

This PDF includes a chapter from the following book:

# **Sulphuric Utopias**

## **A History of Maritime Fumigation**

© 2020 Massachusetts Institute of Technology

### **License Terms:**

Made available under a Creative Commons  
Attribution-NonCommercial-NoDerivatives 4.0 International Public  
License

<https://creativecommons.org/licenses/by-nc-nd/4.0/>

### **OA Funding Provided By:**

The open access edition of this book was made possible by  
generous funding from Arcadia—a charitable fund of Lisbet  
Rausing and Peter Baldwin.

The title-level DOI for this work is:

[doi:10.7551/mitpress/12437.001.0001](https://doi.org/10.7551/mitpress/12437.001.0001)

# Index

- Abdülmecid, Sultan, 85  
Abensour, Miguel, 15  
Ackerknecht, Erwin, 13, 45  
Actor Network Theory, 17  
Aden, 86, 113  
Aegean Sea, 120  
Aegeum Company (L'Egée), 96  
Agote, Luis, 158–163  
Albertus Magnus, 24  
Alchemy, 24, 199  
Alexandria, 87, 110, 111, 229n32, 235n24. *See also* Quarantine: Alexandria Quarantine Office  
Alvarez, Adriana, 149, 158  
Amador, José, 172  
Anatolia, 227n17  
Anthrax, 53, 67, 114, 127, 134, 135, 140, 239n13  
Apéry, Pierre, 20, 84–97, 102, 114, 232n72. *See also* Fumigation apparatus: Apéry's machine  
Argentina, 21, 147, 244n1. *See also under* Boards of health  
Asistencia Pública, 149, 152, 168–169  
Department of Hygiene, 149  
Dirección Nacional de Higiene, 162  
Armus, Diego, 150, 156, 171  
Arsenic, 32, 34, 228n47  
Arthritis, 28  
Asistencia Pública. *See under* Argentina  
Asphyxiation, 88, 91, 96, 99, 100, 111, 116, 167, 189, 195  
Asunción, 159–160  
Athens, 109, 214n28, 214n31  
Atlantis, 11  
Auschwitz, 205  
Austro-Hungarian Empire, 28, 195  
Avignon, 33  
  
Bacteriology, 7, 49, 51, 97, 150, 153, 155, 157, 173, 199, 201, 203  
bacteriological revolution, 7, 8  
Baldwin, Peter, 9  
Balilis, S., 121–123  
Banff, 76  
Barcelona, 190  
Barnes, David, 48, 49  
Bartholow, Robert, 50–51  
Bashford, Alison, 13, 44, 45  
Basra, 120  
Bedbug, 167, 179, 180  
Bein, Amit, 82  
Beirut, 110  
Belch, E. C., 126  
Belgian Royal Academy of Medicine, 92  
Belmar, Antonio García, 40  
Belmartino, Susana, 149  
Bentham, Jeremy, 9  
Berlin, 42, 99, 100, 194  
Berlin Conference (1884–1885), 11  
Bertomeu-Sánchez, Ramón, 40  
Bertrand, Gabriel, 189  
Biopolitics, 5, 6, 40, 54, 96, 201

