

The 93rd Conference
INDUSTRIAL CHEMISTRY



TWO YEAR COLLEGE CHEMISTRY CONFERENCE
DIVISION OF CHEMICAL EDUCATION
AMERICAN CHEMICAL SOCIETY

OCTOBER 17 AND 18, 1986
GREENVILLE TECHNICAL COLLEGE
GREENVILLE, SOUTH CAROLINA

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Greenville Technical College
 Greenville, SC 29606
 October 17-18, 1986

Program Theme - Industrial Chemistry

Program Chair - Leo Kling III, Tricounties Technical College, Pendleton, SC 29670, (803) 646-8361

Local Arrangements Chair - Alan Day, Greenville Technical College, Greenville, SC 29606, (803) 242-3170

Industrial Sponsor Chair - Dee Lamb, Greenville Technical College

Friday Morning, October 17, 1986 - Library Auditorium

- 9:00 - 11:00 Registration, Exhibits, Coffee and Donuts
- 9:30 Open Meeting of the Committee on Chemistry in the Two Year College
- 11:15 Opening - Onofrio Gaglione, New York City Technical College and 1986 2YC3 Chair
- 11:20 Welcome - Dr. Tom Barton, President, Greenville Technical College
- 11:25 Introduction to the Program - Leo Kling III
- 11:30 "The Development of the Integrated Circuit," Jay Lathrop, Electrical Engineering and Computer Science Dept., Clemson, University
- 12:30 - 1:45 Lunch on your own; Exhibits
- 1:45 "Silicon Wafer Manufacturing," Bob DiAntonio, Monsanto Co., Spartanburg, SC
- 2:30 "Practical Textile Chemistry: The Dyeing Process," Christine Jarvis, Textile Science Dept., Clemson University
- 3:15 Coffee Break, Exhibits
- 3:30 "Monomers and Polymers," Richard Gilbert, Textile Chemistry Dept., North Carolina State University
- 4:30 Pre-Banquet Break
- 5:30 - late Hors d'oeuvres, banquet followed by a tour of Digital Equipment Company, Greenville Manufacturing Facilities

Saturday Morning, October 18, 1986 - Library Auditorium

- 8:30 - 10:00 Registration, Exhibits, Coffee and Donuts
- 9:00 Opening of Saturday Session - Leo Kling III
- 9:05 Welcome - Mrs. Robbye Mauldin, Administrative Vice President, Tri-Counties Technical College, Pendleton, SC
- 9:10 Introduction to Program - Alan Day
- 9:15 "Incorporating Industrial Topics into the Undergraduate Organic Chemistry Course," Guy Mattson, University of Central Florida
- 10:00 "Potential Areas for College-Industry Cooperation," Bert Knesel, Ethel Corporation, Orangeburg, SC
- 10:45 Coffee Break, Exhibits
- 11:15 "Incorporating Industrial Topics into the General Chemistry Course," Steven Zumdahl, Dept. of Chemistry, University of Illinois
- 12:00 Lunch on your own
- 1:00 "Paper Chemistry: Pulp and the ClO₂ Bleaching Process," H. Wade Cain, Dept. of Chemistry, Morehead State Univ.
- 1:45 "Critical Issues in Two Year College Chemistry," O. Gaglione, New York City Technical College
(Report of ACS Task Force on Two Year College Chemistry)
- 3:00 End of Conference

AGENDA

Committee on Chemistry in the Two-Year College

Friday, October 17, 1986

General Meeting

- I. Introductions
- TAB1 II. Approval of the minutes from the Chicago meeting (page 5)
- III. Reports
 - TAB2 A. Chair--Dick Gaglione (page 13)
 - B. Chicago meeting
 - C. Dayton meeting (page 19)
 - D. Greenville meeting--Leo Kling and Alan Day
 - E. Membership--Mike Knoll (page 25)
 - F. Treasurer--John Clevenger (page 27)
 - G. College Sponsors--John Clevenger (page 29)
 - H. Industrial Sponsors--Elliott Greenberg (page 33)
 - I. Publications--Ethelreda Laughlin
 - J. Meeting Sites--Dick Gaglione (page 39)
 - K. Programs--Len Grotz
 - L. Workshops--Sam Crawford
 - M. ACS Two-Year Colleges Program--Jim Bradford (page 45)
 - 1. 2YC Distillate
 - 2. Invitational Education Conference Report
 - 3. Task Force on ACS Involvement in the Two-Year Colleges
 - 4. Guidelines for Chemistry Education in the Two-Year Colleges
 - 5. College Chemistry Consultants Service
- IV. Old business
- V. Good and Welfare
- TAB3 VI. Information Items

2YC3 Executive Committee Meeting
Thursday, April 24 1986 6:40 p.m.

Present: Jay Bardole Dick Gaglione (chair)
 Edith Bartley Cecil Hammonds
 Jim Bradford Uni Susskind
 Ralph Burns Kathy Weissman
 Curt Dhonau

1. The minutes of the Executive Committee meeting of April 11, 1986, held in Valhalla, NY were approved.
2. Dick Gaglione announced that 5 names of persons attending the NY meeting were accidentally left off the distributed attendance roster. The NY meeting ran over in terms of expenses. Due in part to a donation to 2YC3 from the New York State 2 yr college two-year chemistry Teachers Association, the initial overage was reduced to less than \$100.

3. Future Meeting Sites:

The corrected dates for the mailed newsletter of the 93rd and 94th conferences were given.

93rd - October 17 and 18, 1986

94th - November 14 and 15, 1986

95th - The program chair for the Denver meeting will be Martin Van Dyke.

96th - The local arrangements chair will be C.H. Breedlove and
Independent Sponsor Chair will be Harold J. Plostas.

97th - In Lincoln, Nebraska, October 9, 10, 1987.

98th - Jacksonville, Florida. Date to be in late November or early
December.

101st - The meeting at Purdue in conjunction with the Division Chemistry
Education 10th Biennial meeting has been designated as the 101st
meeting.

This then increased the conference numbers by one starting with the new
102nd.

102nd - Pittsburg, PA meeting in early fall 1988.

103rd - Edith Bartley is to determine the college site in Dallas.

105th - Scheduled in Rexburg, Idaho.

The Executive Committee decided that the 105th scheduled at Ricks college in Rexburg should be changed. The changing is due to two concerns expressed by the committee. One was the location. The concern expressed was that attendance would be extremely low and should not be considered as a full 2YC3 meeting. The second concern was the restraints placed on the attendee's by the college, i.e., the restriction against smoking and the drinking of coffee or tea on campus.

Southern California was suggested as an alternate site.

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Sites for the 106th and 107th are to be decided.

106th - Suggestion was made for the Midwest.

107th - Suggestion was made for Mississippi.

108th - Will be in conjunction with ACS in Boston.

109th - Suggestion in Washington State.

4. John Clevenger reported by phone to the chair that he had received about \$400 in individual dues and \$750 in college sponsors.

The allotment of \$500 made it possible for John Mitchell, a 2YC3 appointee, to attend the Invitational Conference Task Force in New York. This amount was approved at the Reno Meeting.

5. A call for nominations for the Industrial Sponsors Chair was announced. These nominations are to be received by the first fall meeting. Call for nominations for Chair-Elect will be in the early fall newsletter.

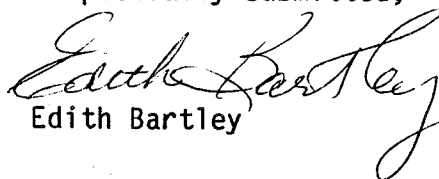
6. Jim Bradford reported on the Invitational Task Force meeting, Monday, April 15, in NY. He stated that on December 20, 1985, the recommendations draft from the Task Force had been presented to the National Science Board. The NSB 06 100 report will include information relating to the two year task force's work.

The recommendation was made that members of the task force, 2YC3 Executive Members and 2YC3 committee members write a letter to Erick Block of the National Science Foundation and Homer Neel Chairman, NSB, expressing our appreciation for inclusion in the NSB report.

7. Bill Mooney has requested that the program chairs for the next two meetings allow time for the presentation of the initial guidelines resulting from the task force's work.

