

Division of Professional Relations
1155 16th Street, NW
Washington, DC 20036

DENNIS CHAMOT, *Editor*



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FROM THE EDITOR . . .

Election Results

The official results of the recent election of DPR officers are as follows:

Chairman-elect

Louis J. Sacco, Jr.*	75
Adrienne Dey**	1

Member-at-large

Grace B. Borowitz*	51
E. Ann Nalley*	45
Adrienne S. Dey	40
Linda L. Hutchings	22
Raquel Diaz-Sprague	3

* = elected

** = write-in

As an experiment, the nominating committee included the ballot in the last issue of the *Bulletin*, rather than mail each one individually as was the case in the past. The number of returned ballots were significantly lower this time. Future elections will use the original procedure.

Report from Denver

First, thank you to all of you who recruited new members. As a result of these efforts, coordinated by membership chairman Mordecai Treblow, Division membership nudged over 1,000 for the first time in our history! In addition to demonstrating increasing interest in the DPR, this number also guarantees that we keep both Councilors for the next four years. There is a new system for allocating Councilors to divisions, and under it, the Council Policy Committee set the cut-off at 824, which we comfortably exceeded. Now let's work to keep all of our current members, and add another 1,000 before the next cut-off determination four years from now. We could then get a *third* Councilor. Of course, regardless of the number of Councilors, increasing the membership of your Division also guarantees that the issues we consider important get the attention they deserve.

The Council Committee on Professional Relations (CPR) reported that record numbers of chemists were involved in multiple terminations recently, including 200 at one company and 100 at another (by the time you receive this, *C&EN* should have published their report). In addition, CPR noted that three companies had terminations as a result of mergers and take-overs. Chemists over 40 appear to have a considerable problem. In some cases, substantial numbers of non-chemist professionals were also terminated.

The most disturbing thing about all of this, in addition to the individual trauma, is the apparent breakdown of any sense of long term employment commitment on the part of chemical employers. Many (if not all) of the terminations are occurring at profitable companies. Some use the rationale of "competitive pressures", as if these didn't always exist. Others are the victims of take-overs and subsequent reorganizations. The bottom line for chemists, though, is that they better look for other mechanisms to try to achieve some job security, because their employers aren't concerned about that any more.

At the Council meeting, the most lively debate centered around raising the dues. After much discussion, the Council rejected the full \$4.00 increase permitted by the bylaws. As I and several others pointed out, (a) dues are no longer tax deductible for many ACS members, (b) dues are already high for lower income members, and (c) the Society has an enormous budget, much of it related to CAS and other publishing businesses, and some of the pressure on dues supported activities comes from the way the budget items are categorized, not from an overall lack of money. In the end, a three dollar increase was approved. Not much of a difference, but a symbolic victory nonetheless.

Questionnaire

Elsewhere in this issue you will find a questionnaire. Please take a moment to fill it out and send it in (a photocopy is acceptable if you don't want to destroy your copy of the *Bulletin*). Your elected leaders need to know what you think.

—Dennis Chamot

New Service for Job-Seekers
and Consultants

The ACS national office now offers a new service for members seeking that first job or a career change. This service also is available to those who want to do chemical or chemical engineering consulting. To aid members in their search, ACS has joined with Career Placement Registry Inc. (CPR), a computerized job matching service. CPR, a subsidiary of Plenum Publishing Corp., is available to the top 8000 businesses, service organizations, and industrial companies in the U.S. and 55 foreign countries who subscribe to the DIALOG information retrieval service.

The new service is an addition to the range of employment services already available from the Employment Aids Office in the Society's Washington headquarters. ACS members may register for it six months at a time.

ACS is offering a special registration fee of \$12 to experienced members and \$8.00 to students. (If you don't register through the society, the fee is \$15 to \$40 for experienced persons and \$12 for students.)

