1977 SURVEY REPORT

STARTING SALARIES AND EMPLOYMENT STATUS OF CHEMISTRY AND CHEMICAL ENGINEERING GRADUATES

Office of Manpower Studies
American Chemical Society
Washington, D.C.

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This report was prepared by the
ACS Office of Manpower Studies.

American Chemical Society
1155 Sixteenth Street, N.W.
Washington, D. C. 20036

October, 1977

Available from Special Issues Sales, ACS. Price: $5.00.

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DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

ACKNOWLEDGEMENTS

Annual surveys among chemistry and chemical engineering graduates are conducted in the Office of Manpower Studies, Department of Professional Relations and Manpower Studies, American Chemical Society, in order to observe trends in starting salaries and employment status. This work is carried out under the aegis of the Society's Committee on Economic Status.

This year, for the first time, the Committee presents a commentary on the survey findings, which appears as the Summary of Findings, prepared by Dr. Alan L. McClelland of E. I. du Pont de Nemours, Inc. and Dr. Madelleine M. Joullie of the University of Pennsylvania. Mr. J. Robert Jones, ACS Manager of Manpower Studies, and Ms. Maria D. Frizat, Assistant to the Manager, conducted the survey, edited the returns, and assembled the report. Mr. Daryle S. Watson of Chemical Abstracts Service did the computer programming, and Ms. Joanna K. Chin typed the manuscript.

Robert K. Neuman, Head
Department of Professional
Relations and Manpower Studies

SUMMARY OF FINDINGS

This survey shows a continuation of the rather poor job market for chemists that has persisted throughout the 1970's, though a few positive notes are evident. Data from the annual survey of 1976-1977 chemistry and chemical engineering graduates show that median starting salaries increased more than the cost of living index, that the number of Ph.D. chemists finding full-time chemical employment instead of postdoctoral positions increased, and that the job market for chemical engineers at all levels continues very strong. Chemists continue to have a difficult time finding chemical employment, though there is some slight indication that the demand for M.S. chemists is increasing in addition to the previously mentioned improvement for Ph.D.'s.

Starting salaries, in general, went up more than the 6.6% increase in the official cost of living index from August 1976 to August 1977. Significant comparisons of industrial starting salaries appear below in summary Table 1. Since 65% or more of all chemists and chemical engineers go into industry, the industrial starting salaries provide the most reliable year-to-year comparisons. Summary Tables 2 and 3 provide overall figures for all chemists and chemical engineers.

TABLE 1

STARTING MEDIAN YEARLY SALARIES
Of Inexperienced Chemists and Chemical Engineers in Industry
by Degree: Summer of 1976 and Summer 1977

Degree Level	1976	1977	Percent Increase
Chemists			
Bachelor's	$11,700	$12,600	7.7
Master's	14,000	15,200	8.6
Ph.D.	18,780	20,000	6.5
Chemical Engineers			
Bachelor's	15,480	16,800	8.5
Master's	16,800	18,000	7.1
Ph.D.	21,000	22,500	7.1

The academic salary picture[1] is much less favorable; for the third year in a row, academic median starting salaries for Ph.D. chemists

[1]See Table B-2, p. 27.

are unchanged at $12,000. Of the Ph.D. chemists accepting full-time employment (51%, excluding postdoctorals), 21% accepted academic positions and 69% went to industry. Thus the academic job market is still a significant one for Ph.D. chemists but the salary situation is discouraging. Postdoctoral salaries[2] also showed no change from last year; the median is $10,000. However, the encouraging factor about the postdoctoral situation is that only 43% of new Ph.D. chemists, compared with 49% last year, took postdoctoral positions. This can be presumed to represent an improved availability of non-temporary employment opportunities. The 51% accepting employment, mentioned above, is significantly above the 44% last year.

The disparity between engineering and chemistry salaries continues a twenty-year trend of diverging numbers. As Table 1 shows, only at the M.S. level did the chemists exceed the percentage increase of the engineers, though the actual dollar increase was the same.

Table 4 shows that the number of B.S. chemists finding jobs in chemistry on graduation increased by 2.6 percentage points to 22.3%, but since that percentage has ranged between 17.5% and 25.8% through the 1970's, this does not seem to hold much promise of any real change in the B.S. job market. Likewise, the percentage (29.9%) accepting graduate assistantships or fellowships for full-time study seems consistent with the pattern of the previous three years (28.1%, 31.2%, and 31.6% for 1974, 1975, and 1976, respectively). As usual, a high percentage (72.1%) of B.S. chemical engineers went directly into engineering employment.

Tables 5 and 6 reveal some interesting patterns of further education plans. About 75% of all B.S. chemistry graduates plan immediate further study; 61% will continue full-time and 14% part-time. Of those continuing full-time, 42% are going to medical or dental school and 41% continuing in chemistry or biochemistry. In contrast, only 20% of B.S. chemical engineers are going on to full-time study; of these, 73% are going on in chemical engineering and 10% to medical or dental school. However, another 24% are planning part-time study, and of these 49% will take business courses and 38% will continue in chemical engineering. Thus there is a marked difference in the further education pattern of engineers and chemists.

Madeleine M. Joullie, Chairman
Committee on Economic Status

Alan L. McClelland, Chairman
Subcommittee on the Annual Report
and Surveys

[2]See Table B-12, p. 36.

TABLE 2

STARTING YEARLY SALARIES OF INEXPERIENCED FULL-TIME EMPLOYED CHEMISTRY GRADUATES

by Degree: Summer of 1976 and Summer of 1977

Salaries	DEGREE LEVEL					
	Bachelor's		Master's		Ph.D.	
	1976	1977	1976	1977	1976	1977
90th Percentile	$13,620	$14,640	$15,300	$17,600	$20,100	$21,600
75th Percentile	12,500	13,500	14,300	16,000	19,200	20,700
50th Percentile	10,800	12,000	12,400	14,100	18,300	19,500
25th Percentile	9,280	10,000	10,000	11,500	15,600	16,800
10th Percentile	8,200	8,400	9,000	9,722	11,600	12,000
Mean	10,860	11,670	12,320	13,812	17,119	18,163
Count	436	398	90	106	150	173
Std. Dev.	2,205	2,363	2,602	3,029	3,250	3,596

TABLE 3

STARTING YEARLY SALARIES OF INEXPERIENCED FULL-TIME EMPLOYED CHEMICAL ENGINEERING GRADUATES

by Degree: Summer of 1976 and Summer of 1977

Salaries	DEGREE LEVEL					
	Bachelor's		Master's		Ph.D.	
	1976	1977	1976	1977	1976	1977
90th Percentile	$16,200	$17,400	$17,500	$19,000	$21,600	$24,000
75th Percentile	15,700	17,100	17,040	18,300	21,000	23,000
50th Percentile	15,420	16,800	16,620	18,000	20,700	22,200
25th Percentile	15,000	16,200	16,000	17,100	19,800	21,500
10th Percentile	14,000	15,300	15,600	15,500	16,800	17,000
Mean	15,225	16,563	16,426	17,552	19,931	21,764
Count	524	664	90	91	42	40
Std. Dev.	1,025	1,167	1,250	1,490	2,084	2,420

TABLE 4 POSTGRADUATION STATUS OF CHEMISTRY AND CHEMICAL ENGINEERING GRADUATE
Summer of 1976 and Summer of 1977

Major and Employment Status	DEGREE LEVEL					
	Bachelor's		Master's		Ph.D.	
	1976	1977	1976	1977	1976	1977
CHEMISTRY						
Full-time employed:						
In chemistry or chemical engineering	19.7%	22.3%	42.9%	45.1%	43.7%	50.5%
Outside chemistry or chemical engineering	7.9	7.9	5.7	3.2	2.4	3.1
Postdoctoral/grad. asst./other fellowship	31.6	29.9	34.1	37.1	48.7	42.7
Military/peace Corps, etc.	1.6	1.4	1.0	0.5	0.4	0.6
Unable to obtain full-time employment	7.3	7.5	5.4	4.5	3.4	2.3
(and planning further studies)	(1.5)	(2.3)	(1.3)	(0.8)	(0.2)	(0.2)
(not planning further studies)	(5.6)	(5.0)	(3.9)	(3.7)	(3.2)	(2.1)
Not seeking full-time employment	31.8	31.0	10.9	9.5)	1.4	0.8
(and planning further studies)	(29.5)	(29.0)	(9.6)	(7.2)	(1.0)	(0.0)
(not planning further studies)	(2.3)	(2.0)	(1.0)	(2.4)	(0.4)	(0.8)
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number of responses	2,970	2,345	387	377	503	487
CHEMICAL ENGINEERING						
Full-time employed:						
In chemistry or chemical engineering	71.4%	72.1%	64.1%	72.2%	85.9%	83.9%
Outside chemistry or chemical engineering	4.1	4.4	3.2	0.9	0.0	5.7
Postdoctoral/grad. asst./other fellowship	15.4	15.6	25.5	20.2	12.9	9.2
Military/Peace Corps, etc.	1.4	0.7	0.9	1.8	0.0	0.0
Unable to obtain full-time employment	3.2	2.6	1.4	1.3	1.2	1.1
(and planning further studies)	(0.2)	(0.4)	(0.5)	(0.4)	(0.0)	(0.0)
(not planning further studies)	(2.7)	(2.2)	(0.9)	(0.9)	(1.2)	(1.1)
Not seeking full-time employment	4.5	4.5	5.0	3.6	0.0	0.0
(and planning further studies)	(4.2)	(4.2)	(4.1)	(3.6)	(0.0)	(0.0)
(not planning further studies)	(0.3)	(0.3)	(0.9)	(0.0)	(0.0)	(0.0)
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number of responses	910	1,082	220	223	85	87

Note: For categories "unable to obtain full-time employment" and "not seeking full-time employment," a further breakdown is given: "planning further studies" and "not planning further studies." Please note that detail may not add up to total because of no responses to second question.

TABLE 5

PLANS FOR ADVANCED FURTHER STUDIES OF B.S. CHEMISTRY AND CHEMICAL ENGINEERING GRADUATES: Fall 1977

	Chemists	Chemical Engineers
Plan further studies	74.4%	43.9%
Full-time	(60.5)	(20.0)
Part-time	(13.9)	(23.9)
Have no plans or no response	25.6	56.1
Total	100.0	100.0
Number of responses	2,345	1,082

TABLE 6

FIELD OF ADVANCED FURTHER STUDIES OF B.S. CHEMISTRY AND CHEMICAL ENGINEERING GRADUATES WHO PLAN FURTHER STUDIES: Fall 1977

Field of Study	Chemists	Chemical Engineers
Full-time		
Chemistry or Biochemistry	40.5%	1.9%
Chemical Engineering	3.2	72.7
Medicine or Dentistry	42.2	9.7
Business or Management	1.2	6.5
All Others	12.9	9.2
Total	100.0	100.0
Number of responses	1,418	216
Part-time		
Chemistry or Biochemistry	49.5%	1.5%
Chemical Engineering	3.4	37.5
Business or Management	17.7	48.6
All Others	29.4	12.4
Total	100.0	100.0
Number of responses	327	259

TABLE A-1

POSTGRADUATION STATUS OF CHEMISTS

BY HIGHEST DEGREE EARNED AND SEX

EMPLOYMENT STATUS		BACHELORS MEN	BACHELORS WOMEN	BACHELORS ROW TOTAL	MASTERS MEN	MASTERS WOMEN	MASTERS ROW TOTAL	PHD MEN	PHD WOMEN	PHD ROW TOTAL
FULLTIME IN CHEM	#	349	174	523	119	51	170	220	26	246
	%	19.9	29.3	22.3	43.4	49.5	45.1	52.6	37.7	50.5
FULLTIME NONCHEM		141	45	186	9	3	12	15	0	15
		8.0	7.6	7.9	3.3	2.9	3.2	3.6	0.0	3.1
POSTDOC,GRADASST		546	154	700	109	31	140	171	37	208
		31.2	26.0	29.9	39.8	30.1	37.1	40.9	53.6	42.7
MILITARY,VISTA		29	4	33	2	0	2	3	0	3
		1.7	0.7	1.4	0.7	0.0	0.5	0.7	0.0	0.6
SEEKING EMPLOYMT		118	57	175	10	7	17	8	3	11
		6.7	9.6	7.5	3.6	6.8	4.5	1.9	4.3	2.3
NOT SEEKING EMPL		569	159	728	25	11	36	1	3	4
		32.5	26.8	31.0	9.1	10.7	9.5	0.2	4.3	0.8
COLUMN TOTAL		1752	593	2345	274	103	377	418	69	487
		74.7	25.3	100.0	72.7	27.3	100.0	85.8	14.2	100.0