- Biopower, 25
- Birdfoot Delta (US), 1
- Black Death, 19, 32
- Blackpool (UK), 133
- Black Sea, 85, 120
- Bloch, Ernst, 10
- Boards of health  
   Argentina, 152, 160  
   Istanbul, 96, 114  
   Louisiana State Board of Health, 4, 19, 55, 57, 58, 63, 64, 65, 68, 71, 75, 76–78, 105, 116
- Bonkowski Pasha, 95
- Bordas (physician), 189
- Bordeaux, 116
- Borel, Frédéric, 128, 129
- Boulton Bliss & Dallett Company, 185
- Britain, 36, 41, 51, 66, 100, 106, 109.  
   *See also* Quarantine Act (UK)  
   British Board of Trade, 120  
   Colonial Office, 106, 180  
   House of Commons, 39  
   UK Chamber of Shipping, 120
- British India Steam Navigation Company, 106
- Bromide. *See under* Fumigation gas
- Bronchitis, 133
- Brooklyn, 67
- Brown, Hannah, 178
- Brussels Medical Congress, 128–129, 130, 131, 181
- Bucquoy, Jules, 110
- Buenos Aires, 21, 146, 147, 244n1
- Bunsen burner, 166, 179
- Burgess, Douglas, 12
- Butler, Benjamin, 60
- Calcasieu Parish (Louisiana), 62
- Calcutta, 113, 131, 180
- Callao (Peru), 144
- Calmette, Albert, 114–116, 129, 130, 134, 139–141, 200
- Cambodia, 145
- Canary islands, 190
- Cape of Good Hope, 179
- Cape Town, 234n16
- Capitalism, 12, 18
- Carbolic acid/phenic acid, 50, 61–62, 64, 65, 66, 67, 77, 94, 111, 120, 191, 222n37. *See also* Phenol
- Carbon dioxide. *See under* Fumigation gas
- Carbon monoxide/carbonic oxide. *See under* Fumigation gas
- Cargo, 2, 7, 62, 63, 70, 73, 92, 98, 100, 102, 106, 107, 109, 111, 113, 116–119, 123, 126–142, 145, 160, 162, 178, 182, 183, 186, 187, 190, 191, 199, 202
- Carroll, James, 6, 208n9
- Cartagena (Spain), 40, 41
- Cats, 184
- Cattle plague, 50
- Ceylon (Sri Lanka), 193–194
- Charbonniere (quack doctor), 24
- Charcoal, 28, 34, 35, 99, 101, 111, 120
- Chemical warfare, 189, 204
- China, 86, 145
- Chlorine, 49, 52. *See also under* Fumigation gas
- Chlorocyanic gas. *See under* Fumigation gas
- Chloropicrin (CCl<sub>3</sub>NO<sub>2</sub>). *See under* Fumigation gas
- Cholera, 2, 16, 41–46, 50, 52, 60, 63, 72, 85, 87, 97, 98, 110, 114, 116, 126, 127, 128, 134, 138, 148, 149, 151, 161, 164, 167, 220n120  
   fowl, 68
- Cinnabar, 24, 33
- Civil War (US), 60
- Clairborne, William C., 56
- Clayton, Thomas Adam, 55, 71, 73, 76, 78
- Clayton apparatus/machine. *See under* Fumigation apparatus

- Clayton Company, 175  
 Clayton Fire Extinguishing & Disinfecting Company of New York (US), 105, 175  
 Clayton Fire Extinguishing and Ventilating Company (UK), 105, 108–109, 126–127, 131, 133, 134, 135  
 Clayton Gas Company (Egypt), 105  
 Compagnie du Gaz Clayton (France), 105  
 Clemow, Franck, 96, 121, 123, 125–128  
 Cockroach, 35, 107, 131  
 Cocoa, 107, 116, 135  
 Coffee, 1, 2, 7, 48, 70, 92, 107, 127, 134  
 Compagnie Générale Transatlantique, 193  
 Coni, Emilio, 173  
 Connor, Steven, 33  
 Conrad, Sebastian, 11  
 Constantinople. *See* Istanbul/  
 Constantinople  
 Contagion, 14, 31, 34, 37–42, 44, 48, 52, 134, 153, 157, 161  
 moral, 153  
 Contagionism/anti-contagionism, 55, 56, 60, 154  
 Coquillet, D. W., 180  
 Corpses (human), 86, 215n32  
 Corput, G. M., 184  
 Cottony cushion scale, 180  
 Cozzonis Effendi, 95  
 Creel, H., 177, 187, 188, 194  
 Crimean War, 227n19  
 Cuba, 6, 59, 172, 185  
 Yellow Fever Commission, 208n9  
 Cueto, Marcos, 148  
 Cyanide, 4, 18, 21, 176, 180, 186, 188, 194, 195–196, 203. *See also*  
 Fumigation gas: hydrocyanic acid gas  
 Danyz virus, 154  
 D'Arcet, Jean-Pierre-Joseph, 28, 29  
 DDT, 5, 21, 204  
 De Carro, Jean, 28  
 Decoud, Diogenes, 161–162  
 De Laet, Marianne, 17–18  
 Deleuze, Gilles, 18  
 Delian League, 12  
 Denmark, 143  
 Desguin, V. F. J., 92  
 Dijon, 35–36  
 Disease ecology, 7, 154, 161  
 Disinfectant, 49–52, 63, 65, 66, 80, 136, 195, 219n109  
 Disinfection, 6, 14, 42, 47–51, 63, 92, 94, 106, 107, 111, 123, 137, 147, 149, 151, 157, 165, 176, 191, 199, 202  
 apparatus/machine, 52–54  
 campaign, 169  
 corrosive sublimate, 120  
 experiment, 65–68, 167–169  
 heat, 49, 53  
 dry, 53  
 moist, 2  
 procedure, 157–158  
 station, 157, 159, 162, 165  
 stove, 164  
 technology, 165  
 total, 172  
 Disinfestation, 21, 23, 81, 84, 92, 94, 96, 100, 103, 111, 113, 146, 148, 165, 166, 175, 176, 191, 195, 202, 203, 204  
 Dougall, John, 66  
 Douglas, Mary, 30  
 Dubrovnik, 43  
 Duca Pasha, 126  
 Dumotiez brothers, 40  
 Dundee, 131  
 Dunkirk, 113–114, 118, 119, 130, 131, 141, 187  
 Duriau, Gustave, 113, 114, 115, 119, 132  
 Dystopia, 9

