

# “Portrait of a Chemical Engineer” (As a Young Man Growing Older)

From Gilbert Chemistry and Erector Sets to Bhopal and Beyond

CLE AIChE Presentation, November 13, 2024

The Department of Chemical and Biomedical Engineering  
Washkewicz College of Engineering, Cleveland State University

By: Mr. Benjamin A. Horwitz

# Chapters

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3. Bhopal, India, 1969 (Peace Corps)
4. Back in Cleveland, 1971 (OH Med.)
5. Still in Cleveland, 1973 (HKF)
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7. Renville, Minnesota Sugar Beet Startup
8. Cleveland, Ohio 1976
9. Cleveland, Ohio 1977 Arthur G. McKee
10. Back at HKF 1979
11. Tokyo, Japan 1981
12. Cleveland, Ohio A Manager is Born
13. The University Education of a Chemical Engineer  
*(you may want to skip this if you are not a Chemical Engineer or a professor of Chemical Engineering)*
14. Weirton, West Virginia
15. Adapting to the Role of Manager
17. The Sex Life of a Chemical Engineer  
*(you may want to skip this chapter if you are not a Chemical Engineer or have no interest in Sex. Or both)*
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19. The PC Age Arrives
20. Two Near-Death Experiences with H<sub>2</sub>O
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# Introduction and Chapter 1

Why did I write this book?

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The Ohio Medical Products maintenance crew, 1971—author in the middle

By Benjamin A. Horwitz





TRANSFERRED TO		ENGINEERING		UNIVERSITY OF PITTSBURGH		ACADEMIC RECORD OF	
ADMITTED TO		LIBERAL ARTS		PITTSBURGH, PA.		HORWITZ, BENJAMIN ALAN	
FROM				DEGREE <i>B.S. in Ch.E</i>		STUDENT NO. <i>400-835-H</i>	
ENTRANCE UNITS FROM		SHAKER HIGH SCHOOL		DATE <i>8-12-67</i>		3711 LINDHOLM ROAD	
ENGL		LATH		HONORS		SHAKER HEIGHTS 20, OHIO	
MATH		PHYS		MAJOR <i>Chem. Engr.</i>			
CH E	81	FALL 63-64	0	P		FALL 65-66	400-835H
CHEM	11	SEMINAR	4	A	15	31 ORGANIC	104 UNIT OPER
MIL SC	1	GENERAL	1	P	0	35 THERMODYNAMICS	02 KINETICS
MUS	80	1ST BAS ARMY	3	B	9	1 PHYSICAL ED	00 HEAT TRANSFER
ENG	1	APPRECIATN	3	B	9	110 DIFF EQUATNS	42 PROC DESIGN
E.O	2	COMPOSITION	3	B	9	81 EARTH & MAN 8	12 ELECT INST CNTR
MATH	21	ENGR GRAPHICS	2	C	4	27 MECH OF MATLS	88 SEMINAR
		COL ALG TRIG	4	B	12	85 SEMINAR	25 INTRO ANAL
CH E	81	WNTR 63-64	0	P			
P ED M	2	SEMINAR	1	A	4	WNTR 65-66	400-835H
MATH	22	PHYSICAL ED	4	A	15	125 ABSTRACT ALG 1	115 PROB STATISTIC
BCON	80	ANL GEO CL 2-9	3	D	3	823 LINEAR ALGEBRA	* 17 WAVES & OPTICS
E.O	2	BOON MOD WRLD	2	B	2	32 ORGANIC	98 COMP THES. PROB
CHEM	12	ENGR GRAPHICS	4	B	12	141 PHY CHEM LECT	19 INTRO LAB 1
ENG	2	GENERAL	3	B	9	86 SEMINAR	
		COMP REC 9	3	B	9	36 THERMODYNAMICS	67-4 SUMM
						143 PHY CHEM LAB	129 TOPICS IN GEO
MATH	23	FALL 64-65					152 ADV CALCULUS
PHYS	15	ANL GEO CL 2 9	4	A	16	FALL 66-67	400-835H
MUS	11	MECHANICS	4	C	8	* 17 WAVES OPTICS	
I.E	12	MUSICIANSHIP	3	B	9	01 MASS TRANSFER	
CH E	9	MUS	3	B	9	44 PHY CHEM LAB	
CH E	83	DIG COMP PROG	2	B	6	03 UNIT OPER	
		FUNDAMENTALS	4	A	16	86 SEMINAR	
		SEMINAR	0	P		42 PHY CHEM LECT	
CH E	84	WNTR 64-65	0	P		110 I/FIDS TRANS	
INTDIS	81	SEMINAR	3	C	6		
T.A M	23	INTRO HUMAN	3	B	9		
PHYS	16	STATICS	4	B	12		
MATH	24	ELECT MAGNTSM	4	A	16		
		ANL GEO CL 2-6	4	A	16		

A. SUPERIOR ATTAINMENT 4 POINTS PER CREDIT HOUR. B. ATTAINMENT 3 POINTS. C. AVERAGE ATTAINMENT 2 POINTS. D. LOWEST 1 POINT. F. FAILURE 0 POINTS. P. PASSING. G. INCOMPLETE. W. WITHDRAWAL.

ENGL. 0 CR. \_\_\_\_\_ FPL. 0 CR. \_\_\_\_\_ ENGL. 10 CR. \_\_\_\_\_  
 CONP. 0 CR. \_\_\_\_\_ LAB. 0 CR. \_\_\_\_\_ SOC. SCI. 10 CR. \_\_\_\_\_  
 LIT. 0 CR. \_\_\_\_\_ COURSE. P.E.S.T.A. NAT. SCI. 10 CR. \_\_\_\_\_

REMARKS: \* COURSE REPEAT FACULTY ACTION: *Trans to Engr 9/1/67*

AE/CB/EP  
 V EDD M PFI

Serendipity; The Fact of finding interesting or valuable things by chance.



# Chapter 2, Job with Sohio 1968

Oscar Kropp

Frank Purdy

GWRK

Larry Nault (age 33.8, New Jersey suburban hotel)

The Drop Test (Divorce)

Bill Covey (Divorce) Hutt Pelletier

North Hampton, MA Smith College, Melamine Dishes



W. ALEC JORDAN  
11/26/76

Dear Mr. Horwitz:

Your kind and thoughtful letter, made this a sunny morning. (It was forwarded to me by my office because, at the moment, I'm "in seclusion" at my retreat in New Hampshire. Hence, the handwriting - which I hope you'll be able to decipher.)

There is a great industry, a great business. And I hope your GWRK file will grow fat with good friends - and will make your career doubly fulfilling.

And, of course, if there's anything I can help at any time - just call on me.

