

**Why buy a "dumb" fermentor when  
you can have an intelligent fermentation  
system for the same price**



**GEN II Instrumentation System with 16-liter sterilizable-in-place bench fermentor.**

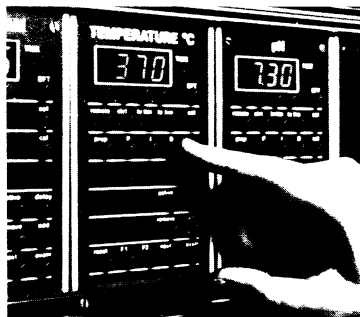
**Now! Microprocessor-controlled instruments "talk" to each other  
to provide interactive control of the total fermentation process.**

You don't pay for software and you don't pay for a computer interface — NBS includes them in every instrumentation system.

GEN II is used with benchtop pilot plant and production fermentors to provide a variety of control strategies, including time-based and event-based profiling.

Individual instruments have full P.D. control capability with proportional gain, as well as integral and derivative time adjustments. The system incorporates fully distributed control and manual back-up of every parameter.

With GEN II, any fermentor has the brainpower it needs for superior sophistication and reliability. And if you can operate your calculator, you can operate GEN II. Send for our new 84 page Fermentation Catalog at P.O. Box 986, Edison, N.J. 08816 or call 800-631-6417.



**NEW BRUNSWICK SCIENTIFIC CO., INC.**

*At NBS Advanced Technology is a Way of Life*

Meeting the bacteriologist's need for a compact handbook of laboratory methods—

# Manual of Methods for General Bacteriology

EDITOR-IN-CHIEF  
Philipp Gerhardt

SECTION EDITORS:  
Ralph N. Costilow  
Noel R. Krieg  
R. G. E. Murray  
Eugene W. Nester  
G. Briggs Phillips  
Willis A. Wood

Published  
and distributed  
by:



American Society  
for Microbiology  
1913 I Street, NW  
Washington, DC 20006

This *Manual* covers all the taxa of bacteria, and its approach is generalized for both pure and applied bacteriology. Aimed at senior undergraduate and beginning graduate science majors, at teachers and researchers, the *Manual* provides practical descriptions of laboratory procedures that are known to be reliable and that are in frequent use. It is an invaluable tool for all involved in bacteriology in the laboratory setting.

The book comprises six sections, each of which is self-contained, with its own table of contents to help the reader find specific methods as easily as possible. The contents are listed below.

## METHODOLOGY FOR GENERAL BACTERIOLOGY

**MORPHOLOGY**—Light Microscopy—Specimen Preparation for Light Microscopy—Determinative Methods of Light Microscopy—Electron Microscopy—Cell Fractionation

**GROWTH**—Biophysical Factors in Growth—Biochemical Factors in Growth—Enrichment and Isolation—Solid Culture—Liquid Culture—Growth Measurement—Preservation

**GENETICS**—Gene Mutation—Gene Transfer—Plasmids

**METABOLISM**—Physical Methods—Chemical Composition—Enzymatic Activity—Permeability and Transport

**SYSTEMATICS**—General Characterization—Numerical Taxonomy—Genetic Characterization

**LABORATORY SAFETY**—Sterilization—Containment and Disinfection

**ADDENDUM**—Diluents and Biomass Measurement

## ORDERING INFORMATION

Publication date: March 1981. 525 pages, fully illustrated.

Clothbound

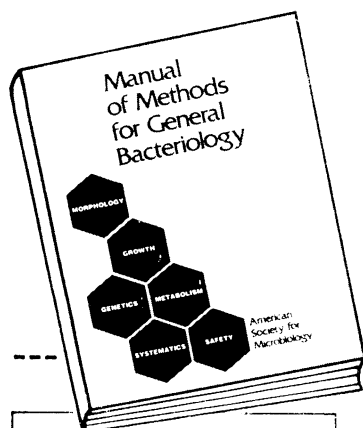
Flexible binding:

ISBN: 0-914826-29-8

ISBN: 0-914826-30-1

\$30.00 (\$22.00 to members of ASM) \$26.00 (\$19.00 to members of ASM)

Prices subject to change without notice



I am a member of ASM

Send me \_\_\_\_\_ copy(ies)

(limit of 3 at member prices)

\$22.00 (Cloth);

\$19.00 (Flexible).

I have enclosed \$ \_\_\_\_\_

Please send me \_\_\_\_\_ copy(ies) of  
MANUAL OF METHODS FOR GENERAL BACTERIOLOGY  
\$30.00 (Cloth);                      \$26.00 (Flexible).