- Echenberg, Myron, 153, 159, 161
- Ecology, disease. *See* Disease ecology
- Edinburgh, 33, 108
- Egypt, 52, 90, 105, 110, 111, 229n32
- Engels, Friedrich, 9
- England, 39, 44, 52, 53, 82, 85, 106, 133
- Entomology, 179, 180
- Epidemiological reasoning, 87, 93, 203
- Epidemiology, 7, 147, 154, 161
- Epilepsy, 31
- Epistemology, 4, 5, 8, 16, 31, 44, 45, 48, 54, 149, 150
- Epizootic, 36, 86, 122, 139, 243n74
- Etiology, disease, 6, 31, 42, 46, 55, 61, 163
- Europeanization, 156
- Evans, Richard, 97
- Évora, 31
- Experimental system, 6, 18, 201, 203
- Faivre, Paul, 114, 116–119, 141
- Federal Marine Hospital Service, 105
- Fermentation, 50, 51, 88, 164
- Fever, 1, 2, 31, 35, 36, 37. *See also*  
Typhoid fever; Yellow fever  
enteric, 127  
hospital, 36, 37  
jail, 37  
petechial, 38  
swine, 53
- Finlay, Carlos, 208n9
- Fire department, 69
- Flea, 7, 83, 84, 109, 114, 118, 122, 129, 138, 141, 167, 177, 178, 179, 180, 181, 186, 189
- Florence, 43
- Flour, 107, 130, 135, 140
- Foucault, Michel, 12
- France, 20, 25, 26, 33, 40, 68, 85, 105, 109, 113, 116, 123, 130, 146, 147, 155, 166, 189  
Academy of Sciences, 189  
Comité Central des Armateurs de France, 166  
Conseil supérieur d'hygiène publique (Superior Council of Hygiene), 142, 144, 189–190  
National Academy of Medicine, 112
- Franque, Jean-Batiste, 33, 215n35
- Frasch, Herman, 73, 75. *See also*  
Sulphur: Frasch process
- Fraser, George, 53
- Fridman, Leon, 90–91
- Fumigation,  
agricultural, 191  
damage to goods, 52, 62, 73, 88, 100, 102, 107, 117, 118, 119, 125, 136, 137, 185, 186, 202  
damage to ship's structure, 102, 111, 115, 140, 141, 166, 190, 193, 195, 202  
density of gas, 65, 68, 77, 80, 88, 91, 100, 102, 112, 175, 179, 251n24  
distribution of gas, 64, 100, 115, 135, 190  
duration, 111, 119, 137, 181, 188  
hygienic, 30, 32, 41, 43, 49  
lachrymatory properties, 189, 190, 194  
on loaded/unloaded holds, 90, 96, 99–100, 111, 112, 113, 118, 119, 135, 136, 137, 183, 188, 196  
and moisture, 127, 166  
and oxygen, 28, 40, 50, 51, 73, 100, 101, 106, 109, 137, 211n47  
penetration by gas, 62, 63, 98, 112, 118, 127, 128, 132–136, 169, 176, 179, 186, 187, 189, 190, 191, 195, 196, 197, 202  
pressure of gas, 2, 53, 77, 99, 109, 118, 141, 166, 167, 175, 196  
risk of fire, 109, 119, 136, 186, 190  
risk to operators, 20, 33, 37, 78, 118, 136, 144, 180, 181, 185, 186, 187–188, 189, 190, 194, 195, 202, 204  
smell (odor), 20, 26, 88, 89, 90, 118, 132, 133, 135–136, 190, 194