Sincerely,  
W. Alec Jordan

VICE CHAIRMAN, MANNING, SELVAGE & LEE, INC., 666 FIFTH AVENUE  
NEW YORK, N. Y. 10019 TELEPHONE 312-589-2500



# Chapter 3, Bhopal, India Peace Corps 1969





# Chapter 3, Bhopal, India Peace Corps 1969



# Chapter 3, Bhopal, India Peace Corps 1969





# Chapter 3, Bhopal, India Peace Corps 1969



# Chapter 3, Bhopal, India Peace Corps 1969





# Chapter 3, Goa/Agara, India Peace Corps 1969





# Chapter 3, Kashmir, India Peace Corps 1969





# Chapter 3, Bhopal, India Peace Corps 1969



# Chapter 3, Bhopal, India Peace Corps 1969





# Chapter 3, Bhopal, India Peace Corps 1969



# Chapter 3, Bhopal, India Peace Corps 1970





# Chapter 3, Bhopal, India Peace Corps 1970



# Chapter 3, Bangkok/Laos India Peace Corps 1970





# Chapter 3, Bombay (Mumbai)/boat, India Peace Corps 1971



# Chapter 3, Mombasa, Kenya Peace Corps 1971





# Chapter 3, Mombasa, Kenya Peace Corps 1971





# Chapter 3, Mombasa, Kenya Peace Corps 1971





# Chapter 3, Mombasa, Kenya Peace Corps 1971





# Chapter 3, Malindi, Kenya Peace Corps 1971





# Chapter 3, Tsavo National Park W., Kenya Peace Corps 1971





# Chapter 3, Kenya Peace Corps 1971





# Chapter 4, Ohio Medical (back in Cleveland) 1971

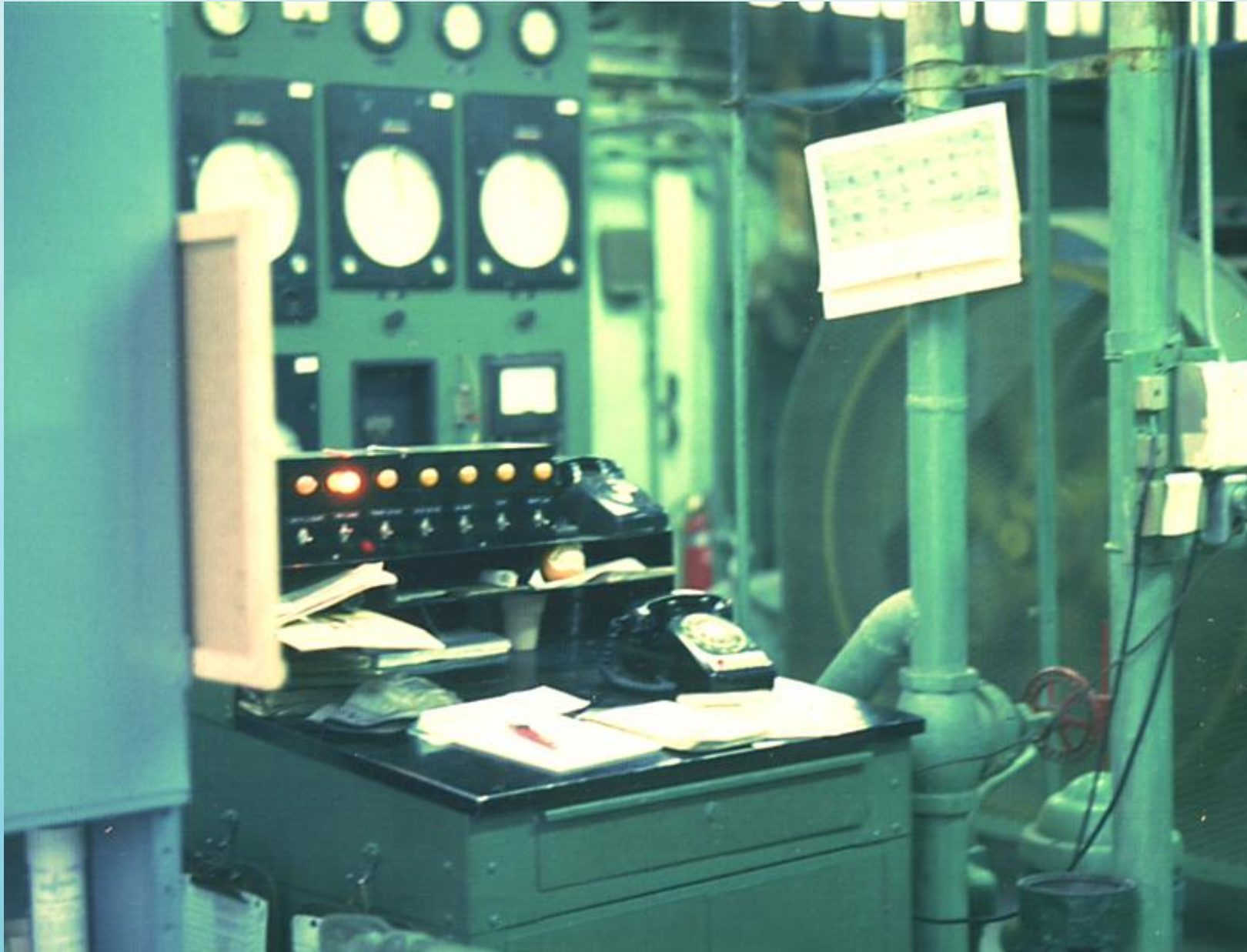


# Chapter 4, Ohio Medical (back in Cleveland) 1971

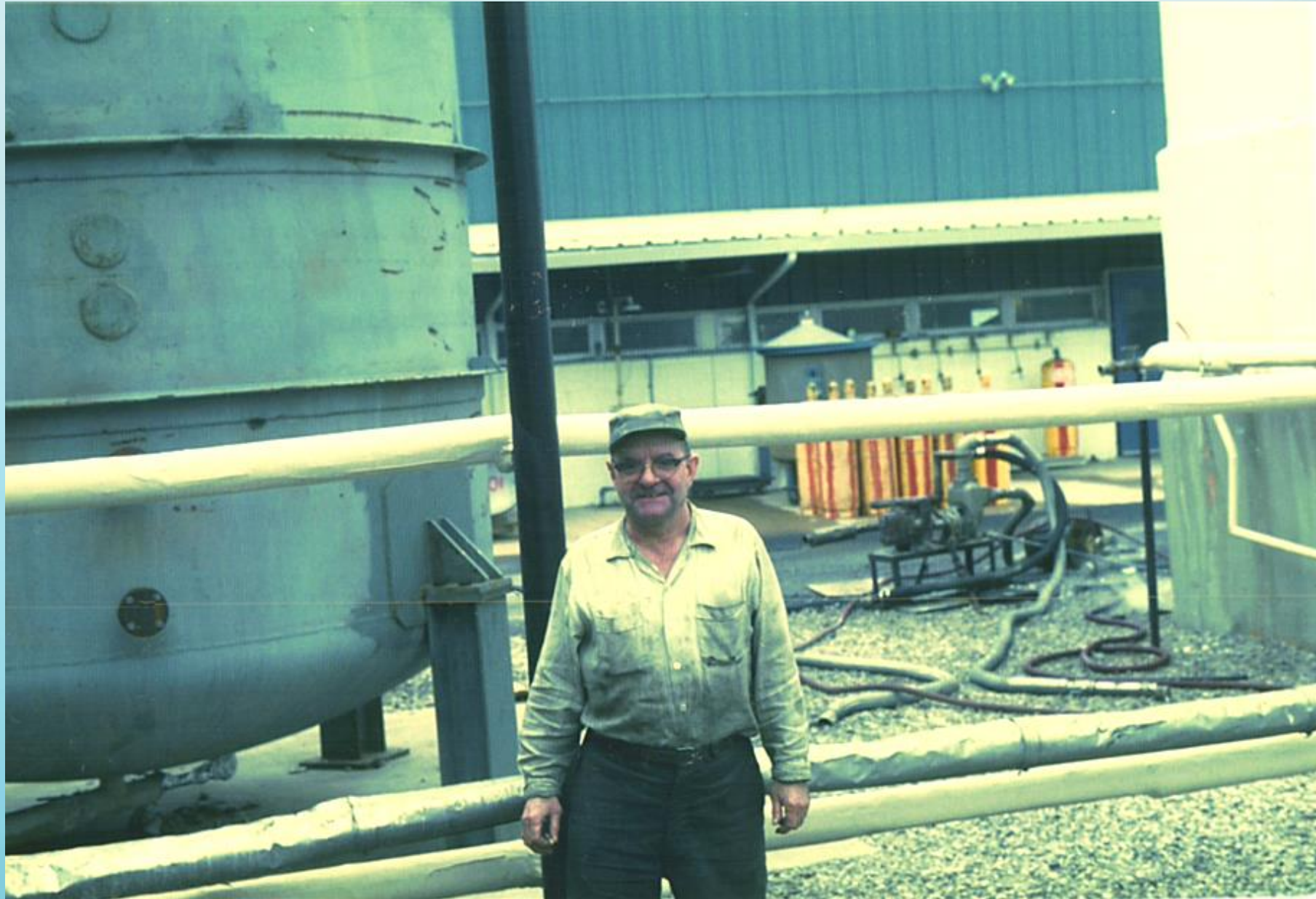




# Chapter 4, Ohio Medical (back in Cleveland) 1971



# Chapter 4, Ohio Medical (back in Cleveland) 1971





# Chapter 5, Still in Cleveland 1973



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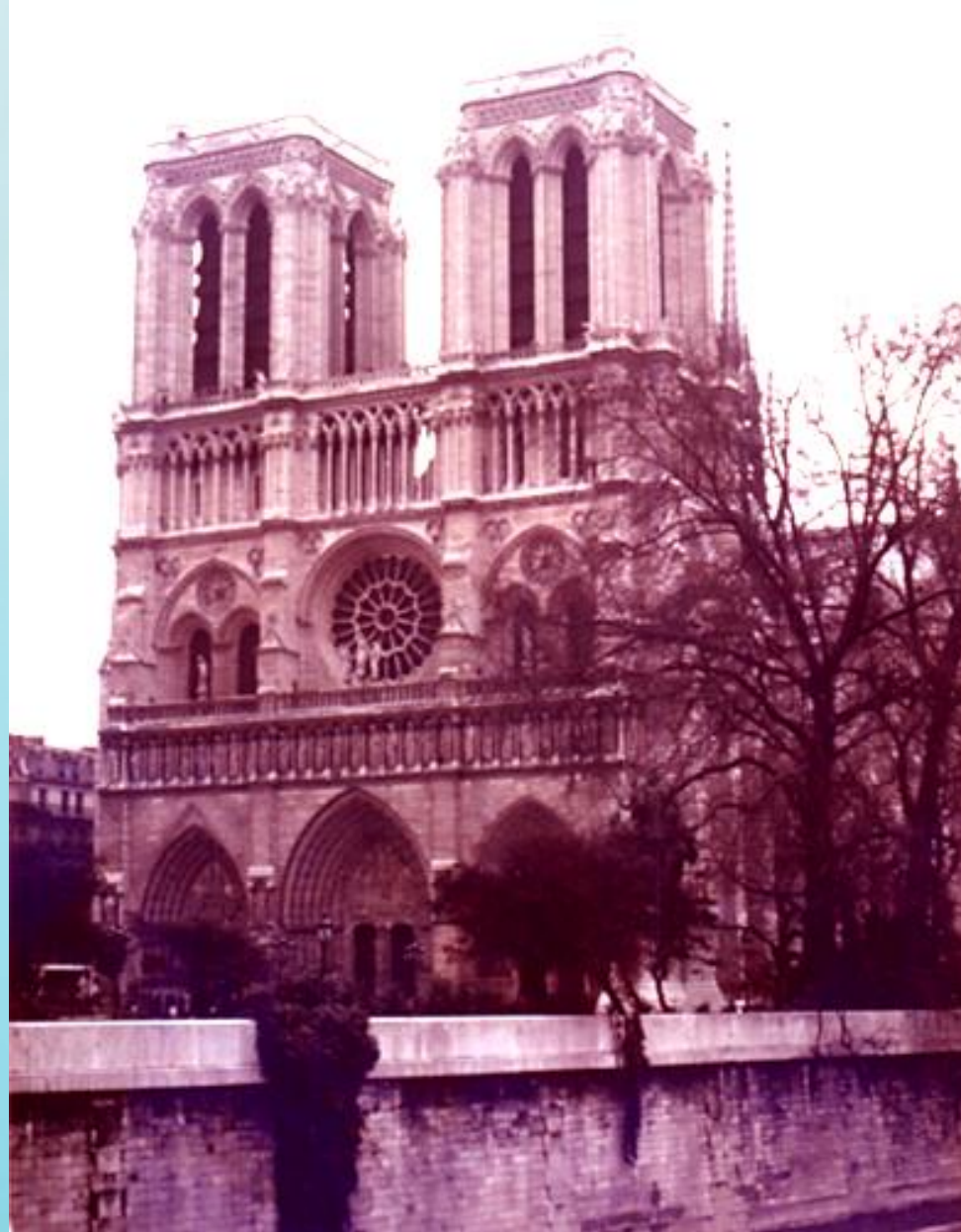


