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MARVIN MARGOSHES

1925 Born in New York, New York, on 23 May

Education

1950 B. S., Polytechnic Institute of Brooklyn, Chemistry, *cum laude*
1953 Ph.D., Iowa State College, Physical Chemistry

Professional Experience

Harvard Medical School
1954-1957 Research Fellow and Research Associate, Biophysics Research Laboratory, Peter Bent Brigham Hospital

National Bureau of Standards
1957-1969 Spectrochemical Analysis Section, Analytical Chemistry Division

Digilab, Inc. (Block Engineering, Inc.)
1969-1970 Project Manager

Technicon Instrument Corporation
1971-1989 Director, Chemical Instrumentation, Corporate Research; Manager, Program of Grants for Research on Scientific and Industrial Instrumentation

Techtransfer Service, Inc.
1990-1993 President

Honors

1953 First Annual Phi Lambda Upsilon Award for Graduate Research, Iowa State College
1964 Department of Commerce Merit Award
1969 Department of Commerce Merit Award
1971 Outstanding Member Award, Baltimore-Washington Section, Society for Applied Spectroscopy
1976 Society for Applied Spectroscopy Gold Medal
1998 Distinguished Service Award, Society for Applied Spectroscopy
ABSTRACT

Marvin Margoshes grew up in New York City, New York, one of three children. His parents had left the Austro-Hungarian Empire, his father from Galicia and his mother from Hungary, and had met as members of a Zionist organization. Margoshes’s father, though he did not finish high school and only obtained a GED when he was sixty, helped organize the national dental laboratory business and founded a school for technicians. Margoshes himself was always interested in science, settling on chemistry when he was at Brooklyn Technical High School. After high school Margoshes worked in a chemistry lab at New York University Medical School until he enlisted in the U.S. Army. The Army sent him to become an instrument technician in Kalamazoo, Michigan, but he was soon sent on to the Pacific theater, where he fought in the Battle of Leyte and the Battle of Okinawa. He describes his experiences in battle, in typhoons, and with pygmies on Mindoro.

Finally back from war, Margoshes enrolled at Brooklyn Polytechnic Institute, intending to major in chemistry, though he also liked physics. For a PhD Margoshes entered Iowa State University, where his advisor, Velmer Fassel, assigned him to run an infrared spectroscopy lab with George Hammond. For fun in Ames, Iowa, Margoshes and his classmates bowled, worked crossword puzzles, and ate all they could at buffets. Margoshes then moved on to Harvard University, where he was a research fellow. He also had an unpaid job in flame spectroscopy at Massachusetts Institute of Technology, and worked with Bert Vallee on a study of cadmium as a cause of hypertension; this work required rapid transfer of kidneys to the lab, first from human cadavers and then from horses. The invention of the AutoAnalyzer, which provided a profile of blood results; previous methods performed only one test at a time.

Margoshes began work in the analytical chemistry spectrometry group of Bourdon Scribner at the National Bureau of Standards (NBS). At the NBS he worked with cyanogen and spent a year studying Russian, as most of the work published about cyanogen was in that language. Stanley Rasberry worked with Margoshes on inductively coupled plasma with argon, while Fassel used helium; he also worked with Rasberry on the first laser probe. Margoshes began computer work using the time sharing computer; he invented a coenzymometer (DetermiTubes), which he says had a good run; and he had an idea for a glucose analyzer but could not sell the idea to Technicon.

After nearly twenty years at NBS Margoshes went to work at Block Engineering, doing Fourier transform analysis with Tomas Hirschfeld. After just two years he moved to Technicon. Morris Shamos liked Margoshes and recognized his scientific knowledge and ability. He put Margoshes in charge of a program that offered grants for projects with a commercial value. Margoshes felt this was the perfect job for him: he became known as the “company skeptic” because his extensive knowledge allowed him to understand and evaluate proposals. Technicon was sold several times; when Bayer AG acquired it Margoshes quit because Bayer refused to do business in Israel.

During the course of his career, Margoshes performed an analysis of sodium for United Fruit Company, who wanted to emphasize the importance of bananas in a low-sodium diet; that article was published in New England Journal of Medicine, a fact of which Margoshes is proud; he also analyzed potassium in bananas and discovered its importance for astronauts. He has written the chapter on emission spectroscopy in Treatise on Analytical Chemistry, as well as a chapter (with Donald Burns) on automation. In addition he has been review editor of Analytical
Chemistry, and admits that he is not immune from editors’ annoying criticisms of his own writing.

