

CHEMICAL HERITAGE FOUNDATION

MARVIN L. VESTAL

Transcript of an Interview
Conducted by

Michael A. Grayson

at

Orange County Convention Center
Orlando, Florida

on

3 March 2010

(With Subsequent Corrections and Additions)

ACKNOWLEDGMENT

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MARVIN L. VESTAL

1934 Born in Pendleton, Indiana on 8 September.

Education

1958 B.S., Engineering Sciences, Purdue University
1960 M.S., Engineering Sciences, Purdue University
1975 Ph.D., Chemical Physics, University of Utah

Professional Experience

1954-1956 U.S. Army
Signal Corp, Fort Huachuca, Arizona

1958-1967 Johnston Laboratories, Baltimore, Maryland
Scientist

1967-1970 Scientific Research Instruments Corp., Baltimore, Maryland
Senior Scientist and Founder
1970-1976 Consultant

1970-1975 University of Utah, Salt Lake City, Utah
Research Instructor, Chemistry
1975-1976 Research Associate Professor, Chemistry

1976-1981 University of Houston, Houston, Texas
Associate Professor of Chemistry
1981-1987 Professor of Chemistry

1983-1993 Vestec Corporation, Houston, Texas
President

1993-1997 PerSeptive Biosystems, Framingham, Massachusetts
Vice President, Mass Spectrometry

1997-2001 Applied Biosystems/PerSeptive Biosystems, Framingham, Massachusetts
Scientific Fellow and Vice President, Mass Spectrometry

2001-2004 Applied Biosystems, Framingham, Massachusetts
Principal Scientist, TOF Mass Spectrometry Research

2004-present Virgin Instruments, Framingham, Massachusetts
Founder, CEO, CSO

Honors

1985 Lester W. Strock Award
1997 Scientific Fellow, PerSeptive Biosystems
2005 Field and Franklin Award for Distinguished Contribution in Mass
Spectrometry
2010 Distinguished Contribution in Mass Spectrometry

ABSTRACT

Marvin L. Vestal grew up in Pendleton, Indiana, one of two children. Vestal's father was a farmer and self-taught engineer whose father refused to allow him to attend high school. He encouraged Marvin and his brother to get an education, because they were "too damn lazy to work for [a living]." Marvin obtained both bachelor's and master's degrees in Engineering Sciences from Purdue University, taking a break after two years to volunteer for the draft; he was assigned to join the U.S. Army Signal Corps. He finished his undergraduate degree and master's degree on the GI Bill, coming out of Purdue with no college debt. During college he worked part time at Johnston Laboratories, meeting there Henry Rosenstock and Merrill Wallenstein, who had studied at the University of Utah under Austin Wahrhaftig and Henry Eyring, and who developed the quasi-equilibrium theory (QET) of mass spectrometry (MS). Rosenstock left Johnston Laboratories, so Vestal continued the coincidence time-of-flight (TOF) project on which the two had been working; he also improved the machine with his invention of an electron multiplier.

When Johnston Labs moved to Baltimore, Maryland, Vestal also moved. He began a physics PhD program at Johns Hopkins University but quit after two years to work full time at Johnston. He left that company to found Scientific Research Instrument Corporation (SRIC), with cofounders Gordon Fergusson, William Johnston (of Johnston Labs), and Bob Jones. The company licensed the new process chemical ionization (CI) from its inventors, Burnaby Munson and Frank Field, and Vestal was the first to commercialize it. Ever restless, Vestal decided that the academic world held appeal, so he went to the University of Utah for a PhD in chemical physics, studying under Wahrhaftig and Futrell. He published some papers along the way; he built a triple quadrupole MS for photodissociation. With Calvin Blakely he built a crossbeam MS for his dissertation.

PhD in hand, Vestal accepted a position at the University of Houston, where he stayed for eleven years. During those years he invented and patented thermospray and started another company, Vestec, which did so well he had to leave the University to work at Vestec. The company commercialized MALDI/TOF instruments and sold "a bunch" all over the world. Vestec's merger with PerSeptive, led by Noubar Afeyan, eventually led to the merger with Applied Biosystems. Internal problems caused MALDI to be sold to ABSciex. Vestal retired from ABSciex but soon came out of retirement to found a new company. Virgin Instruments, working to find the theory for optimizing any MALDI, has produced instruments in sizes from desktop to two-story vertical. At AB Vestal and his coworkers were again first, this time to commercialize the revolutionizing delayed-extraction MALDI/TOF and then to develop the first commercial TOF/TOF.