The Ohio Medical Products maintenance crew, 1971—author in the middle

By Benjamin A. Horwitz

*(A reading from the textbook, “Portrait of a Chemical Engineer”)*

# Chapter 6, Paris, France 1976

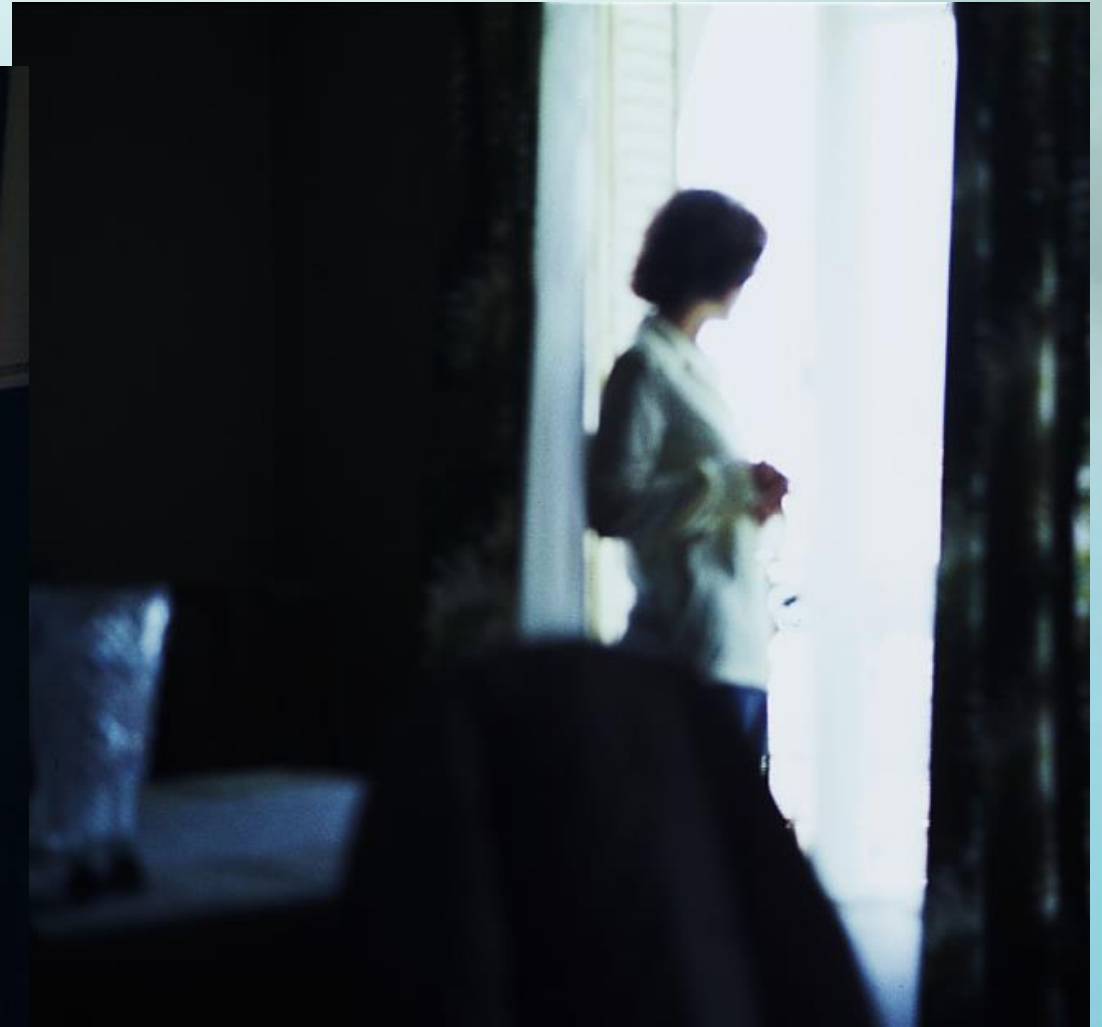




# Chapter 6, Paris, France 1976



# Chapter 6, Paris, France 1976





# Chapter 6, Paris, France 1976





# Chapter 6, Paris, France 1976





# Chapter 6, Paris, France 1976





# Chapter 6, Paris, France 1976



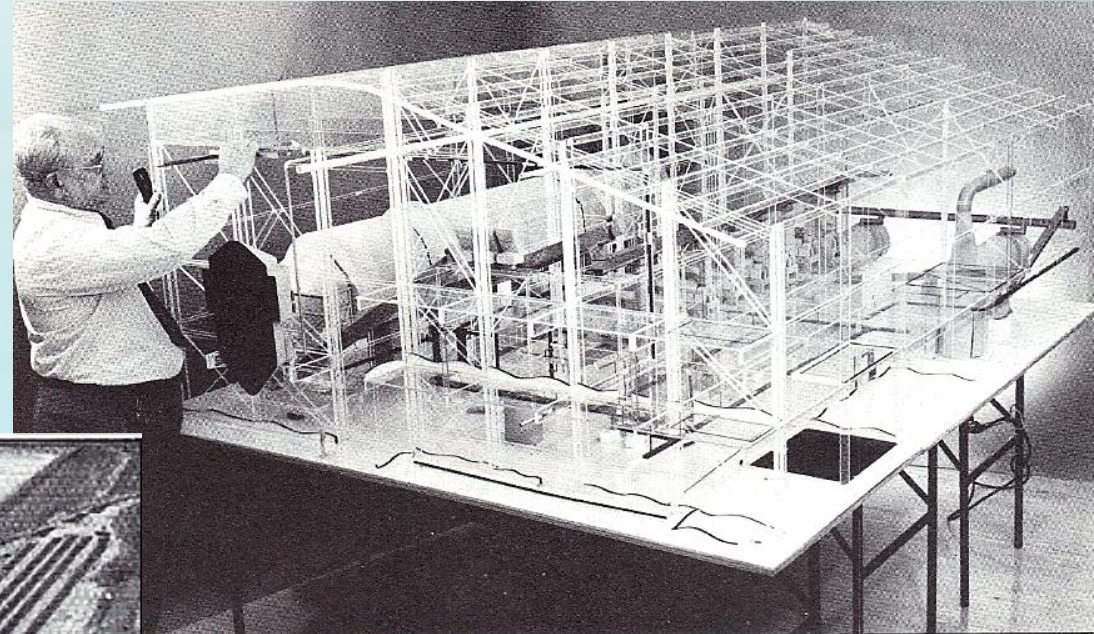


# Chapter 6, Lausanne, Switzerland 1976





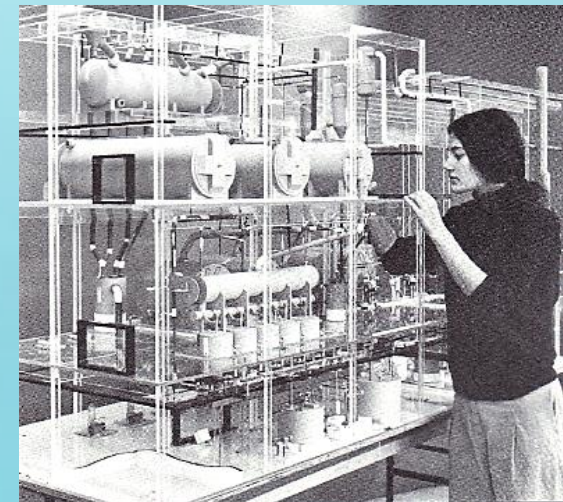
# Chapter 7, Renville, Minnesota (Sugar Beet Start-up) 1975



Scale model of the beet sugar plant is underway in the Model Department. Al Lobser, Model Department Supervisor, is examining a section of the model of the west end of the processing plant which contains the diffuser, dryers, and carbonation systems.



**\$43-MILLION BEET SUGAR PLANT — A Project in Progress**





# Chapter 7, Renville, Minnesota (Sugar Beet Start-up) 1975



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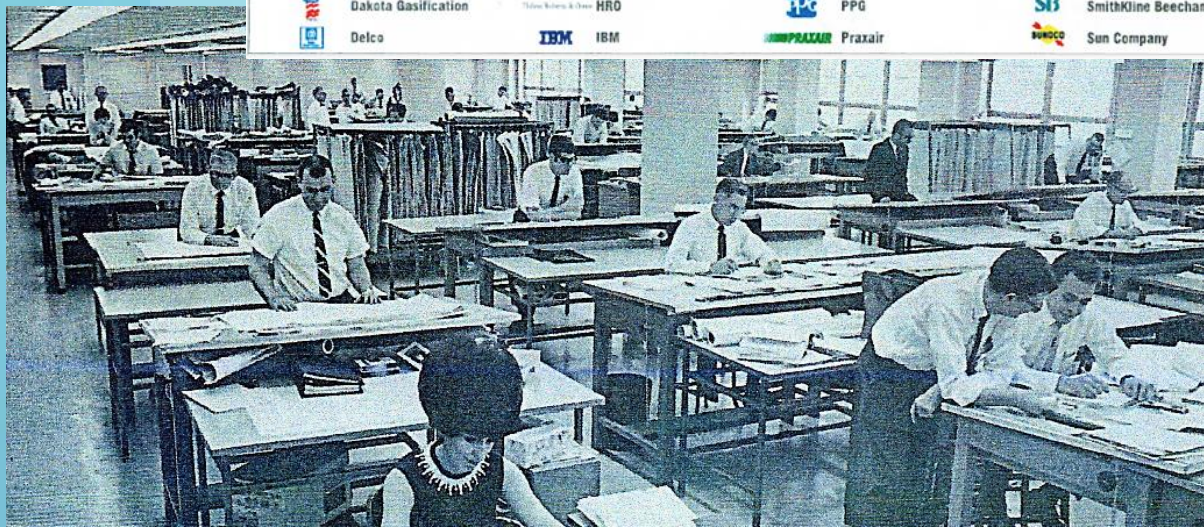
# Chapter 8, HK Ferguson Co.(MK), Cleveland, OH 1976

