Contents

Preface vii
1 The Legacy of Disease: Porphyria and Hemophilia 1
2 The Irish Potato Blight 19
3 Cholera 33
4 Smallpox: the Speckled Monster 50
5 Bubonic Plague 68
6 Syphilis: the Great Pox 83
7 Tuberculosis: the People’s Plague 104
8 Malaria 130
9 Yellow Fever: the Saffron Scourge 143
10 The Great Influenza 158
11 AIDS: the 21st Century Plague 174
Epilogue 195
Notes 199
Index 207
Preface

The literature on the impact of disease on history is large. It chronicles how illness has affected Western civilizations: in the 14th century plague broke the Malthusian stalemate and provided the impetus to restructure European societies; during the past two centuries genetic diseases altered the fates of the British, Spanish, and Russian royal families and contributed to the rise of Lenin, Franco, and Hitler; in the last 100 years we have witnessed how increased opportunities for disease transmission have decimated populations, created panic, and fostered discrimination. We continue to be painfully aware of the power a disease can wield in effecting social and political changes on a grand scale and how it can reveal and exacerbate social tensions. In the past, disease played a role in colonial expansion in the Americas and Africa and, through demographic pressure and starvation, forced a mass migration of the Irish people; tomorrow in different places and in different ways, another disease may do the same.

Historical perspectives of disease can be valuable for a better understanding of how we, and our forebears, survived the onslaught of “plagues” and how we might avoid some of their consequences: confrontations between immigrants and nativists, discrimination against those with different lifestyles, and the social and political disruptions due to incapacitation and death. Of equal value, and much needed, is an examination of the attempts to control disease and how it was possible to improve the public health. In short, this book is about the lessons we have or should have learned from our past encounters with unanticipated outbreaks of disease and how such understanding can be put to use when future outbreaks occur.
The recent SARS and AIDS pandemics clearly show that our lives, as well as the political and economic fortunes of the developed world and emerging nations, can be influenced by the appearance of a contagious disease. In 2004, alarm bells went off as avian influenza spread across the globe, killing millions of domestic fowl and 113 people. The public asked what measures would be needed to stop its spread so that another 1918 to 1920 flu pandemic, which killed tens of millions of people, would not occur. In 2006 cholera swept through West Africa, striking 20,000 people, and in the United States mumps—no longer thought to be a threat because of childhood vaccination—broke out in Iowa and quickly spread to neighboring states, affecting 1,000 people.

These unanticipated epidemics provoke questions. What is needed to curtail the transmission of a disease? What will it take to contain a disease so that protective measures can be instituted? These questions, perplexing and complex, need answers. To simply catalog past diseases and tell of their historic consequences would not be of lasting value to the general public. Rather, it was my feeling that the answers to how we might deal with “coming plagues” could be better obtained by an examination of how past encounters with disease allowed for better control and improved health.

Our world has experienced so many diseases that it would be pointless to deal with all of them. In fact, it would be a nearly impossible task, and, if achieved, it would be numbing to read. Instead, I have selected a dozen diseases that have shaped our history and illuminated the paths taken in finding measures to control them. Porphyria and hemophilia (chapter 1) influenced the political fortunes of England, Spain, Germany, Russia, and the United States; late blight (chapter 2) spawned a wave of immigration that changed the politics of the United States; cholera (chapter 3) stimulated sanitary measures, promoted nursing, and led to the discovery of oral rehydration therapy; smallpox (chapter 4) led to a vaccine that ultimately eradicated the disease; plague (chapter 5) promoted quarantine measures and attenuated vaccines were the result of outbreaks of tuberculosis (chapter 6); syphilis (chapter 7) provided the impetus for cure through chemotherapy; and malaria and yellow fever (chapters 8 and 9) provided the basis for vector control. However, despite these successes, two pandemics—influenza (chapter 10) and HIV/AIDS (chapter 11)—continue to elude control. In this book I try to answer why this is so.

The message of this book is simple: understanding past outbreaks of disease can better prepare us for those in our future. The twelve diseases
chosen have influenced the way we look at sickness and show how they resulted in public health measures and other interventions to stem the spread of that disease and others. To eliminate the fear and confusion surrounding “coming plagues,” I describe the ways we have succeeded in bringing certain diseases under control and, in other cases, our failures. My purpose in writing this book for the general reader is to show that despite the challenges which an unanticipated illness may place before us, the future is not without hope or remedy.
Index