Vestal discusses his views of a number of things: sources of innovation; grants; biases of reviewers; increasing complexity of science; dearth of American graduate students; persistence of professional managers and wasteful meetings ("less talk and more do"); interesting people he has met through science; publishing; friendly competition; his wife's career; patents (he has at least fifty), licensing, and lawsuits; women in science, particularly MS; influences of Rosenstock, Wahrhaftig, and Futrell on his thinking; his influence on others; and the Distinguished Contribution to Mass Spectrometry award given him in 2010 by the American Society for Mass Spectrometry (ASMS).

Vestal concludes his interview with a discussion of his newest company and his ideas for the future. He thinks biology is extremely important and has already driven a huge expansion of

the field; he hopes his instruments will continue to drive research into biological applications. He talks about electrospray and MALDI's superiority, but thinks MALDI is reaching its limits. His company will have a new instrument within a year. His advice to young would-be scientists is to do science for love, not money. Thinking about his own career in science, he says he has always "followed [his] nose."

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	1
Born in Pendleton, Indiana. Family background and occupations. Liked to read. Liked math; won state contest. Farm work.	
College Years	7
Matriculated at Purdue University in Engineering Sciences. Married. Mid-career joined U.S. Army. Secret Agency School, then Electronic Proving Ground in Fort Huachuca. Returned to Purdue on GI Bill. Henry Rosenstock and Merrill Wallenstein. Austin Wahrhaftig. Bachelor's and master's degrees in Engineering Sciences. Johnston Laboratories.	
Johnston Laboratories	24
Quasi-equilibrium theory. Rosenstock and Wallenstein. Coincidence time-of-flight. Rosenstock and Wallenstein leave for Board of Standards. Wahrhaftig consults for Johnston; QET corrects major problem in TOF. Jean Futrell funding. Moves to Baltimore, Maryland, with Johnston Labs; starts PhD in physics at Johns Hopkins University, but doesn't finish. William Johnston of Johnston Labs, Gordon Fergusson, Bob Jones, and Vestal start Scientific Research Instruments Corporation (SRIC). Chemical ionization just patented by Frank Field and Burnaby Munson; licensed to SRIC.	
University of Utah	32
Decides academic world appeals, but needs PhD. Enrolls at University of Utah, where Jean Futrell, Austin Wahrhaftig, and Henry Eyring are. PhD in chemical physics. Publishes many papers. Eyring's absolute rate theory. Builds triple quadrupole. Aeronautical Research Laboratory (ARL). Photodissociation. Calvin Blakely. Crossbeam mass spectrometer for dissertation. Hee-Yong Kim.	
Job Search	41
Accepts position at University of Houston. References from Joe Franklin and Frank Field. Ownership of crossbeam; James McCloskey arranges compromise. Futrell's tandem MS, probably first, at Wright-Patterson Air Force Base. Eleven years at Houston. Patents thermospray; not much interest from others, so starts Vestec, Inc., with wife, Christina, and Gordon Fergusson. Builds first machine on kitchen table. Business too good; loses National Science Foundation funding. Leaves University of Houston to work full-time at company. John Fenn. Sold many instruments to Shimadzu, Hewlett Packard, Finnigan.	
Impending Demise of Thermospray	57
Hears Fenn's talk on electrospray. Beginning of matrix-assisted laser desorption/ionization/time-of-flight (MALDI/TOF). Vestec builds "a bunch" and sells to Massachusetts Institute of Technology, Proctor and Gamble, Johnson and Johnson, Baylor University, University of Texas Medical Center. Randy Nelson, his "do all guy." Electron multiplier Vestal had invented at Johnston	