PLANS FOR FURTHER STUDIES THIS FALL

FULL-TIME	#	1120	298	1418	130	38	168	26	0	26
	%	63.9	50.3	60.5	47.4	36.9	44.6	6.2	0.0	5.3
PART-TIME		222	105	327	40	12	52	21	4	25
		12.7	17.7	13.9	14.6	11.7	13.8	5.0	5.8	5.1
NO PLANS		402	186	588	101	53	154	366	61	427
		22.9	31.4	25.1	36.9	51.5	40.8	87.6	88.4	87.7
NO RESPONSE		8	4	12	3	0	3	5	4	9
		0.5	0.7	0.5	1.1	0.0	0.8	1.2	5.8	1.8
COLUMN TOTAL		1752	593	2345	274	103	377	418	69	487
		74.7	25.3	100.0	72.7	27.3	100.0	85.8	14.2	100.0

TABLE A-2

PLANS FOR FURTHER STUDIES

OF UNEMPLOYED CHEMISTS

BY HIGHEST DEGREE EARNED AND SEX

PLANS FOR FURTHER STUDIES THIS FALL		NOT SEEKING EMPLYMNT MEN	NOT SEEKING EMPLYMNT WOMEN	NOT SEEKING EMPLYMNT ROW TOTAL	SEEKING EMPLOYMT MEN	SEEKING EMPLOYMT WOMEN	SEEKING EMPLOYMT ROW TOTAL
BACHELORS							
FULL-TIME	#	519	130	649	13	4	17
	%	91.2	81.8	89.1	11.0	7.0	9.7
PART-TIME		20	11	31	20	16	36
		3.5	6.9	4.3	16.9	28.1	20.6
NO PLANS		30	16	46	80	37	117
		5.3	10.1	6.3	67.8	64.9	66.9
NO RESPONSE		0	2	2	5	0	5
		0.0	1.3	0.3	4.2	0.0	2.9
COLUMN TOTAL		569	159	728	118	57	175
		78.2	21.8	100.0	67.4	32.6	100.0
MASTERS							
FULL-TIME	#	20	6	26	0	1	1
	%	80.0	54.5	72.2	0.0	14.3	5.9
PART-TIME		1	0	1	1	1	2
		4.0	0.0	2.8	10.0	14.3	11.8
NO PLANS		4	5	9	9	5	14
		16.0	45.5	25.0	90.0	71.4	82.4
COLUMN TOTAL		25	11	36	10	7	17
		69.4	30.6	100.0	58.8	41.2	100.0
PHD							
PART-TIME	#	0	0	0	1	0	1
	%	0.0	0.0	0.0	12.5	0.0	9.1
NO PLANS		1	3	4	7	3	10
		100.0	100.0	100.0	87.5	100.0	90.9
COLUMN TOTAL		1	3	4	8	3	11
		25.0	75.0	100.0	72.7	27.3	100.0

TABLE A-3

POSTGRADUATION STATUS OF CHEMICAL ENGINEERS

BY HIGHEST DEGREE EARNED AND SEX

EMPLOYMENT STATUS		BACHELORS MEN	BACHELORS WOMEN	ROW TOTAL	MASTERS MEN	MASTERS WOMEN	ROW TOTAL	PHD MEN	PHD WOMEN	ROW TOTAL
FULLTIME IN CHEM	#	667	113	780	148	13	161	71	2	73
	%	71.3	76.9	72.1	70.5	100.0	72.2	83.5	100.0	83.9
FULLTIME NONCHEM	#	40	8	48	2	0	2	5	0	5
	%	4.3	5.4	4.4	1.0	0.0	0.9	5.9	0.0	5.7
POSTDOC,GRADASST	#	150	19	169	45	0	45	8	0	8
	%	16.0	12.9	15.6	21.4	0.0	20.2	9.4	0.0	9.2
MILITARY,VISTA	#	8	0	8	4	0	4	0	0	0
	%	0.9	0.0	0.7	1.9	0.0	1.8	0.0	0.0	0.0
SEEKING EMPLOYMT	#	26	2	28	3	0	3	1	0	1
	%	2.8	1.4	2.6	1.4	0.0	1.3	1.2	0.0	1.1
NOT SEEKING EMPL	#	44	5	49	8	0	8	0	0	0
	%	4.7	3.4	4.5	3.8	0.0	3.6	0.0	0.0	0.0
COLUMN TOTAL		935	147	1082	210	13	223	85	2	87
		86.4	13.6	100.0	94.2	5.8	100.0	97.7	2.3	100.0

PLANS FOR FURTHER STUDIES THIS FALL

FULL-TIME	#	193	23	216	51	0	51	1	0	1
	%	20.6	15.6	20.0	24.3	0.0	22.9	1.2	0.0	1.1
PART-TIME	#	221	38	259	42	0	42	5	0	5
	%	23.6	25.9	23.9	20.0	0.0	18.8	5.9	0.0	5.7
NO PLANS	#	511	85	596	116	13	129	78	2	80
	%	54.7	57.8	55.1	55.2	100.0	57.8	91.8	100.0	92.0
NO RESPONSE	#	10	1	11	1	0	1	1	0	1
	%	1.1	0.7	1.0	0.5	0.0	0.4	1.2	0.0	1.1
COLUMN TOTAL		935	147	1082	210	13	223	85	2	87
		86.4	13.6	100.0	94.2	5.8	100.0	97.7	2.3	100.0

TABLE A-4

PLANS FOR FURTHER STUDIES

OF UNEMPLOYED CHEMICAL ENGINEERS

BY HIGHEST DEGREE EARNED

PLANS FOR FURTHER STUDIES THIS FALL		NOT SEEKING EMPLYMNT			SEEKING EMPLOYMT		
		MEN	WOMEN	ROW TOTAL	MEN	WOMEN	ROW TOTAL
BACHELORS							
FULL-TIME	#	40	3	43	1	1	2
	%	90.9	60.0	87.8	3.8	50.0	7.1
PART-TIME		1	1	2	2	0	2
		2.3	20.0	4.1	7.7	0.0	7.1
NO PLANS		2	1	3	23	1	24
		4.5	20.0	6.1	88.5	50.0	85.7
NO RESPONSE		1	0	1	0	0	0
		2.3	0.0	2.0	0.0	0.0	0.0
COLUMN TOTAL		44	5	49	26	2	28
		89.8	10.2	100.0	92.9	7.1	100.0
MASTERS							
FULL-TIME	#	8	0	8	1	0	1
	%	100.0	0.0	100.0	33.3	0.0	33.3
NO PLANS		0	0	0	2	0	2
		0.0	0.0	0.0	66.7	0.0	66.7
COLUMN TOTAL		8	0	8	3	0	3
		100.0	0.0	100.0	100.0	0.0	100.0
PHD							
NO PLANS	#	0	0	0	1	0	1
	%	0.0	0.0	0.0	100.0	0.0	100.0
COLUMN TOTAL		0	0	0	1	0	1
		0.0	0.0	0.0	100.0	0.0	100.0

TABLE A-5

POSTGRADUATION STATUS OF CHEMISTS

BY HIGHEST DEGREE EARNED AND CITIZENSHIP

EMPLOYMENT STATUS		BACHELORS U. S. CITIZEN	BACHELORS RESIDENT VISA	BACHELORS OTHER VISA	BACHELORS ROW TOTAL	MASTERS U. S. CITIZEN	MASTERS RESIDENT VISA	MASTERS OTHER VISA	MASTERS ROW TOTAL	PHD U. S. CITIZEN	PHD RESIDENT VISA	PHD OTHER VISA	PHD ROW TOTAL
FULLTIME IN CHEM	#	513	8	0	521	161	6	3	170	227	12	6	245
	%	22.4	25.0	0.0	22.3	48.3	40.0	10.0	45.0	53.4	34.3	24.0	50.5
FULLTIME NONCHEM	#	184	0	3	187	9	2	1	12	12	3	0	15
	%	8.0	0.0	25.0	8.0	2.7	13.3	3.3	3.2	2.8	8.6	0.0	3.1
POSTDOC,GRADASST	#	681	9	7	697	117	2	21	140	169	19	19	207
	%	29.7	28.1	58.3	29.8	35.1	13.3	70.0	37.0	39.8	54.3	76.0	42.7
MILITARY,VISTA	#	33	0	0	33	2	0	0	2	3	0	0	3
	%	1.4	0.0	0.0	1.4	0.6	0.0	0.0	0.5	0.7	0.0	0.0	0.6
SEEKING EMPLOYMT	#	171	4	0	175	16	0	1	17	10	1	0	11
	%	7.5	12.5	0.0	7.5	4.8	0.0	3.3	4.5	2.4	2.9	0.0	2.3
NOT SEEKING EMPL	#	712	11	2	725	28	5	4	37	4	0	0	4
	%	31.0	34.4	16.7	31.0	8.4	33.3	13.3	9.8	0.9	0.0	0.0	0.8
COLUMN TOTAL		2294	32	12	2338	333	15	30	378	425	35	25	485
		98.1	1.4	0.5	100.0	88.1	4.0	7.9	100.0	87.6	7.2	5.2	100.0

PLANS FOR FURTHER STUDIES THIS FALL

FULL-TIME	#	1382	20	11	1413	138	5	25	168	22	2	2	26
	%	60.2	62.5	91.7	60.4	41.4	33.3	83.3	44.4	5.2	5.7	8.0	5.4
PART-TIME	#	320	5	1	326	48	3	1	52	19	5	1	25
	%	13.9	15.6	8.3	13.9	14.4	20.0	3.3	13.8	4.5	14.3	4.0	5.2
NO PLANS	#	580	7	0	587	144	7	4	155	376	28	21	425
	%	25.3	21.9	0.0	25.1	43.2	46.7	13.3	41.0	88.5	80.0	84.0	87.6
NO RESPONSE	#	12	0	0	12	3	0	0	3	8	0	1	9
	%	0.5	0.0	0.0	0.5	0.9	0.0	0.0	0.8	1.9	0.0	4.0	1.9
COLUMN TOTAL		2294	32	12	2338	333	15	30	378	425	35	25	485
		98.1	1.4	0.5	100.0	88.1	4.0	7.9	100.0	87.6	7.2	5.2	100.0

TABLE A-6

POSTGRADUATION STATUS OF CHEMICAL ENGINEERS

BY HIGHEST DEGREE EARNED AND CITIZENSHIP

EMPLOYMENT STATUS		BACHELORS				MASTERS				PHD			
		U. S. CITIZEN	RESIDENT VISA	OTHER VISA	ROW TOTAL	U. S. CITIZEN	RESIDENT VISA	OTHER VISA	ROW TOTAL	U. S. CITIZEN	RESIDENT VISA	OTHER VISA	ROW TOTAL
FULLTIME IN CHEM	#	767	12	2	781	141	9	11	161	48	13	12	73
	%	73.0	63.2	16.7	72.2	78.3	81.8	35.5	72.5	90.6	76.5	70.6	83.9
FULLTIME NONCHEM	#	47	1	0	48	2	0	0	2	3	2	0	5
	%	4.5	5.3	0.0	4.4	1.1	0.0	0.0	0.9	5.7	11.8	0.0	5.7
POSTDOC,GRADASST	#	161	2	6	169	28	2	15	45	2	1	5	8
	%	15.3	10.5	50.0	15.6	15.6	18.2	48.4	20.3	3.8	5.9	29.4	9.2
MILITARY,VISTA	#	8	0	0	8	3	0	0	3	0	0	0	0
	%	0.8	0.0	0.0	0.7	1.7	0.0	0.0	1.4	0.0	0.0	0.0	0.0
SEEKING EMPLOYMT	#	22	4	1	27	1	0	2	3	0	1	0	1
	%	2.1	21.1	8.3	2.5	0.6	0.0	6.5	1.4	0.0	5.9	0.0	1.1
NOT SEEKING EMPL	#	46	0	3	49	5	0	3	8	0	0	0	0
	%	4.4	0.0	25.0	4.5	2.8	0.0	9.7	3.6	0.0	0.0	0.0	0.0
COLUMN TOTAL		1051	19	12	1082	180	11	31	222	53	17	17	87
		97.1	1.8	1.1	100.0	81.1	5.0	14.0	100.0	60.9	19.5	19.5	100.0