Acid-fast stain, 114
Acquired immunodeficiency disease syndrome, see AIDS
Acyclovir, 187
Addison's disease, 1, 18, 106
Aedes mosquito, 150–153
Africa
cholera, 34, 36
HIV infection, 181–183, 192–193
influenza, 160, 167
malaria, 132, 141–142
plague, 68, 75, 78, 81
smallpox, 53, 55
syphilis, 84, 100
tuberculosis, 125, 127–128
yaws, 87
yellow fever, 144, 146, 152–153, 156
“Age of powder and patches,” 56
Ague, 141
AIDS, 174–194, see also HIV infection
AIDS vaccine, 186–189
AIDS-related complex, 178
Air travel, 81
Airborne transmission
influenza, 158–173
plague, 79
smallpox, 50–67
tuberculosis, 104–129
Albert, Prince of Saxe-Coburg and Gotha, 10
Alexander the Great, 141
Alexandra Feodorovna, 11–13
Alexis, Tsarevich, 11–13
Alice (daughter of Queen Victoria), 10
Alphonso XIII, King of Spain, 13–14
Altruistic vaccine, 141
Amantadine, 172
American Lung Association, 123
Amerindians
smallpox, 53–56
syphilis, 86, 101
tuberculosis, 112
Amherst, Sir Goeffrey, 55
Amodiaquine, 139
Andrewes, Christopher, 160
Aniline dyes, 93, 114
Animal Vaccination Establishment, 60
Anne, Queen of England, 5, 107
Anopheline mosquito, 134–139
Anthrax, 113
Anthrax vaccine, 66
Antibiosis, 96
Antibiotics, 96
for tuberculosis, 124–126
Antibody, 61–64
antigen-antibody interactions, 62–63, 94
Antibody-mediated immunity, 62–65
Antigen, 65
    antigen-antibody interactions, 62–63, 94
Antigenic drift, 161–165
Antigenic shift, 161–165
Antigenic site, 162
Antimarialys, 139–140
Anti-Semitism, 112
Antitoxin, 61–62, 93–94
Antiviral drugs, 171–172
Aristotle, 106
Arsenicals, 94
Arsphenamine, 95
Artemisinin derivatives, 140
Ashurbanipal, Assyrian King, 106, 132
Asia
    HIV infection, 193
    influenza, 159–160, 163–164, 169
    malaria, 140
    plague, 71–72, 75–76, 79
    smallpox, 53
    syphilis, 84, 87–88, 100–101
    tuberculosis, 127
Asian flu, 158, 164–165
Atahualpa, 54
Athlete’s foot, 178
Atovaquone, 139–140
Atoxyl, 94
Attenuation, 65–66, 126, 156, 187
Austen, Jane, 106
Avian influenza virus, 163, 169, 172
Azidothymidine (AZT), 184
Aztec Empire, smallpox, 53–54
B cells, 63–64, 177
Bacterial disease
    cholera, 33–49
    malaria, 130–142
    plague, 68–82
    syphilis, 83–103
    tuberculosis, 104–129
    “Bad air,” 132–133
Bad Blood (James Jones), 91
Baltimore, David, 176
Barbarossa, Frederick, 141
Basophils, 177
Bastianelli, Giovanni, 137
Bathhouses, public, 88
Bauer, Johannes, 155
BCG vaccine, 66, 126–127
    “Beauty patch,” 56
    Bed nets, 138–139
    Bejel, 85
    Berkeley, The Reverend Miles J., 28
    Biggs, Hermann, 122–123
    Bignami, Amico, 137
    Bile pigments, 3
    Biological warfare agent
        plague, 79–80
        smallpox virus, 55
    Black ‘47, 26
    Black Death, see Plague
    Blankets, smallpox-contaminated, 55
    Bleeders’ disease, 8–18
    Blood, HIV-contaminated, 9, 180–181,
        186–187
    Blood clotting, 8–9
    Boccaccio, Giovanni, 68
    Bolshevik revolution, 13
    Bone marrow, 63–64, 177
    Book of Epidemics (Hippocrates), 132
    Booster shot, 63
    Bordeaux mixture, 30–31
    Boru, Brian, King of Ireland, 21
    Bouquet, Colonel Henry, 55
    Boylston, Zabdiel, 58
    British Army, health administration
        of, 43–47
    British royal family
        hemophilia, 8–10
        porphyria, 4–8, 17
    Broad Street pump, 35–36
    Bronze John, 146
    Bruce, David, 150
    Bubo, 71, 76
    Bubonic plague, 68–82, see also Plague
    Bush meat, 181–182
    Caldwell, Mark, 110
    California gold rush, 154
    Calmette, Albert, 126
Index