To search for a new employee or consultant using CPR, a personnel director or recruiter dials CPR's direct access database of personnel from any remote desk top terminal and lists the requirements of the position. Names and qualifications of available personnel are instantly relayed to them in a printout.

To take advantage of this additional employment aid, request CPR forms (indicating experienced member or student) from: ACS Employment Aids Office, 1155 Sixteenth Street, N.W., Washington, D.C. 20036.

DPR QUESTIONNAIRE

1. Are you satisfied with the public image of chemistry? Yes _____ No _____
If no, what is wrong? How might it be improved?

2. Are you satisfied with the public image of chemists? Yes _____ No _____
If no, what is wrong? What could the Division of Professional Relations do or recommend to improve it?

3. Are you satisfied with the symposia that the DPR organizes at national ACS Meetings? Yes _____ No _____ Don't remember any _____
What topics would you suggest for future meetings?

When sufficient material is available, symposia may be published in book form.

Would you like to see more such books? Yes _____ No _____

In general, how much would you be willing to pay for such a book:

Less than \$15 _____ \$15-25 _____ More than \$25 _____

4. Federal income tax deductions for dues, books, travel not reimbursed by your employer, etc. will be limited to amounts in excess of 2% of your gross income. Will this affect:
- a. your membership in ACS _____ yes _____ no
 - b. your membership in DPR _____ yes _____ no
 - c. your subscriptions to scientific journals _____ yes _____ no
 - d. your travel to regional or national ACS meetings _____ yes _____ no
5. Do you think the DPR is not activist enough? _____ Too activist? _____ About right? _____
What more would you like to see the DPR do? (Give *specific* examples)

6. Do you believe that "whistle-blower" legislation is necessary to encourage the reporting of safety or environmental violations?
Yes _____ No _____

7. Please give additional comments below:

Please return this questionnaire by July 15 to: Dr. E. Ann Nalley
Physical Sciences Department
Cameron University
Lawton, Oklahoma 73505

CHANGES IN WORK PATTERNS IN SCIENCE-BASED INDUSTRY: WHY WE WILL SEE A PROLIFERATION OF WORK STYLES IN COMING YEARS

Terrence Russell
Manager, Office of Professional Relations
American Chemical Society
Washington, DC

Social and Demographic Change: Why the Supply of Chemists for Temporary and Part-Time Positions Exists

The increase in two earner households and change in desired work patterns will increase emphasis on the "modularity" of career stages: a preference for easy in, easy out, easy return jobs. While part-time and temporary work has, in the past, been viewed as a less-desirable alternative to full-time employment, employers are finding an increasing demand for these flexible schedules from chemists who view them more as a fringe benefit than an indicator of a less than first-rate career.

Chemists, like other Americans, are highly attached to work, both as a good thing economically and as a means for practicing skill and science. When other concerns, particularly those of family, make commitment to full-time work difficult, or in situations where one wants to practice chemistry but does not have to make a living doing so, alternative schedules with features of modularity allows a continuing work life with expanded time for other things.

The availability of trained chemists with (at least some) retirement income will mean that more people will be looking for part-time and temporary work. Changing definitions of "retirement" will accelerate this trend.

Near-term availability of chemistry faculty as consultants, part-timers and temporaries will increase as enrollment-driven budgets stagnate along with faculty salaries, research funding and summer teaching, particularly in the non-research oriented schools. Retirements will not be a factor in the supply of faculty until the baby-boomers retire, around 2010. Faculty in some situations may find alternative work a method for keeping current on rapidly developing instrumentation. Part-time chemists in academia will continue to be an increasing fraction of academic chemists and there is some evidence that this is less likely a personal preference than in the case of their industrially employed colleagues.

Finally, high rates of career change means re-entry people will be available but they must be trained and retrained as they move in and out of employment. Training on specific techniques and instruments will emerge as an important need and opportunity area for entrepreneurially-minded educators within and without academia.