- sulphurization, 81, 110–113, 116–119, 130, 144, 165, 175, 185, 192, 193  
 therapeutic, 23, 30, 42, 43  
 Fumigation apparatus, 2, 3, 4, 6, 10, 16, 20, 24, 25, 40, 63, 72, 74–75, 91, 102, 129, 165, 174, 175, 200, 202  
 Aparato Marot (Sulfurozador), 4, 21, 142, 146, 147–151, 163–173, 175, 193, 204  
   experiment, 167–168  
   power blower, 2, 3, 77, 80  
   ventilator, 101, 131, 132, 142  
 Apéry's machine, 96  
 Autran and Galardi apparatus, 254n82  
 Clayton apparatus/machine, 16, 19, 20, 64, 68, 77, 79, 80, 99, 100, 102, 105–109, 113, 117, 118, 125, 126, 129, 136, 140, 144, 147, 149, 163, 166–167, 175, 178, 179, 181, 201–203  
   Claytonization, 114, 118, 119, 125, 130, 134, 135, 136  
   experiment, 80, 113–116, 131–137  
   fire-extinguishing, 18, 20, 76–78, 107, 133  
   furnace, 2, 4, 63, 64, 69, 70, 73, 77, 78, 80, 113, 116, 120, 166  
   patent, 4, 73, 76–79  
 Galès's machine, 26–28  
 Gasgenerator (Nocht's CO<sub>2</sub> machine)  
   experiment, 100–103, 112–113  
   furnace, 101  
   gas chamber, 185  
 Guyton de Morveau's machine, 36, 40–41  
 Hyproma, 255n86  
 Lalouette's machine, 24–25  
 Liston Cyanide Fumigator, 193–194  
 Luthy's machine, 28  
 Maurice's apparatus, 32  
 Sanos generator, 193, 254n79, 254n82  
 Fumigation gas  
   bromide, 191, 195  
   carbon dioxide (CO<sub>2</sub>), 20, 89–91, 96, 99, 100, 101, 102, 112, 114, 116, 118, 136, 139  
     Generatargas, 101, 102  
     Kohlenoxydgas, 100, 101  
   carbonic acid (H<sub>2</sub>CO<sub>3</sub>), 28, 50, 88, 90, 91, 94, 112, 129, 141  
   carbon monoxide/carbonic oxide (CO), 92, 99, 129, 130, 136, 186, 187  
   chlorine, 42, 164, 195  
   chlorocyanic gas, 191  
   chloropicrin (CCl<sub>3</sub>NO<sub>2</sub>), 189–190, 194, 204  
   Gaz Sanos (HCN), 254n79  
   hydrochloric acid (HCl), 35, 39, 96  
   hydrocyanic acid gas (hydrogen cyanide) (HCN), 21, 178–188, 189, 190–197, 204, 243n74, 251n24  
   crock (solid cyanide), 185–186  
   dumping (hydrogen cyanide), 187  
   experiment, 179–182  
   liquid, 186, 194, 196  
   spray, 196, 197, 204  
   muriatic acid, 35–37  
   nitrous acid, 37–39, 164  
   Pictolin, 99, 114, 120, 233n87  
   potassium cyanide, 179–181, 187  
   sodium cyanide (NaCN), 185, 193  
   sulphur dioxide (SO<sub>2</sub>), 66, 68, 73, 75, 78, 96, 99, 107, 109, 114, 115, 118, 129, 130–135, 140, 146–149, 165, 166, 175, 176, 181, 185–187, 199, 204  
   Gaz Marot, 166, 167, 173  
   pan-burning, 24, 26, 32, 37, 111  
   pot and pan method, 114, 181–182  
   sulphuric acid (Clayton gas) (H<sub>2</sub>SO<sub>4</sub>), 2, 4, 36, 50, 62–68, 72, 78, 90, 91, 94, 112, 114, 129, 140, 141, 147, 160, 164, 175, 176, 179–180, 181, 186, 187, 195, 199, 203  
   electrified (*see* Fumigation gas:  
     sulphur dioxide: Gaz Marot)

