

THE

TarHelium



A Publication of the North Carolina Section of the American Chemical Society

Vol. 18, No. 8

April 1988

MEETING-IN-MINIATURE

Saturday, April 9, 1988

Cox, Dabney and Williams Halls*
Department of Chemistry
North Carolina State University

Registration

8:30 a.m.—Noon
Room 201 Dabney Hall

Presentation of Papers

9:00 a.m.—12:40 p.m.

Coffee Break

10:40 a.m.—11:00 a.m.

Awards Presentation

12:45 p.m.
Room 124 Dabney Hall

*Luncheon***

Immediately after awards presentation

*Meeting-in-Miniature will not be held at the McKimmon Center as was previously announced.

** The luncheon will be a buffet. The meal is free to speakers and session leaders; \$6 for members and guests and \$3 for students. (Reservations are confirmed for speakers and session leaders unless notification is received.) Please make reservations by phoning one of the following people by Tuesday, April 5: in Chapel Hill, Debbie Edwards, 962-2172; in Durham, Carolyn Bean, 684-2414; in Raleigh, Joyce Dunn, 737-2545; in Fayetteville, Sandra Smith, 486-1000. To cancel reservations for the meal, please call Debbie Edwards in Chapel Hill at 962-2172.

DATE CHANGE FOR APRIL POLYMER GROUP MEETING

The Polymer Group April meeting, originally scheduled for April 19, has been rescheduled for April 12. This joint meeting with the SPE will feature Dan Love, who will speak on Liquid Crystal Polymers.

May Polymer Group Meeting

The next meeting of the Polymer Group will be held Thursday, May 12 at the North Carolina State University Faculty Club. The speaker will be Dr. Roy L. McCollough, Delaware University Center for Composite Materials. The social hour begins at 5:30 p.m., followed by a buffet dinner at 6:30 p.m. The presentation begins at 7:30 p.m. Dinner reservations are required. Call Beverly Maxwell at 552-3811 by May 10. The Faculty Club is located on the north side of Hillsborough Street in Raleigh between the beltline and State Fairgrounds.

1988 EPA/APCA SYMPOSIUM ON AIR POLLUTANTS

The annual national Symposium on Measurement of Toxic and Related Air Pollutants will be held May 2-4 in the Mission Valley Inn in Raleigh. The meeting is cosponsored by the U.S. Environmental Protection Agency's Environmental Monitoring Systems Laboratory and The Air Pollution Control Association.

The technical program will include both invited and contributed papers emphasizing emerging technology in the measurement of air pollutants (gases and particulates). Categories include acidic deposition, quality assurance, indoor air pollution, hazardous waste emission, complex chemical data analysis, source measurements, ambient measurements and integrated air cancer project studies.

For more information, contact Seymour Hochheiser at 541-2106 or Dr. R.K.M. Jayanty at 541-6483.

SYMPOSIUM TO HONOR DR. VIVIAN STANNETT

A symposium is planned to honor Dr. Vivian T. Stannett upon his retirement from NCSU and to celebrate the 21st anniversary of the founding of the Polymer Group of the N.C. Section of the ACS. The symposium will be held September 8 and 9 at NCSU. More information will appear in future *TarHelium* issues.

SEPTEMBER MEETING

In conjunction with the September 8 meeting of the Section, we will sponsor the second in our series of chemistry symposia, "CHEMISTRY AT SURFACES AND INTERFACES," at Duke University on September 9-10. The symposium will feature invited lectures and contributed posters. Tentative plans include a surface chemistry tutorial the evening of September 8.

PROGRAM



MEETING-IN-MINIATURE

April 9, 1988

*North Carolina Section
· American Chemical Society*

Cox, Dabney and Williams Halls
Department of Chemistry
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Financial Assistance from

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SCHEDULE

Registration

Room 210, Dabney Hall

8:30—noon

TECHNICAL SESSIONS

Analytical Chemistry I	Room 200, Cox Hall	9:00-12:40
Analytical Chemistry II	Room 204, Cox Hall	9:00-12:40
Biochemistry and Bioanalytical Chemistry	Room 209, Cox Hall	9:00-12:40
Chemical Education	Room 220, Dabney Hall	9:00-10:40
Inorganic Chemistry I	Room 330, Dabney Hall	9:00-12:20
Inorganic Chemistry II	Room 331, Dabney Hall	9:00-12:20
Organic Chemistry I	Room 2104, Williams Hall	9:20-12:20
Organic Chemistry II	Room 2312, Williams Hall	9:20-12:20
Organic Chemistry III	Room 2112, Williams Hall	9:20-12:20
Physical Chemistry	Room 321, Dabney Hall	10:20-12:40
Polymer Chemistry	Room 321, Dabney Hall	9:00-10:20