	Labs. Competitors in MALDI. Merger with PerSeptive. Noubar Afeyan. Merger with Applied Biosystems. Move to Framingham, Massachusetts. Internal problems; MALDI sold to ABSciex. Siena, Italy. Finds new company.	
Virgin Instruments	Theory for optimizing any MALDI. Sizes from desktop to two-story vertical. Accelerator MS for bone studies to permit hospital use for patient's lifetime; cost so far "down to a million." How Small Business Innovation Research (SBIR) scores proposals. Ideas for better MALDI and TOF/TOF. William C. Wiley and I.H. McLaren. Linear vs. reflector MS. Franz Hillencamp and delayed extraction. R.S. Brown and John J. Lennon. Vestal first to commercialize MALDI/TOF/delayed extraction.	70
Thoughts on Innovation and Science	Innovation comes from smaller companies, less from universities. Grants more difficult to get. Review committees' makeup, biases. National Institutes of Health's propensity to fund known quantities. Science more complex and expensive. Biology very important. Much research to be done with DNA. Too few American graduate students. Meeting interesting people from all over the world. Management style, his and others'. Wasteful meetings. Professional managers and the persistence thereof. Publishing. Reviews of his own work generally fair. Friendly competition in MS. Publication credit. Wife's career from University of Utah through University of Houston to new company. Patents are defensive, protective. Thirteen patents in new company. Licensing, lawsuits.	84
SELDI, SEND, TOF, MALDI	Surface-enhanced laser desorption/ionization (SELDI), surface-enhanced neat desorption (SEND). Most important publication about theory of TOF and MALDI; 150 equations in paper. Getting award for that paper. Patents on TOF-TOF; its importance to development of instruments. Believes more important ideas in future. Recaps influence of Rosenstock, Wahrhaftig, and Futrell on his own thinking. Steve Hayden, his "right-hand guy."	100
Retrospection and Introspection	Thinking about his career in science. His new company to do things he wants to do. Less talk, more do. Advice to young would-be scientists: do it for love, not money. Women in science. Only two women in his field when he began. Tries to engage, not mentor. Competition good in science. Enormous growth in MS due to biological applications. Electrospray and MALDI. MALDI better for addressing difficult problems. Electrospray approaching its limits.	105
Bibliography		119
Index		131

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INDEX

A

AB. *See* Applied Biosystems
AB Sciex, 71, 72, 96
Aberth, William, 94, 95
absolute rate theory, 11, 24, 37
Advion, 75
Aeronautical Research Laboratory, 25, 39
Afeyan, Noubar, 66, 67, 70, 71, 96
Agilent, 66
Alabama, 15
American Society for Mass Spectrometry,
18, 49, 57, 59, 60, 73, 103, 104, 112
Anderson, Indiana, 2, 3, 12
Anheuser Busch, 87
Applied Biosystems, 63, 65, 68, 69, 70, 72,
76, 82, 87, 92, 96, 97, 99, 100, 107
Armstrong, Neil, 115
ASMS. *See* American Society for Mass
Spectrometry
ASMS 2010 Contribution in Mass
Spectrometry Award, 103
ASTM E-14. *See* ASMS
Atomic Energy Commission, 9
Australia, 39

B

BacTec, 29
Bain & Company, 87
Baltimore, Maryland, 22, 23, 28, 29, 31,
105, 109
Baylor University, 41, 61, 101, 102
Beavis, R.C., 60, 61, 62, 63
Beckman Coulter, Inc., 101
Becton Dickinson, 29, 61
Bendix, 22, 64, 83, 84, 116
Betham, Robert A., 79
BG Medicine, 106
Biemann, Klaus, 41, 114
BioRad Laboratories, 29, 94
Bisbee, Arizona, 14
Blakely, Calvin, 42, 47, 53, 95
Boorn, Andrew, 71, 72

Bordeaux, France, 60
Borden, Clara Barton, 5
Boston, Massachusetts, 13, 59
Botts, William W., 66
Bremen, Germany, 65
Bristol Myers-Squibb, 82
Brookhaven National Laboratory, 52
Brown, R.S., 84
Bruker Corporation, 64, 65, 68, 99, 116
Budde, Bill, 57
Buffalo, New York, 33
Buffett, Warren E., 91

