COMPARATIVE BIOCHEMISTRY

A Comprehensive Treatise

Edited by MARCEL FLORKIN
HOWARD S. MASON

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PREFACE

The previous volumes of this treatise have been arranged to survey the field of comparative biochemistry within a comprehensive framework. The energetic aspect of living organisms was described in Volumes I and II. The composition of living organisms, and the transformations of the constituents were described in Volumes III to V. Volumes VI and VII are concerned primarily with comparative biochemistry at levels of organization higher than the molecular. The present volume includes, in addition, two chapters relating to molecular biochemistry which, for reasons beyond the control of the editors, could not be included in the appropriate volume. Volume VII also includes a comprehensive topical index to the whole treatise.

With this volume we finish a task begun in 1955, the organizing and editing of a comprehensive treatise. The authors contributing to this treatise have pioneered in difficult areas of biochemistry and have helped to produce a work which we believe to be of enduring value whatever the future shape of the field. Once again, we wish to record our gratitude to our publisher, Academic Press, and its staff, for exceedingly competent professional assistance throughout the preparation of the treatise.

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April, 1964

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Volume I: Sources of Free Energy

Volume II: Free Energy and Biological Function

Volume III: Constituents of Life—Part A

Volume IV: Constituents of Life—Part B

Volume V: Constituents of Life—Part C

Volume VI: Cells and Organisms

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* Most of the names refer to phyla, except in a few cases where some of the smaller taxonomic groups are shown. Capitalized names written across lines are groups including all forms above the name.

NOTE: Charts I, II, and III were prepared by Helen A. Stafford, Reed College, Portland, Oregon. For further information see "A Guide to the Nomenclature and Classification of Organisms," by Dr. Stafford, in Vol. I of this treatise.

CHART I
HYPOTHETICAL PHYLOGENETIC RELATIONSHIPS BETWEEN EXTANT MAJOR GROUPS OF ORGANISMS*

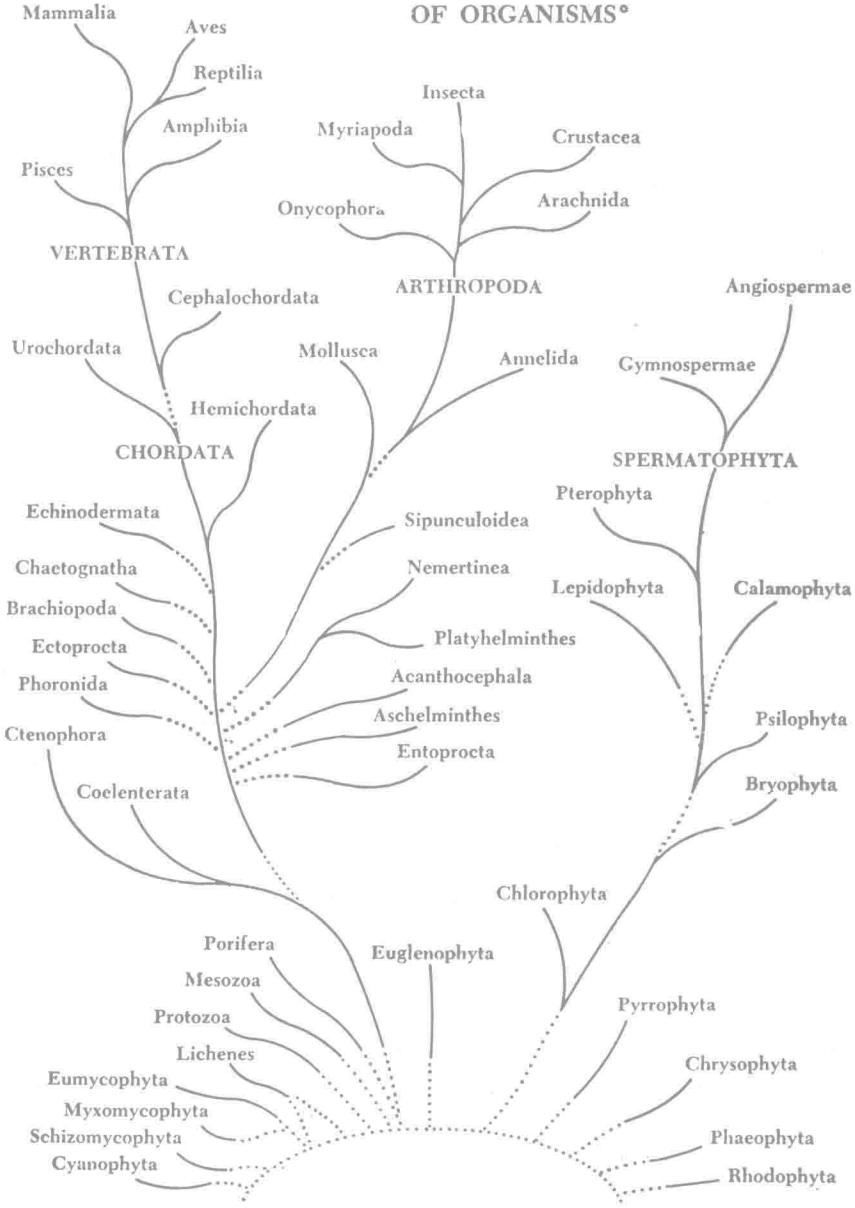
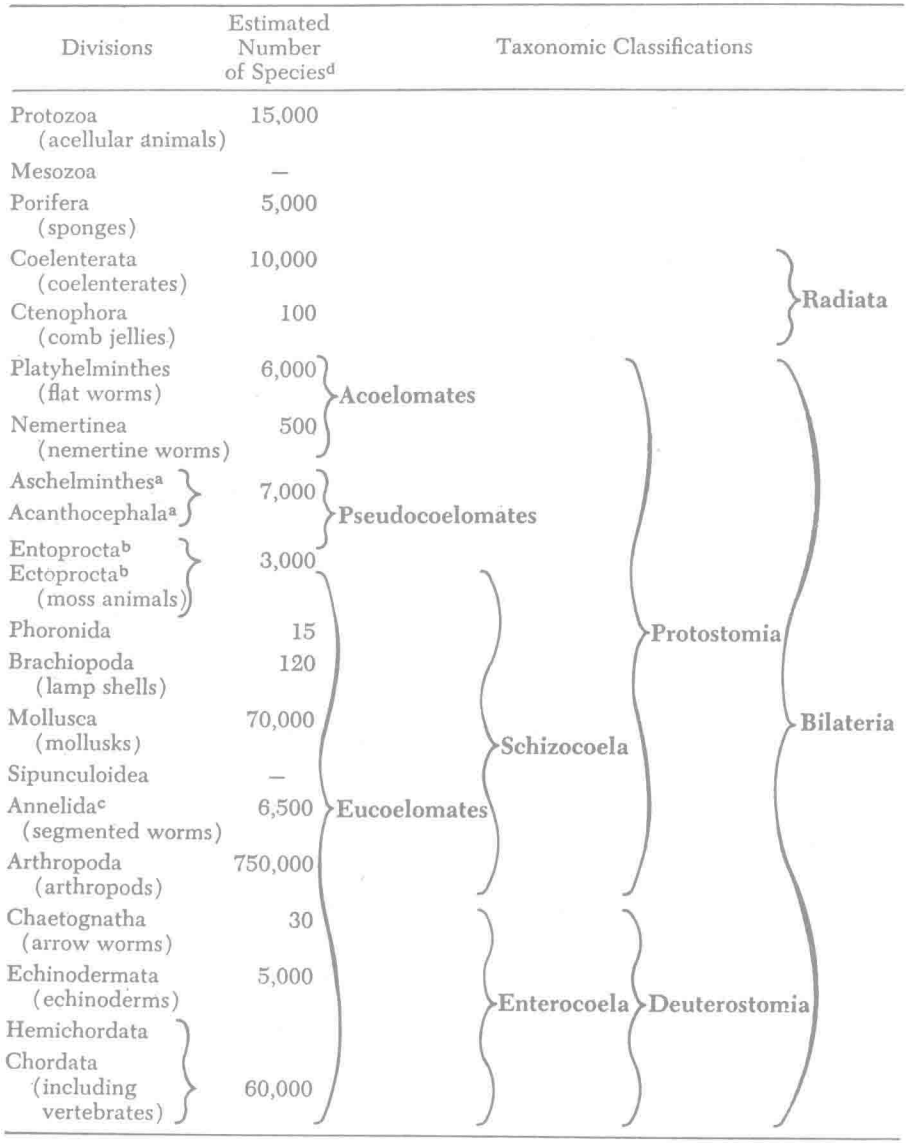