Canada, Irish immigrants, 19–20, 23, 27
Canine distemper virus, 160
Capsid, viral, 177
Caries sicca, 86–87
Caroline, Princess of Wales, 58
Caroline of Brunswick, 7
Carroll, James, 151
Cat(s), plague transmission, 81
Catholics, Irish, 6, 21–22, 26, 31
Cattle, tuberculosis, 106, 108, 110, 115, 129
Caventou, Joseph, 139
Celli, Angelo, 137
Cell-mediated immunity, 62–65, 118, 177
Cerebral malaria, 136
Cesspool, 39
Chadwick, Edwin, 39–40, 44
Chain, Ernst, 96
Chamberland filter, 175
Chancre, syphilitic, 89, 91, 101–102
Charles II, King of England, 107
Charles VIII, King of France, 84
Chemokines, 177–178
CCR5 receptor, 178–179
CCR5-Δ32 receptor, 179
Chemotherapy, 94–96
Chest X-ray, 119
China, influenza, 163–164, 169
Chloroquine, 139–140
Cholera, 33–49
causative agent, 34–37
containment, 37–40
Florence Nightingale and, 43–47
immunity to, 65
mechanism of disease, 48
quarantine, 40–43
signs and symptoms, 33
steerage-class immigrants to
United States, 41–42
treatment, 47–48
Cholera toxin, 48
Cholera vaccine, 66
Christmas Seals, 123
Churchill, Winston, 16
Circumcision, male, 187
Civil War (Spain), 14
Civil War (United States), 142
Clemenceau, George, 166
Clotting cascade, 8–9
Clovis of France, 107
Coal gas, 93
Coal tar, 93, 124
"Coffin ships," 28
Cold sore, 179
Columbian theory, origin of venereal syphilis, 86, 92
Columbus, Christopher, 84, 86, 88
Condoms, 99, 187–188, 193
Conquistadors
discovery of potatoes, 24
spread of disease to New World
malaria, 133
smallpox, 53–54
Consumption, 104–129, see also
Tuberculosis
Cortes, Hernan, 53–54
Cowpox, 59, 62
Crimean War, Florence Nightingale
and, 43–47
Croton aqueduct, 43
Crowding, tuberculosis and, 111, 120
Crusades, 53
Cryptococcal meningitis, 178
Cuba, yellow fever, 149–152
Cytomegalovirus infection, 179
Cytotoxic T lymphocytes, 64–65
Dark Ages, 74
ddC (dideoxycytidine), 184
ddi (dideoxyinosine), 184
DDT, 138–139
de Bary, Anton, 28–30
de Kruif, Paul, 143
de Lesseps, Ferdinand, 153
de Mussis, Gabriel, 79
Dean, William, 151
Deforestation, 81
Democratic Party, 31
Diaphragms, 187
Dickens, Charles, 115–116
Dionisi, Antonio, 137
Diphtheria vaccine, 67
Direct observation of therapy, tuberculosis treatment, 125
Disease control, 195–197
DNA vaccine, 67
DNA virus, 175–176
“Dr. Phantasmus,” 95
Drinking water, cholera, 33–49
Drug resistance
development, 97
HIV, 185
malaria, 139–140, 142
mechanisms, 97
tuberculosis, 124–125, 127
Dulbecco, Renato, 175–176
Dumas, Alexandre, 104–105
Dye industry, 93–95, 114
Ebers Papyrus, 132
Edward I, King of England, 107
Edward VIII, King of England & Duke of Windsor, 16–17
Edward the Confessor, 107
Ehrlich, Paul, 61–62, 92–96, 114
Elion, Gertrude, 183–184
Elizabeth I, Queen of England, 2, 21
Emetic tartar, 7
England
   England-Ireland relations, 6, 21–22, 25–27
   malaria, 142
Envelope, viral, 177
Enzootic infections, plague, 81
Enzyme, 3
Eosinophils, 177
Epitope, 62
Europe
   cholera, 40–41, 43
   HIV infection, 182, 193
   influenza, 160, 165–167, 169
   malaria, 132–133, 142
   plague, 68–70, 73, 75
   potato blight, 31–32
   smallpox, 53
   syphilis, 84, 87–88, 100
   yellow fever, 145
Factor VIII, 8–9
Falciparum malaria, 136
Fansidar, 140
Fansimef, 140
Feline immunodeficiency virus, 183
Ferdinand, Archduke, 11–12
Ferrets, influenza research, 160
Feudal system, 70
Fifth, Stubbs, 149
Fibroblasts, 116
Finlay, Carlos, 150–151
Flea, plague transmission, 68–82
Fleming, Alexander, 96, 124
Florey, Howard, 96
Flu, see Influenza
Flush toilet, 40
Fracastoro, Girolamo, 70, 85
Franco, Generalissimo Francisco, 8, 14–15
Franco-Prussian War, 113
Franklin, Jon, 144
Fungicide, control of potato blight, 30–32
Galen, 106
Gallo, Robert, 176–177
“Galloping consumption,” 105, 109
Gametocyte, 134
Garment industry, 111
George III, King of England, 5–7
George IV, King of England, 7
George V, King of England, 12–13
George VI, King of England, 16
Gerbils, plague transmission, 74
Germ theory of disease, 36–37, 71
Glycerinated calf’s lymph, 60
Gold rush, California, 154
Golgi, Camillo, 133
Gonorhrea, 98–99
Gorgas, William, 152, 155
Gram stain, 71
Grassi, Giovanni Battista, 137–138
Index