- Fumigation gas (cont.)  
 experiment, 65–68, 77, 78, 99  
 liquefied, 136, 166–168  
 sulphur trioxide (SO<sub>3</sub>), 78, 130, 134  
 vitriolic acid, 37, 38  
 Zyklon B, 19, 21, 194–196, 205, 254n82
- Gaffky, Georg Theodor August, 97, 140, 141
- Gagnière, Sylvain, 33
- Galardi apparatus, 254n82
- Galen, 214n28
- Galès, J. C. *See* Fumigation apparatus: Galès's machine
- Gandolfo, Antonio, 152
- Gas. *See* Fumigation gas
- Gaumont, Leon, 235n23
- Gauthier-Deglos apparatus, 142
- Geneste-Herschler sprayers, 157, 165
- Genoa, 32, 39
- German Health Council, 121
- Germany, 20, 68, 81, 97, 129, 140, 195, 205
- Germicide, 2, 5, 51, 65–68, 138, 176, 195
- Germ theory, 16, 31, 51
- Gillson, Gordon, 58, 69
- Glanders, 127
- Glasgow, 131
- Global health, 5, 16, 49
- Globalization, 5, 8, 11, 17, 45, 200
- Godoy, Manuel, 40
- Granet, Antoine, 62
- Gravesend Reach, 113
- Grotta del Cane (Foro di Pozzuoli), 89
- Ground squirrel, 177, 191  
 destructor, 192
- Grubbs, S. B., 191
- Guangzhouwan, 145
- Guattari, Felix, 18
- Gürsel, Zeynep Devrim, 82
- Guyton de Morveau, Bernard, 35, 40, 41
- Haber, Fritz, 195
- Hajj, 128
- Haldane, J. S., 100, 131–137, 141
- Hamburg, 20, 81, 82, 97–103, 112, 130, 136, 194
- Hamburg-American Line, 233n83
- Hamilton, John B., 71
- Harrison, Mark, 44, 45
- Havre, 118, 193
- Haygarth, John, 37
- Heiser, Victor G., 102
- Henderson, John, 43
- Henry, William, 52
- Hermann Lachapelle machine, 96
- Herpes, 28
- Heterotopia, 12
- Higienistas, 146, 147, 149, 151–153, 160, 163, 164
- Hippocrates, 8, 31, 214n28
- Hirsch, August, 46
- Hirst, L. F., 193–194
- Hodby, William, 181–182
- Hodges, Nathan, 32
- Hodgkinson, George, 106–107
- Holocaust, 194
- Holt, Joseph, 3, 4, 19, 68, 69, 71, 72, 73, 77, 80, 200, 208n1  
 system of maritime sanitation, 68–72
- Hong Kong, 6, 83, 86, 88, 109, 145, 183, 228n27, 229n31, 253n67
- Hooper, William, 126
- Hospitals, 1, 9, 28, 37, 41, 52, 68, 71, 85, 88, 95, 150, 152, 160, 200, 215n35. *See also* Ship (vessel): *Pamet Eustaphia*; Ship (vessel): *Union, The Bicêtre*, 24
- Eftal, 228n26
- Forton, 39
- Guy's, 134
- Haslar Naval, 33
- Invalides, 24
- Long Island College, 67
- Marine Hospital Service, 71