At the end of the interview, Margoshes moves on to a discussion of the evolution of electronics, the development of small instruments, and the size and power of computers. He explains demand-pull and science-push and how users, wanting to improve instruments, often change their purpose. He talks about his experiences on the school board in Tarrytown, New York. Throughout the interview Margoshes stresses the importance of broad general knowledge. His mantra is that there is no such thing as useless knowledge, and he gives several examples. His advice to young people is not to specialize too much, as everything changes, often rapidly. He talks about his patents and his experiences getting patents, which he says are like puzzles. He explains a little about his work with the echelle spectrometer and noise in Fourier infrared and emission spectroscopy. He considers his plasma jet work his most significant.

INTERVIEWER

Michael A. Grayson retired from the Mass Spectrometry Research Resource at Washington University in St Louis in 2006. He received his B.S. degree in physics from St. Louis University in 1963 and his M.S. in physics from the University of Missouri at Rolla in 1965. He is the author of over forty-five papers in the scientific literature dealing with mass spectrometry. Before joining the Research Resource, he was a staff scientist at McDonnell Douglas Research Laboratory. While completing his undergraduate and graduate education, he worked at Monsanto Company in St. Louis, where he learned the art and science of mass spectrometry under O. P. Tanner. Grayson is a member of the American Society for Mass Spectrometry [ASMS], and currently is the Archivist for that Society. He has served many different positions within ASMS. He has served on the Board of Trustees of CHF and is currently a member of CHF’s Heritage Council. He continues to pursue his interest in the history of mass spectrometry by recording oral histories, assisting in the collection of papers, researching the early history of the field, and preparing posters recounting historic developments in the field.
TABLE OF CONTENTS

Early Years
Margoshes’ opening statement. Family background. One brother, one sister. Parents Zionists. Father organized dental laboratory business nationally and founded school for technicians. Interested in science from young age, chemistry his focus in high school. Tested into Brooklyn Technical High School.

College Years

Back to College

Harvard University Years

National Bureau of Standards

After NBS

Retirement Years

List of Publications and Patents

Index
LIST OF PUBLICATIONS AND PATENTS


**Patents by M. Margoshes**


INDEX

A
Admiralty Islands, Papua New Guinea, 13
Aleutian Islands, Alaska, 18
American Chemical Society, 80, 102
American Civil War, 75
American Cyanamid Company, 47
American Society for Testing and Materials, 60
Ames Laboratory, 27
Ames, Iowa, 29, 37
Analytical Chemistry, 67, 98, 100, 102, 114
Army Specialized Training Program, 7
Arnold, General Henry H., 25
Astin, Allen V., 63, 64
ASTP. See Army Specialized Training Program
Atomic Energy Commission, 27
Australia, 21, 36
Austro-Hungarian Empire, 1, 2
AutoAnalyzer, 42, 57, 71, 91, 116

B
Barnard College, 4
Bayer AG, 81, 82, 86, 87
Beckman DU, 33, 34, 63
Beckman pH meter, 100
Beckman, Arnold O., 100
Bergerac, Michel, 86, 87
Biloxi Blues, 8
Biloxi, Mississippi, 8
Block Engineering, Inc., 53, 65, 67, 74, 76, 77, 93, 94, 95, 106
Block, Myron, 65, 92, 95, 100
Bolivia, 53
Boston, Massachusetts, 38, 43, 44, 56, 57, 64
Brech, Fred, 54
Brooklyn College, 29
Brooklyn Community College, 3
Brooklyn Tech. See Brooklyn Technical High School
Brooklyn Technical High School, 5, 26, 29, 51
Brooklyn, New York, 5, 14, 26
Bureau of Mines, 78
Burns, Donald A., 99

C
California, 11, 23
Cambridge, Massachusetts, 38, 66
Chemical Abstracts, 98
Chemical and Engineering News, 10
Chemical Heritage Foundation, 1
Chicago, Illinois, 11
China, 48
chromatography, 71, 80, 91, 118
City College of New York, 29
Clark electrode, 115
Clark, Leland, 115
Clinical Chemistry, 117
Coblentz Society, 30
Coblentz, William W., 30, 31
Columbia University, 3
Connecticut, 48, 93
Cooper Union for the Advancement of Science and Art, 3
Cornell University, 58
Cram, Donald J., 40
cyanogen, 47, 48, 49

