer (top) and Bob Langley

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# The Berkley High School Atom Smasher *continued from page 2*

They primarily focused on obtaining materials for a large electromagnet. The magnet design required five-inch-thick steel along with miles of copper wire for the magnet's coils. Finding these materials became a top priority. The group successfully found four steel suppliers and a wire supplier willing to donate the necessary materials. However, the steel had to be ground to achieve the required precision, and then it had to be assembled. Two companies agreed to provide these functions, and by mid-summer, the steel for the magnet had been assembled. A local towing company used its wrecker to insert the assembly through the window of a classroom in Berkley Elementary School, which had been designated to house the cyclotron. (see photo of assembled steel on page 1)

The next step was to wind the coils. Class of '58 student Doug Gamage's father owned an electric company with the necessary equipment, and he wound the coils. Now, all that was needed was a direct current generator to power the magnet. The generator was found at a used equipment dealer. Karl Singer and Joel Sharkey attended the October 13, 1958, school board meeting to request \$275 to purchase a power generator. Their request was approved.

Upon receiving the generator, the group hired a local electrician to install it, and they were then ready to power up the magnet. The magnet produced a magnetic field so strong that a wrench placed in the field was immediately attracted to one of the pole pieces and couldn't be pulled off without first shutting down the generator.

## Constructing the Magnet

With something to show for their efforts, the group decided to hold a dedication ceremony on March 10, 1959. The school board, high school principal, advisors, donors, and parents were invited. The program started with an introduction by Robert E. Langley, chairman of the Berkley Student Research Program. This was followed by a dedicatory speech from Principal Loren A. Disbrow, an explanation of the cyclotron by Donald Callihan, and the unveiling of the cyclotron by Berkley Board of Education President William R. Fuller. A magnet demonstration followed the unveiling.

Not much happened for the remainder of the school year until the July school board meeting, when graduates Karl Singer and Bill Baugh requested \$300 to complete the cyclotron. Their request was granted, but the money went to those who would be part of the project during the 1959-1960 school year. Karl had a scholarship to Harvard, and Bill had been accepted at MIT.

## Subsequent Classes

There was a succession of students and advisors over the years. Vacuum pumps and specialized gauges were acquired, a vacuum chamber and dees were built, and an oscillator to power the dees was acquired. Members of the 1973 graduating class probably came the closest to making it operational. Two of those students, Henry Lambertz and Greg Marks, submitted a paper to the Eighth Annual Southeastern Michigan JUNIOR SCIENCE AND HUMANITIES SYMPOSIUM held on February 25 and 26, 1972. The title of their paper was "Theory, Construction, and Operation of a 12-Inch Cyclotron." At the conclusion of the paper, they state, "...building the equipment and then making it work was a trouble-plagued engineering task. However, the knowledge and practical experience we have gained from this undertaking have more than repaid the time and effort we put into it." This comment applied to every student who was a part of the project over its sixteen-year history. Most went on to successful careers in science, medicine and engineering.

The 1976 BHS Yearbook reported the following on the cyclotron, "BSRP, this year started a new project - the BSSN (Berkley Storm Spotter Network) and announced the demise of an old one - the infamous cyclotron, which has been condemned (again)."

While the final fate of the cyclotron is unknown, it was probably sold for scrap before the 1980 demolition of the Berkley Elementary School, where it was housed..



**BHS Students Worked on the Cyclotron for Almost 20 Years**



# Museum Gift Shop



The museum gift shop has the perfect gift for that person with a Berkley connection. Selections include books about Berkley history, posters, banners, post cards and

**New Christmas Ornament** - Available for \$5. A 2 1/2—inch disc with a representation of the Berkley Santa

**NEW! - Original artwork prints from Berkley artists**

L to R, The Berkley Theater Marquee by Steven Patterson, Downtown Berkley—January 13, 2024 by Dale Carlson, The Vinsetta Garage by Steven Patterson.



## Visit Us

**Berkley Historical Museum**  
**3338 Coolidge Highway**  
**Berkley, MI 48072**  
**248-658-3335**  
**[museum@berkleymi.gov](mailto:museum@berkleymi.gov)**

Hours: Wed: 10 AM till 1 PM  
Sun: 2 PM till 4 PM

Group tours by appointment.

Visit us on the web at  
[www.berkleyhistory.org](http://www.berkleyhistory.org)

Facebook: Berkley Historical Museum

Instagram:  
[@berkleyhistoricalmuseum](https://www.instagram.com/berkleyhistoricalmuseum)

X: [@BerkleyMuseum](https://twitter.com/BerkleyMuseum)

The Museum Corner Editor:  
Don Callihan

## Get the Newsletter

If you wish to receive *The Museum Corner* each time it is published, please put your name and email address in the body of an email and enter the phrase "*The Museum Corner*" in the subject line. Send the email to: [museum@berkleymi.gov](mailto:museum@berkleymi.gov)

## Donate Items of Historical Interest

If you have artifacts or historical photos that you wish to donate, stop by the museum or email: [museum@berkleymi.gov](mailto:museum@berkleymi.gov). Items should be clean and in restorable condition.

## Friends of the Berkley Historical Museum

The Berkley Historical Committee administers the Berkley Historical Museum. The Committee's mission is to preserve and promote the history of the City of Berkley, Michigan, and to engage the public through its administration and management. Committee members are volunteers approved by the city council and sworn in by the city clerk for a renewable two-year term. For those who do not wish to make this level of commitment, the Committee has decided to establish the Friends of the Berkley Historical Museum. For more information, send an email to [museum@berkleymi.gov](mailto:museum@berkleymi.gov)

## Photo and Text Credits

The Berkley Advance, The Daily Tribune, Berkley High School Yearbooks, The personal collection of Don Callihan

The mission of the Berkley Historical Committee is to preserve and promote the history of the City of Berkley, Michigan, and to engage the public through the administration and management of the Berkley Historical Museum.