8. With no additional discussion the meeting was adjourned at 7:52 p.m..

Respectfully submitted,


Edith Bartley

OPEN COMMITTEE MEETING
William Rainey Harper College
Palatine, IL
Friday, April 25, 1986
9:35 AM

Attendees:

Joe Arrigo	Consultant, Palatine, IL
Neil Ball	UWC-Sheboygan, Sheboygan, WI
Jay Bardole	Vincennes University, Vincennes, IN
Edith Bartley	TCJC - South, Ft Worth, TX
Jim Bradford	ACS, Washington, D.C.
Ken Broche	U of Illinois, Urbana, IL
Dale Burgess	Eastern Wyoming Coll., Torrington, WY
Ralph Burns	St. Louis Community Coll., Kirkwood, MO
Kathryn Caraway	Mott Comm. Coll., Flint, MI
Alan Davis	Fraser Valley Coll., Chilliwack, BC, Canada
Curt Dhonau	Vincennes U., Vincennes, IN
D. Gaglione	NYC Tech. Coll., Brooklyn, NY
Elliott Greenberg	Prairie State Coll., Chicago Heights, IL
Cecil Hammonds	Penn Valley CC, Kansas City, MO
Balmant Hansra	Richard J. Daley, Chicago, IL
Lucette Held	Thornton CC, South Holland, IL
Alan Hileman	Monroe County C.C., Monroe, MI
John E. Hiomer	Joliet Junior College, Joliet, IL
Shahid Jalil	John Abbott Coll., Ste. Anne de Bellevue, Quebec
Richard Jarosch	U. of Wisconsin, Sheboygan, WI
Dick Jones	Sinclair CC, Dayton, OH
John Kenkel	Southeast Comm. Coll., Lincoln, NE
Dave Klein	Kansas City CC, Kansas City, KS
Leo Kling	Tri-County Tech. College, Pendleton, SC
Doris Kolb	Bradley Univ., Peoria, IL
Ken Kolb	Bradley Univ., Peoria, IL
F. Axtell Kramer	St. Louis CC, Kirkwood, MO
Ethelreda Laughlin	Parma, OH
Bill Lindquist	Worthington, CC, Worthington, Minn.
David Macaulay	Harper College, Palatine, IL
William T. Mooney, Jr.	El Camino Collage, Torrance, CA
Bob Porod	Rock Valley Coll., Rockford, IL
Gayheart R. Roche	Milwaukee Area Tech. Coll., Milwaukee, WI
Paul Santiago	Harford CC, Bel Air, MD
Dick Shaw	Madison Area Tech. Coll., Madison, WI
Uni Susskind	Oakland CC, Auburn Hills, MI
Martin Van Dyke	Grant Range CC, Westminster (Denver), CO
Katherine Weissmann	Mott Comm Coll., Flint, MI
John Winkelmann	Illinois Valley CC, Olesby, IL
Myo Yoo	Thornton CC, S. Holland, IL

Dick Gaglione opened the meeting at 9:35 AM. He recognized Bill Mooney who complimented the program chair for the excellent work he did for the anniversary conference.

Dick announced that the 25th anniversary will be used as a heading for the membership drive in each newsletter.

p.1

2YC3 has 477 members, 94 of whom are new.

Dick reported for John Clevenger in his absence. John asked for more college sponsors. Recruitment must come from the members. Renewal notices are sent to an individual in chemistry, not to the administration. Some colleges get sponsorship money from the chemistry supply budget. A college sponsorship costs \$25.00.

Elliott Greenberg, industrial sponsor chair, distributed packets for industrial sponsors. He asked the membership to visit the industrial sponsor booths. He also urged recruitment of more sponsors. A sponsorship costs \$100.00. He urged renewals from VWR and American Scientific. He said that we particularly need computer software sponsors.

Edith Bartley, Chair Elect, is in charge of meeting sites. She made the following announcements:

93rd conference at Greenville Technical College: Leo Klin, program chair, said the program is almost complete. The theme will be Industrial Topics in First and Second Year courses.

94th conference at Sinclair Community College: Dick Jones is the program chair. The themes will be Chemistry, the Chemical Science and Applications of Chemistry.

97th conference: The date, Oct. 9-10, 1987 has been selected. John Kenkel, program chair, said that motel rooms will be a problem if this is a home football weekend. He'd like a theme dealing with chemistry in technical programs.

Allen Davis announced the program plans for the 100th conference to be held in Toronto, in conjunction with the ACS national meeting.

Jim Bradford said that the invitational conference, held last November, produced a list of "partner" groups. The National Science Foundation will now have the input of two-year colleges. Jim would like the comments of two-year college teachers. He recommended reading the report of the NSF in the yellow book produced for the New York meeting.

Bill Mooney reported that there would be a panel discussion on Saturday giving the recommendations of the conference. He said that there will be increased research opportunities and that it will be important to get letters to Eric Bloch at NSF.

Jim Bradford announced a new publication, "What's Happening in Chemistry". He said that application forms were available at the information desk.

Leo Kling requested a meeting with those participants who'll be in Bozeman. He's anxious to have the same kind of 2YC3 impact that the group had at Storrs.

Old Business: Dick Gaglione brought up the suggestion of having a more flexible dues structure such as inclusion of life memberships. He requested suggestions, pro and con.

Uni Susskind encouraged membership in the Division of Chemical Education since we are a committee of the Division and reminded the audience that one does not have to be a member of ACS to be a member of DivChed.

Cecil Hammonds said he was in favor of tying together the dues structure of the two groups. Bill Mooney pointed out that Chem. Ed. dues are collected through the national office and it would be better to keep the 2YC3 dues separate.

Dick Gaglione asked for news of local meetings for the newsletters.

The meeting was adjourned at 10:30 AM.

INTERIM REPORT - AUGUST 1986

Committee on Chemistry in the Two Year College Division of Chemical Education American Chemical Society

The Committee on Chemistry in the Two Year College, during the period from January 1 to August 1, 1986, has continued to support the improvement of chemical education by:

providing regional Two Year College Chemistry Conferences (2YC3) at Westchester Community College, Valhalla, New York and at William Rainey Harper College in Palatine, Illinois;

participating in the Division's 9th Biennial Conference at Montana State University in Bozeman, Montana;

continuing to support the efforts of the ACS' Office of Chemistry in the Two Year College in publishing the Distillate;

participating in the Society Committee on Education's Task Force on Two Year College Chemistry;

striving to increase general membership and the number of college and industrial sponsors;

publishing two editions of the 2YC3 Newsletter;

continuing to implement our new Policies and Procedures for the election of committee officers;

planning for conferences, elections, appointments and other activities for the Fall 1986.

TWO YEAR COLLEGE CHEMISTRY CONFERENCES

On April 11 and 12, 1986, a 2YC3 meeting was held at Westchester Community College in Valhalla, New York in conjunction with the ACS National meeting in New York City. Pat Flath, of Paul Smith's College, was the program chair for this conference, which included 16 papers, 12 industrial exhibits, a trading post and a banquet. The event was attended by 85 chemistry educators and featured a post-banquet presentation on Industrial Research by Dr. Ivar Giaver, Nobel Laureate from the General Electric Company and Rensselaer Polytechnic Institute.

A second conference was held at Harper College in Palatine, Illinois, on April 25-26, 1986 and was attended by 223 people representing 22 states and 3 Canadian provinces. The program chair for this meeting was William T. Mooney, Jr., who provided attendees with 19 papers, a workshop, a banquet and a special 2YC3 25th Anniversary recognition ceremony. This program featured a keynote address by Ronald Gillespie, McMaster University and a post-banquet presentation by Mary Good, President-elect, American Chemical Society.

NINTH BIENNIAL CONFERENCE - DIVISION OF CHEMICAL EDUCATION

The Committee also participated in the Division Biennial Conference held at Montana State University on July 27-31, 1986. Ed Heath of Southwest Texas Junior College chaired a 2YC3 program of seven papers, which were integrated into the overall conference program. It was estimated that approximately 90-100 Two Year College Chemistry educators joined the Four Year College and High School teachers in attendance in making this a most memorable professional experience. The Committee also provided an exhibit booth, directed by Leo Kling of Tricounties Technical College, which supplied information about the activities of 2YC3.

OFFICE OF CHEMISTRY IN THE TWO YEAR COLLEGE

The Committee has continued to support the publication of the Distillate by providing \$2,000 per year. The ACS staff person, Dr. James Bradford, in the Office of Chemistry in the Two Year College, has not only worked closely with the Committee in the preparation of items for this publication, he has also attended our regional meetings, preparing agenda books and actively participating in Committee meetings and programs.

S O C E D TASK FORCE ON TWO YEAR COLLEGE CHEMISTRY

In 1986, the Society Committee on Education's Task Force on Two Year College Chemistry added two members from our Committee, Dick Gaglione and John Mitchell, to join the group in preparing the guidelines for Two Year College Chemical Education.

MEMBERSHIP, COLLEGE AND INDUSTRIAL SPONSORS

In the first half of 1986, the Committee has attempted to increase the number of members, college sponsors and industrial sponsors via our 25th Anniversary Membership Drive. A significant increase in general membership has occurred and will be documented in the Annual Report. A rough estimation of general membership at this time is 571. Final figures on college and industrial sponsors will appear in the Annual Report.