The Great Hunger, 19–32
Great Pestilence, 75
Great Plague of 1665, 75–76
Great Pox, 83–103
“Great War,” 166
Grosse-Ile detention station (Canada), 19–20
Grunbeck, Joseph, 84
Guaiacum resin, 92
Guérin, Camille, 126
Guinea Pig Doctors, The Drama of Medical Research Though Self-Experimentation (Franklin & Sutherland), 144
Gumma, 90

HAART therapy, 184–185, 191
Haemophilus influenzae, 160
Haemophilus influenzae vaccine, 67
Haiti, yellow fever, 147–148
Halofantrine, 139–140
Hamilton, Alexander, 145
Harrison, President Benjamin, 41
Hata, Sahachiro, 95
Hay-Bunau-Varilla Treaty, 154
Helper T cells, 65, 117–118, 174, 177, 186
Hemagglutinin (H protein), influenza virus, 161–164
Heme, 3–4
Hemoglobin, 3–4
Hemophilia, 8–18
British royal family, 8–10
defect in, 8
House of Romanov, 8, 10–13
inheritance, 9–10
Spanish royal family, 13–15
World War II and, 15–17
Henrietta Anne, Duchess of Orleans, 4
Henry VIII, King of England, 21
Henry Frederick, Prince of Wales, 4
Hepburn, James, 4th Earl of Bothwell, 2
Hereditary disease
hemophilia, 8–18
porphyria, 1–8
Herlihy, David, 69
Herpesvirus infection, 179, 187
Hindenberg line, 32
Hippocrates, 106, 121, 132, 159
Histoplasmosis, 179
Hitchings, George, 183–184
Hitler, Adolf, 16–17, 166
HIV infection, 174–194
causative agent, 175–177
control, 187–189
diagnosis, 185–186
failure to control, 185–188
immune system in, 177–179
inherited resistance, 179
opportunistic infections associated with, 178–179, 181, 185, 192
social context, 189–191
spread throughout the world, 181–183
syphilis and, 101
transmission, 180–181
treatment, 183–184, 192
tuberculosis and, 112, 117, 120, 125–127, 179
types of HIV, 181
viral replication, 184
HIV vaccine, 186–189
Hoffmann, August, 93
Hoffmann, Erich, 85
Homosexual community, 174–194
Hong Kong flu, 158, 164–165
Hospice care, 46–47
House of Hanover, 5–8
House of Hanover, 8, 10–13
House of Windsor, 17
Hudson, Paul, 53
Human immunodeficiency virus, see HIV infection
Human subjects for experimentation, 144, 150, 152
Huns, 53
Hunter, John, 84, 90
Hunter, Richard, 7
Hutchinson, Jonathan, 92
Hutchinson’s triad, 92
Index

Hyphae, *P. infestans*, 29–30
Hypnozoite, 136

Illness as a Metaphor (Sontag), 104
Illuminating gas, 92–93
“Immune serum,” 61
Immune system, HIV infection, 177–179
Immunity, 60–65
Immunotherapy, 94
Inca Empire
   cultivation of potato, 23–24
   smallpox, 54
   tuberculosis, 110
Indinavir, 184
Industrial Revolution, 38
Industrialization
   tuberculosis and, 120
   waterborne disease and, 37–38
Influenza, 158–173
   causative agent, 159–161
   control, 161–165, 168–172
   1918 pandemic, 158–159, 165–168
   pandemics, 162, 165, 170–172
   quarantine, 170
   signs and symptoms, 168
   transmission, 170–171
   treatment, 171–172
Influenza A virus, 160, 162, 168
Influenza B virus, 160, 162–163, 168
Influenza di fredo, 159
Influenza vaccine, 67, 161, 168–169, 172
Influenza virus, 159–161
   antigenic drifting and shifting, 161–165
   avian, 163, 169, 172
   H and N proteins, 161–163
   H5N1, 164–165
   life cycle, 161
   strains, 160
Informed consent, 152
Injecting drug users, 193
An Inquiry into the Causes and Effects ofVariolae Vaccine (Jenner), 60
Interferon, 118
Irish
   home rule, 21–22
   immigrants
      to Canada, 19–20, 23, 27
      to United States, 20, 23, 28, 30–31
   political influence in United States, 31
   relationship with British, 6, 21–22, 25–27
Irish potato blight, 19–32
   causative agent, 28–30
   politics and the Great Hunger, 19–23
Isoniazid, 124–125
James I, King of England, 2–4, 21
James IV, King of Scotland, 84
Japanese encephalitis vaccine, 67
Jefferson, Thomas, 147
Jenner, Edward, 57, 59–60
Jesty, Benjamin, 59
“Jewish disease,” tuberculosis, 111
Jews, immigrants to United States, 41–43, 111–112
Johnson, Dr. Samuel, 107
Journal of the Plague Year (Defoe), 76
Juan Carlos, King of Spain, 15
Kennedy, President John F., 1, 18
Kilbourne, Frederick, 150
Killer lymphocytes, 118
Killer T cells, 64, 177
King’s Evil, 107
Kitasato, Shibasaburo, 61, 72, 95
Koch, Robert, 36–37, 61, 71, 113–115, 118, 136–137
Koch’s postulates, 36–37, 114
Korean War, malaria, 142
l’Ouverture, Francois, 148
“La Bohème,” 104, 108
La Salle, Robert, 147
“La Traviata,” 104, 108
Lady with the Lamp, see Nightingale, Florence
Laennec, René, 119
Laidlaw, Patrick, 160
Index

