



THE

CHESAPEAKE CHEMIST

MARYLAND SECTION
AMERICAN CHEMICAL SOCIETY



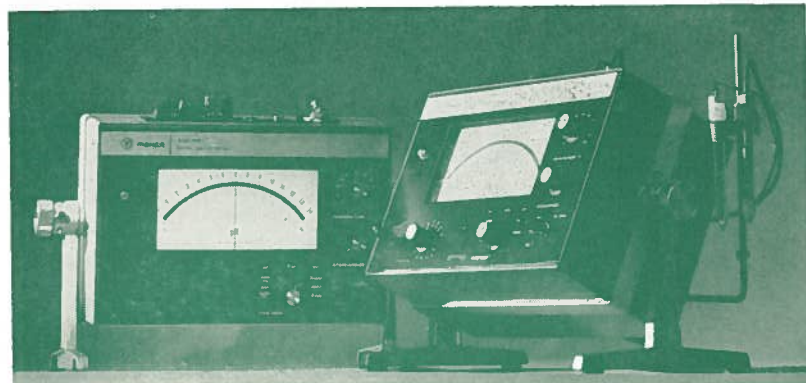


THE CHESAPEAKE CHEMIST

VOL. XXVI

DECEMBER, 1970

NUMBER 9



ACCUMET 220

ACCUMET 320

These new Fisher pH Meters are versatile, adaptable and pHandsome!

The new AccuMET® 320 and 220 pH Meters combine performance with greater convenience, versatility and handsome design. Some features that you will appreciate in both models are:

- May be adjusted to any angle for best view of panel meter.
- Controls are arranged for easier use, easier reading.
- Unique test circuit checks electronics instantly.
- Scale mirror placed to minimize reading errors.
- Can be easily adapted for use with any recorder.
- Equipped with new rugged, full-range glass electrode (0-14 pH, — 5 to 110°C).
- New Dri-Pak reference electrode has porous plug junction to assure ultrastable readings.
- Accessory bracket permits mounting on wall or underneath wall cases to conserve bench space.

The AccuMET 320 Research Meter features thirteen expanded pH ranges of 1.4 pH units that give you readings accurate to ± 0.005 pH plus standard 0-14 pH and 0 to ± 1400 mv ranges. A log scale and zero mv adjustment assure convenient use of ion selective electrodes.

The AccuMET 200 is accurate to ± 0.05 pH, has 0-14 pH and both 0 to ± 1400 and 0 to ± 700 mv ranges. Take a look at the handsome changes in pH Meters. Write or call for more information. Fisher . . . first.

S-75B



FISHER SCIENTIFIC

World's Largest Manufacturer-Distributor of Laboratory Appliances & Reagent Chemicals

711 Forbes Avenue, Pittsburgh 19, Pennsylvania

For immediate service call 391-1330 in Pittsburgh, Pa.

EDITORIAL STAFF

William G. Galetto Editor
McCormick and Co.
204 Wight Ave.
Cockeysville, Md. 21030
Phone: 666-3155

James Leslie Associate Editor
University of Maryland
Baltimore, Md. 21201
Phone: 955-7440

Allen Bednarczyk Assistant Editor
McCormick and Co.
Cockeysville, Md. 21030

David Gordon Contributing Editor
U. S. Food and Drug Adm.
Baltimore, Md.

E. M. Glocker Contributing Editor
W. R. Grace and Company
Clarksville, Md.

J. F. Lemp, Jr. Contributing Editor
Fort Detrick, Frederick, Md.

M. R. Vansant Contributing Editor
The Johns Hopkins University
Baltimore, Md.

BUSINESS STAFF

Yale H. Caplan Business Manager
Merle I. Eiss Advertising Manager
Sandi A. Kellman Business Office Sec.
Surgical Research Department
Sinai Hospital of Baltimore, Inc.
Baltimore, Md. 21215
Phone 301-367-7800, ext. 8695

MEMBERSHIP CHAIRMAN

John L. Kolbe
W. R. Grace & Co.
Clarksville, Md. 21029

SECTION OFFICERS

Joseph Cogliano Chairman
W. R. Grace and Co.
Clarksville, Md. 21029

Richard J. Kokes Chairman-elect
Chemistry Department,
The Johns Hopkins University
Baltimore, Md. 21218