2YC3 NEWSLETTER

Two editions of the Newsletter were published in March and June with an average circulation of approximately 2,500. The Newsletters contain information concerning:

- future regional conference sites;
- executive committee members of 2YC3;
- programs and local arrangements for regional meetings;
- membership application for 2YC3;
- call for nominations and election results;
- DIVCHED news and membership;
- local 2YC3 groups.

NEW POLICIES AND PROCEDURES

In accordance with our new Policies and Procedures, Ralph Burns of St. Louis Community College at Meramec was elected Chair-elect for 1987 and Michael Knoll of Vincennes Junior College was re-elected to serve another term as Membership Chair.

PLANS FOR THE REMAINDER OF 1986

The Committee is actively planning:

to participate in a 25th Anniversary Symposium at the ACS National Meeting in Anaheim;

two regional conferences on 10/17-18/86 in Greenville, S. C. and on 11/14-15/86 in Dayton Ohio;

to hold elections for Chair-elect for 1988 and Industrial Sponsor Chair;

to update the roster of regional committee members.

Respectfully submitted,

Onofrio (Dick) Gaglione
Chairman (1986)
Committee on Chemistry in the Two Year College

94TH 2YC3

SINCLAIR COMMUNITY COLLEGE
DAYTON, OHIO 45402

NOVEMBER 14-15 1986

PROGRAM THEME - CHEMISTRY-THE CENTRAL SCIENCE

The trend in society and education is to put chemistry on the back burner. New developments (many generated by chemists) have led to new fields which now compete for society's limelight. In education, chemistry is being displaced from program requirements in engineering and health fields and replaced with courses within their own discipline.

While other 2YC3 conferences have had chemists look at how chemistry is applied to other fields, **CHEMISTRY - THE CENTRAL SCIENCE** will have professionals in other fields look at how they use chemistry in their discipline. Perhaps we can gain insight into how we can make our chemistry curriculum more attractive. Not only is chemistry central, but chemistry is also essential.

PROGRAM CHAIR - Richard Jones, Sinclair Community College, Dayton, OH 45402, (513) 226-7907

LOCAL ARRANGEMENTS - Roger Penn (Dayton), Sinclair Community College, Dayton, OH 45402, (513) 226-2556 -- Noel Farrier (SCC), Sinclair Community College, Dayton, OH 45402, (513) 226-3058

LOCAL INDUSTRIAL SPONSOR COORDINATOR - James Johnson, Sinclair Community College, Dayton, OH 45402, (513) 226-2557

PUBLIC RELATIONS - Sam Ikharebha, Sinclair Community College, Dayton, OH 45402, (513) 226-7952

FRIDAY, NOVEMBER 14, 1986

- 9:00 - 12:00 REGISTRATION, EXHIBITS, COFFEE & ROLLS
Atrium Building 4 - Sinclair Community College
- 9:30 - 10:30 COMMITTEE ON CHEMISTRY IN THE TWO-YEAR COLLEGE
This meeting is open to all interested persons.
- 10:45 - 11:00 OPENING: Onofrio Gaglione, New York City Technical
College and 1986 Chairperson 2YC3
WELCOME: Dr. Ned Sifferlen, Vice President for
Instruction, Sinclair Community College
INTRODUCTION TO PROGRAM: Dr. Richard Jones, Sinclair
Community College

- 11:00 - 12:00 KEYNOTE ADDRESS: "Microencapsulation," Dr. Joe Bakan
Laboratory Director, Eurand America, Dayton, OH
- 12:00 - 1:30 LUNCH -- EXHIBITS (on your own-see list of restaurant)
- SYMPOSIUM ON CHEMISTRY IN THE HEALTH FIELD
(Dr. Noel Farrier, Sinclair Community College
presiding)
- 1:40 - 2:25 "CHELATION THERAPY," David G. Goldberg, D.O.,
Practicing physician, Dayton, OH
- 2:30 - 3:15 "PULMONARY HYPERSENSITIVITY," Dr. Peter Thorne,
Graduate School of Public Health, University of
Pittsburgh
- 3:15 - 3:45 COFFEE BREAK -- EXHIBITS, Atrium Building 4
- 3:45 - 4:30 "CHEMISTS, CROOKS, AND KILLERS: THE ROLE OF THE
SCIENTIST IN THE CRIMINAL JUSTICE SYSTEM,"
Bill Dean, Criminalist, Hamilton County Coroner,
Cincinnati, OH
- 5:30 - 7:30 SOCIAL EVENTS AT RAMADA INN (Dr. Roger Penn, Sinclair
Community College presiding)
- 5:30 - 6:30 SOCIAL HOUR, Ramada Inn, Downtown Dayton, Banquet Room
- 6:30 - 7:30 BANQUET, Ramada Inn, Downtown Dayton, Banquet Room
- 7:30 - 8:30 BANQUET ADDRESS, Ramada Inn, Downtown Dayton, Banquet
Room, FISHER ART COLLECTION, John Tavlik,
Fisher Scientific, Pittsburgh, PA

SATURDAY, NOVEMBER 15, 1986

SYMPOSIUM ON CHEMISTRY IN THE ENGINEERING FIELDS
(Jim Johnson, Sinclair Community College
presiding)

- 8:30 - 12:00 REGISTRATION, EXHIBITS, COFFEE & ROLLS
- 9:00 - 9:10 ANNOUNCEMENTS, OPENING REMARKS
- 9:10 - 9:55 "COMPOSITES, PAST, PRESENT, AND FUTURE," Ray Cull,
Chemical Engineer, Dow Corning, Midland, MI
- 10:00 - 10:45 "THE PLACE OF ORGANIC CHEMISTRY IN THE LIBERAL ARTS AND
PROFESSIONAL CURRICULUM," Dr. Sehan N. Ege,
Department of Chemistry, University of Michigan
- 10:45 - 11:15 COFFEE BREAK -- EXHIBITS, Atrium Building 4

- 11:15 - 12:00 "ENVIRONMENTAL CHEMISTRY," Dr. Maurice A, Shapiro,
Department of Environmental Science, University
of Pittsburgh
- 12:00 - 1:30 LUNCH (on your own-see list of downtown restaurants)
- SYMPOSIUM ON INTERESTING CHEMISTRY TEACHING TECHNIQUES
(Sam Ikharebha, Sinclair Community College
presiding)
- 1:30 - 1:40 ANNOUNCEMENTS, OPENING REMARKS
- 1:40 - 2:25 "FIVE THINGS EVERYONE SHOULD KNOW ABOUT CHEMISTRY,"
John Hill, Chemistry Department, University of
Wisconsin, River Falls
- 2:30 - 3:15 "THE VALIDITY OF HUMOR IN EDUCATION," Paul Grotz,
Chemistry Department, University of Wisconsin,
Waukesha
- 3:20 - 4:30 "PHILOSOPHY OF CHEMICAL DEMONSTRATIONS,"
George Gilbert, Chemistry Department, Dennison
University

MEMBERSHIP REPORT

October 1, 1986

Renewed Memberships	=	404
New Memberships	=	<u>226</u>
Total Memberships	=	630

Note 1: There were 480 total memberships on October 1, 1985

Note 2: 90 new members joined during the 25th anniversary meeting

September 30, 1986
 FINANCIAL REPORT FOR COCTYC
 From: 1/1/85 To: 9/30/86

Credits

Balance forward		\$ 10720.27
College Sponsors		300.00
Industrial Sponsors		3075.00
Individual Membership		1488.00
DIVCHED		2000.00
Interest		996.02
C.D.'s	490.36	
Checking	505.66	
Meetings & Misc.		813.00
Reno	10.00	
Valhalla	50.00	
Bozeman booth	753.00	
		\$ 19392.29

Debits

Travel		\$ 3788.31
Chair	1347.79	
Chair-Elect	329.40	
Past Chair	438.40	
Secretary	311.36	
Membership	335.36	
Treasurer	526.00	
Taskforce Mem.	500.00	
Office Supplies		19.90
Postage		76.84
Printing		132.98
Meetings & Misc.		1066.71
Valhalla	144.16	
Bozeman booth	922.55	
		\$ 5084.64

Balance \$ 14307.65

COLLEGE SPONSORS

We had 102 college sponsors for 1986. A listing follows this report.
 Renewal notices have been sent out for 1987.

John V. Clevenger

 John V. Clevenger
 Treasurer/College Sponsors

College Sponsors Report

There are 101 paid College Sponsors for 1986 as of 10/1/86.

A list of sponsors is available from John Clevenger.