LAPDAP, 140
Larvicide, 138
*The Last Crusade* (Caldwell), 110
Late blight of potato, 19–32
Latin America, yellow fever, 144–146
Latta, Thomas, 47
Laveran, Alphonse, 133, 138
Lazear, Jesse, 151
Lazy bed, potato cultivation, 24–25
Le Clerc, General Victor Emanuel, 148
Leigh, Vivien, 109
Leopold, Duke of Albany, 15–16
Leprosaria, 88
London, cholera, 35–36, 44
Louis XVI, 107
Louisiana Purchase, 147–148
“Lunger,” 105
Lymphocytes, 63, 177

Macalpine, Ida, 7
MacCallum, William, 133–134
Macrophages, 63–65, 77, 116–118, 177
*The Magic Mountain* (Mann), 122
Major histocompatibility complex I, 65
Major histocompatibility complex II, 65
Mal’ aria, 132
Malaria, 130–142
  benign tertian, 132
  causative agent, 134–136
  control, 138–139
  origins, 132–134
  quartan, 132, 136
  signs and symptoms, 134–136
  transmission, 130–132, 134–138
  treatment, 139–140
Malaria vaccine, 140–141
Malarone, 140
Maloprim, 140
Malthus, Thomas, 25–26
Mann, Thomas, 122
Manson, Patrick, 136, 150
Manual labor, monetary payment, 70
Marie Antoinette, 24
Marine Hospital Services quarantine, 41–42
Marmot fur, 75
Marten, Benjamin, 107
Mary Queen of Scots, 1–3
Mast cells, 93
Mather, Cotton, 58
McNeil, William, 33
Measles, 196–197
Measles vaccine, 67, 196–197
Mefloquine, 139–140
Meister, Joseph, 66
Memory cells, 63, 65
Merozoïte, 134, 136
Methylene blue, 133
Miasma, 29, 34, 36–38, 47, 70, 145, 160
*Microbe Hunters* (de Kruif), 143
Microgamete, 134
Microscope, invention, 71
Middle Ages, tuberculosis, 106–107
Middle East
  cholera, 33
  plague, 68
Middle Passage, 44
Military hospitals, work of Florence Nightingale, 43–47
Military personnel
  influenza, 165–167
  malaria, 133, 142
  syphilis, 98–100
  yellow fever, 146, 148
Milk, transmission of tuberculosis, 115
“Miss Evers’ Boys,” 91
Mongols, 79
Monkey, yellow fever in, 144, 155
Monocytes, 63, 177
Montagnier, Luc, 176–177
Montagu, Lady Mary Wortley, 57–58
Mosquito
  malaria transmission, 130–142
  yellow fever transmission, 143–157
Mosquito control, 138, 152–155
Multiplier of disease, 170
Mummy, signs of tuberculosis, 106
Mutation, 10
Mycobacteria, 109–110
Mycobacterium avium, 110
Mycobacterium bovis, 110, 128
Mycobacterium tuberculosis, 109–110, 112–113

Napoleon Bonaparte, 147–148
National Venereal Disease Control Act, 100
Nazional Sozialist (Nazi) Partie, 16, 166
Nei Ching, 132
Nelms, Sarah, 59
Neuraminidase (N protein), influenza virus, 161–164
Neurosyphilis, 90–92
Neutrophils, 177
New Orleans, Louisiana, 146
New York City, cholera, 41–43
Nicholas II, Tsar of Russia, 10–13
Nicholas Nickelby (Dickens), 115–116
Night soil, 37
Nightingale, Florence, 43–47
Noguchi, Hideyo, 85
Notes on Matters Affecting the Health, Efficiency and Hospital Administration of the British Army (Nightingale), 46
Nucleoside analogs, 184–185

O’Shaughnessy, William, 47
Oceangoing vessels, yellow fever, 145
On Contagion and Contagious Diseases (Fracastoro), 70
On the Mode on Communication of Cholera (Snow), 34–35
Ookinete, 134
Opie, Eugene, 133–134
Opportunistic infections, in HIV infection, 178–179, 181, 185, 192
Oral rehydration therapy, cholera treatment, 47–48
Oriental rat flea, 74
Oseltamivir, 171–172
Oxophenarsamine, 95