Send book(s) to: \_\_\_\_\_ I have enclosed \$ \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

City/State/Zip \_\_\_\_\_

*Bringing the best of traditional and modern microbiology research*

# ASPECTS OF MICROBIOLOGY

*a highly acclaimed series of paperback books*

series editors: J. A. Colwell, University of Birmingham  
P. J. Klevorick, University of Kent  
D. Suckling, Lancaster University

## **Oral Microbiology**

P. Marsh, 1980, 96 pages

## **Bacterial Toxins**

I. Stephenson & R. A. Pitt-Rivers, 1981, 112 pages

## **The Microbial Cell Cycle**

C. Edwards, 1981, 96 pages

## **Bacterial Plasmids**

K. Hardy, 1981, 112 pages

## **Bacterial Respiration and Photosynthesis**

C. W. Jones, 1982, 96 pages

## **Bacterial Cell Structure**

H. J. Rogers, 1988, 96 pages

## **Microbial Control of Plant Pests and Diseases**

J. W. Deacon, 1984, 96 pages

## **Methylotrophy and Methanogenesis**

Ivor L. Large, 1988, 87 pages

ASM member: \$5.00 (each)

Nonmember (US only): \$12.00 (each)

Prices stated in £/pounds without notice

The *Aspects of Microbiology* series is published in the United States through the American Society for Microbiology, 11 Dupont Circle, N.W., Washington, DC 20036. Payment must accompany orders. Payment must be made in US dollars drawn on a US bank.

**ASM members and US nonmembers** should direct their orders to American Society for Microbiology, 11 Dupont Circle, N.W., Washington, DC 20036. Payment must accompany orders. Payment must be made in US dollars drawn on a US bank.

**Outside the US, nonmembers** should direct their orders and inquiries to: ASM, Nostrand Reinhold, Middle Millars Road, Wokingham, Berkshire, RG40 3PS, England.

© AMERICAN SOCIETY FOR MICROBIOLOGY, Publication Sales, 11 Dupont Circle, N.W., Washington, DC 20036

Quantity	Title	ASM member	Nonmember (US only)	Shipping and postage
1	Oral Microbiology	\$5.00	\$12.00	US\$ 2.00
1	Bacterial Toxins	\$5.00	\$12.00	US\$ 2.00
1	The Microbial Cell Cycle	\$5.00	\$12.00	US\$ 2.00
1	Bacterial Plasmids	\$5.00	\$12.00	US\$ 2.00
1	Bacterial Respiration and Photosynthesis	\$5.00	\$12.00	US\$ 2.00
1	Bacterial Cell Structure	\$5.00	\$12.00	US\$ 2.00
1	Microbial Control of Plant Pests and Diseases	\$5.00	\$12.00	US\$ 2.00
1	Methylotrophy and Methanogenesis	\$5.00	\$12.00	US\$ 2.00
1	Payment of \$12.00 (US only) for each title			\$4.00 (US only)
1	Book and US membership (1993)			US\$ 12.00

The latest volume in ASM's  
annual **Microbiology** series:

# Microbiology— 1983

**Editor:**  
**David Schlessinger**

This volume covers a variety of topics:

- I. Termination, Antitermination, and Processing of Bacterial mRNA
- II. Genetic Control of DNA Replication of Phages and Their Hosts
- III. Impact of Genetics on the Systematics of Microorganisms
- IV. Metabolism of C<sub>1</sub> Compounds
- V. Developmental Biology of Bacteria
- VI. Mycology
- VII. Infectious Diseases
  - A. Iron and Trace Metals: Transport, Metabolism, and Disease
  - B. Obligate Intracellular Parasitism
- VIII. Short Reviews

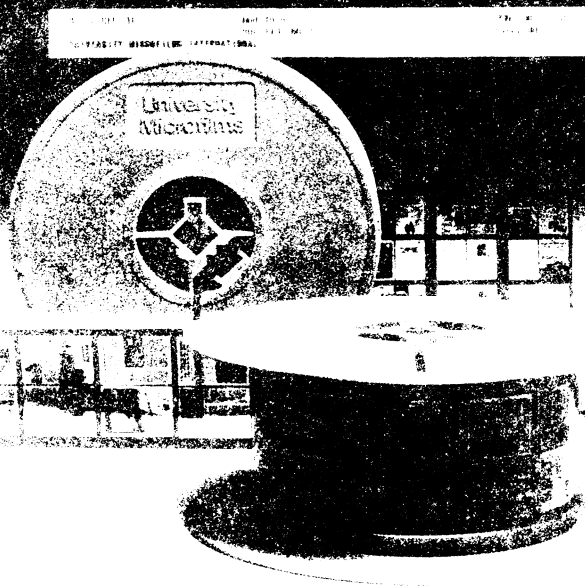
Researchers in these areas, departmental and university libraries, and graduate students with a particular interest in any of these topics will find this volume useful.