INDUSTRIAL SPONSORS OF THE
TWO-YEAR COLLEGE CHEMISTRY CONFERENCE

Ms. Lisa S. Berger
Chemistry Editor
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Harper & Row, Publishers, Inc.
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New York, NY 10022

Mr. Robert L. Bieser
Vice President
Science Education Sales
Sargent-Welch Scientific Co.
7300 North Linder Avenue
Skokie, IL 60077

Dr. E. Jim Bradford
Project Coordinator
Office of College Chemistry
American Chemical Society
1155 Sixteenth Street, N.W.
Washington, DC 20036

Mr. A. F. Bremble
Manager, Marketing Services
Mettler Instrument Corporation
P.O. Box 71
Hightstown, NJ 08520

Mr. Dennis Calsin
Analytical Product Manager
Radiometer America
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Westlake, OH 44145

Mr. Paul A. Cauchon
Director, Program Development
Programs For Learning, Inc.
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Mr. James A. Chapman
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FUTURE MEETING SITES-2YCS

95TH CONFERENCE - IN CONJUNCTION WITH ACS NATIONAL
3-4/87 - ARAPAHOE COMMUNITY COLLEGE, 5900 SOUTH SANTA FE DR
LITTLETON, COLORADO 80120
PROGRAM CHAIR - MARTIN VAN DYKE, FRONT RANGE COMMUNITY COLLEGE NORTH
CAMPUS, 3645 W.112th AVE., WESTMINSTER, CO. 80030
(303) 466-8811
LOCAL ARR. CHAIR - AL GROHE, ARAPAHOE C.C., (303) 797-5939
IND. SPON. CHAIR - TO BE ANNOUNCED

96TH CONFERENCE
7/23-24/87 - MONTGOMERY COMMUNITY COLLEGE, ROCKVILLE, MD. 20850
PROGRAM CHAIR - MARGOT SCHUMM, MONTGOMERY COM. COLLEGE, (301) 279-5129
LOCAL ARR. CHAIR - ALAN HEYN, MONTGOMERY COMMUNITY COLLEGE
IND. SPON. CHAIR - C.H. BREEDLOVE, MONTGOMERY COMMUNITY COLLEGE

97TH CONFERENCE
10/16-17/87 - SOUTHEAST COMMUNITY COLLEGE, 8800 "D" ST., LINCOLN,
NEBRASKA 68352
PROGRAM CHAIR - JOHN KENKEL, SOUTHEAST COMMUNITY COLLEGE, LINCOLN,
NE., (402) 471-3333
LOCAL ARR. CHAIR - DON MUMM, SOUTHEAST COMMUNITY COLLEGE, LINCOLN, NE
IND. SPON. CHAIR - ROBIN MONROE, SOUTHEAST COMMUNITY COLLEGE

98TH CONFERENCE
11/13-14/87 - FLORIDA JUNIOR COLLEGE, NORTH CAMPUS, JACKSONVILLE,
FLA. 32218
PROGRAM CHAIR - WENDELL MASSEY, FLORIDA JUNIOR COLLEGE, NORTH CAMPUS,
JACKSONVILLE, FLA. (904) 757-6441
LOCAL ARR. CHAIR - TO BE ANNOUNCED
IND. SPON. CHAIR - TO BE ANNOUNCED

99TH CONFERENCE
SPRING 1988 - AMERICAN RIVER COLLEGE, 4700 COLLEGE OAK DR.,
SACRAMENTO, CA. 95841
PROGRAM CHAIR - RICHARD LUNGSTROM, AMERICAN RIVER COLLEGE,
(916) 484-8464
LOCAL ARR. CHAIR - TO BE ANNOUNCED
IND. SPON. CHAIR - TO BE ANNOUNCED

100TH CONFERENCE - IN CONJUNCTION WITH ACS NATIONAL
6/5-11/88 - TORONTO, ONTARIO, CANADA
CONTACT PERSON - SHAHID JALIL, JOHN ABBOT COLLEGE, CS LIAISON 10 BYOB

101ST CONFERENCE - IN CONJUNCTION WITH THE 10th BIENNIAL DIVCHED CONF.
SUMMER 1988 - PURDUE UNIVERSITY, WEST LAFAYETTE, IN.
PROGRAM CHAIR - DORIS KOLB, ILLINOIS CENTRAL COMMUNITY COLLEGE,
EAST PEORIA, IL 61635 (309) 694-5011

102nd CONFERENCE
EARLY FALL 1988 - COMMUNITY COLLEGE OF ALLEGHANY, ALLEGHANY CAMPUS,
BOB RIDGE AVE., PITTSBURGH, PA.
PROGRAM CHAIR - BARBARA RAINARD, C.C. OF ALLEGHANY, (412) 237-2525
LOCAL ARR. CHAIR - TO BE ANNOUNCED
IND. SPON. CHAIR - TO BE ANNOUNCED

103rd CONFERENCE
LATE FALL 1988 - KANSAS CITY KANSAS COMMUNITY COLLEGE, 7250 STATE AVE,
KANSAS CITY, KANSAS 66112
PROGRAM CHAIR - DAVE KLEIN, KANSAS CITY KANSAS C.C., (913) 334-1000
LOCAL ARR. CHAIR - TO BE ANNOUNCED
IND. SPON. CHAIR - TO BE ANNOUNCED

104th CONFERENCE - IN CONJUNCTION WITH ACS NATIONAL
APRIL 1989 - DALLAS, TEXAS AREA

105TH CONFERENCE
LATE SPRING 1989 - SITE NOT DETERMINED
PROGRAM CHAIR -
LOCAL ARR. CHAIR -
IND. SPON. CHAIR -

106TH CONFERENCE
SITE NOT DETERMINED - EARLY FALL 1989

07TH CONFERENCE

SITE NOT DETERMINED - LATE FALL 1989

108TH CONFERENCE - IN CONJUNCTION WITH ACS NATIONAL

APRIL 1990 - BOSTON MASS. AREA

09TH CONFERENCE

LATE MAY OR EARLY JUNE, 1990 - POSSIBLE SITE AT VANCOUVER, B.C.

CONTACT PERSON - WILLIAM WASSERMAN, SEATTLE CENTRAL COMMUNITY COLLEGE,
SEATTLE, WA., (206) 587-4080

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SCHOOL OF EDUCATION
Office of the Dean

June 25, 1986

Dr. Bassam Z. Shakhashiri
Assistant Director
Science and Engineering Education
National Science Foundation
Washington, D.C. 20550

Dear Bassam:

I write to transmit some of the results of the meeting of the Science and Engineering Education Advisory Committee that was held on 23 and 24 June 1986. First, however, let me state that the Committee was deeply impressed with the progress that has been made during the last two years in developing and inaugurating sound programs in each of the units. The level of Directorate activity and its quality are particularly heartening to those of us who have had occasion to observe science education activities at NSF over a period of several decades. I served on the Advisory Committee from 1973 to 1976, then again since 1984. I also was a principal investigator for six years in the early 1960s. Not for twenty-five years has there been such a fresh sense of commitment to addressing the many serious problems that beset science education in this country, nor have we seen until now the emergence of so carefully crafted a strategy for addressing those problems. Your leadership is evident, and the Committee is gratified to learn that you have consented to remain at the Foundation for at least another year. The Committee was moved to cast its sentiments in a formal resolution that was framed initially by Gerald Holton and James Ebert, then passed unanimously. Please see Attachment 1.

Let me proceed with a report of the additional formal actions taken by the Committee:

1. There was considerable discussion of the Neal Report (NSB 86-100) and its ramifications. The Committee welcomed the prospect of increased attention by the NSF to problems at this instructional level. We believe that the most successful approaches to the improvement of undergraduate education in science, mathematics, and engineering will come from a high degree of collaboration between the research directorates and SEE. At the same time, we believe that responsibility for stimulation and coordination of activities in undergraduate education must reside in one place that is clearly accountable. SEE should be the NSF center for activities designed to improve undergraduate science education. A motion to this effect was passed by the Advisory Committee, without dissent. See Attachment 2.

2. The Committee received the External Peer Oversight Reports for three programs: Graduate/Minority Fellowships, Informal Science Education, and Research in Teaching and Learning. See Attachments 3, 4, and 5. The Committee was appreciative of the thoroughness of the reviews and pleased by the fact that they were

favorable. Staff in these programs are to be complimented. Additionally, the Committee chose to go on record as favoring expansion of the graduate fellowship program. See Attachment 6.

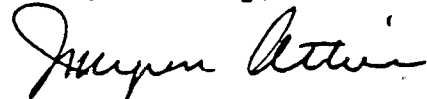
3. There was also discussion of possible support for programs that would enable high school students to participate in science and mathematics activities in universities and industry. Such programs require capable mentors as well as other critical factors for success, and the Committee was not prepared to suggest the precise details of such an initiative. It did express the view that SEE explore the possibility of instituting such a program of programs.

4. Finally, the Committee recommends that eligibility for the college science instrumentation program be extended to include two-year colleges and undergraduate programs at doctorate-granting universities. Instrumentation needs at such institutions are pronounced, as is the need for sound approaches to curriculum development. Undergraduate instructional approaches at research universities are sometimes emulated at other colleges; significant numbers of "mainline" students attend two-year colleges.