Panama Canal, 149
construction, 153–155
Para-amino salicylic acid, 124
Parran, Thomas, 99–100
Passive immunity, 61
Passive immunization, 61
Pasteur, Louis, 36, 65–66, 71, 175
Peel, Robert, 26
Pelletier, Pierre, 139
Penicillin, 96–97, 102
Penicillium, 96
People’s plague, 104–129
Pepys, Samuel, 75–76
Person-to-person transmission
HIV infection, 174–194
influenza, 158–173
plague, 76
smallpox, 50–67
syphilis, 83–103
tuberculosis, 104–129
“Pest ships,” 20
Pettenkofer, Max von, 34–39
Pfeiffer, Richard, 159
Philip VI of Valois, 107
Phipps, James, 59
Phthisis, 106, 121
Phytophthora infestans, 28–30
life cycle, 29–30
Pidoux, Hermann, 112–113
Pig(s), influenza, 172
Piggy-bank savings, 25
Pinta, 85–86
Pitt, William, 6, 21
Pizarro, Francisco, 24, 54
Plague, 68–82
biological warfare agent, 79–80
causative agent, 70–72
control, 81
endemic, 78
mock-attack scenario, 79–80
pandemics, 73–78
quarantine, 72–73, 82
signs and symptoms, 71, 76
treatment, 82
Plague of Antonius, 53
Index

Plague of Justinian, 73–74
Plague vaccine, 66
Plantation system (English in Ireland), 21
Plasma, 62
Plasma cells, 63
Plasmodium, 133–136
life cycle, 134
Pneumococcal pneumonia, 170
Pneumococcal vaccine, 67
Pneumocystis jiroveci pneumonia, 174, 178
Pneumonic plague, 76–79
Pockmarks, 56
Polio, eradication, 195–196
Polio vaccine, 67, 195–196
Poor Law(s), 27
Poor Law Extension Act (1847), 27
Poor Law Guardians, 40
Poorhouse (workhouse), Ireland, 26–27
Population growth, 25–26
restraints, 25
Porphyria, 1–8, 17
British royal family, 4–8, 17
inheritance, 4
Mary Queen of Scots, 1–3
metabolic defect, 3–4
Porphyrin, 3–4
Potato
cultivation by Incas, 23–24
introduction to Europe, 24
lazy bed cultivation, 24–25
Potato blight
Germany, 31–32
Ireland, 19–32
Russia, 32
Pott, Sir Percival, 106
Pott’s disease, 106, 110
Prairie dogs, plague transmission, 81
Premarital testing, syphilis, 99–100
Primaquine, 139
Primo de Rivera, General Miguel, 14
Prison population, tuberculosis, 112
Privy, 38–40
Procopius of Caesarea, 74
Protease, HIV, 184
Protease inhibitors, 126, 184–185
Protestants, Irish, 6, 21–22
Provirus, 176
Public health measures 195–197,
see also Quarantine
HIV infection, 188–191
safe drinking water, 37–40, 43, 48
syphilis, 98–103
tuberculosis, 119–124, 128
yellow fever, 145–146
Purified protein derivative (PPD), 115, 118
Pyrazinamide, 125
Qinghaosu, 140
Quarantine
colera, 40–43
home inspections for cholera, 42
household, 73
influenza, 170
plague, 72–73, 82
SARS, 171
yellow fever, 145–146
Quarantine station, 19, 40–43, 73
Quinine, 139
R₀ value, 170–171, 180
Rabies vaccine, 66–67
Rasputin, Gregorii, 11–12
Rats, plague transmission, 68–82
Red Cross Society, 46
Reed, Walter, 143, 149–152
Rehydration therapy, cholera
treatment, 47–48
Report into the Sanitary Conditions of the Labouring Population in Britain (Chadwick), 39
Reverse transcriptase, 176, 184
Reverse transcriptase inhibitors, 126, 184–185
Revolutions, American, 6, 142, 147
Ridomil, 30
Rifabutin, 126
Rifampin, 125–126
Downloaded from www.asmscience.org by
IP: 54.70.40.11
On: Tue, 11 Dec 2018 03:23:22
Rimantadine, 172
Ritonavir, 184
Riverside Hospital (New York), 123
RNA virus, 176–177
Roch, Saint, 69
Rodents, plague transmission, 68–82
Roentgen, Wilhelm, 119
Roman fever, 132
Romanowsky, Dimitri, 133
Roosevelt, Eleanor, 109
Rosahn, P. D., 90
Rous, Peyton, 175
Rous sarcoma virus, 176
Royal Touching, 107
Rubella vaccine, 67
Russell, John, 26
Russia
- cholera, 40–41, 43
- plague, 75, 78
- potato blight, 32
Russian flu, 158, 165
Russian Revolution, 11–12
“Safer sex,” 187–189
Saffron scourge, 143–157
Sailing ships, rats and plague, 75
Salivation (treatment for syphilis), 92
Salmon, Edmund, 66
Salvarsan, 95–96
San Francisco Young Men’s Health Study, 188–189
Sanarelli, Giuseppe, 149–150
Sanitarium, tuberculosis, 121–122, 124
Sanitary conditions, 37–40
- cholera and, 33–49
- military hospitals during Crimean War, 43–47
“Sanitary maps,” 39
Saquinavir, 184
Sarcoma, 175
SARS, 171
Schatz, Albert, 124
Schaudinn, Fritz, 85
Scrofula, 106–108
Sebastian, Saint, 69
Second-dose campaign, measles vaccine, 196
Septicemic plague, 76
Serum, 62
Severe acute respiratory syndrome (SARS), 171
Sewage disposal, 33–49
Sex workers, 193
Sex-linked gene, 9–10
Sexual behavior, 98–102, 180–181, 187–189
Sexually transmitted disease control, 101–102
- HIV infection, 174–194
- syphilis, 83–103
Shingles, 178
Shope, Richard, 160
“Sickly season,” 146
Silk Road, 75
Simian immunodeficiency virus (SIV), 181, 183
Simond, Paul-Louis, 72
Simpson, Wallis, 16
Single-crop economy, 19–32
Skin test, tuberculosis, 115, 118
Slave trade, 54, 87, 133, 148, 156–157
Sleeping sickness, 94, 150
Slim, Sir William, 142
“Slim disease,” 182
Smallpox, 50–67
- as biological warfare agent, 55
- causative agent, 55–56
- CCR5 receptor, 179
- epidemics, 57
- eradication, 58–59
- signs and symptoms, 56
- susceptible humans, 56–57
- transmission, 56–57
- worldwide spread, 53–55
Smallpox vaccination, 57–66
Smallpox virus, 55–56
- varieties, 56
- Smith, Theobald, 66, 150