Award Presentations

Room 124, Dabney Hall

12:45 PM

Presentation of Fifty Year Certificates
High School Teacher Award
Centennial Scholarship Award
Recognition of Former Section Chairmen
Recognition of Meeting-in-Miniature Sponsors

Luncheon

immediately following Award Presentations

ANALYTICAL CHEMISTRY I

George R. Dubay, Presiding

Room 200, Cox Hall

- 9:00 "Mössbauer Analysis of Thermally Treated Iron Oxides", *M.S. Artley* and *L.H. Bowen*, Chem. Dept., NCSU.
- 9:20 "Mössbauer Analysis of Magnetically Filtered Goethites (FeOOH)", *S.C. Dorman* and *L.H. Bowen*, Chem. Dept., NCSU.
- 9:40 "Formation of Molecular Ions of Substituted Group VIB Transition Metal Carbonyls by Negative Fast Atom Bombardment Mass Spectrometry", *R.B. van Breemen*, *L.B. Martin, III* and *A.F. Schreiner*, Chem. Dept., NCSU.
- 10:00 "Adsorption Isotherms of Mobile Phase Modifiers on Silica from Supercritical CO₂", *L. Mink* and *C.H. Lochmüller*, Chem. Dept., Duke U.
- 10:20 "Fluorescence of Chemically Modified Papain Adsorbed to Silica Gel", *A.W. Grobin*, *S.S. Saavedra*, and *C.H. Lochmüller*, Chem. Dept., Duke U.
- 10:40 COFFEE BREAK
- 11:00 "The Effect of Temperature/Flow Programming on Separation Numbers in Capillary GC", *W. Reiss*, Chem. Dept., NCSU.
- 11:20 "Electrochemical and Electropolymerization Studies of Neat Organic Monomers", *R.L. McCarley* and *R.W. Murray*, Chem. Dept., UNC-CH.
- 11:40 "Solid State Voltammetry", *C.J. Barbour*, *J.F. Parcher* and *R.W. Murray*, Chem. Dept., UNC-CH.
- 12:00 "Thin Layer Derivative Cyclic Voltabsorptometry", *R.M. Paddock, Jr.* and *E.F. Bowden*, Chem. Dept., NCSU.
- 12:20 "AC Impedance Analysis of Strongly Adsorbed Cytochrome *c*", *J.L. Willit* and *E.F. Bowden*, Chem. Dept., NCSU.
- 12:45 Award Presentations, Room 124, Dabney Hall, followed by luncheon.

ANALYTICAL CHEMISTRY II

Peter M. Grohse, Presiding

Room 204, Cox Hall

- 9:00 "Comparison of the Effect of Matrix Elements on Atomic Emission and Fluorescence in ICP-AES", *M. Hadnagy*, E. Williamsen and J. Olesik, Chem. Dept., UNC-CH.
- 9:20 "Is Noise a Signal in the ICP?" *E. Williamsen* and J. Olesik, Chem. Dept., UNC-CH.
- 9:40 "Measurement of Electron Number Densities in an ICP", *S.J. Den*, K. Bradley and J. Olesik, Chem. Dept., UNC-CH.
- 10:00 "Microbeam Spectroscopies for Particle Characterization", *J.T. Rickman*, R.W. Linton, I.H. Musselman and J.L. Hunter, Chem. Dept., UNC-CH.
- 10:20 "Development of Surface Analytical Techniques for the Analysis of Metalated Polymer Films", R.W. Linton and *S.G. Maybury*, Chem. Dept., UNC-CH.
- 10:40 COFFEE BREAK
- 11:00 "FTIR Spectroscopy Using Step-Scan Interferometry", R.A. Palmer, *C.J. Manning* and J.L. Chao, Chem. Dept., Duke U.
- 11:20 "Gas Chromatography/Matrix Isolation Infrared Spectrometry for the Analysis of Environmental Air Extracts", *J.W. Childers*, N.K. Wilson and R.K. Barbour, Northrop Services, Inc. and US-EPA.
- 11:40 "Isolation and Natural C-13 Abundance Measurement of Sedimentary Pore Water Acetate", N.E. Blair and *W.D. Carter, Jr.*, Chem. Dept. and Marine, Earth and Atmospheric Sciences, NCSU.
- 12:00 "Evaluation of Woodstove Particulate Emissions Data—A Statistical Perspective", *M.J. Messner* and J.D. Evans, Research Triangle Institute.
- 12:20 "Sample and Analysis Management with Defensible Documentation", *D.J. Benson*, Radian Corporation.
- 12:45 Award Presentations, Room 124, Dabney Hall, followed by luncheon.