## Current/Recent Morrison Knudsen Clients

American Electric Power	Delphi	Johnson & Johnson
American Home Products	Dept. of Defense	Kellogg
ALCOA	Dept. of Energy	Kennecott
AMAX Gold	Dept. of State	Kodak
AMOCO	Dept. of Transportation	Kraft
Anheuser-Busch	Dominion Semiconductor	Lockheed-Martin
Applied Materials	Dow Corning	LORD Corporation
ARCO Chemical	DTRA	Lucent Technologies
Aristech	DuPont	Manitowoc
Avery Dennison	Duramed	Matrix Essentials
Baltimore Gas & Electric	EG&G	McDonnell Douglas
BNFL	Eveready	Medimmune
Boeing	Exxon	Merck
British Airways	Federal Reserve Bank	Monsanto
British Petroleum	Florida Power & Light	Motorola
Caterpillar	Florida Toll Services	NASA
Corrections Corp. of America	Ford	Navistar
Chevron	General Electric	Nissan
Chrysler	General Motors	Opel
Coca-Cola	Geon	OxyChem
Corn Products	GlaxoWellcome	Pepsi-Cola
Corps of Engineers	Gorman-Rupp	Pfizer
Dakota Gasification	HRO	PPG
Delco	IBM	Praxair



ABOVE, electronic data processing center, where engineering, accounting, and other calculations are performed for jobs presently representing more than \$300,000,000 in client investments. BELOW, secretaries in executive





# Chapter 8, HK Ferguson Co.(MK), Cleveland, OH 1976

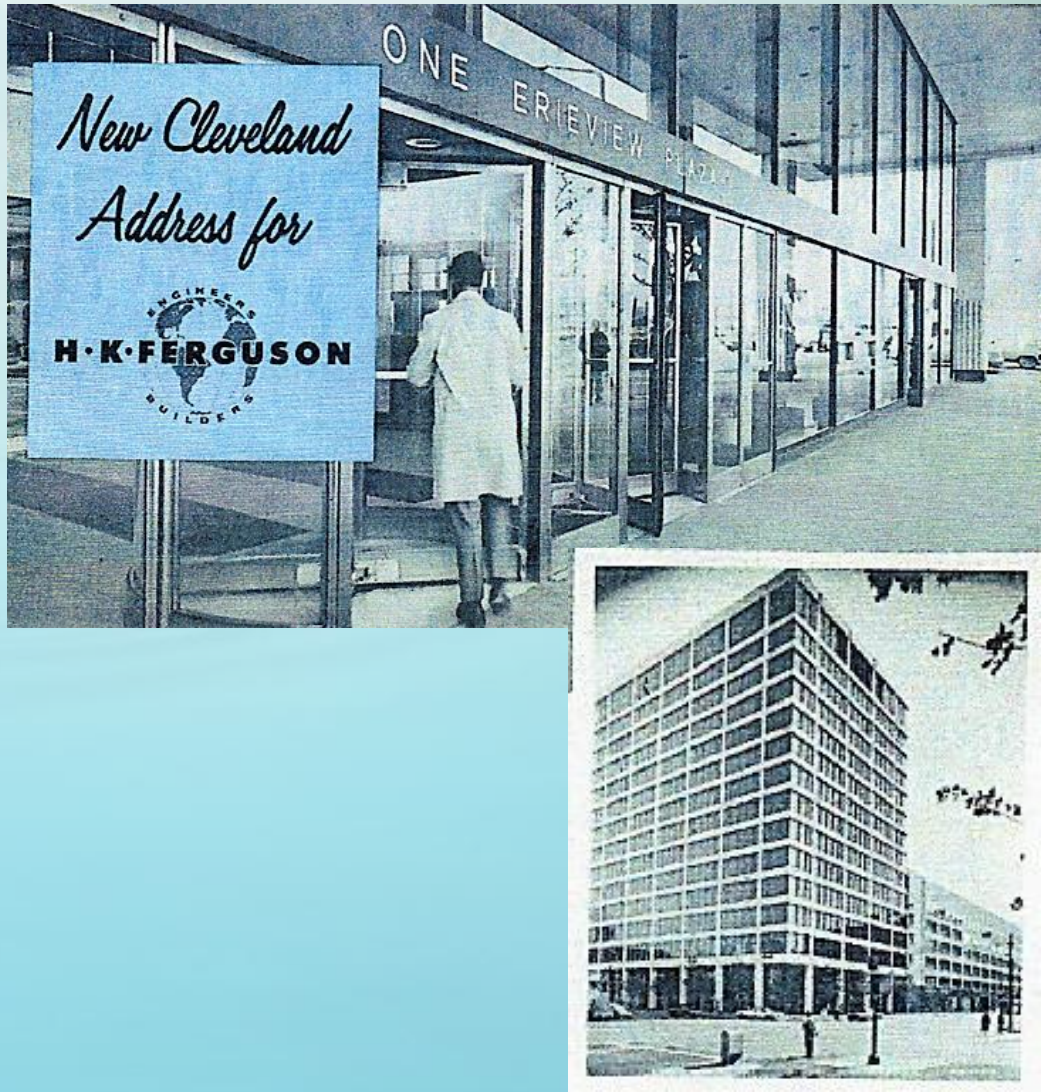


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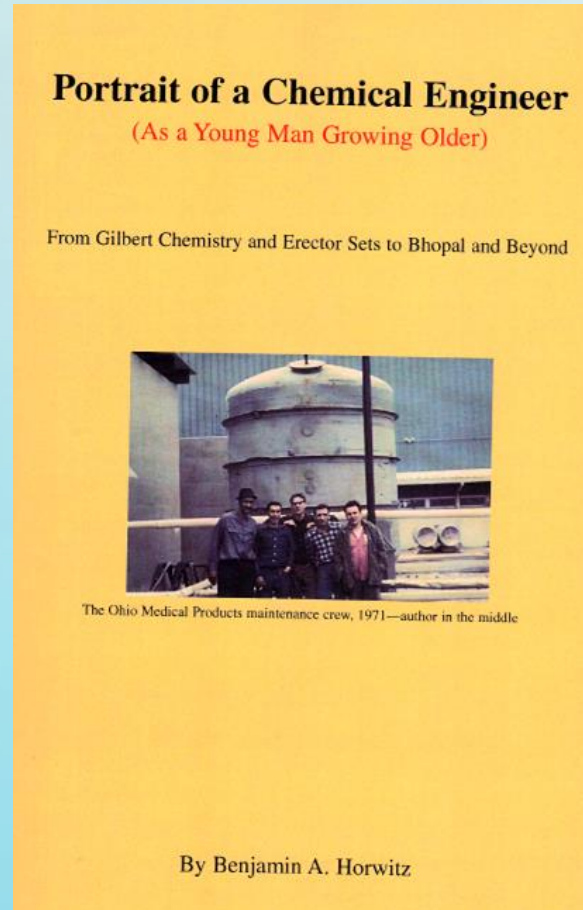
By Benjamin A. Horwitz