Downloaded from www.asmscience.org by
IP: 54.70.40.11
On: Tue, 11 Dec 2018 03:23:22

15_The_Twelve_Index_p207-p220 7/24/07 11:06 AM Page 216
Index

Smith, Wilson, 160
Snow, John, 34–36
Social reformers, syphilis and, 98–100
Sommariva, George, 92
Sontag, Susan, 104
South America
  cholera, 34
  plaque, 81
  syphilis, 100
  yellow fever, 144
Spanish Civil War, 14
Spanish royal family, hemophilia, 13–15
Spanish-American War, 149, 154
Spitting in public, 119
Spore, P. infestans, 29
Sporozoite, 134, 141
Squirrels, plague transmission, 81
Stamp Tax (1765), 6
Steamship passengers, cholera
  among steerage passengers, 41–42
Steamer-class immigration, to United
  States, 41–42
Stem cells, 63
Stethoscope, 119
Stokes, Adrian, 155
Streptomycin, 124
Subunit vaccine, 67, 141
Suez Canal, 153
Suppressor T cells, 118
Sutherland, John, 144
Swine flu, 160–161
Swine influenza virus, 163–164
Sylvatic plague, 81
Sylvius, Franciscus, 107
Syphilis, 83–103
  AIDS and, 101
  chancre stage, 89, 91, 101–102
  congenital, 92, 100–101
  control, 101–103
  diagnosis, 102
  latent (tertiary) stage, 90–91
  names used for, 84
  premarital testing, 99–100
  secondary (disseminated) stage, 89–92, 101–102
  signs and symptoms, 88–91
  social reformers and, 98–100
  transition from nonvenereal to venereal disease, 86–89
  transmission, 91–92
  treatment, 92–97, 102–103
Syphilis (shepherd), 85
T cells, 63–65, 117–118, 174, 177–178, 186
Tafenoquine, 139
Tailors’ disease, 111
TB, see Tuberculosis
Temin, Howard, 176
Tenant farmers, Irish, 22, 26–27
Tenement housing, tuberculosis, 111, 123
Tetanus toxin, 61
Theiler, Max, 155–156
Thrush, 178
Thymus, 63–64
Tissue culture, 175
Titer, 61–62
“Town dairies,” 108
Toxoplasmosis, 178–179
Trade caravans, 53, 55
Treponarid, 85–87
Treponema pallidum, 85–86
Treponemes, 83–103
Trudeau, Edward Livingstone, 122
Trudeau Institute, 122, 124
Trypan red, 94
Tuber, 24, 30
Tuberculosis, 107, 116–118
Tuberculin skin test, 115, 118
Tuberculosis (TB), 104–129
  causative agent, 109–115
  control, 121–124
  diagnosis, 115, 118
  drug-resistant, 124–125, 127
  eminent victims, 108–109
  HIV infection and, 112, 117, 120, 125–127, 179
  latent, 117