Herbert S. Aaron Secretary
7412 Kathydale Road
Baltimore, Md. 21208

Theodor C. Berenthien Acting Treasurer
1328 Deanwood Rd.
Baltimore, Md. 21234

IN THIS ISSUE

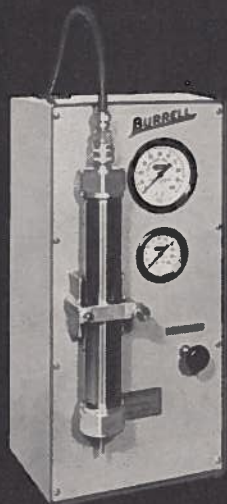
December Meeting	5
Biography and Précis of Talks	7
Results of Reader Survey	8
January Meeting—Cancelled	9
New Members	10
1971 Section Officers	10

The Chesapeake Chemist is published monthly September through May by the Maryland Section of the American Chemical Society. Address editorial comments to Dr. William Galetto, McCormick and Co., 204 Wight Ave., Cockeysville, Md. 21030. Phone 666-3155. Address advertising inquiries and plates to Merle I. Eiss, Sinai Hospital of Baltimore, Inc., Belvedere Ave., Belvedere, Baltimore, Maryland 21215.

DECEMBER, 1970

3

**VISCOSITY MEASUREMENT
WITH ACCURATE AND
REPRODUCIBLE RESULTS**



**BURRELL
EXTRUSION RHEOMETER
MODEL A-120**

An indispensable tool for studying rheological properties of substances that will flow at room temperature with or without the application of pressure. Burrell Model A-120 is excellent for production control and for determination of fundamental data. Fast and simple manipulation obtains accurate and reproducible results that are independent of the wetting properties of the material under test. Model A-120 is an improvement of the Model A-100 (ASTM D-1823-61 T) and meets or surpasses all previous standards. **Catalog No. 73-851-20 \$360.00**

Viscosity Range... 1 to 1 million Centipoises. Pressure Range... 0 to 100 PSI. A filler tube accessory is available for charging the sample cylinder with materials that do not flow readily at room temperature.

For more information ask your Burrell Representative for Bulletin 335 or contact:

BURRELL

BURRELL CORPORATION

SCIENTIFIC INSTRUMENTS AND LABORATORY SUPPLIES
2223 FIFTH AVENUE, PITTSBURGH, PA. 15219

DECEMBER MEETING



RONALD G. LAWLER

DATE:

**WEDNESDAY, DECEMBER 16,
1970**

PLACE:

**Eudowood Gardens Lecture
Room, Eudowood Plaza, Joppa
Road near Goucher Boulevard.**

SPEAKERS AND TOPICS:

**5:30 P.M. Dr. Ronald G. Lawler,
Brown Univ. "Effects of Nuclear
Spin on Chemical Reactivity".
8:30 P.M. Dr. P. von Rague
Schleyer, Princeton Univ.
"Adamantanes".**

SOCIAL HOUR:

**There will be a social hour after
the meeting. Refreshments will
be served.**

COCKTAILS AND DINNER:

**Eudowood Gardens Dining Room.
Price is \$4.75 per person for
cocktails (6:30-7:15, unlimited
quantity) and hot buffet din-
ner (7:15). Students and their
spouses may attend the dinner
for \$3.00. Reservations are nec-
essary for the dinner, and should
be made with Mr. Allen Bednar-
czyk, McCormick and Co., Inc.,
204 Wight Avenue, Cockeysville,
Md. 21030, phone 666-3155, no
later than December 11. It is
not necessary to be a member of
the American Chemical Society
to attend the dinner or the talks,
and the talks may be attended
without attending the dinner.
You are invited to bring your
wife and friends to both the
dinner and the meeting.**



P. von RAGUE SCHLEYER



**REPLACES
LABORIOUS
METHODS!**

**OHAUS MODEL 6010PC
POLLUTION CONTROL
MOISTURE DETERMINATION
BALANCE**

Not only does this 10-gram capacity instrument replace six pieces of apparatus normally used in pollution control, but it also saves valuable time. You can run a complete sludge solids content determination in 15 minutes (instead of the usual three hours) . . . accurately test for percent volatiles in 20 minutes, and for mixed liquor total solids in 30 minutes. Filter cake testing takes just 15 minutes.

The precise moisture loss or weight of a sample can be determined at any time throughout the entire drying cycle by simply reading the correct answer on the projection screen in both grams and percent moisture. The swing-away infrared lamp permits fast access to the pan. A special heat control eliminates warm-up and/or cool-down time. And a 1-60 minute timer automatically shuts off the heater.