Table 1. Employed full- and part-time wage and salary workers in the temporary help supply industry, by selected characteristics, May 1985
(Percent distribution)

Characteristic	Full-time workers	Part-time workers
Age		
Total, 16 years and over	60.0	40.0
16 to 24	55.7	44.3
25 to 54	66.8	33.2
55 and over	(1)	(1)
Sex and race		
Men	64.4	35.6
Women ²	57.5	42.5
Single	64.9	35.1
Married, spouse present	50.7	49.3
White	62.7	37.3
Men	71.0	29.0
Women	58.5	41.5
Black	44.6	55.3
Men	(1)	(1)
Women	(1)	(1)
Occupations		
Technical sales, and administrative support	66.1	33.9
Administrative support, including clerical	66.6	33.4
Operators, fabricators, and laborers	55.3	44.7
All other occupations	51.8	48.2

¹Data not shown where base is less than 75,000.

²Includes widowed, divorced, and separated women, not shown separately.

Source: *Monthly Labor Review*, Nov., 1986, p. 46.

Technological Change: Why The Jobs Will Exist

Standardization of instrumentation and routinization of chemical work will mean the increasing substitutability of laboratory workers and the "modularization" of tasks, easing some of the problems of using part-time and temporary workers. The development of automated laboratories will accelerate these trends.

As "high tech" U.S. chemistry becomes more of a service industry, providing information about highly engineered materials as a central activity, work will be tied less and less to the monitoring of processes and the need to be in a particular place (e.g., the lab) at a particular time will diminish. As a result, consulting and part-time activity should increase, although part-timers may work for more than one employer at any given time.

Economic Change: Why The Jobs Will Exist—II

In addition to the obvious possibilities of direct savings in labor costs, some relationships between research activity, marketing and rapid change in science and technology indicate an increasing demand for part-time and temporary chemists in extremely sophisticated research activities that are not part of the routinization process discussed earlier. For example, more market-driven research programs will mean less continuity of research effort and make ad hoc puzzle-solving teams more attractive, leading to increasing numbers of temporary research employees.

Further, increased innovation rates mean that flexibility in research personnel will be more valued than continuity of research programs. Flexibility will be gained by the use of specifically trained temporary (or short cycle permanent, the distinction will begin to blur) workers instead of retraining or developing a flexible permanent work force.

Finally, savings in overhead from temporary and part-time workers can be attractive: pensions, training, vacations and holidays and (perhaps) other fringe benefits. Costs of such activities can be prorated by the employer in some circumstances and borne by the employee in others. In multiple-earner households, this may not be much of a problem if direct pay is somewhat higher to accommodate these costs. We will, as a result, see a move away from the provision of these social services through the employer. What other institution will pick up the payment or provision of these services, training and education is a matter for speculation. Alternative work sharpens questions concerning the proper role of employers in the provision of social services: is the attachment to work the way to guarantee health care and non-work related income or is this beyond what we should expect from work? Who else will do it if employers do not?

(continued on p. 4)

ASIANS IN THE U.S. CHEMICAL PROFESSION

Meeting the Problems: What Are Employers and the ACS Doing in This Area?

Many employers are responding to the problems of alternative work by maximizing the choices that chemists may have in the way that they work. In addition to prorated benefits, many firms now offer "cafeteria benefit" packages that let employees choose among several fringe benefit options. Other possibilities for part-time work, such as job sharing and telecommuting (by computer) for those who are temporarily incapacitated are becoming more common. In its activities, the ACS has developed new guidelines for benefit proration in the 1988 version of the *Professional Employment Guidelines* and has added part-time and temporary categories to all its materials at all ACS employment clear-houses.

Bob Jones
Manager, Office of Statistical Services
American Chemical Society
Washington, D.C.

Table 2. Part-Time Workers as Percentage of Chemists.