PLANS FOR FURTHER STUDIES THIS FALL

FULL-TIME	#	206	2	7	215	31	1	19	51	0	0	1	1
	%	19.6	10.5	58.3	19.9	17.2	9.1	61.3	23.0	0.0	0.0	5.9	1.1
PART-TIME	#	254	3	2	259	36	4	2	42	2	2	1	5
	%	24.2	15.8	16.7	23.9	20.0	36.4	6.5	18.9	3.8	11.8	5.9	5.7
NO PLANS	#	580	14	3	597	113	6	9	128	51	15	14	80
	%	55.2	73.7	25.0	55.2	62.8	54.5	29.0	57.7	96.2	88.2	82.4	92.0
NO RESPONSE	#	11	0	0	11	0	0	1	1	0	0	1	1
	%	1.0	0.0	0.0	1.0	0.0	0.0	3.2	0.5	0.0	0.0	5.9	1.1
COLUMN TOTAL		1051	19	12	1082	180	11	31	222	53	17	17	87
		97.1	1.8	1.1	100.0	81.1	5.0	14.0	100.0	60.9	19.5	19.5	100.0

TABLE A-7

POSTGRADUATION STATUS

OF MINORITY CHEMISTS

BY HIGHEST DEGREE EARNED

EMPLOYMENT STATUS		BACHLORS	MASTERS	PHD	ROW TOTAL
FULLTIME IN CHEM	#	26	12	26	64
	%	16.7	27.9	42.6	24.6
FULLTIME NONCHEM		18	3	3	24
		11.5	7.0	4.9	9.2
POSTDOC,GRADASST		46	21	30	97
		29.5	48.8	49.2	37.3
MILITARY,VISTA		1	0	0	1
		0.6	0.0	0.0	0.4
SEEKING EMPLOYMT		16	2	2	20
		10.3	4.7	3.3	7.7
NOT SEEKING EMPL		49	5	0	54
		31.4	11.6	0.0	20.8
COLUMN TOTAL		156	43	61	260
		60.0	16.5	23.5	100.0

PLANS FOR FURTHER STUDIES THIS FALL

FULL-TIME	#	104	24	3	131
	%	66.7	55.8	4.9	50.4
PART-TIME		25	7	5	37
		16.0	16.3	8.2	14.2
NO PLANS		27	12	52	91
		17.3	27.9	85.2	35.0
NO RESPONSE		0	0	1	1
		0.0	0.0	1.6	0.4
COLUMN TOTAL		156	43	61	260
		60.0	16.5	23.5	100.0

TABLE A-8

POSTGRADUATION STATUS

OF MINORITY CHEMICAL ENGINEERS

BY HIGHEST DEGREE EARNED

EMPLOYMENT STATUS		BACHLORS	MASTERS	PHD	ROW TOTAL
FULLTIME IN CHEM	#	42	20	13	75
	%	64.6	62.5	61.9	63.6
FULLTIME NONCHEM		3	0	3	6
		4.6	0.0	14.3	5.1
POSTDOC,GRADASST		11	9	4	24
		16.9	28.1	19.0	20.3
SEEKING EMPLOYMT		5	1	1	7
		7.7	3.1	4.8	5.9
NOT SEEKING EMPL		4	2	0	6
		6.2	6.3	0.0	5.1
COLUMN TOTAL		65	32	21	118
		55.1	27.1	17.8	100.0

PLANS FOR FURTHER STUDIES THIS FALL

FULL-TIME	#	13	10	1	24
	%	20.0	31.3	4.8	20.3
PART-TIME		19	5	1	25
		29.2	15.6	4.8	21.2
NO PLANS		33	16	19	68
		50.8	50.0	90.5	57.6
NO RESPONSE		0	1	0	1
		0.0	3.1	0.0	0.8
COLUMN TOTAL		65	32	21	118
		55.1	27.1	17.8	100.0

TABLE A-9

POSTGRADUATION STATUS OF B.S. CHEMISTS

BY CERTIFICATION STATUS

EMPLOYMENT STATUS		CERTIFD.[1]	NON-CERTIFD.	ROW TOTAL
FULLTIME IN CHEM	#	256	267	523
	%	25.0	20.2	22.3
FULLTIME NONCHEM		51	136	187
		5.0	10.3	8.0
POSTDOC,GRADASST		434	266	700
		42.4	20.1	29.8
MILITARY,VISTA		11	22	33
		1.1	1.7	1.4
SEEKING EMPLOYMT		80	95	175
		7.8	7.2	7.5
NOT SEEKING EMPL		191	537	728
		18.7	40.6	31.0
COLUMN TOTAL		1023	1323	2346
		43.6	56.4	100.0

PLANS FOR FURTHER STUDIES THIS FALL

FULL-TIME	#	616	802	1418
	%	60.2	60.6	60.4
PART-TIME		138	190	328
		13.5	14.4	14.0
NC PLANS		262	326	588
		25.6	24.6	25.1
NO RESPONSE		7	5	12
		0.7	0.4	0.5
COLUMN TOTAL		1023	1323	2346
		43.6	56.4	100.0

[1] A "certified bachelor" is one who has been certified by the chemistry department chairman to the American Chemical Society, as having successfully completed the curriculum in chemistry as approved by the ACS Committee on Professional Training, and is, therefore, eligible to become a member of ACS.

TABLE A-10

POSTGRADUATION STATUS OF M.S. AND PH.D. CHEMISTS

BY FIELD OF HIGHEST DEGREE

EMPLOYMENT STATUS		FIELD OF HIGHEST DEGREE: CHEMSTRY, GENERAL	BIOCHEMISTRY	AGRICULT, FOOD	ANALYTICAL	INORGANIC	ORGANIC	PHARMA, MED, CLN	PHYSICAL, THEORET	POLYMER, MACROMOL	CHEMSTRY, OTHER	ROW TOTAL
MASTERS												
FULLTIME IN CHEM	#	35	16	1	28	12	44	3	10	8	13	170
	%	62.5	34.0	100.0	73.7	48.0	40.0	60.0	18.9	61.5	43.3	45.0
FULLTIME NONCHEM	#	1	3	0	0	1	2	0	4	0	1	12
	%	1.8	6.4	0.0	0.0	4.0	1.8	0.0	7.5	0.0	3.3	3.2
POSTDOC,GRADASST	#	13	18	0	7	6	48	1	28	5	14	140
	%	23.2	38.3	0.0	18.4	24.0	43.6	20.0	52.8	38.5	46.7	37.0
MILITARY,VISTA	#	0	0	0	0	0	0	0	1	0	1	2
	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	3.3	0.5
SEEKING EMPLOYMT	#	3	4	0	1	1	2	1	4	0	1	17
	%	5.4	8.5	0.0	2.6	4.0	1.8	20.0	7.5	0.0	3.3	4.5
NOT SEEKING EMPL	#	4	6	0	2	5	14	0	6	0	0	37
	%	7.1	12.8	0.0	5.3	20.0	12.7	0.0	11.3	0.0	0.0	9.8
COLUMN TOTAL		56	47	1	38	25	110	5	53	13	30	378
		14.8	12.4	0.3	10.1	6.6	29.1	1.3	14.0	3.4	7.9	100.0
PHD												
FULLTIME IN CHEM	#	6	8	0	46	29	82	1	51	6	17	246
	%	35.3	19.5	0.0	78.0	42.0	57.3	50.0	47.7	46.2	45.9	50.4
FULLTIME NONCHEM	#	0	1	0	1	0	4	0	6	1	2	15
	%	0.0	2.4	0.0	1.7	0.0	2.8	0.0	5.6	7.7	5.4	3.1
POSTDOC,GRADASST	#	10	29	0	11	35	53	1	46	6	18	209
	%	58.8	70.7	0.0	18.6	50.7	37.1	50.0	43.0	46.2	48.6	42.8
MILITARY,VISTA	#	1	1	0	0	1	0	0	0	0	0	3
	%	5.9	2.4	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.6
SEEKING EMPLOYMT	#	0	2	0	1	3	1	0	4	0	0	11
	%	0.0	4.9	0.0	1.7	4.3	0.7	0.0	3.7	0.0	0.0	2.3
NOT SEEKING EMPL	#	0	0	0	0	1	3	0	0	0	0	4
	%	0.0	0.0	0.0	0.0	1.4	2.1	0.0	0.0	0.0	0.0	0.8
COLUMN TOTAL		17	41	0	59	69	143	2	107	13	37	488
		3.5	8.4	0.0	12.1	14.1	29.3	0.4	21.9	2.7	7.6	100.0

TABLE A-11

FIELD OF ADVANCED FURTHER STUDIES OF CHEMISTS

WHO PLAN FURTHER STUDIES (FULL-TIME OR PART-TIME) IN FALL, 1977

BY HIGHEST DEGREE EARNED AND SEX

FIELD OF ADVANCED FURTHER STUDIES		BACHELORS MEN	BACHELORS WOMEN	BACHELORS ROW TOTAL	MASTERS MEN	MASTERS WOMEN	MASTERS ROW TOTAL	PHD MEN	PHD WOMEN	PHD ROW TOTAL
CHEMISTRY	#	475	139	614	113	33	146	28	1	29
	%	35.4	34.5	35.2	66.5	66.0	66.4	59.6	25.0	56.9
OTH PHY SCI,MATH		24	7	31	2	0	2	1	0	1
		1.8	1.7	1.8	1.2	0.0	0.9	2.1	0.0	2.0
CHEMICAL ENGRING		46	15	61	4	0	4	0	0	0
		3.4	3.7	3.5	2.4	0.0	1.8	0.0	0.0	0.0
OTHER ENGRING		19	4	23	5	0	5	0	0	0
		1.4	1.0	1.3	2.9	0.0	2.3	0.0	0.0	0.0
BIOCHEMISTRY		84	39	123	15	6	21	3	1	4
		6.3	9.7	7.0	8.8	12.0	9.5	6.4	25.0	7.8
OTH LIFE SCIENCE		66	37	103	1	1	2	3	0	3
		4.9	9.2	5.9	0.6	2.0	0.9	6.4	0.0	5.9
MEDICINE		408	101	509	6	3	9	0	0	0
		30.4	25.1	29.2	3.5	6.0	4.1	0.0	0.0	0.0
DENTISTRY		90	11	101	3	0	3	0	0	0
		6.7	2.7	5.8	1.8	0.0	1.4	0.0	0.0	0.0
PHARMACY		28	12	40	4	2	6	0	0	0
		2.1	3.0	2.3	2.4	4.0	2.7	0.0	0.0	0.0
BUSINESS,MGMT		58	17	75	12	4	16	9	1	10
		4.3	4.2	4.3	7.1	8.0	7.3	19.1	25.0	19.6
LAW		17	8	25	2	0	2	0	0	0
		1.3	2.0	1.4	1.2	0.0	0.9	0.0	0.0	0.0
SOC SCI,HUMNTIES		6	7	13	1	1	2	2	1	3
		0.4	1.7	0.7	0.6	2.0	0.9	4.3	25.0	5.9
OTHER		15	6	21	1	0	1	0	0	0
		1.1	1.5	1.2	0.6	0.0	0.5	0.0	0.0	0.0
NO RESPONSE		6	0	6	1	0	1	1	0	1
		0.4	0.0	0.3	0.6	0.0	0.5	2.1	0.0	2.0
COLUMN TOTAL		1342	403	1745	170	50	220	47	4	51
		76.9	23.1	100.0	77.3	22.7	100.0	92.2	7.8	100.0