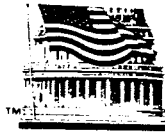
Please let me know if you need further detail in writing about the meeting. As you know from the agenda (and your presence throughout), the Committee discussed several additional topics, particularly budget and strategic planning. In this connection, the Committee places great weight on the importance of expanding Directorate activities, and we hope such a priority is reflected in the FY 88 budget request.

One final point: It seems clear that National Science Board interest in science education is growing rapidly; the Director is also searching for ways to enhance the presence and influence of NSF in science education. I am sure I speak for all members of the Committee when I affirm our willingness to assist further in any way we can in articulating an appropriate and sound policy for science education for the Foundation. In fact, it was suggested that some of us should meet with the Director and with appropriate Board members for a more informal discussion of key issues than we usually find time for. This is an unusually formative and critical period for the Foundation in science education. It is important that all of us charged with the responsibility for advising on or setting policy have opportunities for whatever exchange of views is necessary for the establishment of approaches that best serve the nation and at the same time reflect favorably on the National Science Foundation.

Sincerely,



J. Myron Atkin
Dean



June 24, 1986 - No. 197

VETO THREATENED. As this newsletter went to press, the White House was threatening a veto of the FY'86 Emergency Supplemental Appropriation -- just completed by House-Senate conferees -- which would put another \$146 million into Pell Grants for the coming academic year (see story p. 3). Also at press time, the Packwood tax reform bill appeared on the verge of Senate passage, after the Mitchell amendment to add a 35% top rate was rejected 71-29.

* **SCIENCE FUNDING.** The House report on the bill that resanctions the National Science Foundation for FY'87 has included language that bluntly "directs the Foundation to extend the eligibility for CSIP grants to include two-year and community colleges." The author is Rep. Doug Walgren, D-PA, Chairman of the House Subcommittee on Science, Research and Technology.

The bill, H.R. 4184, is awaiting a Rules Committee vote that could send it to the House floor before the July 4 recess. The Senate version, S. 2184, has cleared markup in the Labor and Human Resources Committee and is expected on the Senate floor after the July 4 recess. Both H.R. 4184 and S. 2184 shift an additional \$4 million into undergrad instrumentation.

The House report recognizes that increased support of undergraduate instructional scientific equipment and expansion of the NSF College Science Instrumentation Program (CSIP) is "the number one priority" of the recent American Council on Education report, "Towards a National Policy for Undergraduate Science Education: with the Recommendations of the National Higher Education Associations' Task Force." The House report (99-619) goes on to emphasize:

The Committee wishes to express its dual intent that the Foundation offer opportunities for instrumentation improvement to both two-year and community colleges as well as four-year undergraduate institutions. Since both these entities served the majority of undergraduate students they hold the greatest potential for educating future scientists and engineers. The Committee believes that a strong College Science Instrumentation Program should be open to as many institutions as possible in light of the continually aging and deteriorating condition of instructional instrumentation in the nation's postsecondary institutions.

H.R. 3700/S. 1965. Sen. Orrin Hatch, D-UT, Chairman of the Labor and Human Resources Committee, has signalled his intent to chair the Senate conferees who will adjust differences with the House on the new Higher Education Act. House and Senate conferees are not likely to meet until their respective committee staffs have completed and published a detailed and voluminous comparison of H.R. 3700 and H.R. 1965 -- which should be ready when Congress returns from its July 4 recess.

Community colleges have joined the larger higher education community in preparing detailed comparative comments for the conferees. Some of these "consensus"

(continued on p. 2)

Opportunity With Excellence

NATIONAL CENTER FOR HIGHER EDUCATION

ONE DUPONT CIRCLE, N.W., SUITE 410, WASHINGTON, D.C. 20036

202/293-7050

April 10, 1986

CALL TO CONSCIENCE. A statement that college leaders visiting Congress last week issued as a "call to conscience" is swarming with cosigners across the land. Assembled to make a series of visits to House and Senate leaders to ask that the federal partnership in education be stabilized as a budget priority, the group elected to make the "call to conscience" their written battlecry. It states in part: "It is time that we remind the nation that education is fundamental to the quality of life in our democratic society, as well as to our economic security and our national defense. It is time to bring education back to the forefront of our national priorities."

Pennsylvania university and college presidents as a group already have endorsed the statement. Blocks of cosigners are forming in other States. Community college leaders among the original cosigners included Sandra Featherman, Chairman of the Board, Community College of Philadelphia; Philip Gannon, President of Lansing (MI) Community College, and Michael Blouin, Executive Director of the Kirkwood Community College (IA) Foundation.

By Mr. DOLE for Mrs. HAWKINS:
S. 2282. A bill to establish a national advanced technician training program utilizing the Nation's eligible colleges to expand and improve the supply of technicians required by industry and national security in strategic, advanced, and emerging technology in order to increase the productivity of the Nation's industries, to contribute to the self-sufficiency of competitiveness of the United States in international trade, and for other purposes; to the Committee on Labor and Human Resources.

NATIONAL ADVANCED TECHNICIAN TRAINING ACT
● Mrs. HAWKINS. Mr. President, the American economy and the American work force today face global chal-

lenges of unprecedented scale. The key to meeting these challenges lies in large measure in skill training, in expanding the pool of technicians employed at the cutting edge of new and changing industrial technology. The legislation I introduce today, the National Advanced Technician Training Act, addresses this need.

The essence of this bill, Mr. President, is partnerships. Community and technical colleges already have gone further than any other segment of higher education in building programs tailored to the needs of employers and the private sector.

Yet the employer community is just one of many populations knocking at the community college doors. The community colleges serve larger minority populations than any other segment of higher education. Almost 45 percent of the total black community in higher education is attending community colleges; 70 percent of the Hispanic community is tackling its college dreams through community colleges. The community colleges also are serving a more recent phenomenon in higher education—the so-called reverse transfers. In the State of Washington, among others, the students moving from senior institutions back to community colleges, in order to satisfy the demands of the workplace, are greater in number than the enrollments transferring from the community colleges into the universities and senior colleges.

Growing numbers of adults who already hold higher college degrees—BA's through Ph.D.'s—are using the community colleges to meet the changing skill needs of their careers. For reasons of convenience and economy, the community colleges are the colleges of choice of the innumerable single parents and displaced homemakers who are striving to gain new or better employment. Such diverse demands from the community are putting a severe strain on the budgets of most community colleges. They simply lack the budgetary resources to increase their outreach to employers, and to instigate the courses that will more fully serve the accelerating changes of the workplace. With the seed support that my bill proposes, Mr. President, the partnerships between industry and community colleges that address the emerging priorities of high technology can be encouraged and expanded far beyond their present scope.

In the emerging workplace, Mr. President, virtually all occupations—from auto mechanic, draft and design technician, and machinist to nurse and secretary—require the worker to be prepared in the competencies of high technology. For the nurse and medical technician, it means working with electronically controlled life support systems and exotic lifesaving pharmaceuticals. For the draftsman it means working with computer-aided design,

and for the secretary and accountant it means working with word processors and automated ledgers. For the auto mechanic it means working with sophisticated electronic diagnostic equipment, and for the machinist, working with numerical control equipment. Advanced technology is invading almost every worksite, work station and occupation imaginable.

High technology is becoming equally pervasive to the home—sweetening domestic life with everything from food processors and word processors to solar heat.

Some of my colleagues have raised the question, as to why the bill puts the program in the National Science Foundation. There are several reasons, Mr. President.

Perhaps paramount is the simple fact that the National Science Foundation virtually ignores the largest segment of higher education, which is the community colleges. I regard this as a serious breach of the national interest. I see no justification whatsoever for the NSF's thinking that the only stream of talent it needs to keep our country at the forefront of global competition in science and technology comes from the engineering schools and graduate schools of the 90 or so largest research universities.

The NSF has grown topheavy in its preoccupation with graduate and postgraduate work, at the expense of undergraduate science and mathematics. It should be giving much stronger leadership to the needs of undergraduate education, and especially to the community colleges, where more than half the Americans now starting college enroll.

As another reason, the technician training that goes on between industry and the community colleges offers a promising but untapped environment for enhancing American leadership in applied science and applied technology. With seed support from NSF, these partnerships can be used to much greater advantage in strengthening postsecondary instruction in both math and science. Tens of thousands of very bright students are gaining hands-on opportunities to test their inventiveness and their higher aptitudes for math and science, through the community college courses they are taking with industrial laboratories and high-technological employers. Given the proper encouragement and opportunity, many such students will be strong candidates for upper-level courses and eventual graduate work serving the national interest in science and engineering.

As you will note, my bill calls for the establishment of an Office of Applied Technology at NSF, to administer the grant program the bill would establish.