Temperature range is 0-600°C; optical range, 10g x 0.01g (100% x 0.1%); sensitivity, 0.01g to 0.1%; tare capacity, ±5g. Ask us for details.

B-2399-25X Ohaus Moisture Determination Balance, Model 6010PC, 10-gram capacity, for 115 volts, 50/60 cycles, AC (500 watts)\$475.00

SILVER SPRING, MD. OFFICE:
Wheaton Plaza Office Building — Phone: 587-5600

**SCIENTIFIC
GLASS
APPARATUS
CO. INC.**
BLOOMFIELD, NEW JERSEY



◆ **APPARATUS**
◆ **INSTRUMENTS**
◆ **CHEMICALS**
◆ **GLASSWARE**

Branches: Boston Mass. • Danbury Conn. • Elk Grove Village Ill. • Fullerton Calif. • Philadelphia Penna. • Silver Spring Md. • Syracuse N.Y.

DR. R. G. LAWLER

Ronald G. Lawler received his Ph.D. from the University of California at Berkeley in 1964 in the field of physical organic chemistry. From 1963 to 1965 he was a postdoctoral fellow at Columbia University, carrying out research in electron spin resonance spectroscopy. In 1965 he joined the faculty of Brown University where he is presently Associate Professor of Chemistry. He has held National Science Foundation predoctoral and postdoctoral fellowships and is currently a research fellow of the Alfred P. Sloan Foundation. His research interests include electron and nuclear magnetic resonance spectroscopy and theoretical organic chemistry.

**EFFECTS OF NUCLEAR SPINS ON
CHEMICAL REACTIVITY**

It is usually considered that the weak interactions arising from nuclear magnetic moments have negligible influence on chemical properties. Recently, however, compelling evidence has arisen for observable effects of nuclear spins on the rate constants of reactions of pairs of organic free radicals in liquid solution. These effects, collectively known as Chemically Induced Dynamic Nuclear Polarization (CIDNP), are revealed in the high resolution nmr spectra of protons and other nuclei in the products of rapid reactions proceeding via radical intermediates. The observation of this phenomenon promises to provide a significant tool for probing the microdynamics of liquids and the details of free radical reaction mechanisms. Examples taken from recent work at Brown University will be discussed.

COVER PHOTOGRAPH CONTEST

Don't delay—submit your favorite photographs for the cover of future issues to the editor of the *Chesapeake Chemist*.

This month's cover: Jessup Baptist Church, submitted by Mr. Robert F. Perkins.

DR. P. R. SCHLEYER

Professor Paul R. Schleyer received his Ph.D. from Harvard in 1954 under the direction of P. D. Bartlett. Since then, he has been a member of the faculty at Princeton where he now holds the title of Eugene Higgins Professor of Chemistry. He is well known for his many contributions in physical-organic chemistry. This work includes not only the chemistry of bridged ring systems but also studies of carbonium reactivity and stability as well as spectroscopic studies of hydrogen bonding and conformational analysis. He is the author or co-author of well over a hundred publications in this area.

Professor Schleyer is in high demand as a lecturer. He has been the Glidden Lecturer at the University of Florida, the Sun Oil Lecturer at the University of Ohio, the Merck Lecturer at Bucknell and the Lind Lecturer in Tennessee. He has been a visiting professor at a number of institutions here and abroad and has held Sloan, Guggenheim and Fulbright Fellowships. Currently, he is on the editorial boards of *Chemical Reviews* and the *Journal of the American Chemical Society*.

**RECENT DEVELOPMENTS IN THE
CHEMISTRY OF
ADAMANTANE, DIAMANTANE, AND
DIAMONDOID MOLECULES**

The smallest structural unit of the diamond is the molecule adamantane, a beautiful interlocking network of chair-form cyclohexane rings. Adamantane, and other diamondoid molecules, are characterized by unusual chemical, physical, and physiological properties. These molecules, because of their high thermodynamic stability, can often be prepared by rearrangement from readily available starting materials. Furthermore, because of the rigidity of their carbon framework, diamondoid molecules make ideal substrates for testing theories of physical-organic chemistry. Illustrations will be taken from our recent work.