TABLE A-12

FIELD OF ADVANCED FURTHER STUDIES OF CHEMISTS

WHO PLAN FURTHER STUDIES (FULL-TIME) IN FALL, 1977

BY HIGHEST DEGREE EARNED AND SEX

FIELD OF ADVANCED FURTHER STUDIES		BACHELORS MEN	BACHELORS WOMEN	BACHELORS ROW TOTAL	MASTERS MEN	MASTERS WOMEN	MASTERS ROW TOTAL	PHD MEN	PHD ROW TOTAL
CHEMISTRY	#	387	94	481	97	28	125	20	20
	%	34.6	31.5	33.9	74.6	73.7	74.4	76.9	76.9
OTH PHY SCI,MATH	#	13	4	17	2	0	2	1	1
	%	1.2	1.3	1.2	1.5	0.0	1.2	3.8	3.8
CHEMICAL ENGRING	#	33	13	46	4	0	4	0	0
	%	2.9	4.4	3.2	3.1	0.0	2.4	0.0	0.0
OTHER ENGRING	#	9	3	12	3	0	3	0	0
	%	0.8	1.0	0.8	2.3	0.0	1.8	0.0	0.0
BIOCHEMISTRY	#	65	29	94	12	5	17	2	2
	%	5.8	9.7	6.6	9.2	13.2	10.1	7.7	7.7
OTH LIFE SCIENCE	#	56	22	78	1	1	2	1	1
	%	5.0	7.4	5.5	0.8	2.6	1.2	3.8	3.8
MEDICINE	#	400	100	500	5	2	7	0	0
	%	35.7	33.6	35.3	3.8	5.3	4.2	0.0	0.0
DENTISTRY	#	90	11	101	3	0	3	0	0
	%	8.0	3.7	7.1	2.3	0.0	1.8	0.0	0.0
PHARMACY	#	23	8	31	2	1	3	0	0
	%	2.1	2.7	2.2	1.5	2.6	1.8	0.0	0.0
BUSINESS,MGMT	#	17	0	17	0	0	0	1	1
	%	1.5	0.0	1.2	0.0	0.0	0.0	3.8	3.8
LAW	#	15	8	23	0	0	0	0	0
	%	1.3	2.7	1.6	0.0	0.0	0.0	0.0	0.0
SOC SCI,HUMNTIES	#	3	4	7	0	1	1	0	0
	%	0.3	1.3	0.5	0.0	2.6	0.6	0.0	0.0
OTHER	#	9	2	11	0	0	0	0	0
	%	0.8	0.7	0.8	0.0	0.0	0.0	0.0	0.0
NO RESPONSE	#	0	0	0	1	0	1	1	1
	%	0.0	0.0	0.0	0.8	0.0	0.6	3.8	3.8
COLUMN TOTAL	#	1120	298	1418	130	38	168	26	26
	%	79.0	21.0	100.0	77.4	22.6	100.0	100.0	100.0

TABLE A-13

FIELD OF ADVANCED FURTHER STUDIES OF CHEMICAL ENGINEERS

WHO PLAN FURTHER STUDIES (FULL-TIME OR PART-TIME) IN FALL, 1977

BY HIGHEST DEGREE EARNED AND SEX

FIELD OF ADVANCED FURTHER STUDIES		BACHELORS MEN	BACHELORS WOMEN	BACHELORS ROW TOTAL	MASTERS MEN	MASTERS ROW TOTAL	PHD MEN	PHD ROW TOTAL
CHEMISTRY	#	7	0	7	1	1	0	0
	%	1.7	0.0	1.5	1.1	1.1	0.0	0.0
OTH PHY SCI,MATH	#	6	3	9	2	2	0	0
	%	1.4	4.9	1.9	2.2	2.2	0.0	0.0
CHEMICAL ENGRING	#	222	32	254	62	62	2	2
	%	53.6	52.5	53.5	66.7	66.7	33.3	33.3
OTHER ENGRING	#	20	3	23	2	2	0	0
	%	4.8	4.9	4.8	2.2	2.2	0.0	0.0
BIOCHEMISTRY	#	1	0	1	0	0	0	0
	%	0.2	0.0	0.2	0.0	0.0	0.0	0.0
OTH LIFE SCIENCE	#	5	0	5	2	2	1	1
	%	1.2	0.0	1.1	2.2	2.2	16.7	16.7
MEDICINE	#	17	1	18	0	0	0	0
	%	4.1	1.6	3.8	0.0	0.0	0.0	0.0
DENTISTRY	#	3	0	3	0	0	0	0
	%	0.7	0.0	0.6	0.0	0.0	0.0	0.0
BUSINESS,MGMT	#	119	21	140	20	20	3	3
	%	28.7	34.4	29.5	21.5	21.5	50.0	50.0
LAW	#	6	1	7	2	2	0	0
	%	1.4	1.6	1.5	2.2	2.2	0.0	0.0
SCC SCI,HUMNTIES	#	4	0	4	0	0	0	0
	%	1.0	0.0	0.8	0.0	0.0	0.0	0.0
OTHER	#	1	0	1	1	1	0	0
	%	0.2	0.0	0.2	1.1	1.1	0.0	0.0
NC RESPONSE	#	3	0	3	1	1	0	0
	%	0.7	0.0	0.6	1.1	1.1	0.0	0.0
COLUMN TOTAL	#	414	61	475	93	93	6	6
	%	87.2	12.8	100.0	100.0	100.0	100.0	100.0

TABLE A-14

FIELD OF ADVANCED FURTHER STUDIES OF CHEMICAL ENGINEERS
WHO PLAN FURTHER STUDIES (FULL-TIME) IN FALL, 1977
BY HIGHEST DEGREE EARNED AND SEX

FIELD OF ADVANCED FURTHER STUDIES		BACHELORS MEN	BACHELORS WOMEN	BACHELORS ROW TOTAL	MASTERS MEN	MASTERS ROW TOTAL	PHD MEN	PHD ROW TOTAL
CHEMISTRY	#	4	0	4	0	0	0	0
	%	2.1	0.0	1.9	0.0	0.0	0.0	0.0
OTH PHY SCI,MATH	#	3	2	5	0	0	0	0
	%	1.6	8.7	2.3	0.0	0.0	0.0	0.0
CHEMICAL ENGRING	#	140	17	157	47	47	1	1
	%	72.5	73.9	72.7	92.2	92.2	100.0	100.0
OTHER ENGRING	#	6	1	7	1	1	0	0
	%	3.1	4.3	3.2	2.0	2.0	0.0	0.0
OTH LIFE SCIENCE	#	3	0	3	1	1	0	0
	%	1.6	0.0	1.4	2.0	2.0	0.0	0.0
MEDICINE	#	17	1	18	0	0	0	0
	%	8.8	4.3	8.3	0.0	0.0	0.0	0.0
DENTISTRY	#	3	0	3	0	0	0	0
	%	1.6	0.0	1.4	0.0	0.0	0.0	0.0
BUSINESS,MGMT	#	12	2	14	1	1	0	0
	%	6.2	8.7	6.5	2.0	2.0	0.0	0.0
LAW	#	5	0	5	1	1	0	0
	%	2.6	0.0	2.3	2.0	2.0	0.0	0.0
COLUMN TOTAL	#	193	23	216	51	51	1	1
	%	89.4	10.6	100.0	100.0	100.0	100.0	100.0

TABLE A-15

FIELD OF ADVANCED FURTHER STUDIES OF B.S. CHEMISTS WHO PLAN FURTHER STUDIES (FULL-TIME OR PART-TIME) IN FALL, 1977 BY CERTIFICATION STATUS

FIELD OF ADVANCED FURTHER STUDIES		CERTIFD.[1]	NON-CERTIFD.	ROW TOTAL
CHEMISTRY	#	402	212	614
	%	53.3	21.4	35.2
OTH PHY SCI,MATH		13	18	31
		1.7	1.8	1.8
CHEMICAL ENGRING		35	26	61
		4.6	2.6	3.5
OTHER ENGRING		11	12	23
		1.5	1.2	1.3
BIOCHEMISTRY		59	64	123
		7.8	6.5	7.0
OTH LIFE SCIENCE		26	77	103
		3.4	7.8	5.9
MEDICINE		130	379	509
		17.2	38.2	29.2
DENTISTRY		11	90	101
		1.5	9.1	5.8
PHARMACY		11	29	40
		1.5	2.9	2.3
BUSINESS,MGMT		31	45	76
		4.1	4.5	4.4
LAW		9	16	25
		1.2	1.6	1.4
SOC SCI,HUMNTIES		5	8	13
		0.7	0.8	0.7
OTHER		7	14	21
		0.9	1.4	1.2
NO RESPONSE		4	2	6
		0.5	0.2	0.3
COLUMN TOTAL		754	992	1746
		43.2	56.8	100.0

[1] SEE NOTE ON TABLE A-9.

TABLE A-16

FIELD OF ADVANCED FURTHER STUDIES OF B.S. CHEMISTS WHO PLAN FURTHER STUDIES (FULL-TIME) IN FALL, 1977 BY CERTIFICATION STATUS

FIELD OF ADVANCED FURTHER STUDIES		CERTIFD.[1]	NON-CERTIFD.	ROW TOTAL
CHEMISTRY	#	336	145	481
	%	54.5	18.1	33.9
OTH PHY SCI,MATH		8	9	17
		1.3	1.1	1.2
CHEMICAL ENGRING		25	21	46
		4.1	2.6	3.2
OTHER ENGRING		7	5	12
		1.1	0.6	0.8
BIOCHEMISTRY		52	42	94
		8.4	5.2	6.6
OTH LIFE SCIENCE		21	57	78
		3.4	7.1	5.5
MEDICINE		129	371	500
		20.9	46.3	35.3
DENTISTRY		11	90	101
		1.8	11.2	7.1
PHARMACY		8	23	31
		1.3	2.9	2.2
BUSINESS,MGMT		7	10	17
		1.1	1.2	1.2
LAW		7	16	23
		1.1	2.0	1.6
SOC SCI,HUMNTIES		1	6	7
		0.2	0.7	0.5
OTHER		4	7	11
		0.6	0.9	0.8
COLUMN TOTAL		616	802	1418
		43.4	56.6	100.0

[1]SEE NOTE ON TABLE A-9.

TABLE A-17

NUMBER OF FIRM JOB OFFERS TO FULL-TIME EMPLOYED CHEMISTS

BY HIGHEST DEGREE EARNED AND SEX

NUMBER OF OFFERS		BACHELORS MEN	BACHELORS WOMEN	BACHELORS ROW TOTAL	MASTERS MEN	MASTERS WOMEN	MASTERS ROW TOTAL	PHD MEN	PHD WOMEN	PHD ROW TOTAL
INEXPERIENCED										
1	#	141	69	210	31	19	50	72	7	79
	%	55.5	50.0	53.6	43.1	55.9	47.2	46.2	41.2	45.7
2		63	34	97	20	8	28	37	4	41
		24.8	24.6	24.7	27.8	23.5	26.4	23.7	23.5	23.7
3		35	20	55	3	4	7	26	4	30
		13.8	14.5	14.0	4.2	11.8	6.6	16.7	23.5	17.3
4		10	8	18	9	0	9	13	2	15
		3.9	5.8	4.6	12.5	0.0	8.5	8.3	11.8	8.7
5		2	2	4	6	0	6	8	0	8
		0.8	1.4	1.0	8.3	0.0	5.7	5.1	0.0	4.6
6 OR 7		2	5	7	3	1	4	0	0	0
		0.8	3.6	1.8	4.2	2.9	3.8	0.0	0.0	0.0
8 OR 9		1	0	1	0	0	0	0	0	0
		0.4	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
10 OR MORE		0	0	0	0	2	2	0	0	0
		0.0	0.0	0.0	0.0	5.9	1.9	0.0	0.0	0.0
	COLUMN TOTAL	254	138	392	72	34	106	156	17	173
		64.8	35.2	100.0	67.9	32.1	100.0	90.2	9.8	100.0
	MEAN	1.7	2.0	1.8	2.3	2.3	2.3	2.0	2.1	2.0
EXPERIENCED										
1	#	47	14	61	29	8	37	34	6	40
	%	52.8	46.7	51.3	64.4	50.0	60.7	54.0	66.7	55.6
2		18	9	27	10	6	16	13	2	15
		20.2	30.0	22.7	22.2	37.5	26.2	20.6	22.2	20.8
3		16	7	23	3	1	4	9	1	10
		18.0	23.3	19.3	6.7	6.3	6.6	14.3	11.1	13.9
4		3	0	3	0	1	1	2	0	2
		3.4	0.0	2.5	0.0	6.3	1.6	3.2	0.0	2.8
5		4	0	4	2	0	2	3	0	3
		4.5	0.0	3.4	4.4	0.0	3.3	4.8	0.0	4.2
6 OR 7		0	0	0	1	0	1	2	0	2
		0.0	0.0	0.0	2.2	0.0	1.6	3.2	0.0	2.8
10 OR MORE		1	0	1	0	0	0	0	0	0
		1.1	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0
	COLUMN TOTAL	89	30	119	45	16	61	63	9	72
		74.8	25.2	100.0	73.8	26.2	100.0	87.5	12.5	100.0
	MEAN	2.0	1.8	1.9	1.6	1.7	1.7	2.0	1.4	1.9