C

calcium, 77, 78, 79
California, 61, 70, 77, 79
californium, 55, 64, 65
Campbell, Jennifer M., 106
Canada, 67
Canada University, 67
Caprioli, Richard M., 61, 64, 65
carbon, 29, 77, 78
Cattran, Larry, 66, 98
Chait, B.T., 60, 61, 62, 63
Chemical and Engineering News, 40
Chemical Heritage Foundation, 32
chemical ionization, 28, 29, 30, 32, 33, 44,
53, 54, 55
Chicago, Illinois, 12
Chief Anderson, 19
CipherGen Biosystems, 101
collaboration, 43
College Station, Texas, 65
competition, 4, 71, 88, 92, 95, 114
Connolly, John, 53
Consolidated Engineering Corporation, 47,
112
Cotter, Robert J., 116
Covey, Tom, 56

D

Davos, Switzerland, 85
Dayton, Ohio, 25

Delaware, 48
delayed extraction, 84, 85, 99, 116
Delco Remy, 2
DNA, 63, 90, 92
DNA Consortium, 90
Dole, Malcolm, 58
Dougherty, Ralph C., 32
Douglas, Arizona, 14
Douglas, Don, 14, 106
Dupkin, Manuel, II, 22, 28, 29
Dyckes, Doug, 49

E

EG&G Technical Services, Inc., 87
EI. *See* electron impact
electron impact, 53, 106, 114
England, 65
Enke, Christie G., 39, 43
ethnicity
 (American) Indians, 17, 18, 19
 blacks, 12, 13, 15, 112
 Orientals, 12
Exxon, 112
Exxon/ESSO, 29
Eyring, Henry, 10, 11, 12, 20, 24, 35, 36, 37

F

Fales, Henry, 30, 31, 105, 106
Fall Creek, 2, 17, 18
Fenn, John B., 53, 56, 57, 60, 108
Fenselau, Catherine, 85, 111
Fergusson, Gordon, 28, 33, 34, 59
Feuer, Henry, 12
Feuer, Paula, 12
Field, Frank H., 29, 40, 44, 57, 112
Findeis, Arthur F., 51
Finnigan 1015, 31
Finnigan Instrument Corporation, 31, 32,
 60, 64, 65, 68, 116
Finnigan, Robert E., 44, 50
Florida State University, 32
Fort Benjamin Harrison Hospital, 15
Fort Devens, 13, 14
Fort Huachuca, Arizona, 14, 15
Fort Leonard Wood, Missouri, 13
FORTRAN, 26

Framingham, Massachusetts, 69, 70
Franklin, Joe L., 21, 40, 111
Friedman, Lewis, 52
Futrell, Jean, 25, 26, 35, 39, 40, 41, 42, 43,
 46, 47, 48, 105

G

G.D. Searle & Company, 34
Gates, William H., 91
Gayle, P. Jane, 82
Germany/German, 21, 22
Glish, Gary, 104
Grissom, Virgil I., 115

H

Hamamatsu, 61
Harris, Ernie, 5
Harris, Frank M., 39
Hattan, Stephen J., 82
Haug, Patricia, 111
Hayden, Kevin, 106, 113
Heller, Steven R., 106
Henion, Jack, 52, 75
Herold, David A., 77, 79
Hewlett Packard, 60, 65, 66, 67, 98
Hillegonds, Darren J., 77
Hillenkamp, Franz, 56, 60, 84, 85
Hiller, Joseph F., Jr., 48
Hitler, Adolf, 21
Houston, Texas, 21, 40, 41, 42, 43, 48, 49,
 67, 68, 69
HP. *See* Hewlett Packard
Human Genome Project, 90, 92
Humble Oil and Refining Company, 29
Hunt, Don, 32
Hurt, Sergeant, 15
Hutchens, T. William, 61, 101

I

Illinois, 24
InBev, 87
Indiana, 1, 15, 18
Indiana State Normal School, 2
Indiana State University, 2
Indianapolis Historical Society, 19
Indianapolis, Indiana, 2, 18