	Non-academic	Academic	Total
1975	—	1.0	1.3
1976	—	1.3	1.4
1977	—	1.4	1.0
1978	0.7	1.9	1.0
1979	1.6	3.0	1.9
1980	0.7	1.5	1.0
1981	0.9	1.6	1.0
1982	0.9	2.7	1.3
1983	1.3	2.5	1.6
1984	1.3	2.6	1.7
1985	1.0	2.8	1.4
1986	1.2	2.8	1.6

Source: ACS Annual Salary and Employment Status Surveys.

Table 3. Part-Time Workers as Percentage of Chemists, by Sex

	Men	Women
1976	0.9	6.2
1977	0.8	4.0
1978	0.6	4.7
1979	1.7	4.0
1980	—	—
1981	0.8	2.9
1982	0.9	4.1
1983	1.1	4.4
1984	1.3	4.2
1985	—	—
1986	0.9	4.7

Source: ACS Annual Salary and Employment Status Surveys.

Two striking developments force students of scientific manpower to devote special attention to scientists of Asian origin. First, although Asians now comprise only about 2% of the U.S. workforce, Asians have been, and by all estimates will continue to be, an increasingly large part of the U.S. population. Since Lyndon Johnson's administration, immigration from South Asia and from East Asia has been rapid and continuous. Second, Asians, who often enter the U.S. as graduate students and then find ways to stay on, are far more educated than non-Asians in the U.S. and are far more likely than others, even other educated workers, to pursue scientific careers.

This growth of the Asian-American population and that population's leaning toward science combine to place novel responsibilities on the scientific community. One aspect of that responsibility concerns possible prejudices that could unfairly transfer to some members of the profession. Racial, national, and linguistic prejudices are real difficulties even among those whose training and temperament lead them to take pride in their cold rationality.

Asians already in the profession are shouldering responsibility for helping the profession make the necessary adjustments. Two large groups organized for this purpose are the India Chemists Club and the Chinese American Chemical Society, both of which have chosen to associate themselves closely with the American Chemical Society.

This article gives statistics that may prove useful to the American Chemical Society and other groups that seek to understand how the profession is evolving. This analysis should help those who plan programs that will guide the profession's adaptation to its changing milieu. Statistics about the forces at work on the profession should encourage and promote adjustments that will make the profession more effective by providing its practitioners the opportunity for more satisfying and rewarding careers.

Asian-Americans show their collective good taste not only by favoring technical subjects when they choose careers, but by specifically leaning toward chemistry as their life work. Not only are they three times as likely as others to choose science or engineering, but they also choose chemistry in numbers out of proportion to their presence in the science and engineering population.

The 1980 census found that 1.6% of the U.S. population was of Asian origin. The NSF found that Asians were 4.6% of the science and engineering population. Asians are an even greater fraction of chemists: in 1985, 5.8% of chemists in the American Chemical Society were of Asian origin, and that proportion has been increasing.

The only source of detailed statistics about Asians in chemistry is the 1985 survey of ACS members. The rest of this article is an analysis of the results of that survey. For convenience the term "chemists" will refer to chemists who in 1985 were not students, were not retired, and were members of the American Chemical Society.

About 16% of chemists of Asian background are U.S. natives and about 5% hold temporary visas. The rest are either non-citizen, permanent residents or naturalized citizens. Table 1 shows that the distribution by citizenship varies markedly among Asians. Two points deserve special note. First although the overwhelming majority of Japanese are U.S. natives, a larger fraction of Japanese than of other Asian races hold temporary visas. About 24% of non-native Japanese hold temporary visas, whereas among the non-Japanese Asians, only about 5% of non-citizens hold temporary visas. Apparently Japanese who come to the U.S. are far less likely to remain permanently. The second striking point is that fewer than one-half of one percent of Indians are natives of the U.S. Incidentally, in this article the words "Chinese" and "Indians" describe ethnic groups, not nationalities. Thus, the "Chinese" immigrants could be from Hong Kong, Taiwan, Singapore, the various countries in Southeast Asia or other countries in which Chinese are a minority. Similarly "Indians" are persons from India, Pakistan, Bangla Desh, Ceylon and other subcontinental countries as well as Malaysia, Guyana, Jamaica, and other countries where Indians are a minority. The group sometimes labeled "Other Asians", and sometimes Southeast Asians, is probably mostly Filipinos.