TABLE A-18

NUMBER OF FIRM JOB OFFERS TO FULL-TIME EMPLOYED CHEMICAL ENGINEERS

BY HIGHEST DEGREE EARNED AND SEX

NUMBER OF OFFERS		BACHLORS MEN	BACHLORS WOMEN	ROW TOTAL	MASTERS MEN	MASTERS WOMEN	ROW TOTAL	PHD MEN	PHD WOMEN	ROW TOTAL
INEXPERIENCED										
1	#	119	13	132	16	0	16	10	0	10
	%	21.3	12.7	20.0	19.3	0.0	18.0	25.6	0.0	25.0
2		109	17	126	18	1	19	9	1	10
		19.5	16.7	19.1	21.7	16.7	21.3	23.1	100.0	25.0
3		106	12	118	10	2	12	6	0	6
		19.0	11.8	17.9	12.0	33.3	13.5	15.4	0.0	15.0
4		69	9	78	14	1	15	5	0	5
		12.3	8.8	11.8	16.9	16.7	16.9	12.8	0.0	12.5
5		52	8	60	6	1	7	1	0	1
		9.3	7.8	9.1	7.2	16.7	7.9	2.6	0.0	2.5
6 OR 7		53	16	69	9	1	10	5	0	5
		9.5	15.7	10.4	10.8	16.7	11.2	12.8	0.0	12.5
8 OR 9		24	10	34	3	0	3	1	0	1
		4.3	9.8	5.1	3.6	0.0	3.4	2.6	0.0	2.5
10 OR MORE		27	17	44	7	0	7	2	0	2
		4.8	16.7	6.7	8.4	0.0	7.9	5.1	0.0	5.0
	COLUMN TOTAL	559	102	661	83	6	89	39	1	40
		84.6	15.4	100.0	93.3	6.7	100.0	97.5	2.5	100.0
	MEAN	3.7	5.5	3.9	3.9	4.0	3.9	3.6	2.0	3.6
EXPERIENCED										
1	#	19	1	20	20	2	22	15	0	15
	%	19.2	11.1	18.5	34.5	33.3	34.4	48.4	0.0	46.9
2		16	2	18	7	1	8	4	0	4
		16.2	22.2	16.7	12.1	16.7	12.5	12.9	0.0	12.5
3		13	2	15	12	1	13	3	1	4
		13.1	22.2	13.9	20.7	16.7	20.3	9.7	100.0	12.5
4		13	2	15	5	0	5	4	0	4
		13.1	22.2	13.9	8.6	0.0	7.8	12.9	0.0	12.5
5		10	0	10	6	2	8	2	0	2
		10.1	0.0	9.3	10.3	33.3	12.5	6.5	0.0	6.3
6 OR 7		16	2	18	3	0	3	1	0	1
		16.2	22.2	16.7	5.2	0.0	4.7	3.2	0.0	3.1
8 OR 9		4	0	4	5	0	5	1	0	1
		4.0	0.0	3.7	8.6	0.0	7.8	3.2	0.0	3.1
10 OR MORE		8	0	8	0	0	0	1	0	1
		8.1	0.0	7.4	0.0	0.0	0.0	3.2	0.0	3.1
	COLUMN TOTAL	99	9	108	58	6	64	31	1	32
		91.7	8.3	100.0	90.6	9.4	100.0	96.9	3.1	100.0
	MEAN	4.3	3.6	4.2	3.1	2.8	3.1	2.7	3.0	2.7

TABLE A-19

AVERAGE NUMBER OF FIRM JOB OFFERS

TO FULL-TIME EMPLOYED MINORITY CHEMISTS AND CHEMICAL ENGINEERS

BY HIGHEST DEGREE EARNED AND SEX

HIGHEST DEGREE EARNED		CHEMISTS MEN	CHEMISTS WOMEN	CHEMISTS ROW TOTAL	CHEM ENGINEERS MEN	CHEM ENGINEERS WOMEN	CHEM ENGINEERS ROW TOTAL
INEXPERIENCED							
BACHLORS	MEAN	2.1	1.5	2.0	2.8	4.2	3.2
	COUNT	13	7	20	24	9	33
	STD DEV	1.2	1.2	1.2	1.7	3.2	2.2
MASTERS		2.3	1.0	1.7	1.4	3.0	1.6
		3	3	6	9	1	10
		1.5	0.0	1.2	1.0	0.0	1.1
PHD		1.9	3.0	2.0	2.6	0.0	2.6
		17	1	18	5	0	5
		0.8	0.0	0.8	1.1	0.0	1.1
COLUMN	MEAN	2.0	1.7	2.0	2.4	4.1	2.8
	COUNT	33	11	44	38	10	48
	STD DEV	1.0	1.1	1.0	1.6	3.0	2.0
EXPERIENCED							
BACHLORS	MEAN	1.0	2.7	1.8	4.0	1.0	3.7
	COUNT	3	3	6	8	1	9
	STD DEV	0.0	0.6	1.0	3.0	0.0	3.0
MASTERS		1.7	1.7	1.7	1.9	3.0	2.0
		3	3	6	9	1	10
		0.6	0.6	0.5	1.1	0.0	1.1
PHD		2.3	1.5	1.9	2.0	0.0	2.0
		4	4	8	8	0	8
		2.5	1.0	1.8	1.6	0.0	1.6
COLUMN	MEAN	1.7	1.9	1.8	2.6	2.0	2.6
	COUNT	10	10	20	25	2	27
	STD DEV	1.6	0.9	1.2	2.2	1.4	2.1

TABLE B-1

STARTING YEARLY SALARIES

OF INEXPERIENCED FULL-TIME CHEMISTS AND CHEMICAL ENGINEERS

BY HIGHEST DEGREE EARNED AND SEX

HIGHEST DEGREE EARNED		MEN	WOMEN	ROW TOTAL
CHEMISTS				
BACHLORS	MEDIAN	12000.	12000.	12000
	MEAN	11776.	11480.	11670.
	COUNT	255	143	398
	STD DEV	2250.	2550.	2363.
MASTERS		14825.	13500.	14100
		14129.	13110.	13812.
		73	33	106
		3105.	2770.	3029.
PHD		19500.	19200.	19500
		18313.	16786.	18163.
		156	17	173
		3432.	4758.	3596.
COLUMN	MEAN	14238.	12226.	13664.
	COUNT	484	193	677
	STD DEV	4055.	3219.	3940.
CHEM ENGINEERS				
BACHLORS	MEDIAN	16800.	16970.	16800
	MEAN	16500.	16907.	16562.
	COUNT	561	102	663
	STD DEV	1221.	757.	1170.
MASTERS		18000.	18000.	18000
		17593.	17063.	17552.
		84	7	91
		1349.	2800.	1490.
PHD		22200.	22300.	22200
		21750.	22300.	21764.
		39	1	40
		2450.	0.	2420.
COLUMN	MEAN	16933.	16966.	16938.
	COUNT	684	110	794
	STD DEV	1819.	1108.	1738.

TABLE B-2

STARTING YEARLY SALARIES

OF INEXPERIENCED FULL-TIME CHEMISTS

BY HIGHEST DEGREE EARNED AND EMPLOYER

HIGHEST DEGREE EARNED		EMPLOYER										
		TOTAL PRIVATE INDUSTRY	MANUFAC-TURING	NONMANU-FACTURING	COLLEGE, UNIVRSTY	HIGH SCH, OTHR SC	FEDERAL GOVERNMT	STATE, LOCL GOV	HOSPITAL, IND LAB	NONPRFT, RES INST	OTHER	ROW TOTAL
BACHLORS	MEDIAN	12600.	12600.	12000.	8400.	9000.	10000.	10500.	9500.	10800.	C.	
	MEAN	12472.	12467.	12518.	8613.	9088.	10566.	11307.	9504.	10774.	C.	11669.
	COUNT	286	259	27	31	12	15	6	34	13	C	397
	STD DEV	2013.	2002.	2157.	1754.	888.	1778.	2583.	1530.	2313.	0.	2366.
MASTERS		15200.	15200.	14825.	9000.	10350.	11500.	11000.	11000.	15000.	C.	
		15035.	15018.	15167.	9170.	11182.	12445.	11852.	12332.	15000.	0.	13791.
		71	63	8	10	7	6	5	5	1	0	105
		2387.	2389.	2534.	2094.	2505.	1972.	2163.	2801.	0.	C.	3036.
PHD		20000.	20000.	20100.	12000.	11000.	17500.	C.	12000.	16800.	16000.	
		20038.	19990.	20467.	12441.	11000.	18471.	C.	13150.	17400.	16000.	18163.
		119	107	12	36	1	12	C	2	2	1	173
		1462.	1475.	1311.	2393.	0.	2383.	C.	1626.	849.	0.	3596.
COLUMN	MEAN	14746.	14718.	14998.	10475.	9916.	13782.	11555.	10027.	11866.	16000.	13663.
	COUNT	476	429	47	77	20	33	11	41	16	1	675
	STD DEV	3734.	3716.	3929.	2800.	1877.	4168.	2300.	2041.	3178.	0.	3944.

TABLE B-3

STARTING YEARLY SALARIES

OF INEXPERIENCED FULL-TIME CHEMISTS

BY HIGHEST DEGREE EARNED AND EMPLOYER - MEN

HIGHEST DEGREE EARNED		EMPLOYER										
		TOTAL PRIVATE INDUSTRY	MANUFAC-TURING	NONMANU-FACTURING	COLLEGE, UNIVRSTY	HIGH SCH, OTHR SC	FEDERAL GOVERNMT	STATE, LOCL GOV	HOSPITAL, IND LAB	NONPRFT, RES INST	OTHER	ROW TOTAL
BACHLORS	MEDIAN	12500.	12480.	13000.	8300.	8500.	10000.	11139.	10000.	10800.	0.	
	MEAN	12396.	12320.	13170.	8743.	8755.	10964.	12510.	9698.	10835.	0.	11776.
	COUNT	191	174	17	16	6	12	4	18	8	0	255
	STD DEV	1977.	1967.	1966.	1539.	854.	1760.	2237.	1566.	2482.	0.	2250.
MASTERS		15500.	15500.	14825.	9000.	10500.	14097.	11000.	11000.	0.	0.	
		15144.	15154.	15079.	8974.	12283.	12557.	12190.	12700.	0.	0.	14103.
		52	45	7	6	3	3	4	4	0	0	72
		2508.	2506.	2724.	2633.	3220.	2756.	2340.	3092.	0.	0.	3118.
PHD		20000.	20000.	20100.	12000.	11000.	17500.	0.	14300.	16800.	16000.	
		20038.	19984.	20467.	12741.	11000.	18471.	0.	14300.	17400.	16000.	18313.
		108	96	12	31	1	12	0	1	2	1	156
		1491.	1510.	1311.	2340.	0.	2383.	0.	0.	849.	0.	3432.
COLUMN	MEAN	15154.	15061.	15973.	11108.	10038.	14477.	12350.	10420.	12148.	16000.	14234.
	COUNT	351	315	36	53	10	27	8	23	10	1	483
	STD DEV	3903.	3909.	3805.	2889.	2364.	4217.	2126.	2292.	3540.	0.	4059.