Beyond the grant program, there are at least two important national purposes that could be served by such an office. The NSF should be staffed to work with the Labor Department on

AACJC Letter

4/29/86

long-term projections of the skill base the Nation must have to remain in the forefront of global economic, scientific and technological competition, and this office could serve this function.

It could also provide the leadership on technology transfer that is so badly needed within the Government. Vast amounts of innovation that potentially could enhance American leadership in industry, science and technology are simply dying on the shelves of Federal laboratories, in such diverse Departments as Defense, Education, Energy, and Agriculture, because there is no cohesive Federal strategy for moving the unclassified innovations off the shelves and into the hands of potential users in both the private and public sectors. NSF could be designing and leading such a strategy through this office.

In short, Mr. President, enactment of NATTA would be a major step toward reskilling the American workforce to keep our industry and our economy at the forefront of both global competition and applied technology, a step as well toward more employment and greater national productivity.

Mr. President, I ask unanimous consent that the text of the bill and a bill analysis be printed in the RECORD.

There being no objection, the material was ordered to be printed in the RECORD, as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "National Advanced Technician Training Act".

STATEMENT OF FINDINGS

Sec. 2. The Congress finds that—

(1) both industry and national security are hampered by shortages of highly skilled technicians to produce, operate, and service highly technical equipment, systems, and processes;

(2) growing numbers of dislocated workers and unemployed youth and adults lack the training to meet the emerging skill needs of industry and the information age;

(3) the United States has become increasingly dependent upon foreign producers for the advanced-technology systems that feed reindustrialization and economic growth; and

(4) a national advanced technician training program will give men and women from all backgrounds more opportunities to pursue training and education programs leading to an associate degree or technical certificate or otherwise to upgrade their competence consistent with the emerging needs of business, industry, and national security.

PURPOSE

Sec. 3. It is the purpose of this Act to increase the productivity of the industries of the Nation, improve the competitiveness of the United States in international trade, and prepare technicians and skilled craftsmen by establishing a national advanced technician training program in the Nation's community and associate-degree granting institutions, with matching non-Federal funds.

NATIONAL ADVANCED TECHNICIAN TRAINING PROGRAM

Sec. 4. (a)(1) The Director of the National Science Foundation shall, in accordance

with the provisions of this Act, carry out a three-year advanced technician training program under which eligible colleges will provide training to meet skill needs in strategic, advanced, and emerging technology.

(2) Such program shall include, where feasible, on-the-job training with technical occupational training and shall place special recruiting emphasis on attracting men and women whose skills require retraining or upgrading in order to retain their jobs, or who are unemployed, especially workers dislocated by plant closings and technological change, and individuals who have recently completed high school or who left high school prior to graduation.

(b)(1) In carrying out this Act, the Director shall—

(A) establish within the Directorate of Science, Technology, and International Education in the Foundation an Office of Applied Technology with responsibility both for monitoring the skill needs in emerging and strategic technical fields, and for conducting the grant program authorized by this Act;

(B) award grants on a competitive basis to eligible colleges which possess the demonstrated ability to provide competency-based occupational training to pay the Federal share of advanced technology training programs; and

(C) work with the eligible colleges and other institutions of higher education to establish and maintain, at the National Science Foundation a readily accessible inventory of advanced technician training programs which are serving public and private employers and addressing the changing workforce demands of emerging technology.

(2)(A) For the purpose of clause (B) of paragraph (1), the Federal share shall be 50 percent in each fiscal year.

(B) In carrying out clause (C) of paragraph (1), the Director may enter into contracts with such public and private agencies and organizations as may be necessary.

(C) No grant awarded to a college under this section in any fiscal year shall exceed \$50,000.

(c) Each eligible college awarded a grant under this section shall provide an associate-degree training program in designated advanced-technology occupational fields.

(d) The Director, in awarding grants under this section, shall give special considerations to training programs described in subsection (c) which—

(1) include flexibility in scheduling in order to accommodate working people and parents; and

(2) take steps to meet the adaptive and training needs of handicapped young people and adults.

(e) The Director shall prepare and submit to the Congress an annual report on the national advanced technician training program authorized by this Act, together with—

(1) an evaluation of the program;

(2) a catalog of the college programs identified by the required inventory;

(3) a recommendation on the feasibility of expanding the program; and

(4) such other recommendations, including recommendations for legislation, as the Director deems necessary.

(f)(1) In carrying out the duties under this section, the Director shall consult, cooperate, and coordinate with the programs and policies of the Department of Commerce and other relevant Federal agencies including the Department of Labor, the Department of Education, and the Department of Defense.

(2) In carrying out its functions under this Act, the Foundation shall have the same

power and authority it has under the National Science Foundation Act of 1950 to carry out its functions under that Act.

USE OF FUNDS

Sec. 5. Funds appropriated to carry out this Act shall be used to establish, strengthen, and expand the advanced technician training capabilities of eligible colleges, including—

(1) the development of associate degree and short-cycle training programs in advanced-technology occupations by two-year and four-year colleges, and by consortia of two-year and four-year colleges, with particular emphasis on model instructional programs to prepare and upgrade technicians; and to retrain dislocated workers in state-of-the-art competencies in advanced-technology occupations;

(2) the development of special courses of instruction in advanced-technology fields for faculty and instructors, both full-time and part-time faculty and instructors;

(3) the development of instructional materials in support of advanced technical training programs in eligible colleges and the dissemination of such materials among such colleges;

(4) the development of cooperative advanced technician training programs with business, industry, labor, and government; and

(5) the purchase or lease of state-of-the-art instrumentation essential to training and education programs designed to prepare and upgrade technicians in new and emerging advanced-technology fields.

DEFINITIONS

Sec. 6. For the purpose of this Act—

(1) the term "advanced-technology" includes advanced technical activities such as the modernization, miniaturization, integration, and computerization of electronic, hydraulic, pneumatic, laser, nuclear, chemical, telecommunication, and other technological applications to enhance productivity improvements in manufacturing, communication, transportation, commercial, and similar economic and defense activities;

(2) the term "Director" means the Director of the National Science Foundation;

(3) the term "eligible college" means a junior or community college or other institution of higher education awarding an associate degree accredited under section 1201 of the Higher Education Act of 1965;

(4) the term "junior community college" has the same meaning given that term by section 322(4) of the Higher Education Act of 1965; and

(5) the term "institution of higher education" has the same meaning given that term by section 1201(a) of the Higher Education Act of 1965.

AUTHORIZATION OF APPROPRIATIONS

Sec. 7. There are authorized to be appropriated \$20,000,000 for the fiscal year 1986 and \$30,000,000 for each of the fiscal years 1987 and 1988, to carry out the provisions of this Act.

January 1986

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AMERICAN CHEMICAL SOCIETY
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Cecil Hammonds, Ethelreda Laughlin, William Mooney

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Monterey, CA 93940 (408-646-4154)

Hubbs, Robert R. (1988) DeAnza College
Cupertino, CA 95014 (408-996-4774)

Hubscher, Arthur (1988) Ricks College
Rexburg, Idaho 83440
(208-356-1930)

Lungstrum, Richard A. (1986) American River College
Sacramento, CA 95841 (916-484-8464)

Sherman, Ruth (1986) Los Angeles City College
855 N. Vermont Ave, Los Angeles, CA 90029
(213-669-4223)

Scott, Peter (1986) Linn-Benton Community College
6500 SW Pacific Blvd, Albany, OR 97321
(503-928-2361)

Sternier, Wanda (1986) Cerritos College
11110 E. Alondra Blvd., Norwalk, CA 90650
(213-860-2451 ext 369)

Van Dyke, Martin (1987) Front Range Community College North Campus
3645 W. 112th Ave., Westminster, CO 80030
(303-466-8811)

Wasserman, William (1988) Seattle Central Community College
1701 Broadway, Seattle, WA 98122
(206-587-4080)

Armstrong, Elizabeth (1988) Skyline College
3300 College Drive, San Bruno, CA 94066

Region II Southern States: Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, Oklahoma, Puerto Rico, South Carolina, Tennessee, Texas

Southern Regional Program-Chairman 1985:

King, Leo III (1986) Tri County Technical College
Pendleton, SC 29670
(803-646-3227 ext. 325)

Barber, Ms. Anne (1985) Manatee Junior College
5840 26th Street W., Brandon, FL 33506
(813-755-1511)

Paula Ballard (1986) Jefferson State Jr. College
2601 Carson Rd.,
Birmingham, AL 35215

Bell, Helen (1988) Dyersburg State Community College
Lake Rd., Dyersburg, TN 36034

Cheek, William E. (1988) Central Piedmont Community College
PO Box 35009, Charlotte, NC 28235-5009
(704-373-6968)

Crook, Jody (1988) Meridian Junior College
5500 Highway 19 North, Meridian, MS 39305
(601-483-8241)

Darnall, David (1986) Shelby State Community College
PO Box 40568, Memphis, TN 38104
(901-528-6749)

James Graham, (1987) J.C. Calhoun Community College,
Decatur, AL.

