

# Contents

---

<i>Preface</i>	vii		
<b>1 Introduction</b>	<b>1</b>	<b>4.5 Nutrition and metabolism of tapeworms</b>	<b>124</b>
1.1 Microscopy	1	4.6 Strategies for reproduction	128
1.2 Chemical analysis	6	4.7 Spiral cleavage	131
1.3 Uses of radioactivity	9	4.8 Protonephridia	131
1.4 Recording events	10		
1.5 Electrodes	14	<b>5 Rotifers and roundworms</b>	<b>136</b>
1.6 Experiments on animals	16	5.1 Rotifers	136
1.7 Fossils	16	5.2 Roundworms	139
1.8 Concepts in morphology	17	5.3 Cuticle	142
1.9 Classification	19		
<b>2 Single-celled animals</b>	<b>26</b>	<b>6 Molluscs</b>	<b>148</b>
2.1 Introduction	26	6.1 Introduction	148
2.2 Photosynthesis and feeding	32	6.2 Mollusc shells	154
2.3 Gut-living protozoans	38	6.3 Muscle	160
2.4 Blood parasites	40	6.4 Crawling and burrowing	168
2.5 Intracellular parasites	44	6.5 Jet propulsion and buoyancy	173
2.6 Sex and reproduction	48	6.6 Respiration and blood circulation	180
2.7 Osmotic regulation	53	6.7 Excretion	186
2.8 Locomotion	57	6.8 Eyes	191
<b>3 Animals with mesoglea</b>	<b>72</b>	6.9 Brains and hormones	193
3.1 Sponges	72	6.10 Filter feeding	196
3.2 Cnidarians	75	6.11 Life on the shore	200
3.3 Multicellular structure	86	6.12 Planktonic larvae	202
3.4 Muscles and nerves	90		
3.5 Skeletons	98	<b>7 Segmented animals</b>	<b>208</b>
3.6 Reef-building corals	104	7.1 Segmentation	208
<b>4 Flatworms</b>	<b>108</b>	7.2 Annelids	214
4.1 Free-living flatworms	108	7.3 Various arthropods	215
4.2 Parasitic flatworms	113	7.4 Metachronal rhythms	217
4.3 Diffusion of gases and nutrients	119	7.5 Life in the soil	221
4.4 Feeding and digestion in turbellarians	122	7.6 Life in estuaries	223
		<b>8 Crustaceans</b>	<b>226</b>

*Contents*

8.1	Introduction	226	14.2	Feeding and respiration	344
8.2	The exoskeleton	232	14.3	Buoyancy	352
8.3	Muscles	237	14.4	Silvery shoals	361
8.4	Compound eyes	241	14.5	Warm-blooded fishes	364
8.5	Settlement of barnacle larvae	243	<b>15</b>	<b>Lungfishes and amphibians</b>	<b>368</b>
<b>9</b>	<b>Insects</b>	<b>247</b>	15.1	Coelacanths and lungfishes	368
9.1	Introduction	247	15.2	Amphibians	372
9.2	Flight	255	15.3	Breathing air	375
9.3	Respiration	260	15.4	Blood circulation	385
9.4	Water balance	262	15.5	Aestivation	389
9.5	Metamorphosis	266	15.6	Locomotion on land	390
9.6	Insect colours	267	15.7	Hearing on land	394
9.7	Social insects	272	15.8	Reproduction	397
<b>10</b>	<b>Bryozoans and brachiopods</b>	<b>279</b>	<b>16</b>	<b>Reptiles</b>	<b>400</b>
10.1	Bryozoans	279	16.1	Introduction	400
10.2	Brachiopods	281	16.2	Shelled eggs	407
<b>11</b>	<b>Starfish and sea urchins</b>	<b>284</b>	16.3	Skin, water and salts	412
11.1	Introduction	284	16.4	Temperature	415
11.2	Development	289	16.5	Dinosaurs	422
<b>12</b>	<b>Primitive chordates</b>	<b>295</b>	<b>17</b>	<b>Birds</b>	<b>431</b>
12.1	Sea squirts and amphioxus	295	17.1	Introduction	431
12.2	Lampreys	302	17.2	Feathers and body temperature	435
12.3	Other agnathans	308	17.3	Flight	441
12.4	Bone	311	17.4	Respiration	447
12.5	Water and ions	312	17.5	Song	451
12.6	Lateral lines and ears	317	17.6	Colour and ornament	453
<b>13</b>	<b>Sharks and some other fishes</b>	<b>323</b>	<b>18</b>	<b>Mammals and their relatives</b>	<b>458</b>
13.1	Sharks	323	18.1	From reptiles to mammals	458
13.2	Early jawed fishes	327	18.2	Physiological features	464
13.3	Swimming and buoyancy	329	18.3	Reproduction of mammals	468
13.4	The heart and the blood	334	18.4	The orders of mammals	472
13.5	Reproduction	337	18.5	Walking and running	479
13.6	Sense organs	338	18.6	Teeth and chewing	484
<b>14</b>	<b>Teleosts and their relatives</b>	<b>343</b>	18.7	Conflict and co-operation	491
14.1	Bony fishes	343	18.8	Diving	494
			18.9	Echolocation	496
				Index	501