TABLE B-4

STARTING YEARLY SALARIES

OF INEXPERIENCED FULL-TIME CHEMISTS

BY HIGHEST DEGREE EARNED AND EMPLOYER - WOMEN

HIGHEST DEGREE EARNED		EMPLOYER: TOTAL PRIVATE INDUSTRY	MANUFACTURING	NONMANUFACTURING	COLLEGE, UNIVRSTY	HIGH SCH, OTHR SC	FEDERAL GOVERNMT	STATE, LOCL GOV	HOSPITAL, IND LAB	NONPRFT, RES INST	ROW TOTAL
BACHLORS	MEDIAN	12600.	13000.	12000.	8400.	9000.	9303.	8200.	9000.	10000.	
	MEAN	12624.	12767.	11410.	8474.	9420.	8974.	8902.	9286.	10676.	11476.
	COUNT	95	85	10	15	6	3	2	16	5	142
	STD DEV	2085.	2049.	2099.	2003.	860.	570.	993.	1508.	2292.	2559.
MASTERS		14500.	14400.	15780.	9000.	9722.	11500.	10500.	10860.	15000.	
		14736.	14678.	15780.	9465.	10356.	12333.	10500.	10860.	15000.	13110.
		19	18	1	4	4	3	1	1	1	33
		2050.	2094.	0.	1190.	1875.	1443.	0.	0.	0.	2770.
PHD		20165.	20165.	0.	11000.	0.	0.	0.	12000.	0.	
		20042.	20042.	0.	10580.	0.	0.	0.	12000.	0.	16786.
		11	11	0	5	0	0	0	1	0	17
		1188.	1188.	0.	2003.	0.	0.	0.	0.	0.	4758.
COLUMN	MEAN	13598.	13771.	11807.	9078.	9794.	10654.	9435.	9524.	11397.	12227.
	COUNT	125	114	11	24	10	6	3	18	6	192
	STD DEV	2938.	2936.	2388.	2020.	1347.	2085.	1159.	1589.	2705.	3228.

TABLE B-5

STARTING YEARLY SALARIES

OF INEXPERIENCED FULL-TIME CHEMICAL ENGINEERS

BY HIGHEST DEGREE EARNED AND EMPLOYER

HIGHEST DEGREE EARNED		EMPLOYER							
		TOTAL PRIVATE INDUSTRY	MANUFAC-TURING	NONMANU-FACTURING	COLLEGE, UNIVRSTY	FEDERAL GOVERNMT	STATE, LOCL GOV	NONPRFT RES INST	ROW TOTAL
BACHLORS	MEDIAN	16800.	16800.	16500.	13200.	15300.	9845.	16800.	
	MEAN	16606.	16639.	16344.	13200.	15087.	10347.	17043.	16563.
	COUNT	645	573	72	1	10	2	6	664
	STD DEV	1081.	1076.	1109.	0.	2020.	709.	416.	1169.
MASTERS		18000.	18000.	18000.	15000.	14100.	11000.	16500.	
		17738.	17860.	17468.	15000.	15567.	11000.	17250.	17552.
		84	58	26	1	3	1	2	91
		1205.	1149.	1305.	0.	2627.	0.	1061.	1490.
PHD		22500.	22500.	22200.	17000.	22800.	0.	0.	
		22453.	22584.	21867.	17800.	22800.	0.	0.	21764.
		33	27	6	6	1	0	0	40
		1354.	1169.	2030.	3429.	0.	0.	0.	2420.
COLUMN	MEAN	16984.	16990.	16944.	16875.	15741.	10564.	17095.	16938.
	COUNT	762	658	104	8	14	3	8	795
	STD DEV	1645.	1624.	1787.	3401.	2838.	628.	542.	1736.

TABLE B-6

STARTING YEARLY SALARIES

OF INEXPERIENCED FULL-TIME CHEMICAL ENGINEERS

BY HIGHEST DEGREE EARNED AND EMPLOYER - MEN

HIGHEST DEGREE EARNED		EMPLOYER							
		TOTAL PRIVATE INDUSTRY	MANUFAC-TURING	NONMANU-FACTURING	COLLEGE, UNIVRSTY	FEDERAL GOVERNMT	STATE, LOCL GOV	NONPRFT RES INST	ROW TOTAL
BACHLORS	MEDIAN	16800.	16800.	16500.	13200.	15300.	9845.	16800.	
	MEAN	16550.	16581.	16310.	13200.	15087.	10347.	17040.	16500.
	COUNT	544	482	62	1	10	2	4	561
	STD DEV	1126.	1122.	1150.	0.	2020.	709.	294.	1222.
MASTERS		18000.	18000.	17700.	15000.	14100.	0.	16500.	
		17713.	17845.	17415.	15000.	15567.	0.	17250.	17593.
		78	54	24	1	3	0	2	84
		1226.	1157.	1346.	0.	2627.	0.	1061.	1349.
PHD		22500.	22500.	22200.	17000.	22800.	0.	0.	
		22458.	22595.	21867.	17800.	22800.	0.	0.	21750.
		32	26	6	6	1	0	0	39
		1375.	1190.	2030.	3429.	0.	0.	0.	2451.
COLUMN	MEAN	16978.	16981.	16960.	16875.	15741.	10347.	17110.	16933.
	COUNT	654	562	92	8	14	2	6	684
	STD DEV	1735.	1714.	1871.	3401.	2838.	709.	537.	1820.

TABLE B-7

STARTING YEARLY SALARIES

OF INEXPERIENCED FULL-TIME CHEMICAL ENGINEERS

BY HIGHEST DEGREE EARNED AND EMPLOYER - WOMEN

		EMPLOYER					
HIGHEST DEGREE EARNED		TOTAL PRIVATE INDUSTRY	MANUFAC-TURING	NONMANU-FACTURING	STATE, LOCL GOV	NONPRFT RES INST	ROW TOTAL
BACHLORS	MEDIAN	16970.	17000.	16320.	0.	16500.	
	MEAN	16904.	16942.	16557.	0.	17050.	16907.
	COUNT	100	90	10	0	2	102
	STD DEV	761.	747.	832.	0.	778.	757.
MASTERS		18000.	17100.	18000.	11000.	0.	
		18073.	18060.	18100.	11000.	0.	17063.
		6	4	2	1	0	7
		913.	1176.	141.	0.	0.	2800.
PHD		22300.	22300.	0.	0.	0.	
		22300.	22300.	0.	0.	0.	22300.
		1	1	0	0	0	1
		0.	0.	0.	0.	0.	0.
COLUMN	MEAN	17020.	17046.	16814.	11000.	17050.	16966.
	COUNT	107	95	12	1	2	110
	STD DEV	958.	960.	964.	0.	778.	1108.

TABLE B-8

STARTING YEARLY SALARIES

OF INEXPERIENCED FULL-TIME CHEMISTS AND CHEMICAL ENGINEERS

BY HIGHEST DEGREE EARNED AND GEOGRAPHIC REGION

HIGHEST DEGREE EARNED		GEOGRAPHIC REGION									ROW TOTAL
		PACIFIC	MOUNTAIN	WEST NO. CENTRAL	WEST SO. CENTRAL	EAST NO. CENTRAL	EAST SO. CENTRAL	MIDDLE ATLANTIC	SOUTH ATLANTIC	NEW ENGLAND	
CHEMISTS											
	MEDIAN	11700.	11000.	12000.	13200.	12900.	10000.	12000.	9700.	11000.	
BACHLORS	MEAN	11463.	10704.	11980.	12665.	12654.	11135.	11839.	9907.	11192.	11652.
	COUNT	35	15	19	15	106	10	97	58	40	395
	STD DEV	2321.	2941.	2379.	2510.	1989.	2541.	2128.	1927.	2533.	2360.
		11500.	19080.	13000.	14825.	15000.	12800.	15200.	12400.	15360.	
MASTERS		12191.	19080.	13429.	13253.	14430.	12314.	14776.	12676.	15360.	13812.
		9	1	6	10	24	5	31	19	1	106
		2478.	0.	1616.	3746.	2785.	3289.	2858.	3132.	0.	3029.
		17000.	21310.	17100.	19200.	19800.	18600.	20000.	19000.	18500.	
PHD		17274.	20258.	16933.	17805.	18186.	19469.	18991.	17229.	17267.	18163.
		13	6	15	16	34	6	52	19	12	173
		2766.	2849.	3816.	3871.	3904.	1480.	3399.	3714.	4027.	3596.
COLUMN	MEAN	12903.	13690.	14055.	14814.	14061.	13797.	14411.	11904.	12646.	13663.
	COUNT	57	22	40	41	164	21	180	96	53	674
	STD DEV	3406.	5271.	3677.	4111.	3404.	4400.	4098.	3864.	3865.	3947.
CHEM ENGINEERS											
	MEDIAN	16700.	16800.	16500.	17000.	16800.	16800.	16600.	16800.	15700.	
BACHLORS	MEAN	16371.	16745.	16223.	16998.	16622.	16509.	16440.	16467.	15838.	16565.
	COUNT	64	22	27	135	150	26	139	65	33	661
	STD DEV	2170.	642.	1212.	564.	859.	1231.	1193.	1194.	1152.	1178.
		18000.	18000.	0.	18000.	18000.	18000.	18000.	18000.	18000.	
MASTERS		17765.	18150.	0.	17681.	17264.	17900.	17537.	17320.	17717.	17552.
		8	4	0	14	22	3	29	5	6	91
		1003.	300.	0.	1384.	1868.	173.	1519.	1169.	1980.	1490.
		22200.	22800.	21900.	22800.	21600.	0.	21600.	24000.	15000.	
PHD		22167.	22800.	22200.	22224.	22020.	0.	21078.	22184.	15000.	21764.
		3	1	2	14	5	0	9	5	1	40
		551.	0.	424.	2239.	1163.	0.	2786.	3120.	0.	2420.
COLUMN	MEAN	16752.	17177.	16632.	17506.	16854.	16653.	16855.	16905.	16098.	16941.
	COUNT	75	27	29	163	177	29	177	75	40	792
	STD DEV	2353.	1365.	1936.	1721.	1377.	1241.	1721.	1974.	1443.	1743.

Note: See page 47 for list of states by geographic regions.

TABLE B-9

STARTING YEARLY SALARIES

OF INEXPERIENCED FULL-TIME B.S. CHEMISTS

BY EMPLOYER AND CERTIFICATION STATUS

EMPLOYER		CERTIFD.[1]	NON-CERTIFD.	RCW TOTAL
MANUFAC-TURING	MEDIAN	12700.	12288.	
	MEAN	12720.	12169.	12467.
	COUNT	140	119	259
	STD DEV	1892.	2092.	2002.
NONMANUFACTURING		12000.	12180.	
		12462.	12600.	12518.
		16	11	27
		2568.	1482.	2157.
COLLEGE,UNIVRSTY		8100.	8500.	
		8547.	8675.	8613.
		15	16	31
		2151.	1351.	1754.
HIGH SCH,OTHR SC		0.	9000.	
		0.	9088.	9088.
		0	12	12
		0.	888.	888.
FEDERAL GOVERNMT		12600.	9303.	
		13580.	10102.	10566.
		2	13	15
		1386.	1334.	1778.
STATE, LOCL GOV		11139.	10500.	
		11139.	11341.	11307.
		1	5	6
		0.	2886.	2583.
HOSPITAL,INC LAB		9873.	9000.	
		9616.	9435.	9504.
		13	21	34
		1484.	1590.	1530.
NONPRFT RES INST		12000.	9700.	
		11740.	10170.	10774.
		5	8	13
		2242.	2284.	2313.
ALL EMPLOYERS		12000.	11000.	
		12136.	11230.	11670.
		193	205	398
		2328.	2316.	2363.

[1] SEE NOTE ON TABLE A-9.