Ed Heath (1988) Southwest Texas Junior College,
Garner Field Road, Uvalde, Texas 78801
(512-278-4401)

Inscho, F. Paul (1985) Hiwassee College,
Box 65, Madisonville, TN 37334
(305-442-2182)

Maier, Thomas L. (1986) Atlanta Junior College
1630 Stewart Ave. SW, Atlanta, GA 30310
(404-656-6365)

Massey, Wendell (1986) Florida Junior College,
North Campus,
Jacksonville FL 32218 (904-757-6441)

Hirter, Anne P. (1986) Roane State Community College
Harriman, TN 37748 (615-354-3000)

Singleton, Elizabeth (1988) Houston Community College
4310 Dunlavy, Houston, Texas 77006
(713-868-0787)

Region III - Midwestern States: Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin

Midwest Regional Program-Chairman 1985:

Jones, Richard (1988) Sinclair Community College
Dayton, OH 45402 (513-226-7907)

Ralph Burns (1986) St. Louis Community College at Meramec
11333 Big Bend, St. Louis, MO 63122
(314-966-7718)

Crawford, Sam (1987) Johnson County Community College
College Boulevard at Quivira Road
Overland Park, KS 66210 (913-880-8500)

Eidsness, Warren (1986) Normandale Community College
9700 France Ave. S.
Bloomington, MN 55431 (612-830-9300)

Elkins, I. Dean (1986) Henderson Community College
University of Kentucky, Henderson, KY 42420
(502-827-1867)

Johnson, Cullen (1987) Cuyahoga Community College, Western Campus
Parma, OH 44130 (216-845-4000)

Leonard Grotz (1985) University of Wisconsin-Waukesha,
1500 University Drive, Waukesha WI 53186
(414-544-8743)

Hammonds, Cecil (1988) Penn Valley Community College
Kansas City, MO 64111 (816-932-7659)

Kenkel, John (1988) Southeast Community College
Lincoln Campus
Lincoln, NE 68520 (402-471-3333)

Klein, Dave (1986) Kansas City Kansas Community College
7250 State Ave.
Kansas City, KS 66112 (913-334-1000)

Koch, Frank (1986) Bismarck Junior College
Bismarck, ND 58501 (701-224-5423)

Kalb, Doris (1988) Illinois Central Community College
East Peoria, IL 61635 (309-694-5011)

Kreiger, Albert (1988) Jackson Community College
Jackson, MI 49201 (517-787-0800)

Redmon, Fred (1987) Highland Community College
Freeport, IL 61032 (315-235-6121 ext 331)

Sell, Duane (1987) Wm. Rainey Harper College
Palatine, IL 60067 (312-397-3000)

John Winklemann (1987) Illinois Valley Community College
Rural Route, Oglesby, IL 61348 (815-224-2720)

Region IV - Eastern States: Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Virginia, Vermont, West Virginia

Eastern Regional Program-Chairman 1985:

Flath, Patricia (1986) Paul Smith's College
Paul Smith's NY 12970 (518-327-6266)

Burge, Robert (1987) Suffolk Community College
533 College Road, Serden, NY 11784
(516-451-4110)

Cherim, Stanley (1988) Delaware County Community College
Media, PA 19063 (215-353-5400)

Cucci, Myron w. (1987) Monroe Community College
Rochester, NY 14623 (716-424-5200)

Feldsine, John Jr. (1988) Broome Community College
Binghamton, NY 13902 (607-771-5000)

Hajian, Harry G. (1987) Community College of Rhode Island
400 East Ave.
Warwick, RI 02886 (401-825-2258)

Kanter, Muriel (1987) Roxbury Community College
625 Huntington Ave, Boston MA 62115
(617-734-1960)

Katz, David (1897) Community College of Philadelphia
1700 Spring Garden Street
Philadelphia, PA 19130
(215-751-8000)

Rainard, Barbara (1988) Community College of Allegheny
Allegheny Campus
808 Ridge Ave, Pittsburg, PA 15212
(412-237-2525)

Schumm, Margot K. (1986) Montgomery College, Rockville, MD 20850
(301-279-5129)

Sollimo, Vincent (1988) Burlington County College
Pemberton, NJ 08068 (609-894-9311)

Vlassis, C. G. (1988) Keystone Junior College
LaPlume, PA 18440 (717-945-5141)

Zoranski, Edmund J. (1986) Atlantic Community College
Mays Landing NJ 08330 (609-625-1111)

* • The National Science Foundation's Division of Teacher Enhancement and Informal Science Education is accepting proposals on improving science and mathematic education for students at the junior high school and elementary level. Two-year colleges might be particularly interested in two programs: science and mathematics education networks, and informal science education.

The Science and Mathematics Education Networks program encourages the development of substantive local and regional resource-sharing networks and collaboration that may include, among other, teachers, schools, local and state education agencies, colleges and universities, business and industry, and cultural and professional organizations. The intent is to provide elementary and secondary teachers with access to more, better, and more innovative resources to support their teaching activities.

NSF requests 3 copies of a preliminary 5 page proposal from interested applicants. Preliminary inquiries may be submitted at any time; NSF will attempt to respond within 8 weeks of receipt of the initial proposal.

For more information, contact: Science and Mathematics Education Networks Program, Division of Teacher Enhancement and Informal Science Education, Directorate for Science and Engineering Education, National Science Foundation, Washington, DC 20550, 202/357-7078.

The goal of the Informal Science Education program is to provide greater and mutually reinforcing opportunities for the public to make use of the rich resources for scientific, mathematical, and technological learning that exist outside the formal educational systems. Particular emphasis is placed on projects involving museums, zoos, the communications media, local membership groups, public organizations, telecommunications, and women, minorities, and the physically handicapped.

Again, 3 copies of a preliminary proposal are requested. Formal proposals are reviewed 3 times a year; target dates for submitting full proposals are April 1, August 1, and December 1.

For more information, contact: Informal Science Education Program, Division of Teacher Enhancement and Informal Education, Director for Science and Engineering Education, National Science Foundation, Washington, DC 20550, 202/357-7076.

• Community colleges are having greater success with their proposals at the Fund for the Improvement of Postsecondary Education (FIPSE). As shown in the chart on the next page, significantly more two-year colleges were invited to submit full proposals to FIPSE in the latest round of funding than were invited to do so in 1985, even though fewer two-year school applied initially.

A Community College Program for the Training of Technicians

John Kenkel

Southeast Community College, 8800 "O" Street, Lincoln, NE 68520

Chemists have recognized for many years that the tasks assigned to a technician-level chemist in a "real-world" industrial or governmental laboratory are such that significant "hands-on", or "applied" training is desirable. Often, this means a sort of re-training by the employer to change a bachelor's degree chemist's outlook on the chemistry world from one of conceptualization and theory to one of bench-top experimentation and analysis. New bachelor's degree personnel must discover quickly that typical real-world jobs do not involve using calculus for determining the angular momentum of a spinning electron or determining the electrode mechanism of the electrochemical reduction of a complex organic species. They find that these jobs involve the chemical analysis of raw materials used in the manufacture of some consumable product, or the sampling and analysis of a wastewater plant effluent. The point is that frequently bachelor's degree chemists are not prepared for real-world chemistry experiences.

Current Programs

Of course, there are academic programs in existence that cater to the chemical industry. Some four-year institutions offer BS and even MS degrees in Industrial Chemistry.¹ Also, for many years a number of four-year colleges and community colleges across the country have been offering programs in Chemical Technology.² Some of these programs, begun approximately 15 years ago as a result of an initiative taken by the American Chemical Society (ACS), were the result of detailed studies performed by various committees organized by the ACS. Thus, "ChemTec" programs were established at a number of "pilot schools" across the country.

The schools that were chosen were near metropolitan areas in which chemical-related industries were concentrated and the demand for industry-oriented chemical technicians was high. While many of these programs appear to be successful, the concept does not seem to have "caught on" at community colleges in other locations. There is likely to be a demand for trained technicians in other locations, but the projections for success are not favorable. High operating costs, too small a demand, and recruitment difficulties are all possible problems.