RESULTS OF SURVEY OF READER INTERESTS

Some 44 members took the trouble to complete and return the survey enclosed in the October issue of the *Chesapeake Chemist*. The approximate percent response to each answer is printed below. Features such as Local Section News, a feature article on a local company, or educational institution, and others rated very high and deserve greater at-

tention. Features such as a quiz and/or a book review section apparently have low reader interest and will not be seriously considered. Nine people indicated a willingness to contribute to the *Chesapeake Chemist* and are presently being contacted. Their interest and cooperation is appreciated.

Check Appropriate Box

Subject	Normally read in some detail	Skim and read if catches my eye	Glance at it and move on	Ignore completely
Advertisements	8	54	26	10
Biographies of Speakers	62	33	5	—
Local Section News	56	31	13	—
Meeting Announcements	79	18	3	—
Minutes-Executive Committee	33	36	21	10
New Members	23	31	38	8

What do you think about including the following items? ... high <.....Desirability.....> low

1. A few jokes.	33	28	21	18
2. A feature article on a local company, educational institution.	74	12	5	10
3. A quiz or puzzle.	15	41	13	31
4. Photo contest for front page.	23	37	17	23
5. Book review section.	26	28	26	21
6. A "letter to the editor" section.	51	27	11	11

ACS CHEMICAL TECHNICIAN SCHOLARSHIP PROGRAM

The Maryland Section has just initiated a scholarship program to help promising students to enter the Chemical Technician Training Program at Catonsville Community College. The goal of the program is to seek out students who have a real interest in and aptitude for chemical laboratory work, but who do not wish to enter a four-year college. The financial need of the students is also taken into consideration.

Davison Division of W. R. Grace Co., the H.A.B. Dunning Foundation, Inc. and the Maryland Section of the A.C.S. have contributed funds to this program. Stu-

dents are nominated by advisors and teachers of high schools in Baltimore City. The winners of the first set of scholarships were selected by a committee consisting of Dr. Belle Otto Talbot, Dr. John Gryder, Mr. Joseph Scarlett and Dr. Ernest F. Silversmith (chairman). The committee took into account the high school academic record of the student, letters of recommendation, the student's interest in becoming a chemical technician (as expressed in a brief essay) as well as financial need.

(Continued on Page 9)

SCHOLARSHIP PROGRAM

(Continued from Page 8)

Mr. David S. Dixon, a 1970 graduate of Dunbar High School, was selected as one of the winners; he is currently pursuing the Chemical Technician Program at Catonsville. A second scholarship was also awarded, but the recipient declined it.

It is hoped that this scholarship program will become a continuing project of the Maryland Section. The Education Committee is indebted to Dr. Richard Kokes, who solicited the funds, and to the many high school advisors and teachers who nominated students and wrote letters of recommendation. Thanks are also due Mrs. Patricia Valentine of Morgan State College for her yeoman effort in carrying out the secretarial work related to the program. If the program is to continue, additional help (both financial and otherwise) will be needed.

ORGANIC MICROANALYSES

GALBRAITH
LABORATORIES, INC.

P. O. Box 4187
Knoxville, Tenn. 37921

(615) 546-1335
HARRY W. GALBRAITH, Ph.D.

STRUCTURE PROBE, INC.

SPECIALISTS IN MATERIALS RESEARCH

Scanning
Electron Microscopy
with
Non-dispersive X-Ray Analysis
and Accessories

535 E. Gay St., West Chester, Pa.
(215) 436-5400

JANUARY MEETING — CANCELLED

Due to activities associated with the 6th MARM on February 3, 4, and 5, the regularly scheduled January meeting has been cancelled. This will allow everyone to participate fully in the 6th MARM.

6th MARM

February 3, 4 & 5

ACS SHORT COURSES

The following ACS Short Courses are scheduled:

BUSINESS ASPECTS OF CHEMISTRY

Jan. 15-16, Chicago, Ill. Instructor: Dr. Aimison Jonnard; fee \$80.

FLUORESCENCE AND PHOSPHORESCENCE SPECTROMETRY

Jan. 21-23, Philadelphia, Pa. Instructor: Dr. G. G. Guilbault; fee, \$115.

COLUMN SELECTION IN GAS CHROMATOGRAPHY

Feb. 6, Baltimore, Md. Instructors: Dr. Harold M. McNair and Dr. Walter R. Supina; fee \$60; in conjunction with ACS 6th Middle Atlantic Regional Meeting.