*(A reading from the textbook, "Portrait of a Chemical Engineer")*



# Chapter 10, Back at HKF, 1979



*(A reading from the textbook, "Portrait of a Chemical Engineer")*



# Chapter 11, Tokyo, Japan, 1981





# Chapter 11, Tokyo, Japan, 1981





# Chapter 11, Tokyo, Japan, 1981





# Chapter 11, Tokyo, Japan, 1981





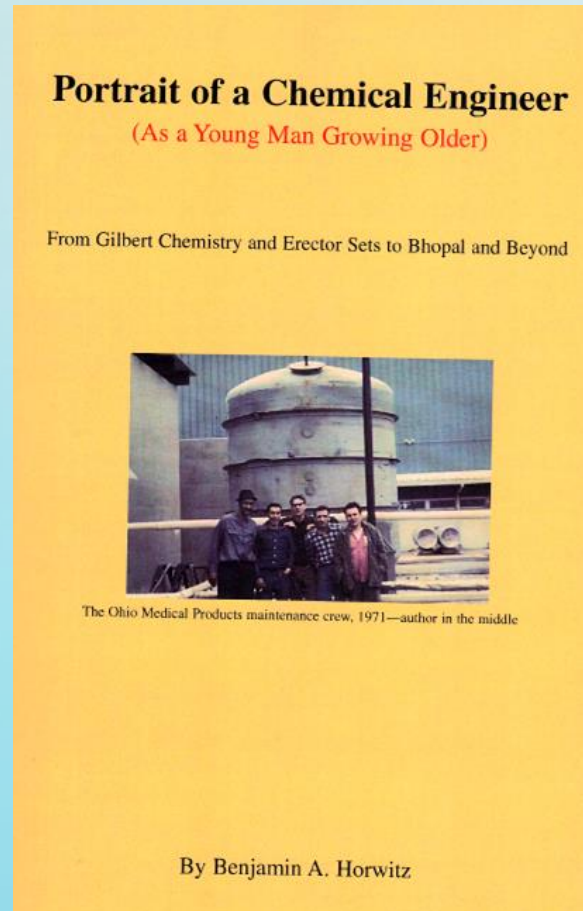
# Chapter 12, HK Ferguson Co.(MK), 1982 (A Process Department Manager is born)





# Chapter 13, The University Education of a Chemical Engineer 1982

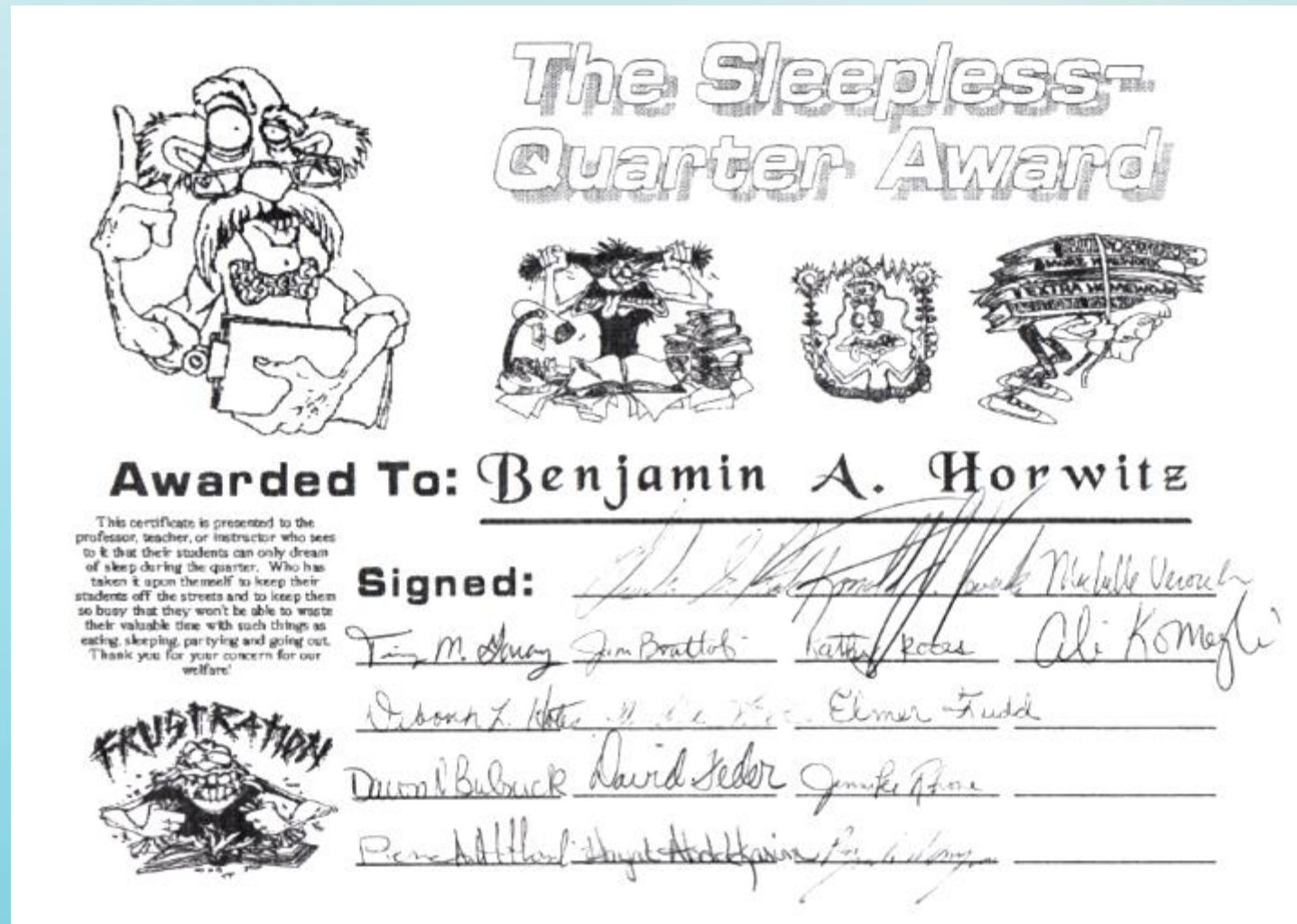
*(You may want to skip this if you're not a Chemical Engineer or a Professor of Chemical Engineering)*



*(A reading from the textbook, "Portrait of a Chemical Engineer")*

# Chapter 13, The University Education of a Chemical Engineer 1982

*(You may want to skip this if you're not a Chemical Engineer or a Professor of Chemical Engineering)*