Southeast Community College's Program

This paper describes a technician training program in operation at Southeast Community College (SCC) in Lincoln, Nebraska. An observation concerning the Lincoln area is that it is not an area where one would expect a high demand for chemical technicians. The program has been quite successful, however, as evidenced by the fact that job placement for the last two years is 100% and for the last seven years is 90%+. Enrollment in this program is not aided by any sort of special recruiting effort. It relies mostly on its established reputation. Typically around 30 students (both

Table 1. Chemistry Course Sequence at Southeast Community College

Quarter 1	Introductory Chemistry I
Quarter 2	Introductory Chemistry II
Quarter 3	Introductory Organic Chemistry
Quarter 4	Analytical Chemistry for Technicians I
Quarter 5	Analytical Chemistry for Technicians II
Quarter 6	Analytical Chemistry for Technicians III

Table 2. A Six-Quarter Environmental Laboratory Technician Curriculum^a

Course	Credit Hours
<i>First Quarter:</i>	
Environmental Lab Orientation	1.0
Introductory Chemistry I	4.5
Introductory Biology I	4.5
Communications I	3.0
Calculators and Calculations	3.0
Introduction to Microcomputers	1.5
	<hr/> 17.5
<i>Second Quarter</i>	
Introductory Chemistry II	4.5
Introductory Biology II	4.0
Physics Concepts I	3.0
Communications II	3.0
Algebra and Trigonometry	3.0
	<hr/> 17.5
<i>Third Quarter</i>	
Introductory Organic Chemistry	4.5
Introduction to Microbiology	4.5
Sanitation	2.5
Physics Concepts II	3.0
Water Supply Systems	3.0
	<hr/> 17.5
<i>Fourth Quarter</i>	
Analytical Chemistry for Technicians I	5.0
Applied Microbiology	5.0
Water Pollution Control Systems	3.0
Elective(s)	4.5
	<hr/> 17.5
<i>Fifth Quarter</i>	
Analytical Chemistry for Technicians II	3.5
Ecology	3.0
Water/Wastewater Analysis	4.0
Statistics	1.0
Practicum I	3.0
Elective	3.0
	<hr/> 17.5
<i>Sixth Quarter</i>	
Analytical Chemistry for Technicians III	3.0
Biological Applications of Analytical Chemistry	4.5
Communications III	3.0
Practicum II	3.0
Elective	4.0
	<hr/> 17.5
Total	105.0

^a Based on the Southeast Community College curriculum.

¹ For example, Florida Technological University, Orlando, FL.

² For example, Florissant Valley Community College, St. Louis, MO, and Community College of Rhode Island, Warwick, RI.

full-time and part-time) are enrolled at the same time and from 8-15 people graduate (with an Associate of Applied Science Degree and some lesser awards) each year.

There are two factors that contribute most significantly to the success of this program. The first is that in addition to their training in chemistry, the students receive significant training in biology/microbiology and water and wastewater plant operations and laboratory. Job opportunities in these fields are also available to them. The program is called "Environmental Laboratory Technology" (ELT). Such a design obviously aids in the student's marketability. Employment opportunities in the wastewater field seem to be particularly important. The program receives excellent support from local employers who donate equipment and time.

Second, the chemistry course sequence has been designed so that the number of teaching staff required is minimal, thus reducing projected expenses. In the ACS-inspired programs, a course sequence is taught that is completely separate from other chemistry offerings, because a series of textbooks published by the ACS for these programs is specially designed for technician training and is not appropriate for chemistry courses used for other purposes. Additional staff are therefore required.

At SCC, the technician trainees enroll in an introductory chemistry/organic chemistry sequence the first year. This same sequence is for allied health students who enroll at SCC, and it uses the standard textbooks. Additional staff and materials for labs are not needed.

In the second year of training, the ELT students branch into the "specialty" courses called "Analytical Chemistry for Technicians I, II, and III". It is in this sequence that they learn the necessary analytical techniques and instrumentation. These are courses that are not found in other curricula (except those for medical lab technicians at SCC) and thus do require additional staff time and materials. The courses are described below and the total chemistry sequence is shown in Table 1.

Analytical Chemistry for Technicians

The analytical sequence, unlike the introductory sequence, is unique to SCC. It is structured along the lines of a traditional analytical chemistry course: classical quantita-

tive analysis followed by instrumental analysis, but it is oriented toward technician training and assumes only an introductory level background. The first course is classical quantitative analysis which emphasizes titrimetric techniques (pipetting, titrating, solution prep, etc.), while the second course emphasizes analytical instrumentation (spectrophotometry, including AA, and chromatography, including GC and HPLC). The third course is purely a laboratory course in which real-world samples (soil, water, food, beverages, pharmaceuticals, etc.) are analyzed using techniques learned in the other two courses. The use of computers is included in all these courses.

Traditional analytical textbooks have been found to be inappropriate for this sequence. Textbook materials for the analytical sequence have therefore been developed at SCC and are currently being class tested. Publication by Lewis Publishers, Inc., is expected by 1987.

The Total Curriculum

Table 2 shows a total six-quarter curriculum for Environmental Laboratory Technology based on what is offered at SCC. The biology/microbiology sequence and the water/wastewater sequence are geared toward technician jobs in these fields. Courses in oral and written communication, math, physics, and microcomputers are included. Practicum I and II are courses in which the students spend time in a real laboratory during their classroom training. There is excellent support from the Lincoln laboratory community for this, and it gives the students a possible added advantage as far as jobs are concerned.

Conclusion

The Environmental Laboratory Technician Program at SCC is unique. Its success is attributed to a lower than expected budget and a good measure of support from the Lincoln community, as well as a broader training schedule to include biology/microbiology and water/wastewater systems. The enrollment meets the requirements of a cost-effective program, mostly due to the low budget and the level of local support. It is a possible alternative to a purely chemical technology program in locations where such a program would not survive.

chemical vignettes

Jack and the Soybean Stalk

Perhaps a modern explanation for the amazing size of Jack's fairytale beanstalk can be found in *brassinolide*. This remarkable chemical is an extremely effective plant hormone that can double the growth of food plants, by both cell elongation and cell division. Only recently have chemists been able to isolate, identify, and then synthesize this valuable substance so that it can be used to increase the world's food supply.

Plant hormones have already revolutionized agriculture. They allow us to coerce cotton plants to release their cotton balls at harvest time, command fruit trees to cling to their fruit, induce Christmas trees to keep their needles, and order stored potatoes not to sprout. *Brassinolide* can now be added to this list, and it is active in quantities of less than one-billionth of an ounce!

Chemists play a crucial role along the long and arduous research road from discovery to use of a new plant hormone. For example, *brassinolide* is found in minute quantities in the pollen of the rape plant (*Brassica rapus* L.) To isolate enough chemical to study, researchers laboriously collected pollen brushed off the legs of bees who had been cavorting in the rape plants. From 500 pounds of pollen so gathered,

chemists were able to extract only 15 milligrams of *brassinolide*, an amount as small as a grain of sand. From this they were able to grow a single tiny crystal, so that a chemical crystallographer could analyze the molecular structure with X-ray diffraction. Just as X-rays penetrate an arm to reveal broken bones, they penetrate a crystal and reveal the geometrical arrangement of the atoms in *brassinolide*. The chemists were surprised to discover an unprecedented seven-atom ring within the molecule, a feature that must be essential to the function of this beneficial compound. With this key information, synthetic chemists have now made several close relatives of *brassinolide*, and agricultural scientists are evaluating them in greenhouse production of potatoes, soybeans, and other vegetables.

This advance involved the knowhow and interaction of plant and insect physiologists, organic chemists, and chemical crystallographers from many different laboratories. It shows that mental effort is as good as magic beans.

Maybe better, Jack!

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1986-87 CONFERENCE CALENDAR

93rd CONFERENCE

10/17-18/86 - Greenville Tech. College, Box 5616, Station B, Greenville,
SC 29606

Program Chair - Leo Kling, Tri-Counties Tech. College, Pendleton, SC
29670 (803) 646-8361

Local

Arrangements

Chair - Alan Day, Greenville Tech. College, (803) 242-3170

94th CONFERENCE

11/14-15/86 - Sinclair Community College, 444 West Third Street, Dayton,
OH 45402

Program Chair - Richard Jones, Sinclair Community College, (513) 226-7907

Local

Arrangements

Chair - Roger Penn, (513) 226-2556; Noel Farrier, (513) 226-3058

95th CONFERENCE (IN CONJUNCTION WITH ACS NATIONAL)

4/3-4/87 - Arapahoe Community College, 5900 South Santa Fe Drive,
Littleton, CO 80120

Program Chair - Martin Van Dyke, Front Range Community College, North
Campus, 3645 W. 112th Ave., Westminster, CO 80030
(303) 466-8811

Local

Arrangements

Chair - Al Grohe, Arapahoe Community College, (303) 707-5939

96th CONFERENCE

5/23-24/87 - Montgomery Community College, Rockville, MD 20850

Program Chair - Margot Schumm, Montgomery Com. College, (301) 279-5129

Local

Arrangements

Chair - Alan Heyn, Montgomery Community College

97th CONFERENCE

10/16-17/87 - Southeast Community College, 8800 "O" St., Lincoln,
NE 68352

Program Chair - John Kenkel, Southeast Community College, (402) 471-3333

Local

Arrangements

Chair - Don Mumm, Southeast Community College