**BIOCHEMISTRY
AND
BIOANALYTICAL CHEMISTRY**

*Robert W. Henkens, Presiding
Room 209, Cox Hall*

- 9:00 "Guanidine Hydrochloride Denatured Bovine Carbonic Anhydrase is Not a Random Coil", *T.P. Oleksiak* and R.W. Henkens, Chem. Dept., Duke U.
- 9:20 "High Field Proton NMR Study of the Intermediate State of Guanidine Hydrochloride Denatured Carbonic Anhydrase", *N. Tandon* and R.W. Henkens, Chem. Dept., Duke U.
- 9:40 "Kinetic Intermediates in the Unfolding of Bovine Carbonic Anhydrase", *J.M. Stewart*, and R.W. Henkens, Chem. Dept., Duke U.
- 10:00 "FTIR Investigations of Secondary Structural States of Acid-Denatured Bovine Carbonic Anhydrase", *M.A. Cline* and R.W. Henkens, Chem. Dept., Duke U.
- 10:20 "The Effect of Crosslinking Ferritin Subunits in Function", *E.C. Theil* and *M. Yablonski*, Biochem. Dept., NCSU.
- 10:40 COFFEE BREAK
- 11:00 "Complete Amino Acid Sequence of Transaminase B", *M.J. Field* and F.B. Armstrong, Biochem. Dept., NCSU.
- 11:20 "Characterization of Protein-Ligand Binding by Analytical Affinity Chromatography", *W.C. Thresher* and H.E. Swaisgood, Dept. of Food Science and Biochemistry, NCSU.
- 11:40 "Styrene Oxide Alkylation of Human Serum Albumin Derived by Fast Atom Bombardment Mass Spectrometry", *R.B. van Breemen* and *J. Creech*, Chem. Dept., NCSU.
- 12:00 "Capillary Electrophoresis of SDS Denatured Proteins in Linear Polyacrylamide", *M. Bushey* and J. Jorgenson, Chem. Dept., UNC-CH.
- 12:20 "Amino Acid Analysis by LC/EC", *M.D. Oates* and J.W. Jorgenson, Chem. Dept., UNC-CH.
- 12:45 Award Presentations, Room 124, Dabney Hall, followed by luncheon.

CHEMICAL EDUCATION

Rose Marie D'Silva, Presiding

Room 220, Dabney Hall

- 9:00 "A New L.C.A.O.-M.O. Model", *H.J. Teague*, Chem. Dept., Pembroke State University.
- 9:20 "A Construction Method for Polyatomic Structures", *H.J. Teague*, Chem. Dept., Pembroke State University.
- 9:40 "Electrical Work In Chemistry: Insight or Afterthought?", *J. Reissner*, Chem. Dept., Pembroke State University.
- 10:00 "Stereoselective Reduction of Chiral Iminium Ions: An Introduction to Asymmetric Synthesis", *R.P. Polniaszek*, Chem. Dept., Duke U.
- 10:20 "Preparation and Alkylation of (4R,5S) Norephedrine Oxazolidinone Propionate: An Introduction to Chiral Enolate Chemistry", *R.P. Polniaszek*, Chem. Dept., Duke U.
- 10:40 COFFEE BREAK
- 12:45 Award Presentations, Room 124, Dabney Hall, followed by luncheon.