STARTING YEARLY SALARIES

OF INEXPERIENCED FULL-TIME M.S. AND PH.D. CHEMISTS

BY FIELD OF HIGHEST DEGREE

FIELD OF HIGHEST DEGREE		MASTERS	PHD	ROW TOTAL
CHEMSTRY, GENERAL	MEDIAN	12000.	18600.	
	MEAN	12937.	18267.	13664.
	COUNT	19	3	22
	STD DEV	2530.	1332.	3026.
BIOCHEMISTRY		11000.	20400.	
		11846.	19680.	15110.
		7	5	12
		2978.	1881.	4733.
AGRICULT,FOOD		17000.	0.	
		17000.	0.	17000.
		1	0	1
		0.	0.	0.
ANALYTICAL		14400.	19500.	
		13771.	18998.	17012.
		19	31	50
		2366.	2486.	3523.
INORGANIC		11500.	19500.	
		11608.	16453.	14895.
		9	19	28
		4596.	4714.	5137.
ORGANIC		15000.	19500.	
		14578.	18683.	17377.
		28	60	88
		2763.	3250.	3638.
PHARMA, MED, CLN		12800.	0.	
		12800.	0.	12800.
		1	0	1
		0.	0.	0.
PHYSICAL,THEORET		15000.	19200.	
		14300.	17816.	17281.
		7	39	46
		2439.	3934.	3936.
POLYMER,MACROMOL		10350.	19000.	
		12175.	19033.	16290.
		2	3	5
		2581.	551.	3991.
CHEMSTRY,OTHER		17000.	16255.	
		15905.	16503.	16204.
		13	13	26
		2881.	4663.	3810.
ALL FIELDS		14100.	19500.	
		13812.	18163.	16510.
		106	173	279
		3029.	3596.	3993.

TABLE B-11

STARTING YEARLY SALARIES

OF INEXPERIENCED FULL-TIME MONORITY CHEMISTS AND CHEMICAL ENGINEERS

BY HIGHEST DEGREE EARNED

HIGHEST DEGREE EARNED		CHEMISTS	CHEM ENGINEERS
BACHLORS	MEDIAN	9600.	16800.
	MEAN	10579.	16406.
	COUNT	20	33
	STD DEV	2745.	1315.
MASTERS		9375.	16000.
		11049.	16070.
		6	10
		3511.	2275.
PHD		19200.	22500.
		17676.	22780.
		18	5
		4239.	1629.
COLUMN	MEAN	13546.	17000.
	COUNT	44	48
	STD DEV	4896.	2526.

TABLE B-12

YEARLY SALARIES

OF POSTDOCTORAL CHEMISTS AND CHEMICAL ENGINEERS

BY EMPLOYER

EMPLOYER		CHEMISTS	CHEM ENGINEERS
MANUFACTURING	MEDIAN	11500.	0.
	MEAN	17150.	0.
	COUNT	2	0
	STD DEV	7990.	0.
NONMANUFACTURING		18900.	0.
		18900.	0.
		1	0
		0.	0.
COLLEGE,UNIVRSTY		10000.	12000.
		10104.	11571.
		171	7
		1750.	1539.
HIGH SCH,OTHR SC		9500.	0.
		9500.	0.
		1	0
		0.	0.
FEDERAL GOVERNMT		14097.	17000.
		13630.	17000.
		15	1
		2975.	0.
STATE, LOCL GOV		13404.	0.
		13404.	0.
		1	0
		0.	0.
HOSPITAL,INO LAB		11000.	0.
		13925.	0.
		4	0
		4244.	0.
NONPRFT RES INST		12500.	0.
		12545.	0.
		13	0
		1898.	0.
ALL EMPLOYERS		10000.	12000.
		10707.	12250.
		208	8
		2448.	2390.

TABLE C-1

AGE DISTRIBUTION

OF B.S. CHEMISTS AND CHEMICAL ENGINEERS

BY SEX

AGE CATEGORY		CHEMISTS MEN	CHEMISTS WOMEN	CHEMISTS ROW TOTAL	CHEM ENGINEERS MEN	CHEM ENGINEERS WOMEN	CHEM ENGINEERS ROW TOTAL
19 OR LESS	#	0	0	0	1	0	1
	%	0.0	0.0	0.0	0.1	0.0	0.1
20		12	8	20	1	1	2
		0.7	1.4	0.9	0.1	0.7	0.2
21		128	58	186	26	15	41
		7.3	9.8	7.9	2.8	10.2	3.8
22		956	356	1312	487	83	570
		54.7	60.1	56.1	52.3	56.5	52.9
23		360	109	469	260	24	284
		20.6	18.4	20.0	27.9	16.3	26.3
24		110	14	124	79	10	89
		6.3	2.4	5.3	8.5	6.8	8.3
25		47	16	63	22	3	25
		2.7	2.7	2.7	2.4	2.0	2.3
26		32	5	37	10	1	11
		1.8	0.8	1.6	1.1	0.7	1.0
27		20	7	27	13	6	19
		1.1	1.2	1.2	1.4	4.1	1.8
28		18	4	22	11	1	12
		1.0	0.7	0.9	1.2	0.7	1.1
29		17	3	20	10	0	10
		1.0	0.5	0.9	1.1	0.0	0.9
30-34		47	8	55	9	2	11
		2.7	1.4	2.4	1.0	1.4	1.0
35-39		1	3	4	2	1	3
		0.1	0.5	0.2	0.2	0.7	0.3
40-49		0	1	1	0	0	0
		0.0	0.2	0.0	0.0	0.0	0.0
COLUMN TOTAL		1748	592	2340	931	147	1078
		74.7	25.3	100.0	86.4	13.6	100.0

TABLE C-2

AGE DISTRIBUTION

OF M.S. CHEMISTS AND CHEMICAL ENGINEERS

BY SEX

AGE CATEGORY		CHEMISTS MEN	CHEMISTS WOMEN	ROW TOTAL	CHEM ENGINEERS MEN	CHEM ENGINEERS WOMEN	ROW TOTAL
21	#	0	1	1	1	0	1
	%	0.0	1.0	0.3	0.5	0.0	0.5
22		6	1	7	10	2	12
		2.2	1.0	1.9	4.8	15.4	5.4
23		9	13	22	30	2	32
		3.3	12.7	5.9	14.4	15.4	14.4
24		55	19	74	41	2	43
		20.3	18.6	19.8	19.6	15.4	19.4
25		51	22	73	44	0	44
		18.8	21.6	19.6	21.1	0.0	19.8
26		38	16	54	25	1	26
		14.0	15.7	14.5	12.0	7.7	11.7
27		24	9	33	16	1	17
		8.9	8.8	8.8	7.7	7.7	7.7
28		18	5	23	7	2	9
		6.6	4.9	6.2	3.3	15.4	4.1
29		17	5	22	14	0	14
		6.3	4.9	5.9	6.7	0.0	6.3
30-34		44	10	54	14	1	15
		16.2	9.8	14.5	6.7	7.7	6.8
35-39		7	1	8	5	0	5
		2.6	1.0	2.1	2.4	0.0	2.3
40-49		0	0	0	2	2	4
		0.0	0.0	0.0	1.0	15.4	1.8
50-64		2	0	2	0	0	0
		0.7	0.0	0.5	0.0	0.0	0.0
	COLUMN TOTAL	271	102	373	209	13	222
		72.7	27.3	100.0	94.1	5.9	100.0

TABLE C-3

AGE DISTRIBUTION

OF PH.D. CHEMISTS AND CHEMICAL ENGINEERS

BY SEX

AGE CATEGORY		CHEMISTS MEN	CHEMISTS WOMEN	CHEMISTS ROW TOTAL	CHEM ENGINEERS MEN	CHEM ENGINEERS WOMEN	CHEM ENGINEERS ROW TOTAL
24	#	1	0	1	1	0	1
	%	0.2	0.0	0.2	1.2	0.0	1.2
25		7	0	7	2	0	2
		1.7	0.0	1.4	2.4	0.0	2.3
26		36	5	41	6	0	6
		8.6	7.2	8.4	7.1	0.0	7.0
27		88	17	105	10	1	11
		21.1	24.6	21.6	11.9	50.0	12.8
28		74	15	89	12	0	12
		17.7	21.7	18.3	14.3	0.0	14.0
29		57	4	61	15	0	15
		13.6	5.8	12.5	17.9	0.0	17.4
30-34		130	22	152	31	1	32
		31.1	31.9	31.2	36.9	50.0	37.2
35-39		20	4	24	5	0	5
		4.8	5.8	4.9	6.0	0.0	5.8
40-49		2	1	3	2	0	2
		0.5	1.4	0.6	2.4	0.0	2.3
50-64		3	1	4	0	0	0
		0.7	1.4	0.8	0.0	0.0	0.0
	COLUMN TOTAL	418	69	487	84	2	86
		85.8	14.2	100.0	97.7	2.3	100.0

TABLE C-4

AGE DISTRIBUTION

OF POSTDOCTORAL CHEMISTS AND CHEMICAL ENGINEERS

BY SEX

AGE CATEGORY		CHEMISTS MEN	CHEMISTS WOMEN	CHEMISTS ROW TOTAL	CHEM ENGINEERS MEN	CHEM ENGINEERS ROW TOTAL
24	#	0	0	0	1	1
	%	0.0	0.0	0.0	12.5	12.5
25	#	4	0	4	0	0
	%	2.3	0.0	1.9	0.0	0.0
26	#	15	1	16	1	1
	%	8.8	2.7	7.7	12.5	12.5
27	#	47	10	57	0	0
	%	27.5	27.0	27.4	0.0	0.0
28	#	31	10	41	2	2
	%	18.1	27.0	19.7	25.0	25.0
29	#	16	3	19	1	1
	%	9.4	8.1	9.1	12.5	12.5
30-34	#	52	12	64	3	3
	%	30.4	32.4	30.8	37.5	37.5
35-39	#	6	1	7	0	0
	%	3.5	2.7	3.4	0.0	0.0
COLUMN TOTAL	#	171	37	208	8	8
	%	82.2	17.8	100.0	100.0	100.0

TABLE C-5

MINORITY CLASSIFICATION OF CHEMISTS AND CHEMICAL ENGINEERS

BY HIGHEST DEGREE EARNED AND SEX

MINORITY CLASSIFICATION		BACHLORS MEN	BACHLORS WOMEN	BACHLORS ROW TOTAL	MASTERS MEN	MASTERS WOMEN	MASTERS ROW TOTAL	PHD MEN	PHD WOMEN	PHD ROW TOTAL
CHEMISTS										
BLACK	#	23	19	42	4	3	7	6	2	8
	%	1.3	3.3	1.8	1.5	3.0	1.9	1.4	2.9	1.6
AMERICAN INDIAN		5	3	8	1	0	1	1	0	1
		0.3	0.5	0.3	0.4	0.0	0.3	0.2	0.0	0.2
ASIAN		47	20	67	22	10	32	34	10	44
		2.7	3.4	2.9	8.2	10.0	8.7	8.2	14.5	9.1
HISPANIC		21	18	39	2	1	3	6	2	8
		1.2	3.1	1.7	0.7	1.0	0.8	1.4	2.9	1.6
NON- MINORITY		1629	522	2151	239	86	325	369	55	424
		94.4	89.7	93.2	89.2	86.0	88.3	88.7	79.7	87.4
COLUMN TOTAL		1725	582	2307	268	100	368	416	69	485
		74.8	25.2	100.0	72.8	27.2	100.0	85.8	14.2	100.0
CHEM ENGINEERS										
BLACK	#	7	1	8	1	0	1	1	0	1
	%	0.8	0.7	0.8	0.5	0.0	0.5	1.2	0.0	1.2
AMERICAN INDIAN		1	0	1	0	0	0	0	0	0
		0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
ASIAN		31	9	40	26	1	27	19	0	19
		3.4	6.3	3.8	12.6	7.7	12.3	23.2	0.0	22.6
HISPANIC		12	4	16	3	1	4	1	0	1
		1.3	2.8	1.5	1.4	7.7	1.8	1.2	0.0	1.2
NON- MINORITY		862	129	991	177	11	188	61	2	63
		94.4	90.2	93.8	85.5	84.6	85.5	74.4	100.0	75.0
COLUMN TOTAL		913	143	1056	207	13	220	82	2	84
		86.5	13.5	100.0	94.1	5.9	100.0	97.6	2.4	100.0