D
Dance of the Photons, The, 82
Darr, Martha, 109
Dartmouth College, 55, 58
Data General, 66
Deadeyes, 11
Delaware, 87
Dell, 119
Denton, Bonner, 106
Determi Tubes, 57
DNA, 78
Duke University, 42
E

E. coli, 78
E.I. DuPont de Nemours and Co., 109
Easley, Claudius, 11, 12, 14
Eisenhower, Mamie, 38
Eisenhower, President Dwight D., 38, 64
Elliott, William G., 63, 106
Ellis Island, 2
Enewetak Atoll, Marshall Islands, 13
England, 78
Enola Gay, 47

F

Fassel, Velmer A., 30, 32, 38, 45, 46, 49, 50, 102, 106
FBI. See Federal Bureau of Investigation
Federal Bureau of Investigation, 46, 67
Fuwa, Keiichiro, 47

G

Galicia, 1
Gallwas, Gerald E., 42
galvanometer, 33
gas chromatograph, 101
Geisel School of Medicine, Dartmouth College, 43
General Electric, 58, 61, 62
General Motors Company, 86
Germany, 24, 39
Gilman, Henry, 31, 32
Goldblum, Sally Rose (sister), 4
grants/funding, 27, 57, 70, 74, 76, 77, 78, 96, 114

H

Hammond, George S., 30, 32, 37
Harrison, George R., 50
Harvard Fellow, 38
Harvard Medical School, 35, 37, 38, 41, 42, 43, 44, 96
Harvard University, 35, 38, 39, 45, 54, 56, 57, 70, 75
Hawaii, 19
Heinrich, Kurt F.J., 58
Hieftje, Gary M., 76, 91
Hippel, Eric von, 100
Hirschfeld, Tomas A., 53, 65, 66, 76, 91, 95
Hitler, Adolf, 81
Houston, Texas, 4
Hungary, 1

I

ICP. See inductively coupled plasma
Illinois, 72, 76
Indiana University, 76, 91
inductively coupled plasma, 30, 49
Iowa State University, 27, 29, 30, 37, 45, 46, 50, 52, 103
Ireland, 84
Israel, 78, 81, 89
Israel Margoshes Award, 3

J

Japan, 19, 21, 23, 24
Jarrell-Ash Wadsworth spectrograph, 39, 54
Jerusalem, Israel, 89
Journal of Physical Chemistry, 103
Journal of the American Chemical Society, 32
Journal of the Optical Society of America, 31, 102

K

Kägi, Jeremias, 44
Kaiser Permanente, 88
Kalamazoo College, 8, 9
Kalamazoo, Michigan, 8
Karman, Arthur, 55
Keesler Field, 8, 11
Kemeny, John C., 55
Klett colorimeter, 42, 56, 57
Kurtz, Thomas E., 55

L

Lawrence Livermore National Laboratory, 76
Lenore, Louis (maternal uncle), 3
Lenorowitz, Lillian (mother), 2
Leyte, Philippines, 12, 13, 15, 22
Licensing Executives Society International, 71
Los Angeles, California, 11
Luzon, Philippines, 16

M
Manhattan Project, 46
Manila, Philippines, 16
Margoshes, Israel (father), 1
Margoshes, Monroe (Monty) David (brother), 2
Margoshes, Samuel (paternal uncle), 3
Maryland, 72
Massachusetts, 75
Massachusetts Institute of Technology, 38, 39, 50, 100, 101, 107
Maui, Hawaii, 13
Meggers, William F., 45, 50
Meinke, Wayne W., 63
Michaelis-Menten, 37, 81
Mindoro, Philippines, 22, 24
MIT. See Massachusetts Institute of Technology
Moscow, Russia, 48

N
National Aeronautics and Space Administration, 108
National Bureau of Standards, 33, 45, 46, 48, 49, 50, 52, 54, 55, 58, 59, 60, 61, 62, 63, 65, 66, 67, 72, 102, 107, 109, 110
National Institutes of Health, 87, 110, 114
National Science Foundation (NSF), 68
New England Journal of Medicine, 97
New Jersey, 11
New Mexico, 92
New York City, New York, 3, 26, 29, 47, 61, 90
New York Times, 38, 79, 82
New York University, 3, 6, 26, 70
New York University Medical School, 5, 7
NIH. See National Institutes of Health
Nobel Prize, 40, 41
Norris, Karl, 71
NYU. See New York University

O
Oahu, Hawaii, 13
Ocean Optics, 93
Okinawa, Japan, 17, 18, 20, 21, 22, 24
Optical Society of America, 50
Oregon, 11