CHART II: ANIMAL KINGDOM



[a] Includes Rotifera, Gastrotricha, Kinorhyncha, Nematoda, Nematomorpha, Priapuloidea. Formerly called Nemathelminthes.

[b] Formerly in Bryozoa.

[c] Includes Echiuroidea.

[d] Taken from "Handbook of Biological Data" (*4*), p. 533.

CHART III: PLANT KINGDOM

Divisions	Estimated Number of Species[d]		Major Synonymous Terms	
Euglenophyta (euglenoids)	340			
Chlorophyta (green algae)	5,700			
Pyrrophyta (cryptomonads, dinoflagellates)	1,000			
Chrysophyta (yellow green algae, diatoms)	5,700	Algae		
Phaeophyta (brown algae)	900			
Rhodophyta (red algae)	2,500		Thallophyta	
Cyanophyta[a] (blue-green algae)	1,400			
Schizomycophyta[a] (bacteria)	1,300[e]			Cryptogamia
Myxomycophyta (slime molds)	430	Fungi		
Eumycophyta (true fungi)	74,000			
Lichenes (lichens)	15,500			
Bryophyta (mosses and liverworts)	23,800		Bryophyta	
Psilophyta[b] (whisk ferns)	3	Psilopsida		
Calamophyta[b] (horsetails)	30	Sphenopsida		
Lepidophyta[b] (lycopods)	1,300	Lycopsida	Tracheophyta	
Pterophyta[b, c] (ferns)	10,000	Pteropsida		
Spermatophyta (seed plants)	201,000			Phanerogamia

[a] Sometimes grouped as Schizophyta.
[b] Formerly classed as Pteridophyta.
[c] Formerly classed as Filicineae in Pteropsida.
[d] Taken from "Handbook of Biological Data" (*4*), p. 533.
[e] There is much disagreement concerning designation of species here.

CONTENTS

CHAPTER 1

Expressions of the Pentose Phosphate Cycle*

N. G. Pon

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