# CONTENTS

Preface ix

# **CHAPTER 1**

# **INTRODUCTION 1**

# Introduction 2

# 1.1 The Global Burden of Disease 2

- The nature of diseases
- The global disease burden
- Disease burdens at the national level

### 1.2 The Nature of Epidemics 7

- Defining epidemics
- Epidemics in world history
- Epidemics as a branching process

### 1.3 Mapping Epidemic Diseases 11

- The nineteenth century
- Twentieth-century mapping
- New developments in disease mapping

# 1.4 Organization of the Atlas 16

- Choosing diseases
- Choosing structures

Further Reading 19

# **CHAPTER 2**

#### THE CLASSIC PLAGUES, 1 20

### Introduction 21

### 2.1 Plague 21

- Nature of plague
- Past patterns: the 'Black Death' •
- Past patterns: later plague cycles
- Past patterns: plague in the 'early modern' period
- Current geography of plague .

### 2.2 Cholera 25

- Nature of cholera
- The great nineteenth-century pandemics
- Cholera waves in North America .
- Cholera in nineteenth-century London
- Cholera in the Philippines, 1902-4
- Current geography of cholera

# 2.3 Leprosy 32

- Nature of leprosy
- Past patterns of leprosy
- Current geography of leprosy

Further Reading 35

# **CHAPTER 3**

# THE CLASSIC PLAGUES, II 36

### Introduction 37

### 3.1 Smallpox 37

- Nature of smallpox
- Origins and early Old World spread .
- Subsequent spread and intensification
- Vaccination and nineteenth-century smallpox .
- Continuing twentieth-century problems

# 3.2 Measles 41

- Nature of measles
- Old World origins of measles
- New World extensions: the Americas •
- New World invasions: the Pacific
- Changes in measles waves in the twentieth century •
- The declining mortality from measles •

- Nature of rabies
- Past patterns of rabies

Further Reading 54

# **CHAPTER 4**

# PERSISTENT SCOURGES 55

### Introduction 56

### 4.1 Tuberculosis 56

- Nature of tuberculosis
- Past patterns of tuberculosis
- Current geography of tuberculosis •

Nature of syphilis

- 3.3 Rabies 51

  - Current geography of rabies

# 4.2 Syphilis 61

- Past patterns of syphilis
- Current geography of syphilis
- Yaws: a related spirochaetal disease

### 4.3 Typhus 63

- Nature of typhus
- Past patterns of typhus
- Current geography of typhus

### 4.4 Relapsing Fever 66

- Nature of relapsing fever
- Past patterns of relapsing fever
- Current geography of relapsing fever

Further Reading 68

# **CHAPTER 5**

# CHILDREN'S DISEASES 69

#### Introduction 70

### 5.1 Typhoid 70

- Nature of typhoid
- Past patterns of typhoid
- Current geography of typhoid

### 5.2 Diphtheria 73

- Nature of diphtheria
- Past patterns of diphtheria
- Current geography of diphtheria

#### 5.3 Other Bacterial Diseases 75

- Scarlet fever
- Whooping cough

### 5.4 Viral Diseases of Childhood 79

- Rubella (German measles)
- Mumps
- Chickenpox

Further Reading 83

# **CHAPTER 6**

# WINTER AND SEASONAL AILMENTS 84

### Introduction 85

- 6.1 Influenza I: Nature and Early Records 85
  - Nature of influenza
  - Measurement of influenza
  - Early influenza epidemics

#### 6.2 Influenza II: The 1918-19 Pandemic 88

- Influenza waves in the northern hemisphere
- Impact on the southern hemisphere: Australia

#### 6.3 Influenza III: Later Pandemics 90

- Identifying the causes of influenza
- The 1957 'Asian flu' pandemic
- Current geography of influenza

#### 6.4 Nature of Seasonal Epidemics 94

- Seasonality in influenza
- The common cold

Further Reading 97

# **CHAPTER 7**

# TROPICAL DISEASES, I 98

#### Introduction 99

- 7.1 Malaria 99
- Nature of malaria
- Past patterns of malaria
- Current geography of malaria
- Burkitt's lymphoma

#### 7.2 Yellow Fever 105

- Nature of yellow fever
- Past patterns of yellow fever
- Current geography of yellow fever