Iribarne, J.V., 54, 56, 57
Israel, 27

J

Japan, 60
Jennings, Keith R., 21, 47
Johns Hopkins University, 23, 27, 28, 35, 39
Johnson & Johnson, 61
Johnston Laboratories, 9, 20, 25, 28, 51, 61
Johnston, William H., 8, 9, 17, 20, 21, 22, 23, 28, 29, 34
Jones, Bob, 28
Juhasz, Peter, 103, 107

K

Karas, Michael, 60
Katta, K. Viswanath, 49, 51
Kebarle, Paul, 44
Keogh, Tom, 61
Kim, Hee-Yong, 49, 113
Korea, 13, 49, 90
Korean Conflict, 8, 13
Koski, Walter S., 28
Kratfel, Ed, 32
Krause, Manfred O., 22
Kyoto, Japan, 60

L

Lacey, Martin, 61
Lafayette, Indiana, 109
Lampe, Frederick W., 35, 105
Langevin equation, 80
Langevin, Paul, 81
laser, 41, 44, 52, 53, 61, 62, 76, 79, 85, 102, 107
Laumann, Laura, 71
Lawrence Livermore National Laboratory, 77
LC/MS. *See* liquid chromatography/mass spectrometry
LCMS. *See* LC/MS
Lee, Milton L., 36
Lennon, John J., 84
Libby, Bill, 8, 9, 22, 29
Libby, Willard F., 8, 9

Lifschitz, Chava, 27
liquid chromatography, 51, 75, 81
liquid chromatography/mass spectrometry, 51
Loeb, Leonard B., 54

M

Macfarlane, Ronald D., 55, 56
MALDI. *See* matrix-assisted laser desorption/ionization
Manhattan Project, 8
Marcus, Rudolph A., 24, 25
Marshall, Alan G., 75
Martin, Steven, 67, 70, 82, 106
Maryland, 37
mass spectrometer, 20, 24, 30, 33, 34, 46, 47, 60, 64, 68, 77
 crossbeam, 42, 46, 47, 48, 52
 tandem, 46
mass spectrometry
 accelerator, 77, 79
Massachusetts Institute of Technology, 61, 67
Massacre at Fall Creek, 17
Matcha, Robert L., 97
matrix-assisted laser desorption/ionization, 60, 61, 64, 65, 67, 68, 69, 70, 71, 73, 74, 75, 80, 81, 84, 85, 101, 102, 103, 104, 114, 116, 117, 118
Mauclaire, G.H., 46
McBee, Earl T., 21, 22
McCloskey, James A., 32, 41, 42, 53
McDonnell Douglas Corporation, 83
McFadden, William H., 51
McLafferty, Fred W., 22, 27, 47, 112
McLaren, I.H., 22, 83, 84, 99
Meisels, Gerry G., 41
MicroMass, 100
Milne, G.W.A., 30, 31, 105
Mississippi, 15
Missouri, 37
MIT. *See* Massachusetts Institute of Technology
Morrison, James D., 39, 43, 44, 45
MSMS. *See* tandem
Munich, Germany, 84