This course explores the critical step in gas chromatography, the selection of the proper column, from both a theoretical and practical point of view. Column material, length, diameter, solid support, and per cent liquid phase are discussed. The results obtained with different columns and different operating parameters are shown in chromatograms. Rules are developed to aid in choosing proper conditions.

To register or obtain complete information on the courses and student discounts, write to Education Office, American Chemical Society, 1155—16th St., N.W., Washington, D. C. 20036. During the two-week period prior to a course, registration should be made by telephone: area code 202, 737-3337 ext. 258.

WELCOME . . .

The following people have recently joined the Maryland Section of the American Chemical Society. The Local Section welcomes each one and invites each member to attend Local Section meetings and to participate in Local Section activities.

James Landes Alderfer, JHU Med. Inst., Baltimore

Dr. Janice Sweeny Barton, JHU, Baltimore

Clinton G. Carlberg, Town & Country Blvd., Ellicott City

Amelia C. Finan, Anne Arundel Comm. Coll., Arnold

Dr. Maria Malachowski Heaton, JHU, Baltimore

Wu Hsiung Huang, JHU, Baltimore

Mr. Robert Edward McCarthy, N. Charles St., Baltimore

1st Lt. Victor Manuel Mendez, Baker Circle, Edgewood

Barry Edward North, Southern Cross Dr., Baltimore

Dr. Douglas Warren Reichard, Edgewood Arsenal

Akshay Dolatrai Vidyarthi, Franklin & Park Sts., Baltimore

Mrs. Theodora Kinderhan Watts, Turnabout Lane, Columbia

SECTION OFFICERS FOR 1971

The election of officers, councilors, and members-at-large of the executive committee for the Maryland Section for 1971 was held at the November Meeting. Dr. Richard Kokes of Johns Hopkins University will be chairman. The Chairman-elect will be Dr. Joyce J. Kaufman, Johns Hopkins University. Dr. Herbert S. Aaron will continue as secretary, Theodor C. Berenthien will be treasurer. Councilor and alternate councilor will be Joyce J. Kaufman and Leon Weber, respectively. The new Members-at-large will be A. Allen Bednarczyk, Donald E. Jones, Edward J. Poziomek, Ernest F. Silversmith, and Norbert M. Zaczek.

COPY DEADLINE

Copy for the *Chesapeake Chemist* should be forwarded to the Editor not later than the tenth of the month preceding publication.

IF YOU CHANGE YOUR ADDRESS . . . Please do not notify the Editor of the *Chesapeake Chemist*, but send your new and old addresses to: The American Chemical Society, 1155 Sixteenth Street, N.W., Washington, D. C. 20036. The Maryland Section will then be notified.

..... Tear-Out Dinner Reservation Form

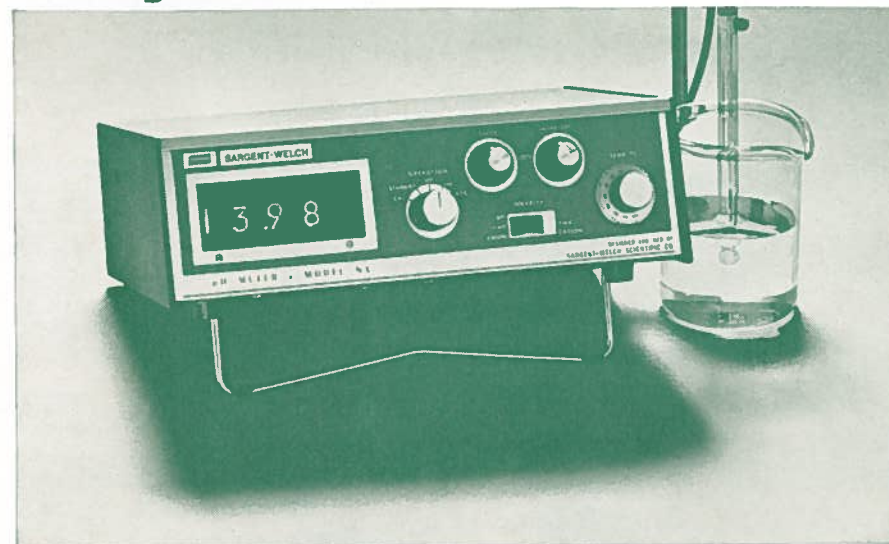
There is enclosed \$..... (\$4.75 per person)* for cocktails and dinner at Eudowood Caterers, Eudowood Plaza, on Wednesday, December 16, 1970 for the following persons.**

<u>Name</u>	(Please Print or Typewrite.)	<u>Affiliation</u>
-------------	------------------------------	--------------------

*Please make checks payable to Maryland Section, ACS and mail together with reservation form to Mr. Allen Bednarczyk, McCormick and Co., Inc., 204 Wight Ave., Cockeysville, Md. 21030, or phone 666-3155.