INORGANIC CHEMISTRY I

*Robert D. Bereman, Presiding
Room 330, Dabney Hall*

- 9:00 "Synthesis and Characterization of Tris-Complexes of the Ligand DDDT²⁻, 2,5,6-dihydro-1,4-dithiin-2,3-dithiolate", *J.H. Welch* and R.D. Bereman, Chem. Dept., NCSU.
- 9:20 "Electronic Characterizations of New Tetraazaannulenes", *P.J. Hochgesang* and R.D. Bereman, Chem. Dept., NCSU.
- 9:40 "Electrochemistry of Catalytic Metalloporphyrins", *K. Pressprich* and R.W. Murray, Chem. Dept., UNC-CH.
- 10:00 "Kinetics and Mechanism of Iron(III) Ligand Exchange Reactions in the Absence and Presence of Micelles", *S.W. Harman* and A.L. Crumbliss, Chem. Dept., Duke U.
- 10:20 "The MO Fate of an Electronic Absorption Process In Catalyst Rh₂(carboxylato)₄", *J. Trexler* and A. Schreiner, Chem. Dept., NCSU.
- 10:40 COFFEE BREAK
- 11:00 "Superexchange in Sulfur Bridged Iron-Copper Clusters", *B.R. Rohrs* and W.E. Hatfield, Chem. Dept., UNC-CH.
- 11:20 "An Angular Overlap Model Ligand-Field Analysis of Sandwich-Like Lanthanide Phthalocyanines", *J. Padilla*, and W.E. Hatfield, Chem. Dept., UNC-CH.
- 11:40 "Magnetic Studies of Mixed-Valence Manganese Cluster Compounds", *W.E. Hatfield* and M.L. Kirk, Chem. Dept., UNC-CH.
- 12:00 "Computational Investigation of Integer and Half-Integer Spin Chains", *J.H. Helms* and W.E. Hatfield, Chem. Dept., UNC-CH.
- 12:45 Award Presentations, Room 124, Dabney Hall, followed by luncheon.

INORGANIC CHEMISTRY II

*Kim W. Nordquest, Presiding
Room 331, Dabney Hall*

- 9:00 "Cationic Tungsten Alkyne Complexes", *S.G. Feng* and *J.L. Templeton*, Chem. Dept., UNC-CH.
- 9:20 "Carbon-Carbon Bond Formation from Molybdenum Enolate Reagents", *M.A. Collins*, *C.A. Rusik* and *J.L. Templeton*, Chem. Dept., UNC-CH.
- 9:40 "Metal to Ligand Migrations in (Arene)Mn(CO)₂R Complexes", *Y. Hong* and *M. Brookhart*, Chem. Dept., UNC-CH.
- 10:00 "Ru₃(CO)₈(μ-OC₆H₄OMe)₂: A Model of an Oxide Bound Metal Particle", *C. Santini*, *J.-M. Basset*, *B. Fontal*, *J. Krause*, *S. Shore* and *C. Charreir*, IRC Villeurbanne, France.
- 10:20 "Mechanistic Aspects of CO₂ Reduction by Monomeric Rhenium Carbonyl Complexes", *T.R. O'Toole*, *T.J. Meyer* and *B.P. Sullivan*, Chem. Dept., UNC-CH.
- 10:40 COFFEE BREAK
- 11:00 "Carbon Dioxide Reduction with Ruthenium Carbonyl Clusters", *J.R. Pugh*, *K. Averill*, *R.J. Haines*, *T.R. O'Toole*, *T.J. Meyer*, and *B.P. Sullivan*, Chem. Dept., UNC-CH.
- 11:20 "Kinetic Study of the Reaction of (Me₃SiCH₂)₂AsH with Ph₃Ga via ¹H NMR Spectroscopy", *R.L. Wells*, *C.J. Benjock*, *M.L. Stanley*, *A.P. Purdy*, *W.K. Holley*, and *C.G. Pitt*, Chem. Dept., Duke U.
- 11:40 "The First Organogallium Four-Membered Ring Compound with Arsenic Halogen Mixed Bridging: Synthesis and Crystal Structure of Ph₂GaAs(SiMe₃)₂Ga(Ph)₂Cl", *R.L. Wells*, *W.K. Holley*, *A.T. McPhail*, and *C.G. Pitt*, Chem. Dept., Duke U.
- 12:00 "Isolation and Crystal Structure of (Me₃SiCH₂As)₅", *R.L. Wells*, *C.-Y. Kwag*, *A.T. McPhail*, and *C.G. Pitt*, Chem. Dept., Duke U.
- 12:45 Award Presentations, Room 124, Dabney Hall, followed by luncheon.