Munson, Burnaby, 29, 30

N

NASA. *See* National Aeronautics and Space Administration

National Aeronautics and Space Administration, 22, 61, 62

National Bureau of Standards, 21, 23

National Institutes of Health, 41, 42, 49, 58, 74, 88, 89, 106, 113

National Science Foundation, 51, 88, 89

Native Americans. *See* ethnicity:(American) Indians

Nelson, Randy, 61, 101

New Orleans, Louisiana, 112

New Zealand, 29, 108

Nier, Alfred O.C., 112

NIH. *See* National Institutes of Health

Nixon, President Richard M., 39

Nobel Prize, 9, 56, 108

Nogales, Mexico, 14

Nova Scotia, Canada, 73

Novartis, 106

NSF. *See* National Science Foundation

Nuclear-Chicago, 34

O

Oak Ridge National Laboratory, 22

Ohio State University, 32

OI Analytical, 65, 66

Orlando, Florida, 1

P

Palo Alto, California, 67

Parker, Kenneth, 82

patent, 20, 22, 50, 63, 98, 99, 100, 101, 102, 104, 106

Peak, Presley, 6

Pendleton, Indiana, 2, 3, 4, 18

Pennsylvania State University, 35, 105

PerkinElmer, 34, 68, 87

PerSeptive Biosystems, 66, 67, 68, 69, 70, 86, 87, 96, 97, 106, 107, 117

PerSeptive Scientific Fellow, 70

Pettitt, B. Montgomery, 97

photodissociation, 43, 44, 56

Pittcon, 1, 66, 117

James L. Waters Annual Symposium, 51

Pittsburgh Conference, 1

Proctor & Gamble, 61

Protein Society, 66

Purdue University, 5, 7, 8, 11, 12, 16, 21, 35, 43, 109, 115

Q

quadrupole, 39, 44, 46, 60, 64, 100

quasi-equilibrium theory, 10, 20, 24, 30

R

Ralph N. Adams Award in Bioanalytical Chemistry, 85

Regnier, Fred E., 66

Reilly, James, 99

religion

(Roman) Catholic, 12

Jews/Jewish/Judaism, 12, 21

Protestant, 12, 111

Research Corporation, 98

Rice University, 40

Rice, Ramsperger, Kassel theory, 11

Richards, Jack, 93

Rickover, Admiral Hyman G., 22

Rock, Sibyl M., 112

Rockefeller University, 40, 61

Roepstorff, Peter, 85

Romney, Governor Willard Mitt, 87

Rosenstock, Henry M., 9, 10, 11, 20, 21, 23, 25, 30, 44, 104, 110

S

San Diego, California, 66

SBIR. *See* Small Business Innovation Research

Schwartz, Karl, 66, 98, 99

Scientific Research Instruments Corporation, 28, 33

Sequenom, Inc., 63

Servicemen's Readjustment Act of 1944, 8, 11, 12

Shimadzu Scientific Instruments, 60

Siena, Italy, 72

SIMION, 107

Small Business Innovation Research, 74,
79, 80, 90
Smith, Jay, 71
Smith, Lloyd, 61, 63
Spain, 21
Story, Mike, 64
surface-enhanced laser
desorption/ionization, 101

T

Tanaka, Koichi, 56
thermospray, 32, 49, 50, 51, 57, 59, 60, 63,
64, 65, 98, 100, 108, 114, 122, 124
Thomson, B.A., 54, 56, 57
Tiernan, Thomas O., 39
time-of-flight, 20, 21, 22, 23, 60, 61, 62, 63,
64, 65, 69, 74, 75, 76, 77, 80, 83, 84, 103,
125, 126
coincidence, 20, 21, 22, 23, 63
TOF. *See* time-of-flight
Toronto, Ontario, Canada, 72, 73, 74
triple quadrupole, 39, 41, 43, 44, 45
Tucson, Arizona, 14

U

U.S. Air Force, 17, 39, 47
U.S. Army, 8, 11, 12, 13, 14, 15, 16, 17
Electronic Proving Ground, 14
Security Agency School, 13
Signal Corps., 14
U.S. Naval Academy, 22
U.S. Navy, 22
United States of America, 12, 18, 60
University of British Columbia, 106
University of California, Los Angeles, 29
University of Houston, 90, 97
University of Nebraska, 41

University of South Florida, 41
University of Texas Medical Center, 61
University of Utah, 12, 23, 33, 34, 35, 41,
47, 53, 77, 97
Utah, 9, 44

V

Vacuum Generators, 51
Vestal, Christina (wife), 59, 74, 82
Vestec, Inc., 48, 59, 65, 97
Veterans Administration, 77
Virgin Instruments, 73, 74, 78

W

Wahrhaftig, Austin L., 10, 20, 23, 27, 35,
38, 40, 44, 104, 105
Wallenstein, Merrill, 9, 10, 20, 21, 44
Wang, Daniel I.C., 67
Washington University in St. Louis, 64
Washington, D.C., 30, 31
Waters, James L., 87
West Lafayette, Indiana, 7, 25
West, Jessamyn, 7, 17, 18
White, Tony, 68, 92
Wiley, William C., 22, 83, 84, 99
Wolf, Fred, 5, 6
World War II, 93
Wright-Patterson Air Force Base, 26, 46

X

xenon, 22, 44

Y

Yergey, Al, 105
Yost, Richard A., 39, 43