# Chapter 14, Weirton, WV, /Ft. Collins, CO 1982



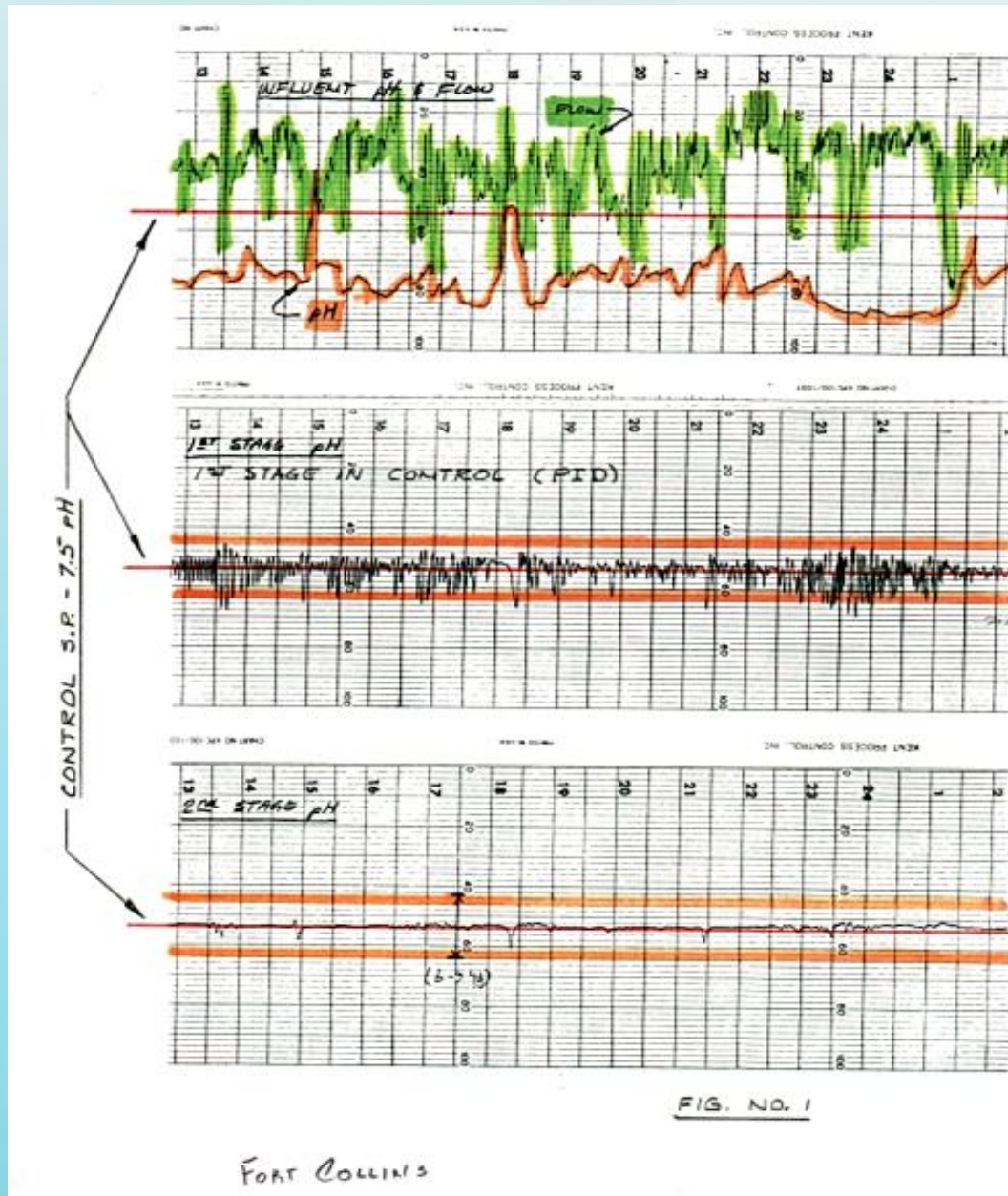


# Chapter 14, Weirton, WV, /Ft. Collins, CO 1982





# Chapter 14, Weirton, WV, / Ft. Collins, CO 1982



# Chapter 14, Weirton, WV, /Ft. Collins, CO 1982



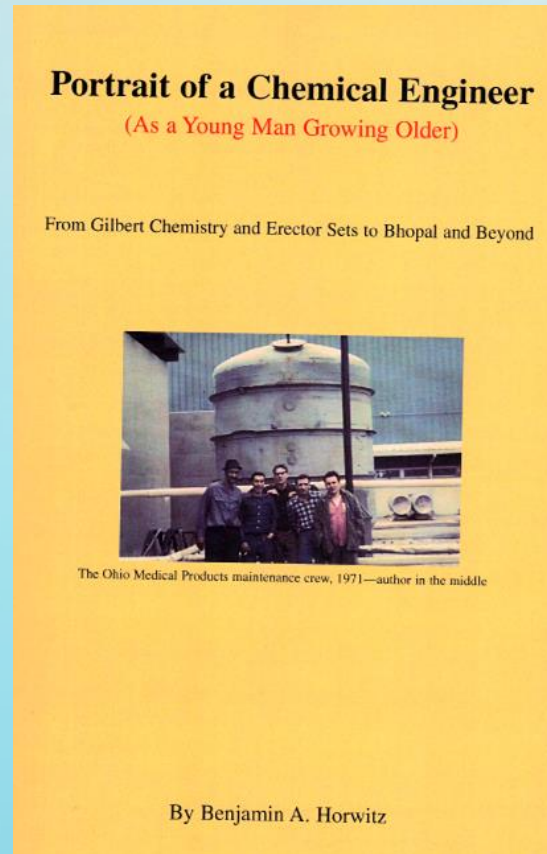


Chapter 15 HK Ferguson Co.,(MK)  
Adapting to the Role of Manager, 1982



# Chapter 17, The Sex Life of a Chemical Engineer

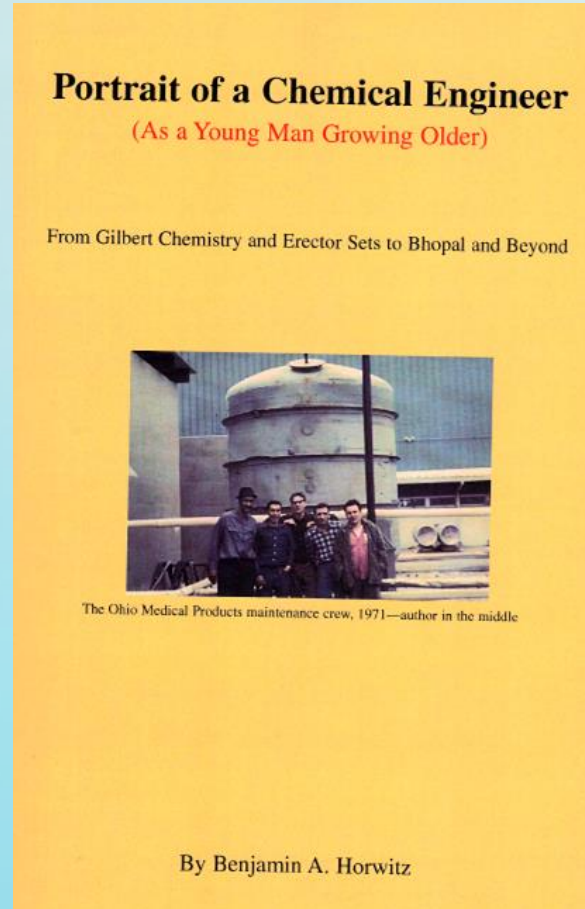
*(You may want to skip this chapter if you are not a Chemical Engineer or have no interest in sex. Or both.)*



