

## *The Biochemistry of Methylotrophs*

by C. Anthony

*Academic Press; London, New York, 1982*

xvi + 432 pages. £24.00, \$49.50

Microbial biochemistry has recently entered a new and interesting phase. Catabolic pathways are being reported for the biodegradation of complex organic compounds some of which are products of the chemical industry and have never been seen previously in nature. At the other extreme are the organisms that obtain all their carbon requirements from 1-carbon compounds. Although the existence of the methylotrophs has been known since the beginning of the century it is only within the last twenty years that their biochemistry has been explored in any detail. Dr Anthony has brought together information that is seldom found in standard textbooks of microbiology or biochemistry and has produced a very readable account of current progress in this field.

The methylotrophs are able to grow at the expense of reduced carbon compounds containing one or more carbon atoms, but containing no carbon-carbon bonds; the obligate methylotrophs are the ones that cannot grow on anything else; the methanotrophs are the ones that grow on methane. To these definitions must be added that facultative methylotrophs may also grow autotrophically or heterotrophically.

The main characteristics of the different sorts of methylotrophs are described in the first chapter, with an account of the criteria used for classifying them into groups. This is followed by descriptions of the pathways for carbon assimilation and detailed discussion of enzyme reactions for the oxidation of specific growth substrates. One chapter is devoted to the methylotrophic yeasts and the methyl cycle is completed with a brief account of current ideas about the methanogens.

Microbiologists will welcome this lucid introduction to an important group of organisms. It will be useful for advanced students and scientists engaged in research in other fields may find much to interest them. The use of *Methylophilus methylotrophus* for the production of single cell protein has brought at least one methylotroph to the attention of biotechnologists. This book may stimulate interest in the exploitation of methylotrophs for other industrial processes.

P.H. Clarke

BOOK REVIEWS The biochemistry of methylotrophs-by C. ANTHONY. 431 pp. 1982. Academic Press, London. The methylotrophic bacteria growing on methane, methanol, methylamine. The methylotrophs are given full treatment in this volume and all their known biochemistry is put into relation with that known for other bacteria and yeasts. There is a final chapter on the commercial exploitation of the methylotrophs for the production of single cell protein for animal feed. production of vitamin B<sub>12</sub>, production of amino acids and carboxylic acids. The Biochemistry of Methylotrophs - Chris Anthony. from [chris.anthony.co.uk](http://chris.anthony.co.uk). Embed. Share. The Biochemistry of Methylotrophs - Chris Anthony. [chris.anthony.co.uk](http://chris.anthony.co.uk). The Biochemistry of Methylotrophs - Chris Anthony. The Biochemistry of Methylotrophs - Chris Anthony. [chris.anthony.co.uk](http://chris.anthony.co.uk). Pages: 447. The biochemical processes involved in methylotrophy that were known by 1982 are described in detail in the now classic book Biochemistry of Methylotrophs by Christopher Anthony (3). In the 20 years following the publication of Biochemistry of Methylotrophs, a few additional methylotrophy biochemical pathways have been discovered, such as the pathway for C<sub>1</sub> transfer linked to methanopterin and methanofuran, which solved the long-standing mystery of formaldehyde oxidation in many methylotrophs (15, 53), and novel pathways for primary C<sub>1</sub> oxidation, such as the pathways for degradation of chlorin