TABLE C-6

CITIZENSHIP OR VISA STATUS OF CHEMISTS AND CHEMICAL ENGINEERS

BY HIGHEST DEGREE EARNED AND SEX

CITIZENSHIP OR VISA STATUS		BACHLORS MEN	BACHLORS WOMEN	BACHLORS ROW TOTAL	MASTERS MEN	MASTERS WOMEN	MASTERS ROW TOTAL	PHD MEN	PHD WOMEN	PHD ROW TOTAL
CHEMISTS										
U. S. CITIZEN	#	1718	575	2293	244	88	332	367	58	425
	%	98.4	97.3	98.1	89.1	85.4	88.1	88.2	84.1	87.6
RESIDENT VISA		21	11	32	11	4	15	30	5	35
		1.2	1.9	1.4	4.0	3.9	4.0	7.2	7.2	7.2
OTHER VISA		7	5	12	19	11	30	19	6	25
		0.4	0.8	0.5	6.9	10.7	8.0	4.6	8.7	5.2
COLUMN TOTAL		1746	591	2337	274	103	377	416	69	485
		74.7	25.3	100.0	72.7	27.3	100.0	85.8	14.2	100.0
CHEM ENGINEERS										
U. S. CITIZEN	#	908	141	1049	168	12	180	52	1	53
	%	97.2	96.6	97.1	80.4	92.3	81.1	61.2	50.0	60.9
RESIDENT VISA		16	3	19	11	0	11	17	0	17
		1.7	2.1	1.8	5.3	0.0	5.0	20.0	0.0	19.5
OTHER VISA		10	2	12	30	1	31	16	1	17
		1.1	1.4	1.1	14.4	7.7	14.0	18.8	50.0	19.5
COLUMN TOTAL		934	146	1080	209	13	222	85	2	87
		86.5	13.5	100.0	94.1	5.9	100.0	97.7	2.3	100.0

TABLE C-7

MINORITY CLASSIFICATION AND CITIZENSHIP OR VISA STATUS OF CHEMISTS

BY HIGHEST DEGREE EARNED

CITIZENSHIP OR VISA STATUS		MINORITY CLASSIFICATION: BLACK	AMERICAN INDIAN	ASIAN	HISPANIC	NON-MINORITY	ROW TOTAL
BACHELORS							
U. S. CITIZEN	#	41	8	51	32	2125	2257
	%	97.6	100.0	77.3	82.1	99.1	96.1
RESIDENT VISA		1	0	10	6	14	31
		2.4	0.0	15.2	15.4	0.7	1.3
OTHER VISA		0	0	5	1	6	12
		0.0	0.0	7.6	2.6	0.3	0.5
COLUMN TOTAL		42	8	66	39	2145	2300
		1.8	0.3	2.9	1.7	93.3	100.0
MASTERS							
U. S. CITIZEN	#	7	1	5	2	310	325
	%	100.0	100.0	15.6	66.7	95.4	88.3
RESIDENT VISA		0	0	7	1	6	14
		0.0	0.0	21.9	33.3	1.8	3.8
OTHER VISA		0	0	20	0	9	29
		0.0	0.0	62.5	0.0	2.8	7.9
COLUMN TOTAL		7	1	32	3	325	368
		1.9	0.3	8.7	0.8	88.3	100.0
PHD							
U. S. CITIZEN	#	7	1	6	6	403	423
	%	87.5	100.0	13.6	75.0	95.5	87.6
RESIDENT VISA		0	0	25	0	10	35
		0.0	0.0	56.8	0.0	2.4	7.2
OTHER VISA		1	0	13	2	9	25
		12.5	0.0	29.5	25.0	2.1	5.2
COLUMN TOTAL		8	1	44	8	422	483
		1.7	0.2	9.1	1.7	87.4	100.0

TABLE C-8

MINORITY CLASSIFICATION AND CITIZENSHIP OR VISA STATUS OF CHEMICAL ENGINEERS

BY HIGHEST DEGREE EARNED

CITIZENSHIP OR VISA STATUS		MINORITY CLASSIFICATION: BLACK	AMERICAN INDIAN	ASIAN	HISPANIC	NON-MINORITY	ROW TOTAL
BACHELORS							
U. S. CITIZEN	#	5	1	27	14	978	1025
	%	62.5	100.0	67.5	87.5	98.7	97.1
RESIDENT VISA		2	0	7	1	9	19
		25.0	0.0	17.5	6.3	0.9	1.8
OTHER VISA		1	0	6	1	4	12
		12.5	0.0	15.0	6.3	0.4	1.1
COLUMN TOTAL		8	1	40	16	991	1056
		0.8	0.1	3.8	1.5	93.8	100.0
MASTERS							
U. S. CITIZEN	#	1	0	4	3	169	177
	%	100.0	0.0	14.8	75.0	90.4	80.8
RESIDENT VISA		0	0	7	1	3	11
		0.0	0.0	25.9	25.0	1.6	5.0
OTHER VISA		0	0	16	0	15	31
		0.0	0.0	59.3	0.0	8.0	14.2
COLUMN TOTAL		1	0	27	4	187	219
		0.5	0.0	12.3	1.8	85.4	100.0
PHD							
U. S. CITIZEN	#	0	0	2	0	51	53
	%	0.0	0.0	10.5	0.0	81.0	63.1
RESIDENT VISA		1	0	11	0	3	15
		100.0	0.0	57.9	0.0	4.8	17.9
OTHER VISA		0	0	6	1	9	16
		0.0	0.0	31.6	100.0	14.3	19.0
COLUMN TOTAL		1	0	19	1	63	84
		1.2	0.0	22.6	1.2	75.0	100.0

APPENDIX

SCOPE AND METHOD OF SURVEY

OBJECTIVES OF SURVEY

The 1977 survey is the twenty-sixth in the series of starting salary surveys conducted by the American Chemical Society. A summary of the results appears in the October 24, 1977 issue of Chemical and Engineering News.

The primary objective of the survey is to determine the salaries and occupational status of the students who majored in chemistry and chemical engineering and who graduated during the 1976-1977 academic year. The survey covers the three degree levels: bachelor's, master's, and Ph.D. In addition, the survey provides information on major employer categories, on graduate study plans, on women and minority participation, and citizenship status.

METHOD OF COLLECTION AND TIMING OF SURVEY

Chemistry and chemical engineering departments provided lists of names and addresses of graduates. The cooperating departments were the chemistry departments approved by the ACS, and the chemical engineering departments accredited by the American Institute of Chemical Engineers and the Engineer's Council for Professional Development.

During the summer of 1977, the Office of Manpower Studies sent questionnaires to graduates who had U.S. addresses and graduation dates from September 1976 through June 1977. Summer graduates were excluded because most of them had twelve months experience by the time the survey was conducted.

EXTENT OF COVERAGE

Approximately 13,336 questionnaires were mailed to graduates of 535 chemistry and 126 chemical engineering departments. Most of the questionnaires were sent by bulk mail, but several hundred were sent first class. Since about 10% of those sent first class mail were returned, apparently about thirteen hundred questionnaires failed to reach the graduates. By the mid-September cutoff date, the Office of Manpower Studies had received 4,642 responses, 4,629 of them usable.

The Office of Manpower Studies estimates that U.S. colleges and universities granted about 21,000 chemistry and chemical engineering degrees during the year ending June 1977. No effort was made to examine the characteristics of the graduates from departments that did not participate in the survey or of those graduates who did not mail back completed questionnaires.

DEFINITIONS

The questionnaire appears in the appendix. Question H on post-graduation status was edited to eliminate multiple check marks and to reflect as accurately as possible the employment status of the respondent.

The term "inexperienced" as used in the tables refers to those who have 12 months or less of prior professional work experience. Salary tables are based only on salaries of those who found full-time employment in chemistry or chemical engineering. Postdoctoral salaries are analyzed separately. The discrepancies in the numbers of respondents in various tables reflect the use of incomplete questionnaires.

GEOGRAPHIC REGIONS

PACIFIC

- Washington
- Oregon
- California
- Alaska
- Hawaii

MOUNTAIN

- Montana
- Idaho
- Wyoming
- Nevada
- Utah
- Colorado
- Arizona
- New Mexico

WEST NORTH CENTRAL

- North Dakota
- Minnesota
- South Dakota
- Iowa
- Nebraska
- Kansas
- Missouri

WEST SOUTH CENTRAL

- Oklahoma
- Arkansas
- Texas
- Louisiana

EAST NORTH CENTRAL

- Wisconsin
- Michigan
- Illinois
- Indiana
- Ohio

EAST SOUTH CENTRAL

- Kentucky
- Tennessee
- Mississippi
- Alabama

MIDDLE ATLANTIC

- New York
- Pennsylvania
- New Jersey

SOUTH ATLANTIC

- Delaware
- Maryland
- West Virginia
- District of Columbia
- Virginia
- North Carolina
- South Carolina
- Georgia
- Florida

NEW ENGLAND

- Maine
- New Hampshire
- Vermont
- Massachusetts
- Connecticut
- Rhode Island

AMERICAN CHEMICAL SOCIETY

Starting Salary and Employment Status of 1977 Chemistry and Chemical Engineering Graduates

A. Sex: (1)___Male (2)___Female

B. Year of birth_____

C. Highest degree received in 1976-77 academic year: (1)___Bachelors (2)___Masters (3)___Ph.D.

D. Field of highest degree:

(01)___Chemical engineering
(02)___Chemistry, general
(03)___Biochemistry
(04)___Agricultural/food chemistry
(05)___Analytical chemistry
(06)___Inorganic chemistry
(07)___Organic chemistry
(08)___Pharmaceutical/medicinal/clinical chemistry
(09)___Physical/theoretical chemistry
(10)___Polymer/macromolecular chemistry
(14)___Chemistry, other (specify)_____
(15)___Non-chemical (specify)_____

E. Citizenship or visa status: (1)___U.S. citizen (2)___U.S. permanent resident visa (3)___Other visa: (specify)_____

F. Are you a member of any of the minority groups recognized by the Equal Employment Opportunity Commission listed below? ___Yes (5)___No

If "Yes," please check those which apply to you:

(1)___Black (not of Hispanic origin)
(2)___American Indian or Alaskan Native
(3)___Asian or Pacific Islander (those of Chinese, Japanese, Korean, Filipino, or subcontinental Indian origin)
(4)___Hispanic (those of Mexican, Puerto Rican, Cuban, or Spanish origin)

G. Post-graduation employment status:

(1)___Accepted (or continued) full-time employment in a field of chemistry or chemical engineering.
(2)___Accepted (or continued) full-time employment in a field <u>other</u> than chemistry or chemical engineering.
(3)___Accepted graduate assistantship or postdoctoral or other fellowship.
(4)___Entered military service, Peace Corps, VISTA, PHS, or other similar service.
(5)___Was unable to obtain full-time employment.
(6)___Was not seeking full-time employment.

H. Do you plan further advanced studies in fall 1977? (1)___Yes, full-time (2)___Yes, part-time (3)___No

a. If "Yes," please specify field:

(01)___Chemistry
(02)___Other physical science, math.
(03)___Chemical engineering
(04)___Other engineering
(05)___Biochemistry
(06)___Other life science
(07)___Medicine
(08)___Dentistry
(09)___Pharmacy
(10)___Business, management
(11)___Law
(12)___Social science, humanities
(13)___Other (specify)_____

IF YOU HAVE FULL-TIME EMPLOYMENT OR A POSTDOCTORAL POSITION, PLEASE ANSWER THE REMAINING QUESTIONS

I. Annual starting salary: $_____

J. Technical work experience prior to graduation: (1)___less than 12 months (or none) (2)___12 months or more

K. Employer classification (check the one category which best describes your employer):

Private industry or business:
(01)___manufacturing
(02)___non-manufacturing (e.g. mining, utilities, construction, etc.)
(03)___College or university
(04)___High school or other school
(05)___Federal government (civilians only)
(06)___State or local government
(08)___Hospital or independent laboratory
(09)___Other non-profit org. or research institute
(10)___Other (specify)_____

L. Geographic location of employment: State_____

M. How many firm offers of employment did you receive in a field of chemistry or chemical engineering? Specify number_____

Please return within 10 days to the American Chemical Society
1155 Sixteenth St. N.W., Washington, D.C. 20036
Thank You

PLEASE DO NOT WRITE IN THIS SPACE

A.___ 1

B.___ 2 ___ 3

C.___ 4

D.___ 5 ___ 6

E.___ 7

F.___ 8

G.___ 9

H.___ 10

Ha.___ 11 ___ 12

I.___ 13 ___ 14 ___ 15 ___ 16 ___ 17

J.___ 18

K.___ 19 ___ 20

L.___ 21 ___ 22

M.___ 23 ___ 24

Certification___ 25

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