*(A reading from the textbook, "Portrait of a Chemical Engineer")*

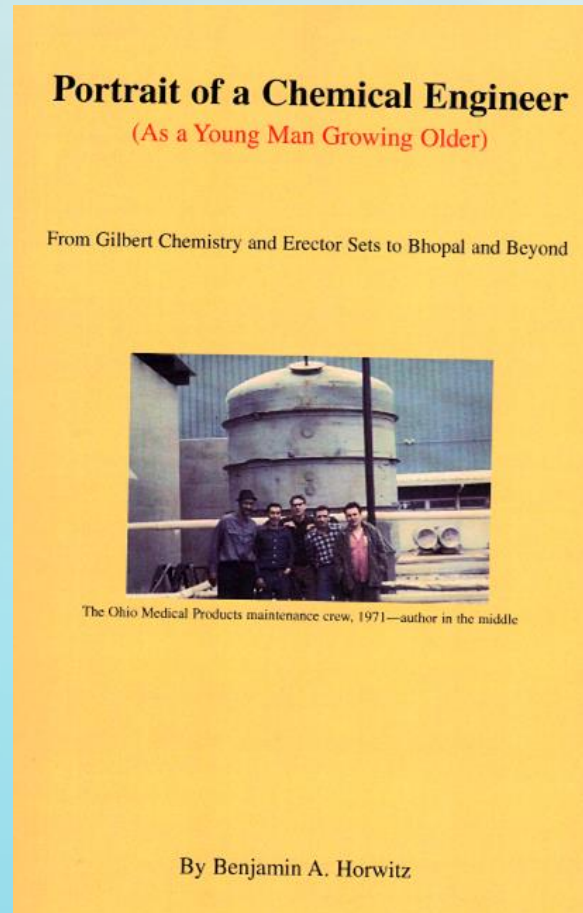


# Chapter 18, The Boise Invasion



*(A reading from the textbook, "Portrait of a Chemical Engineer")*

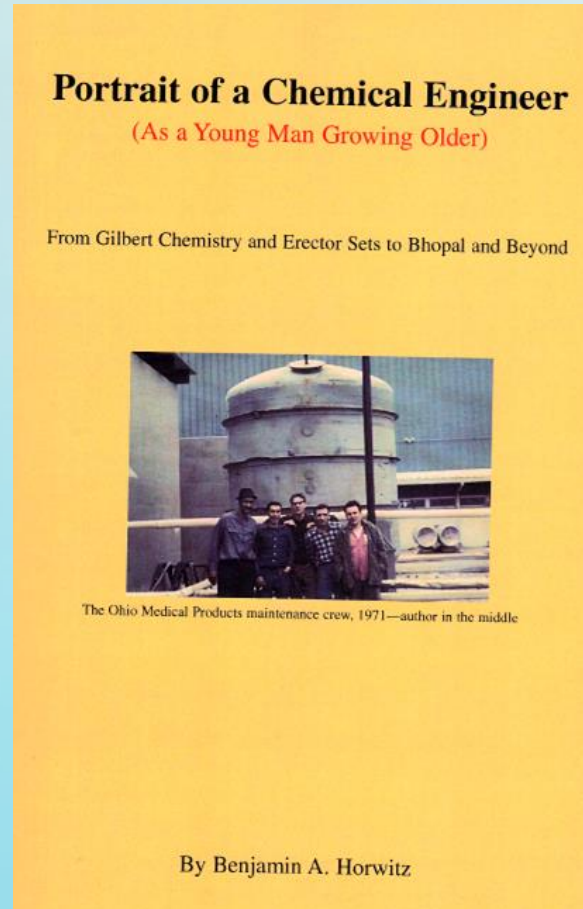
# Chapter 19, The PC Age Arrives



*(A reading from the textbook, "Portrait of a Chemical Engineer")*

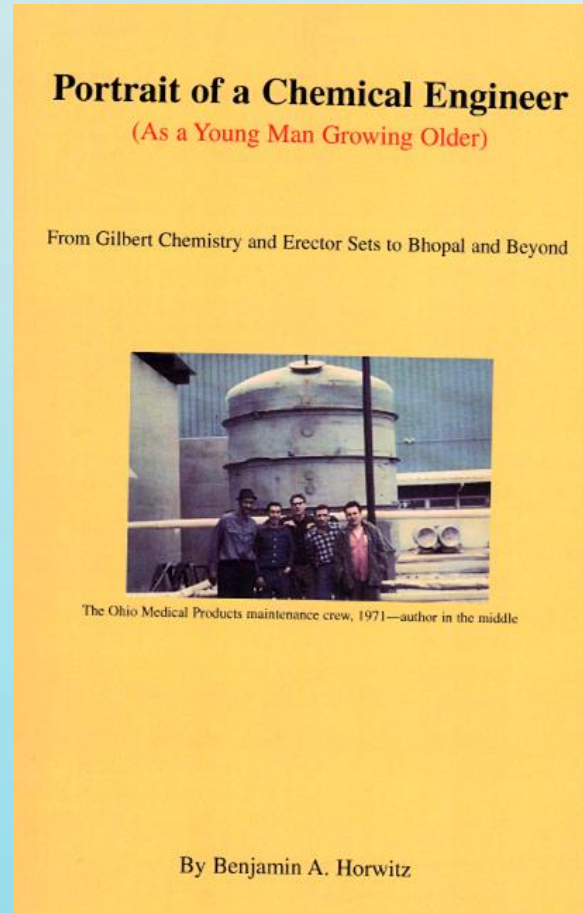


# Chapter 20, Two Near Death Experiences with H<sub>2</sub>O



*(A reading from the textbook, “Portrait of a Chemical Engineer”)*

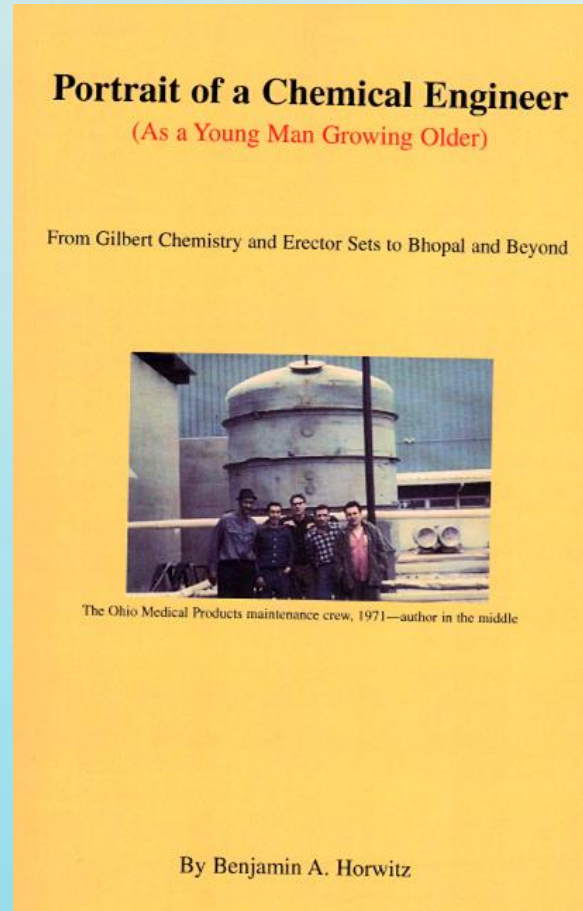
# Chapter 21, DuPont Revisited/The Singapore Debacle



*(A reading from the textbook, “Portrait of a Chemical Engineer”)*



# Chapter 22, The Beginning of the End...NOXSO



*(A reading from the textbook, “Portrait of a Chemical Engineer”)*

# Chapter 23, Epilogue

My career as a chemical engineer did not end the summer of 1992, although I questioned the wisdom of that decision for the first several months after leaving the employ of HKF. House and car payments came in on their regular schedule, but no visual source of income followed. So I was concerned. It has worked out well for me. The last thirteen(32) years have provided challenging projects and a cast of characters easily equaling, and in some cases surpassing, those projects I worked on and those characters I worked with the first 25 years. And the best part – I am back working with the tools of my trade – making design calculations and running around a construction site or plant operation, “building things and making stuff work,” to quote my sugar beet mentor, Ed Marne.

Perhaps there is something of me left in that sugar beet plant in Renville, Minnesota, or the pH control facility at Anheuser Busch, Fort Collins, Colorado, or at any one of the other twelve Anheuser Busch Breweries I’ve worked on. And I suppose as long as those facilities and others I’ve worked on are still standing, maybe I have gained a degree of immortality.

More than 40 years ago when I did so poorly on my freshman orientation Spanish test, I serendipitously found my way into the School of Engineering, majoring in Chemical Engineering. When I thought I may be a mathematician, but Ohio State thought otherwise, again I found a serendipitous path to the Standard Oil Company (Ohio). (Encouraged, perhaps by the dangers of Viet Nam.) Later in my career, Noxso reared its ugly head and conspired with Jim Turner and others to cause me to make another emotional career decision. Somehow it all worked out. Somehow I found my calling, and never looked back. It’s been fun.



# Recommended Further Reading:

1. *The Periodic Table*,  
By: Primo Levi
2. *The Existential Pleasures of Engineering*,  
By: Samuel C. Florman
3. *The Alchemy of Air*,  
By: Thomas Hager
4. *Nylon and Bombs*,  
By: Pap Ndiaye