ORGANIC CHEMISTRY I

*Jeff Wilson, Presiding
Room 2104, Williams Hall*

- 9:20 "Asymmetric Induction in Nitrene Cycloadditions" S.W. Baldwin and S. *Geddon*, Chem. Dept., Duke U.
- 9:40 "The [2 + 2] Photoannulation of Alkenes with Chiral Furanones Derived from Natural Products", S.W. Baldwin and *J.W. Perine*, Chem. Dept., Duke U.
- 10:00 "Diastereofacial Selectivity in Diels-Alder Cycloadditions with Chiral Maleimides, and Applications Toward the Total Synthesis of Gelsemicine", *P.D. Greenspan* and S.W. Baldwin, Chem. Dept., Duke U.
- 10:20 "Enantiotopic Alkene Selectivity in Intramolecular Nitrene Cycloadditions", S.W. Baldwin and *L.M. LaCoss*, Chem. Dept., Duke U.
- 10:40 COFFEE BREAK
- 11:00 "Conjugate Addition-LDA Cyclization of Acetylenic Diesters: A New Route to 3-Substituted Cyclopentenones", M.T. Crimmins, *C.M. Dudek*, and S.W. Mascarella, Chem. Dept., UNC-CH.
- 11:20 "An Approach to the Design and Synthesis of Nonmutagenic Azo Dyes", *J.F. Esancy* and H.S. Freeman, Textile Chemistry, Chem. Dept., NCSU.
- 11:40 "The Synthesis of 5,10-Dihydrophenophosphazine Derivatives", *M.K. Esancy* and H.S. Freeman, Textile Chemistry, Chem. Dept., NCSU.
- 12:00 "N-Aryl Pyridinium Salts in the Synthesis of Substituted Aniline Derivatives", *J.C. Posey, Jr.* and H.S. Freeman, Textile Chemistry, Chem. Dept., NCSU.
- 12:45 Award Presentations, Room 124, Dabney Hall, followed by luncheon.

ORGANIC CHEMISTRY II

*John A. Myers, Presiding
Room 2312, Williams Hall*

- 9:20 "Monolayer Properties of Eight Diastereomeric Two-Chain Surfactants at the Air-Water Interface", N. Harvey, *P. Rose*, N. Porter, J. Huff and E. Arnett, Chem. Dept., Duke U.
- 9:40 "Carbonaceous Solids as a Model for Adsorption by Dispersion Forces", *B.J. Hutchinson* and E.M. Arnett, Chem. Dept., Duke U.
- 10:00 "Equilibration of Resonance Stabilized Carbocations, Carbanions and Radicals by SET in Solution", *E. Marchot* and E.M. Arnett, Chem. Dept., Duke U.
- 10:20 "A Novel Synthesis of Tetrahydrofurans", *A. Godfrey* and R.J. Linderman, Chem., Dept., NCSU.
- 10:40 COFFEE BREAK
- 11:00 "Regiospecific Cyclic Homaldol Products via α -Alkoxyorganocuprates", *K. Horne* and R.J. Linderman, Chem. Dept., NCSU.
- 11:20 "Procedure for Improving the Regioselectivity of Organocuprate", *J. McKenzie* and R.J. Linderman, Chem. Dept., NCSU.
- 11:40 "Stereoselective Nucleophilic Addition Reactions to Chiral Iminium Ions", *R.P. Polniaszek* and J.A. McKee, Chem. Dept., Duke U.
- 12:00 "Asymmetric Induction in Complexation of $\text{Cr}(\text{CO})_3(\text{MeCN})_3$ to Arenes", *R.P. Polniaszek* and S.E. Belmont, Chem. Dept., Duke U.
- 12:45 Award Presentations, Room 124, Dabney Hall, followed by luncheon.