P
Pacific Ocean, 12, 13, 19
Pakistan, 100
Pantry Pride, 87
patent, 57, 78, 79, 91, 94, 95, 96, 99, 114, 115
PerkinElmer Inc., 39, 48, 61, 67, 94
Peter Bent Brigham Hospital, 42, 55
Philadelphia, Pennsylvania, 1, 48
Phoenix, Arizona, 58, 62
Pittcon. See Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy
Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, 59, 63, 103
Pittsburgh, Pennsylvania, 78
plasma, 30, 41, 48, 49, 50, 51, 52, 54, 106
polarograph, 33
Polytechnic Institute of Brooklyn, 26, 29
Proctor & Gamble, 58
publishing/publication, 45, 59, 67, 94, 96, 97, 98, 102, 103, 106
Puerto Rico, 84

R
Raman spectrometer, 61
Rasberry, Stanley D., 49, 54, 55, 58, 69
Rechnitz, Garry A., 91, 92
religion
Jews/Jewish/Judaism, 2, 4
Zionism, 82
Revlon Group, Inc., 77, 81, 86, 87
Rome, Italy, 115
S
Saipan, Commonwealth of the Northern Mariana Islands, 20
Sarah Lawrence College, 68, 118
Scribner, Bourdon F., 30, 31, 45, 47, 54, 60, 63, 98
Seattle, Washington, 91
Shamos, Morris H., 70
Shanghai, China, 48
Siemens AG, 82
Smith, Lemuel F., 9
Smithsonian Institution, 46
Snyder, Lloyd R., 80
Sources of Innovation, 100
Southern Illinois University, 72
Spectrochimica Acta, 64, 102
spectrometry
  échelle spectrometer, 106, 107
  flame spectrometry, 39, 40, 45, 47, 48, 53, 54, 98, 103
spectroscopy, 39, 45, 46, 50, 58, 62, 65, 69, 74, 93, 96
  emission spectroscopy, 30, 46, 58, 97, 99, 100, 107, 108
  Fourier transform infrared spectroscopy, 65, 67, 100
  infrared spectroscopy, 30, 31, 67, 71, 73, 103, 108
Spex Industries, 49
St. Louis, Missouri, 91
Steigman, Joseph, 28
Sweden, 117
Switzerland, 44
Sylvania Electronic Products Inc., 56
T
Tarrytown, New York, 69, 103
Technicon Instrument Corporation, 34, 35, 36, 40, 42, 45, 57, 58, 61, 69, 70, 71, 72, 74, 76, 77, 80, 81, 84, 85, 86, 87, 88, 90, 91, 95, 99, 101, 102, 112, 116, 117
Technion - Israel Institute of Technology, 77, 81
TechTransfer Services, Inc., 90
Tennessee Valley Authority, 84
tenure, 77, 81, 105
Texas, 86
thermal equilibrium, 49
Thiers, Ralph E., 42, 56
thionein, 44
  metallothionein, 44
Thompson, J.J., 101
Treatise on Analytical Chemistry, 99
Truk, Micronesia, 13
U
U.S. Air Force, 8
U.S. Army, 7, 8, 10, 11, 17, 23, 25, 26, 27, 29
U.S. Department of Agriculture, 71, 72
U.S. Merchant Marines, 4
U.S. Navy, 13, 14, 15, 20, 22, 48
Ukraine, 1
United Fruit Company, 96
United States of America, 2, 39, 72
University of Arizona, 106, 114
University of California, Los Angeles, 40
University of Chicago, 11
University of Cincinnati Medical School, 115
University of Florida, 67
University of Illinois, 61
University of Maryland, 33, 46
University of Minnesota, 67
University of Mississippi, 8
University of Paris, 52
University of Pennsylvania, 48, 114
University of Utah, 114
University of Washington, 91
Utica, New York, 26
V
Vallee, Bert L., 35, 39, 42, 43, 47, 49, 55, 110
Veterans' Administration, 25
Vienna, Austria, 83
Virginia, 84
W
Wacker, Warren E.C., 55, 75, 112
Washington University in St. Louis, 91
Washington, D.C., 4, 25, 30, 46, 71, 78, 87
Weizmann Institute of Science, 81
White Plains, New York, 88
Whitehead Institute, 84
Whitehead, Edwin C., 77, 84, 85, 86
Whitehead, John, 85, 87
Widener Library, 38

Winefordner, James D., 67
World War I, 2
World War II, 39, 46, 50

Y
Yale University, 45, 80

Z
Zemel, Jay N., 114