The degrees held by the members of the various Asian groups show some relationship to national origin. Table 2 shows that Japanese, who are mostly U.S. natives, resemble whites in that a relatively small fraction of them hold the doctorate. The pattern, however, does not apply to the group labeled "Other Asians". Although only 4% of the

members of this groups are U.S. natives, hardly any more of them than of whites hold the doctorate. To some extent the Southeast Asians' abundance of women may explain their relative lack of doctoral degrees. Among all racial groups, women are far less likely than men to hold the highest degree. "Other Asians" aside, the great number of doctorates among Asians may have to do with immigration. Some persons who ostensibly enter the United States in order to study, in fact, do quite the opposite: They go to graduate school as a means of entering the United States. Further, because U.S. employers have great difficulty evaluating foreign degrees, many immigrants who obtained their first degree abroad feel pressure to obtain U.S. credentials. This pressure may cause an "over-credentialing" among some immigrants who would be perfectly content to work without advanced degrees if their foreign credentials could receive full value.

Table 3 shows something about the kinds of institutions in which PhD academic chemists work. The message seems to be that Chinese and northeast Asians will work in academic institutions if they can land jobs at prestigious institutions, whereas Indians and Southeast Asians seem to go for the professorial life wherever they can find it.

The age distribution of the various groups is closely related to national origin and highest degree. About 10% of whites, and of Japanese, and nearly that many Southeast Asians are less than 30 years old. In comparison with whites, very few of the Indians, Chinese, or Southeast Asians are more than 45 years old. This relative absence of chemists in middle age is no doubt a result of the patterns of immigration: persons in their twenties come to this country and have been doing so for only about 20 years.

Table 2: PhDs AS PERCENT OF GROUP

Indians	83%
Chinese	75%
Koreans	74%
Japanese	62%
Other Asians	55%
White	53%

Table 3: CHEMISTS WORKING IN DOCTORAL INSTITUTIONS AS A PERCENT OF CHEMISTS WORKING FULL TIME IN ALL ACADEMIC INSTITUTIONS

Koreans	64
Japanese	59
Chinese	53
White	43
Indians	30
Other Asians	30

Table 1: CITIZENSHIP

	Native	Naturalized	Permanent Residents	Temporary Visa Holders
White	93	5	2	0
Japanese	67	12	13	8
Koreans	20	66	13	2
Chinese	13	61	22	4
Southeast Asians	6	57	33	4
Subcontinental Indian	0	47	47	6

Let us turn now to what kind of work chemists perform. Clearly ethnic group bears a very strong relationship to the probability that a chemist works as a manager. Table 4 shows that all Asians are underrepresented in management, but that this underrepresentation is much more pronounced among Chinese and less so among Southeast Asians.

Except for Japanese, who seem to favor government jobs, Asians are distributed among government, private industry and academia pretty much as whites are. Unemployment is somewhat more severe among Indians and Southeast Asians, but about normal for other Asian groups.

We now turn to salaries. To confine attention to comparable groups, we consider only PhD chemists working in non-academic positions. Column two of Table 5 below shows mean salaries. Column three contains salaries that have been made comparable by using a standard population to remove salary differences that may result from differences in age distributions. Koreans and Southeast Asians are left out of Column 3 because too few data are available to allow using this method of analysis. The results show that Chinese and Japanese receive salaries about 7% less than expected, and Indians about 15% less.