ORGANIC CHEMISTRY III

*Robert Izydore, Presiding
Room 2112, Williams Hall*

- 9:00 "Methodology for an Aliphatic Reverse Brook Rearrangement",
A. Ghannam and R.J. Linderman, Chem. Dept., NCSU.
- 9:20 "An Approach to the Synthesis of the Southern Half of Avermectin",
R. Walton, J. Barchi and B.O. Fraser-Reid, Chem. Dept., Duke U.
- 9:40 "Carbocycles from Carbohydrates: An Approach to Triquinane Natural Products",
J. Dickson, R. Tsang and B.O. Fraser-Reid, Chem. Dept., Duke U.
- 10:00 "Regioselective Phosphoranylation Leading to Carbohydrate Oxiranes",
N.A. Eskew and S.A. Evans, Jr., Chem. Dept., UNC-CH.
- 10:20 "A New Twist of the Mitsunobu Reaction with 1,2-Diols",
A.M. Pautard and S.A. Evans, Jr., Chem. Dept., UNC-CH.
- 10:40 COFFEE BREAK
- 11:00 "Mechanistic and Synthetic Studies of Lewis Acid Mediated Decomposition of 1,3,2-Dioxaphospholanes",
W.T. Murray and S.A. Evans, Jr., Chem. Dept., UNC-CH.
- 11:20 "Fluorination of Silyl Enol Ether Derivatives", S.T. Purrington and
N.C. Cale, Chem. Dept., NCSU.
- 11:40 "The Diphenylthioacetal of Trifluoroacetaldehyde", S.T. Purrington and
N. Samaha, Chem. Dept., NCSU.
- 12:00 "Reductive Cleavage of α -Fluorosulfides", S.T. Purrington and
J.H. Pittman, Jr., Chem. Dept., NCSU.
- 12:45 Award Presentations, Room 124, Dabney Hall, followed by luncheon.

PHYSICAL CHEMISTRY

Robert W. Shaw, Presiding

Room 321, Dabney Hall

- 10:20 "Locally Dense Basis Sets in Ab Initio Chemical Shift Calculations", D.B. Chesnut and *K.D. Moore*, Chem. Dept., Duke U.
- 10:40 COFFEE BREAK
- 11:00 "NMR Chemical Shifts and Intramolecular van der Waals Interactions: Carbonyl and Ether Systems", D.B. Chesnut, *D.W. Wright* and B.A. Krizek, Chem. Dept., Duke U.
- 11:20 "Vibrational Spectroscopy and Hydrogen Bond Disorder in Glassy Crystalline Cyclohexanol", R.A. MacPhail and *F.C. Monroe*, Chem. Dept., Duke U.
- 11:40 "Pseudorotational Dynamics of Liquid Cyclopentane", R.A. MacPhail and *J.E. Variyar*, Chem. Dept., Duke U.
- 12:00 "Structure and Dynamics of High Pressure Water. Molecular Dynamics Simulation", *R. Reddy* and M.L. Berkowitz, Chem. Dept., UNC-CH.
- 12:20 "Limiting Ionic Mobility in Aqueous Media. Molecular Dynamics Simulation", R. Reddy and *M.L. Berkowitz*, Chem. Dept., UNC-CH.
- 12:45 Award Presentations, Room 124, Dabney Hall, followed by luncheon.

POLYMER CHEMISTRY

Robert W. Shaw, Presiding
Room 321, Dabney Hall

- 9:00 "Homogeneous Electron Transfer Rates in a Polymer Matrix",
T. Wooster and *R.W. Murray*, Chem. Dept., UNC-CH.
- 9:20 "Fiber Structure Development from Thermotropic Liquid Crystals",
G. Y. Chen, *J.A. Cuculo*, and *P.A. Tucker*, College of Textiles, Chem. Dept., NCSU.
- 9:40 "Plasma Polymerization as Room Temperature Cryochemistry: Ni + Triallylphosphine",
S.D. Clymer, *N. Morosoff* and *A.L. Crumbliss*, Chem. Dept., Duke U. and Research Triangle Institute.
- 10:00 "Phenyl Substituted Aromatic Polyamides", *J.Y. Jadhav*, *W.R. Krigbaum* and *J. Preston*, Chem. Dept., Duke U. and Research Triangle Institute.
- 12:45 Award Presentations, Room 124, Dabney Hall, followed by luncheon.

AWARD PRESENTATIONS

Room 124, Dabney Hall

12:45 PM

Presentation of Fifty Year Certificates

High School Teacher Award

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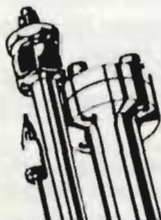
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