#### 7.3 Dengue 107

- Nature of dengue
- Past patterns of dengue
- Current geography of dengue

#### 7.4 Meningococcal Disease 110

- Nature of meningococcal disease
- Meningococcal disease and the African 'meningitis belt'
- Current geography of meningococcal disease

Further Reading 112

**CHAPTER 8** 

# TROPICAL DISEASES, II 113

### Introduction 114

#### 8.1 Sleeping Sickness 114

- Nature of sleeping sickness
- Past patterns of sleeping sickness
- Current geography of sleeping sickness
- Past pa

#### 8.2 Chagas' Disease 116

- Nature of Chagas' disease
- Past patterns of Chagas' disease
- Current geography of Chagas' disease

# 8.3 Leishmaniasis 118

- Nature of Leishmaniasis
- Past patterns of Leishmaniasis
- Current geography of Leishmaniasis

# 8.4 Schistosomiasis 120

- Nature of schistosomiasis
- Past patterns of schistosomiasis
- Current geography of schistosomiasis

# 8.5 River Blindness 123

- Nature of river blindness
- Past patterns of river blindness
- Current geography of river blindness

# 8.6 Other Helminthic Diseases 125

- Filariasis
- Guinea worm
- Hookworm

Further Reading 132

# **CHAPTER 9**

# □ VACCINE-PREVENTABLE DISEASES 133

### Introduction 134

# 9.1 Concepts of Disease Eradication 134

- Spatial control strategies
- Local elimination and natural breaks in infection
- Impact of vaccination on epidemic cycles

# 9.2 Global Eradication of Smallpox 136

- The WHO smallpox control programme
- Progress on eradication
- Post-eradication issues

# 9.3 Measles Elimination 143

- The US campaigns
- Elimination campaigns in the rest of the world
- Current geography of measles

# 9.4 Poliomyelitis Elimination 146

- Nature of poliomyelitis
- Past patterns of poliomyelitis
- Vaccination in the Americas
- Progress in the rest of the world

# **CHAPTER 10**

# NEWLY-EMERGENT DISEASES, | 152

# Introduction 153

# 10.1 Emergence of New Diseases 153

- The geographical question of disease origins
- Mechanisms of disease emergence

# 10.2 AIDS I: Nature and Origins 155

- Nature of AIDS
- Origin of AIDS

# 10.3 AIDS II: Global Patterns 157

- The global magnitude of AIDS
- Regional transmission patterns

# 10.4 AIDS III: Regional Variations 158

- Pattern I: AIDS in the United States
- Pattern II: AIDS in Central Africa
- Transition I/II: AIDS in the Caribbean

# 10.5 AIDS and Related Diseases 163

- AIDS and other infectious diseases
- Gonorrhoea
- Hepatitis B

Further Reading 166

# **CHAPTER 11**

# NEWLY-EMERGENT DISEASES, II 167

### Introduction 168

# 11.1 Legionnaires' Disease 168

- Nature of legionnaires' disease
- Past patterns of legionnaires' disease
- Current geography of legionnaires' disease

# 11.2 Lyme Disease 170

- Nature of Lyme disease
- Past patterns of Lyme disease
- Current geography of Lyme disease
- Other tick-borne fevers in North America

# 11.3 Tropical Haemorrhaghic Fevers 172

- Nature of Ebola-Marburg fever
- Past patterns of Ebola-Marburg fever
- Current geography of Ebola-Marburg fever
- Other tropical haemorrhagic fevers

# 11.4 Other Newly-Emergent Diseases 176

- Neurological disorders: kuru and CJD
- Hantavirus fevers
- Cryptosporidiosis
- Buruli ulcer

Further Reading 181

# **CHAPTER 12**

CHANGING PATTERNS OF DISEASE 182

Introduction 183

12.1 Changes in Disease Environments 183

- Economic development and disease
- Population shift and disease
- Land use change and disease
- Global warming and disease

# 12.2 Spatial Contraction and Disease 187

- The collapse of geographical space
- Disease implications of global shrinkage

12.3 Conflicts and Disease Change 188

- Conventional wars: tsutsugamushi and the Pacific campaigns
- Anthrax and bio-terrorism
- Conflict and disease eradication

12.4 Future Surveillance and Control 192

Further Reading 195

APPENDIX A EPIDEMIC DISEASES ON THE WORLD-WIDE WEB 197

- APPENDIX B GLOSSARY OF TERMS 198
- REFERENCES 200

INDEX 207