**Return by December 11.

easy-to-read. (TRUE ELECTRONIC DIGITAL DISPLAY).
easy-to-use. (SIMPLE TWO-POINT CALIBRATION, ULTRA-FAST INPUT TRACKING).
easy-to-own.—(\$595).



our new model NX pH meter.

We say again: The New Model NX pH Meter is a *true-electronic*, digital-indicating pH-Meter—priced as low as many analog-readout, expanded-scale pH meters.

The NX's digital readout—to four significant figures—shows up, big and bright, as standard-form luminescent numerals. Visible up to 10 feet away. Even in strong ambient lighting. And the decimal point automatically pops into place where it belongs.

Use the Model NX to get millivolt readings, too. Either way, pH or mv, say good-bye to parallax, ambiguities, reading errors.

And the Model NX is an *instantaneous-tracking* instrument. Responds to rapidly changing inputs without detectable time delay. There's *no* time-constant control to adjust.

There are separate slope and intercept controls—and a special calibrating circuit. Which make calibration of the Model NX rapid and exact. One-cycle calibration is a lot faster than the old familiar (but time-consuming) successive approximation technique.

Of course, there's much more to the Model NX. Such as manual temperature compensation, with an automatic version optional. And analog recorder output. Plus optional provision for binary-coded-decimal output for digital printout or computer interfacing. Long-life cold-cathode display tubes. Solid-state circuits on plug-in printed circuit boards for convenient servicing.

The Model NX's \$595 price-tag includes electrode support rod, combination electrode, and buffer solutions. Call your Sargent-Welch representative for a demonstration or write to us.

SARGENT-WELCH

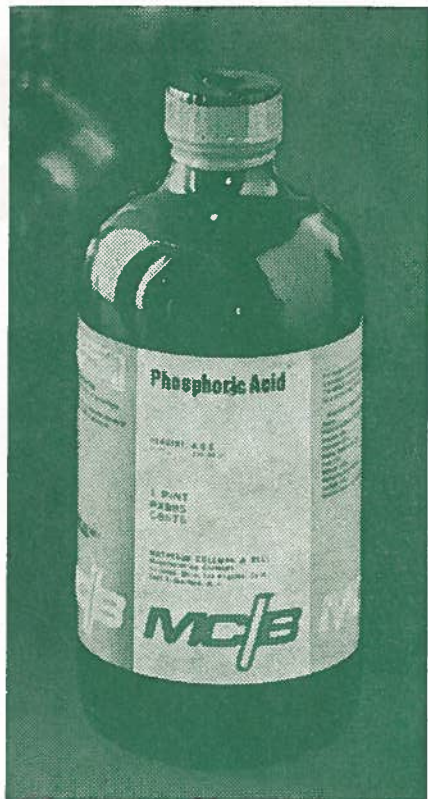
Scientific instruments, apparatus, chemicals.
 Sargent-Welch Scientific Company
 35 Stern Avenue; Springfield, N.J. 07081

Chicago/Anaheim/Birmingham/Cincinnati
 Cleveland/Dallas/Denver/Detroit
 Springfield, N.J./Toronto/Montreal/Vancouver

The Chesapeake Chemist
University of Maryland
636 W. Lombard Street
Baltimore, Maryland 21201

Nonprofit Org.
U.S. Postage
PAID
Baltimore, Md.
Permit No. 2917

PLEASE DO NOT DELAY — DATED NOTICE INSIDE



Think of **MCB** and **US** when you think inorganics

Think **MCB** because Matheson Coleman & Bell has impressive credentials when it comes to inorganic research chemicals. True, MCB is more famous for organics but the same no compromise standards that built MCB's reputation for organics are stringently applied to inorganics.

Think of **US** because we are willing and able to give you fast, comprehensive service on any MCB inorganic. And that goes for any research chemical — we handle over 10,000 with the top quality MCB label.



MACALASTER BICKNELL CO. OF N. J., INC.

NORTH AND DEPOT STREETS, MILLVILLE, N. J. 08332

Area Code 609—825-3222