

ACADEMY OF ACHIEVEMENT A MUSEUM OF LIVING HISTORY

GALLERY OF ACHIEVEMENT LIBRARY MEET YOUR MENTOR ACHIEVEMENT TV CURRICULUM CENTER INFORMATION

GALLERY OF ACHIEVERS
 HALL OF ARTS
 HALL OF BUSINESS
 HALL OF PUBLIC SERVICE
 HALL OF SCIENCE & EXPLORATION
 HALL OF SPORTS

STEPS TO SUCCESS
 HALL OF VISION
 HALL OF PASSION
 HALL OF PREPARATION
 HALL OF PERSEVERANCE
 HALL OF COURAGE
 HALL OF INTEGRITY
 HALL OF THE AMERICAN DREAM

SPONSOR EXHIBITS FAQS CREDITS LOW / HI

all of
 ce &
 exploration

PROFILE BIOGRAPHY INTERVIEW



Edward Teller, Ph.D.

Father of the Hydrogen Bomb

INTERVIEW

September 30, 1990
 Palo Alto, California

When did you first realize that you were interested in your subject?

When I was maybe five years old, maybe not yet five years old, it is one of my earliest memories. I was supposed to go to sleep and didn't, and I invented a game. I was trying to find out how many seconds in an hour, or in a day, or in a year. And that, of course, obviously, I did it in my head. Quite naturally, I got different answers in my head every time I did it. And that made the game more interesting. I don't know how unique it is; I don't know how many other children did that, but I played with numbers.

I was taught German and Hungarian at the same time. The earliest words I remember are a mixture of the two. My mother spoke German much better than Hungarian. My father's German was quite poor. His legal books, of course, were Hungarian. The literary books in our house were German.

I am sure I must have been awfully confused about what all these people talked about, using different sounds for the same objects. I did not catch on!



**The one thing with which I felt familiar,
were numbers.**



[video](#)

[audio](#)

There, at least, was something that hung together.

My father had an older friend who was a retired mathematics professor. His name was Leopold Klug, and he is probably the man who had the greatest influence on my life. He was a retired mathematics professor, and he got me a book. *Algebra* by Leonhard Euler. I was ten years old. The problems that came up were too difficult for me to solve, but not too difficult to understand. Klug gave me that book and I read it. It was my favorite book.



**Klug was the first grown-up whom I met
who loved what he was doing.**



[video](#)

[audio](#)

Who did not get tired. He even enjoyed explaining things to me. That, I think, is when I made up my mind very firmly that I wanted to do something that I really did want to do.

Not for anyone else's sake, not for what it might lead to, but because of my inherent interest in the subject. I knew one other exception in the whole world to the rule that grown-ups were unhappy.

My mother played the piano beautifully. She really wanted to be a concert pianist and she really wanted me to become a concert pianist, as a kid.

**Practicing (piano) was much too hard.
Multiplying numbers was not.**



[video](#)

[audio](#)

My interest in mathematics was soon discouraged. It so happened that we had a very good math teacher, who was a Communist. I remember having learned from him something that I never forget: the rule of nines. A simple point: you add up the numerals in a number, and if the original number was divisible by nine, then the sum of the figures also is. For instance, you take a number like 243. Two and four and three is nine. Therefore, 243 must be divisible by nine. Actually it is nine times 27. The rule is interesting because its so simple. What was really interesting is to us ten year-olds is that our math teacher proved it. The proof is not



terribly difficult, but it was one of the first simple and not quite obvious mathematical proofs that I encountered. That actually was a little before I read Euler's *Algebra*.

Then the Communists took over for a few months in Hungary, and our math teacher talked about some very strange things which I can't say I liked. After communism ended he was replaced as a teacher by a Fascist. The new teacher was less interested in mathematics, but interested in how to write equations so that the writing should be easily legible. I think my writing improved slightly, but my school mathematics vanished. I blame him only in part, because a real interest should not have been stopped that easily. I got interested in reading fantastic stories like Jules Verne, and I got interested even more in reading about technology.

After a few years, I also got interested in the lectures on physics. I had started to read Einstein's relativity, and did not quite understand what it was all about. I went to the teacher and he asked me to bring him the book. I brought it to him and I didn't see the book again for a year. When I passed the final examination, the teacher gave the book back, and said, "All right, now you can read it." This time I read it and I did understand it.

In our teaching system, we consider mathematics and science as exact. It is so, it is proven, it is indisputable. All of it is true. But this misses the point. The interesting thing in the "exact" sciences is what is not yet known, what is in doubt. That element of doubt, of contradiction, which actually occurs as science changes from century to century, should be reproduced in every student's mind. I think, as a matter of fact, it is being reproduced in every good student's mind.

By the time I finished high school, I knew what I wanted to be, and that was a mathematician. My father had a very different opinion. He thought that in mathematics as a university professor, it was impossible to make a living unless you are quite exceptional. I had to study something real. We settled on a compromise. I was to study chemical engineering.



This was not completely unreasonable. At least two older Hungarians who became very famous have done the same thing. The one was John von Neumann, the man who is really responsible for the development of fast computers. The other was Eugene Wigner, who played a big part in the early development of nuclear energy, particularly in nuclear reactors. My father introduced me to them and to a third person, a somewhat peculiar man about whom I will have much more to say: Leo Szilard.

At any rate, I went off to Germany to study. Having spent a few weeks in starting my studies at the Institute of Technology in Budapest, I went off to Germany, to Karlsruhe. At Karlsruhe was the Institute of Technology, sponsored by the very advanced group of chemical industries in Germany. That group employed a young

man by the name of Herman Mark, who really was in a very full sense the originator of polymer chemistry. He also was a truly excellent lecturer, and apart from working for the German chemical industries, he gave lectures at Karlsruhe.

Herman Mark was half-Jewish. When Hitler came, the chemical industries very politely got rid of him, and he got a very good position in Vienna, teaching chemistry at the University. When Hitler marched into Austria in 1938, (that was almost ten years after I met Herman Mark) he had started to grow a family. His son Hans Mark, who is now my good friend, was a child. Herman Mark decided he had to leave. He did not have much money and he had no position abroad. He thought of a trick: as a chemist, he could, without being too obvious about it, buy some platinum. Of the platinum he made wires, painted the wires black, and turned them into coat hangars. They were real heavy. So the winter coats went on the platinum wire, and that is how the modest fortune of the Marks left Austria under the nose of Hitler.

That was not the only ingenuity that the Mark family possessed. Herman Mark was interested even when he lectured in Karlsruhe in what was really new and essential in chemistry. That was quantum mechanics, a completely new way to look at the world and at actual deep problems, which explain the stability of the atom.

Page: [1](#) [2](#) [3](#) [4](#) [5](#)

PROFILE

BIOGRAPHY

INTERVIEW



© 2004 Academy of Achievement. All rights reserved.

[Technical Questions](#)

[Editorial Questions](#)

This page last revised on Jan 21, 1999 16:42 PDT