Downloaded from www.asmscience.org by
IP: 54.70.40.11
On: Tue, 11 Dec 2018 03:23:22
Tuberculosis (TB) (Continued)
miliary, 109
origins, 105–112
prevention, 118–119
reactivation, 117–118, 120
romantic notions about, 104–105, 108–109
signs and symptoms, 105–107, 115–118
transmission, 119–120
treatment, 121–124, 128
antibiotics, 124–126
direct observation of therapy, 125
sunshine and fresh air, 121–122
Tuberculosis vaccine, 66, 126–127
Tumor necrosis factor, 118, 167
Tuskegee Syphilis Study, 90–91
Typhoid vaccine, 66

United States
cholera, 34, 41–42
HIV infection, 181, 183, 191
influenza, 158, 166–167, 169
Irish immigrants, 20, 23, 28, 30–31
malaria, 142
Panama Canal construction, 153–155
plague, 78–79, 81
quarantine policy, 41
smallpox, 58
syphilis, 90–91, 99–101
tuberculosis, 109–112, 116, 120–128
yellow fever, 144–148, 153–155
Urbanization
tuberculosis and, 108, 110, 120, 129
waterborne disease and, 37–38

Vaccination
attenuation and, 65–66, 126, 156, 187
smallpox, 57–66
Vaccine, 94, 195, see also specific diseases
mechanism of action, 60–62
Variola major, 56
Variola minor, 56
Variolation, 57–60
Vector-borne disease
malaria, 130–142
plague, 68–82
yellow fever, 143–157
Vibrio cholerae, 34–37
Victoria, Queen of England, 7, 9–10, 13, 15, 17
Victoria Eugenia (daughter of Queen Victoria), 13
Victorian Age, 108
Vietnam War, malaria, 142
Vikings, 21
Villemin, Jean-Antoine, 112, 114, 119
Viral disease
HIV infection, 174–194
influenza, 158–173
smallpox, 50–67
yellow fever, 143–157
Virchow, Rudolph, 113
Virus
discovery, 175
structure, 177
don Behring, Emil, 61, 93, 96

Waksman, Selman, 124
“War on Consumption,” 123–124
Warbeck, Perkin, 84
Washington, George, 146
Wasserman test, 99–100
Waterborne disease, cholera, 33–49
Webster, Harriet, 105
White cells, 63
Wilhelm II of Germany, 12
William III, King of England, 21
William IV, King of England, 7
Wilson, Woodrow, 166–167
The Woman of the Camellias (Dumas), 104–105

World War I
influenza, 165–166
malaria, 142
syphilis, 98–99
United States in, 31
World War II
effects of hemophilia, 15–17
German potato blight, and 31–32
<table>
<thead>
<tr>
<th>Term</th>
<th>Page Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>syphilis</td>
<td>100</td>
</tr>
<tr>
<td>United States in syphilis</td>
<td>31</td>
</tr>
<tr>
<td>X chromosome</td>
<td>9–10</td>
</tr>
<tr>
<td>X rays</td>
<td>119</td>
</tr>
<tr>
<td>Yaws</td>
<td>85–87</td>
</tr>
<tr>
<td>Yellow fever</td>
<td>143–147</td>
</tr>
<tr>
<td>control of yellow fever</td>
<td>147–148</td>
</tr>
<tr>
<td>Louisiana Purchase and yellow fever</td>
<td>147–148</td>
</tr>
<tr>
<td>origins of yellow fever</td>
<td>144–145</td>
</tr>
<tr>
<td>quarantine of yellow fever</td>
<td>145–146</td>
</tr>
<tr>
<td>transmission of yellow fever</td>
<td>149–153</td>
</tr>
<tr>
<td>Yellow Fever Commission</td>
<td>149–152</td>
</tr>
<tr>
<td>Yellow fever vaccine</td>
<td>155–156</td>
</tr>
<tr>
<td>“Yellow Jack” (flag)</td>
<td>145–146</td>
</tr>
<tr>
<td>“Yellow Jackets,”</td>
<td>145</td>
</tr>
<tr>
<td>Yersin, Alexandre</td>
<td>71–72</td>
</tr>
<tr>
<td>Yersinia pestis</td>
<td>72</td>
</tr>
<tr>
<td>evolution of Yersinia pestis</td>
<td>78</td>
</tr>
<tr>
<td>varieties of Yersinia pestis</td>
<td>77–78</td>
</tr>
<tr>
<td>Yersinia pseudotuberculosis</td>
<td>78</td>
</tr>
<tr>
<td>Yops proteins</td>
<td>77</td>
</tr>
<tr>
<td>Zanamivir</td>
<td>171–172</td>
</tr>
<tr>
<td>Zoonotic disease, tuberculosis</td>
<td>108</td>
</tr>
</tbody>
</table>