**Also Available:** Previous volumes in the **Microbiology** series are still available. The more recent are **Microbiology — 1982**, **Microbiology — 1981**, and **Microbiology — 1980**, but the series goes back to **Microbiology — 1974**. Volumes prior to the 1983 volume are priced at \$25.00 for nonmembers, \$15.00 for ASM members. **Microbiology — 1983** is priced at \$27.00 for nonmembers, \$17.00 for ASM members. It contains 412 pages and is clothbound. Publication date: May, 1983. ISBN: 0-914826-53-0.

Prices are subject to change without notice. Member orders must be prepaid. All orders must be paid in U.S. dollars. Send orders and inquiries to the publisher:

**American Society for Microbiology**  
1913 I Street, NW  
Washington, DC 20006

**This publication  
is available in microform.**



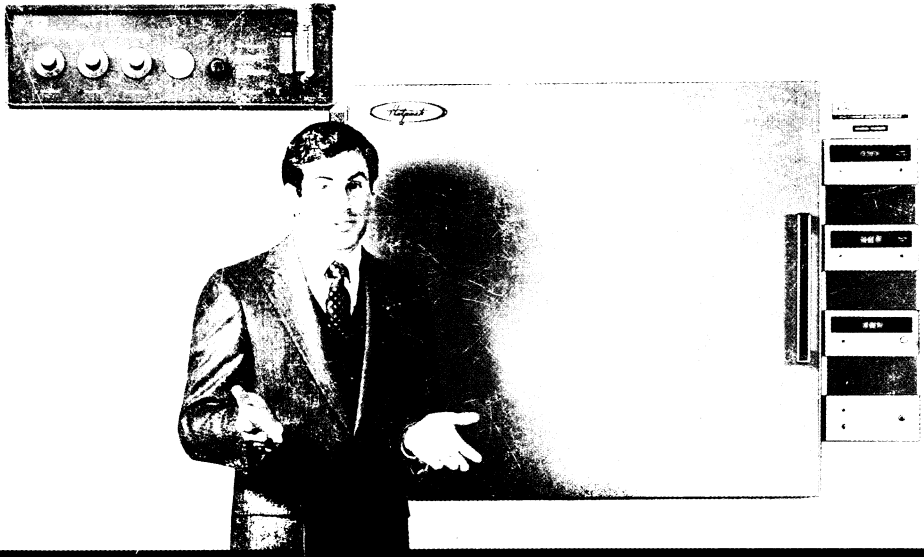
## **University Microfilms International**

University Microfilms International is the world's largest publisher of microfilm and microfiche editions of books, journals, and serials. We have over 100 years of experience in the production and distribution of microform.

Our microform editions are available in a wide variety of formats, including microfiche, microfilm, and microfilm on reels. We offer a wide range of microform editions, including microfilm editions of books, journals, and serials, and microfiche editions of books, journals, and serials.

For more information,  
contact your local  
microfilm distributor or  
write to:

University Microfilms  
300 North Zeeb Road  
Ann Arbor, MI 48106  
London, W1N 7RA  
England



## MECHANICALLY CONVECTED OR WATER-JACKETED INCUBATORS. WHICH IS BETTER?

Feature for feature, users agree Hotpack automatic mechanical convection CO<sub>2</sub> incubators are superior to water-jacketed incubators for their work. And tests prove it!

Compare recovery times, for example. With sensor and thermometer bulb exposed to the same air that flows through the chamber, the mechanical convection incubator's sensor immediately reflects any chamber temperature change that results from door openings. In water-jacketed units, where sensor and bulb are suspended within the water jacket or in a metal well that projects into the chamber and not exposed directly to the chamber air, there's a considerable time lag in registering any change after the door is been opened.

No wonder tests show it takes 24 times longer for a water-jacketed incubator to recover after each 15-second door opening than it does for a mechanically convection unit to recover. Actual recovery times: 45 seconds for the mechanically convection incubator vs. 18 minutes for the water-jacketed incubator!

When it comes to contamination, Hotpack automatic mechanical convection incubators are a breed apart, too. By utilizing external vapor generators to humidify the air instead of internal water reservoirs, the favorite breeding ground for chamber contaminants has been eliminated.

And with Decon, our one-step automatic, electronic self-decontamination

feature, decontamination can be done easily and more frequently to prevent cross contamination. Shelves, side-walls and chamber floor are also easily removed to clean up spills, saving you time and money on manual clean ups.

Feature for feature, it's an open and shut case. And Hotpack, whose 75-year reputation was built on building superior controlled environmental equipment, has more models of mechanically convection incubators than any other manufacturer. To find out more about their advantages, send for our free comparison folder or give us a call toll free at 800-523-3608. In Pennsylvania, call 215-824-1700. Hotpack Corporation, 10940 Dutton Road, Philadelphia, PA 19154.

### WE BUILD EQUIPMENT TO WORK.

OUR 75<sup>TH</sup>  ANNIVERSARY