CONTENTS

PREFACE v

I BIOLOGICAL BEGINNINGS 1

1. Excerpts from *Nature of Man, Humours, Aphorisms and Regimen—Hippocrates* 3
2. Excerpts from *De Generatione Animalium* (On the Generation of Animals)—*Aristotle* 7
3. Excerpts from *Enquiry into Plants—Theophrastus* 11
4. Excerpts from *The First Observations on "Little Animals" Protozoa and Bacteria in Waters—Antony van Leeuwenhoek* 14
5. The Evidence of the Descent of Man from Some Lower Form—*Charles Darwin* 20

II THE STRUCTURE AND FUNCTION OF ANIMALS 31

6. The Unsolved Problem of Development—*John Tyler Bonner* 33
7. The Eve of Meiosis (with Apologies to Clement C. Moore) —*Craig L. Himes* 47
8. Luminescence 50
9. Life's Mysterious Clocks—*Frank A. Brown, Jr.* 53
10. Avian Adaptations 63
11. Blood 67

III THE STRUCTURE AND FUNCTION OF HIGHER PLANTS 83

12. Photosynthesis—*Johannes van Overbeek, Harry K. Wong* 85
13. Respiration—*William A. Jensen* 94
14. Photoperiod—*Arthur W. Galston* 101
15. Growth Hormones—*Arthur W. Galston* 105
16. The Agricultural Sciences—*R. E. Geyer* 109
17. Tree Ferns—*Henricks Hodge* 119
18. Of Molds and Men—*Richard N. Shoemaker* 122

IV NUTRITION, HEALTH, AND DISEASE 129

19. Food, Facts and Fads—*Gladys Cook, May Foley* 131
20. Horizons in Dentistry—*George C. Paffenbargar* 136
21. Rats, Bats and Human Diseases 139
22. Cancer 143
23. Your Heart 155
24. Walter Reed and the Conquest of Yellow Fever—*Grace T. Hallock, Clair E. Turner, John J. Lenz, assistant* 163
25. Plant Pathology and Human Welfare—*A. J. Riker* 175
26. Medical Utopias—*René Dubos* 186

V ECOLOGY 191

27. The Ecology of Man, the Animal—*S. Charles Kendeigh* 193
28. Biology, Society, and Culture in Human Ecology—*Frederick Sargent II, Demitri B. Shimkin* 199
29. The Ecology of Disease—*Marston Bates* 208
30. Wastebasket of the Earth—*William A. Albrecht* 212
31. Space Tracks—*Dwain W. Warner* 221
32. Bird Migration 229
33. The Flower and the Bee—*Mary S. Percival* 233
34. The Rain Forest—*Marston Bates* 241

VI CONSERVATION AND ECONOMIC BIOLOGY 253

35. The Vandals—*Angelo Patri* 255
36. The Useful and Beautiful Forest—*Erhard Rostlund* 256
37. Turning Insects Against Themselves 260
38. Science Attacks the Screwworm—*Norris Randolph* 263
39. Bristlecone Pine, Oldest Living Thing—*Edmund Schulman* 266

VII EXOBIOLOGY 269

40. Significance and Status of Exobiology—*Gilbert V. Levin* 271
41. The Biology of Space 276
42. Travelers in Space—*Samuel Moffat, Elie A. Shneour* 281
43. What Do We Seek in Space?—*Joshua Lederberg* 284

VIII HEREDITY 287

44. Gregor Mendel and His Work—*Hugo Iltis* 289
45. The Language of the Genes—*George W. Beadle* 295

46. DNA and the Chemistry of Inheritance—*Barry Commoner* 311
47. Heredity and Hiroshima—*David M. Bonner, Stanley E. Mills* 314

IX ORIGIN OF LIFE 319

48. Chemical Origin of Life—*Cyril Ponnamperuma* 321
49. Chemical Evolution—*Melvin Calvin* 330
50. Life Begins—*Samuel Moffat, Elie A. Shneour* 331
51. On the Origin and Evolution of Living Machines—*Harold F. Blum* 336
52. Spontaneous Generation—*Irving W. Knobloch* 343

X EVOLUTION 359

53. Man and Natural Selection—*Theodosius Dobzhansky* 361
54. The Two-Million-Year-Old Man 376
55. Continuity and Change—*Samuel Moffat, Elie A. Shneour* 381
56. The Role of Paleontology in the Formulation of Evolutionary Thought—*Everett C. Olson* 386
57. Flowers, Insects, and Evolution—*Herman F. Becker* 392
58. Crop Plant Evolution—*Sir Joseph Hutchinson* 399

XI POPULATION AND BIRTH CONTROL 409

59. How Many People Have Ever Lived on Earth?—*Annabelle Desmond* 411
60. The World's No. 1 Problem—*Earl L. Butz* 412
61. The Population Explosion—*Leroy Augenstein* 413
62. How Good is the Rhythm Method?—*Garrett Hardin* 418
63. Interstellar Migration and the Population Problem—*Garrett Hardin* 420

XII PHILOSOPHY AND SCIENCE

64. A Biologist's Reflections on History—*Max Hamburgh* 427
65. Front Seats for Biologists—*Wallace O. Fenn* 437
66. The Road Traversed and the Road Ahead—*Theodosius Dobzhansky* 441
67. Earthlings in the Space Age—*Ritchie Calder* 467
68. The Logical Basis of Biological Investigation—*Herbert H. Ross* 473
69. Science and People—*Warren Weaver* 479