Even using a standard population, tabular analysis cannot proceed to further refinement because the number of data that refer to Asian chemists are insufficient. A method that gets around the requirement for massive numbers of data is regression analysis that uses dummy variables to represent categories of the variables that explain or predict salary. A model that proved useful was one that re-

gressed the logarithm of salary on dummy variables representing various categories of professional maturity, work functions, highest degrees, categories of citizenship, and ethnic group. Such models help to determine why Orientals seem to receive salaries smaller than do whites doing the same work and having the same qualifications. Because almost none of the South Asians (Indians) are U.S. natives, the regression considers only Japanese, Koreans, Chinese, and Southeast Asians.

A comparison of white and Orientals chemists shows that U.S.-born Orientals do not earn significantly less than do U.S.-born whites. Another regression established that naturalized citizens earn less than natives do, and permanent residents earn less than naturalized citizens do. The data seem to be consistent with the hypothesis that deficiencies in Orientals' salaries tend to disappear when they become thoroughly familiar with the language and the culture.

Table 4: CONCENTRATION IN MANAGEMENT AMONG PhD CHEMISTS EMPLOYED FULL-TIME BY NON-ACADEMIC EMPLOYERS

White	29%
Other Asians	19%
Japanese	13%
Subcontinental Indian	11%
Chinese	6%

Table 5: SALARIES OF NON-ACADEMIC PhD CHEMISTS 1985 SURVEY OF ACS MEMBERS ANNUAL SALARY

	NUMBER OF RESPONDENTS	UN-ADJUSTED	ADJUSTED FOR AGE DISTRIBUTION	
			Dollars	(Index, Whites = 100)
WHITE	10,210	\$51,654	\$50,845	100.0
CHINESE	518	\$46,115	\$47,008	92.5
JAPANESE	88	\$50,416	\$47,558	93.5
KOREAN	51	\$50,416	—	
SUBCONTINENTAL INDIAN	227	\$43,643	\$43,107	84.8
OTHER ASIANS	109	\$43,087	—	

POSTMASTER: IF UNDELIVERABLE AS
 ADDRESSED, PLEASE RETURN TO:
 DIVISION OF PROFESSIONAL RELATIONS
 AMERICAN CHEMICAL SOCIETY
 1155 SIXTEENTH ST., N.W.
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The 1985 survey of ACS members asked several questions about chemists' attitudes toward their work and about how they perceived their career opportunities: The responses to the ACS salary questionnaire varied markedly, as shown in Tables 6-9.

The five tables show that Japanese and Hispanics give answers similar to those that whites give. The reason may have to do with national origin. Whites, Japanese, and Hispanic chemists are mostly native-born citizens whereas Asians other than Japanese are mostly immigrants. If that explanation is correct, then the children of today's immigrants from Asia may avoid many of the difficulties that their parents suffered. (As usual in these matters, the experience of blacks is unique.)

This study is only a beginning and does not attempt to provide definitive answers to the many questions that deserve attention. Results, nevertheless, are available. Some differences noted seem to reflect cultural differences among groups—at least among those Asian chemists who happen to live in the United States and be members of the ACS. Examples include choice of specialty and choice of employer. Salary statistics show that Asians do receive salaries somewhat smaller than whites do, but the data do not provide evidence that Asians' lower salaries are a result of unfair treatment.

Table 6: My Employer Pays Me Fairly

White	73%
Hispanics	71%
Japanese	66%
Koreans	60%
Subcontinental Indians	59%
Chinese	55%
Blacks	52%
Southeast Asians	51%

Table 8: My Chances for PROFESSIONAL ADVANCEMENT are fair

White	69%
Japanese	64%
Subcontinental Indians	57%
Koreans	56%
Blacks	51%
Chinese	50%
Southeast Asians	48%

Table 7: My Chances for MANAGERIAL advancement are fair

White	61%
Hispanic	56%
Japanese	50%
Blacks	42%
Subcontinental Indians	36%
Southeast Asians	36%
Koreans	34%
Chinese	31%

Table 9: My job is satisfying

White	82%
Japanese	81%
Hispanics	80%
Blacks	77%
Subcontinental Indians	77%
Koreans	72%
Southeast Asians	72%
Chinese	71%