

Contents

Presentation of Field “History of Science”	xi
Jean-Claude DUPONT	
Introduction	xiii
Céline CHERICI	
Chapter 1. From Dissection to the Origin of Diseases: 16th–18th Centuries	1
Céline CHERICI	
1.1. Introduction.	1
1.2. New explorations of the human body	2
1.2.1. A renewal of anatomy led by Andreas Vesalius (1514–1564).	3
1.2.2. From autopsies to knowledge of pathologies.	7
1.2.3. Exploring the signs of disease	10
1.3. From moving bodies to organs in pieces.	14
1.3.1. The body: a whole broken down into its parts	15
1.3.2. The merging of mechanistic and vitalistic models.	18
1.4. Advent of the anatomopathological and clinical methods	22
1.4.1. Anatomical explorations and location of diseases	23
1.4.2. The significance of dissections to renewed surgical practice.	28
1.5. Schools of thought modeling medical practice	30
1.6. Developments in clinical anatomopathology	32

1.7. Conclusion	34
1.8. References	35
Chapter 2. The Clinic or the Art of Diagnosis	41
Jean François THURLOY	
2.1. Introduction.	41
2.2. The birth of a concept.	42
2.2.1. The evolution of the concept of disease.	42
2.2.2. The physician–patient meeting	43
2.2.3. Jean Fernel and the concept of disease	44
2.2.4. Gorgio Baglivi and the reshaping of medical art.	45
2.3. Classification thinking	47
2.3.1. Sydenham’s clinical concept	47
2.3.2. Boissier de Sauvages and nosology	48
2.3.3. Philippe Pinel and the revival of nosography.	50
2.4. Searching for an effective treatment	51
2.5. The anatomo-clinical method	53
2.6. Institutionalization of the clinic: the hospital	54
2.7. Conclusion	57
2.8. References	58
Chapter 3. Experimentation on Living Beings in the Modern Era.	61
Jean-Claude DUPONT	
3.1. Introduction.	61
3.2. The emblematic case of blood circulation	62
3.2.1. Blood movements before Harvey	62
3.2.2. Harvey’s contribution	64
3.2.3. Harvey’s innovation and tradition	65
3.2.4. Controversies over experimental contributions and the usefulness of polemics.	67
3.3. The origins of the experimental exploration of living beings.	68
3.3.1. The transformation of anatomical practices: from anatomy to physiology	68
3.3.2. Explanatory systems	70
3.3.3. Instrumentation	72
3.3.4. New methods of exploration	73

3.4. The exploration of animal functions and experimental controversies	73
3.4.1. Nutrition and digestion	73
3.4.2. Relationship functions	74
3.4.3. Reproductive functions.	80
3.5. Chemical exploration of respiration	83
3.5.1. Places of respiration and animal heat	83
3.5.2. Respiration and its link to blood and air chemistry	84
3.5.3. Respiration according to phlogiston theory.	85
3.5.4. Lavoisier, respiratory gas exchange and animal heat	86
3.6. Conclusion	88
3.7. References	89
Chapter 4. The Visible and the Invisible: Images of the Body, From Descartes to the Encyclopedists.	97
Paolo QUINTILI	
4.1. The legacy of humanism and the Renaissance	97
4.2. Separation of the microcosm and macrocosm: the Baroque period	103
4.3. The Cartesian body machine: between Harvey and Descartes	108
4.4. The successors of Descartes and the Flemish anatomists	113
4.5. Images of the body during the Age of Enlightenment: from Lancisi to the Encyclopedia	125
4.6. References	135
Chapter 5. The Observation and Classification of Living Beings: The Animal, 16th–18th Centuries	143
Jean-Luc GUICHET	
5.1. Introduction.	143
5.2. Ancient and medieval legacy	144
5.2.1. Aristotle	144
5.2.2. The legacy of late antiquity and the Middle Ages	145
5.3. The scholarly 16th century: a century of inventory and transition.	146
5.3.1. Classification inadequacy	146
5.3.2. Influence of the principle of continuity: the problem of intermediaries and the hierarchy of perfection	147
5.3.3. Specific challenges in zoology	147
5.3.4. Cabinet scholars and naturalist travelers	148

5.4. The 17th century: disruption at work	150
5.4.1. The age of discovery and the microscope	150
5.4.2. The contributions of dissection and experimentation	151
5.4.3. The classification crisis	153
5.4.4. John Ray's classification.	153
5.4.5. Observation of animal behavior	154
5.5. The 18th century: classification, observation, the question of the human species	155
5.5.1. A detour into botany	155
5.5.2. Linnaean resolution.	156
5.5.3. Resistance to the Linnaean system: Adanson, Réaumur, Buffon	157
5.5.4. The classification dilemma: unclassifiable intermediaries (pongo) and the place of man.	158
5.5.5. Renewed observation and (partial) rehabilitation of animal capabilities	160
5.6. Conclusion	161
5.7. References	162

Chapter 6. Observation and Classification of Living

Beings: Plants	165
Olivier PERRU	
6.1. Introduction.	165
6.2. Botany in the 16th century: description and conceptual framework	166
6.2.1. Describing and illustrating plants	166
6.2.2. A reformed Aristotelian logic: definition following Pierre de La Ramée.	168
6.2.3. The scholarly heirs of the Renaissance: the contributions of Charles de l'Écluse and Peiresc.	171
6.3. Botany in the 17th century	176
6.3.1. A discipline becoming institutionalized: the King's Garden.	176
6.3.2. A new logical tool for defining and classifying: Port-Royal Logic	176
6.3.3. Journeys of exploration and field observations: Father Charles Plumier in the West Indies (1646–1704)	179
6.3.4. Elements of Botany (1694) by Joseph Pitton de Tournefort (1656–1708): moving toward a classification?	181

6.4. The epistemic revolution of the 18th century	184
6.4.1. The Linnaean classification	184
6.4.2. Various approaches between description and classification	186
6.5. Conclusion	188
6.6. References	189

Chapter 7. Models, Systems, and Metaphors for Living Beings, from Descartes to Barthez 193

Paolo QUINTILI

7.1. Metaphor for life in the 17th century: the mechanism	193
7.2. Criticisms of the Cartesian mechanism: pre-existence of germs, iatrochemistry and animism	199
7.3. Spinoza and the “Spinozism” of the Enlightenment: the new life sciences	205
7.4. Diderot, the <i>Encyclopédie</i> and the vitalism of the Montpellier School	209
7.5. References	220

Chapter 8. The Emergence of Transformism in the 18th and 19th Centuries 229

Stéphane TIRARD

8.1. Introduction.	229
8.2. Buffon and listing of species over time	230
8.2.1. A work of concepts	231
8.2.2. Defining the species and its boundaries	233
8.2.3. Linking the history of the Earth and life: Epochs of Nature	234
8.2.4. Spontaneous generations at the beginning of species	235
8.3. Thinking about life beyond dogma: a plethora of approaches	237
8.3.1. The chain of beings: expression of the principle of plenitude	237
8.3.2. Maupertuis: errors producing new species	238
8.3.3. Diderot and the animalization of matter.	239
8.4. Lamarck, story of a conversion: from fixism to “transformism”.	241
8.4.1. Meteorology, hydrogeology and biology	241
8.4.2. Spontaneous generations, a model of the transformation process.	242
8.4.3. The successive formation of species.	245

8.5. Cuvier and the compositional plans	247
8.6. Geoffroy Saint-Hilaire and the principle of recapitulation	248
8.7. Conclusion	249
8.8. References	250
List of Authors	253
Index of Terms	255
Index of Names	259
Summary of Volume 1	265
Summary of Volume 3	271