- Middlesex, 36  
 Saint-Louis, 26  
 Yarmouth Naval, 39
- Humoral theory, 23–24, 53
- Humphreys, Margaret, 56, 57, 60, 61
- Hydrochloric acid (HCl). *See under* Fumigation gas
- Hydrocyanic acid gas (HCN, hydrogen cyanide). *See under* Fumigation gas
- Hygiene, 7, 12, 21, 45, 94, 95, 97, 119, 131, 148, 149, 153, 154, 157, 160, 167, 168, 169, 171, 173, 174, 189, 204
- Immigration, 106
- Immunization, 43, 44
- Imperial Medical Society (Istanbul), 87, 88, 90, 93
- Incineration, 76, 92
- India (British), 47, 83, 86, 87, 99, 108, 109, 126, 161, 179, 193, 229n31
- India Medical Council, 126
- Indochina (French), 144–145
- Infection, 6–8, 19, 23, 33, 34, 39, 48, 49, 57, 60, 62, 93, 121, 122, 126, 128, 137, 148, 150, 157, 162, 164, 168, 200, 201, 202, 203, 215n32, 245n13
- Infestation, 6–8
- İnönü, İsmet, 228n26
- Insecticide, 5, 6, 167
- Insects, 3, 6, 7, 8, 19, 47, 68, 80, 84, 119, 129, 133, 135, 136, 139, 141, 145, 148, 151, 156, 163, 165, 166, 176, 181, 186, 190, 191, 201, 202, 203, 204
- Inspection, 1, 46, 47, 70, 75, 77, 152, 153, 156, 157
- Institut fuer Schiffs-und-Tropenkrankheiten (Hamburg), 99
- Isolation, 5, 42, 71, 88, 93, 95, 106, 148, 155, 160, 162
- Istanbul/Constantinople, 12, 20, 81, 84–97, 114, 119–123, 126, 227nn17–19, 231n57. *See also* Boards of health: Istanbul; Imperial Medical Society; Quarantine: Quarantine Council, Istanbul
- Jeddah, 86, 93, 144
- Johns Hopkins University, 65
- Jouanna, Jacques, 30–31
- J. Pintsch Company, 100
- Jute, 131, 135
- Kaiser Wilhelm Institutes, Berlin, 194
- Kamaran Island, 120
- Kellogg, William P., 60
- Kelly, Ann, 178
- Kinyoun, J. J., 71
- Kipp generator, 91, 230n49
- Klobukowski, Antony Wladislas, 144
- Koch, Robert, 46, 48, 53, 66, 68, 97, 99, 100, 114, 135, 140
- Kohl, Alejandro, 150, 151, 154
- Kumaon and Garhwal (Himalayan districts), 83
- Laboratory, 6, 51, 53, 65, 67, 68, 97, 150, 153, 154, 155, 171, 194
- Lalouette, Pierre. *See* Fumigation apparatus: Lalouette's machine
- Langlois (physician), 114, 118, 130
- Laos, 145
- La Plata River, 159
- Latour, Bruno, 17, 155
- Laveran, Charles Louis Alphonse, 112
- Lavoisier, Antoine, 35, 215n48
- Lazarettos, 14, 43, 44, 48, 52, 92, 95, 98, 111, 120, 126, 217n76, 236n29
- Frioul, 110, 112
- Saint-Nazaire, 113
- San Joseph, 41
- Levitas, Ruth, 10
- Lille, 114
- Lind, James, 33–35, 39
- Lister, Josef, 48, 50, 66



- Lister Institute, 84  
 Liston, W. Glen, 179, 194  
 Liverpool, 125  
   Board of Trade, 92  
   Steamship Owners Association, 120  
 Loir, Adrien, 113, 114, 118, 237n41  
 London, 32, 105, 106, 108, 123, 131, 134, 158, 175  
   London Docks, 107  
   Port Sanitary Authority, 109  
 London School of Hygiene & Tropical Medicine, 106  
 Louisiana, 1, 3, 4, 13, 19, 55, 57, 60, 61, 62, 63, 65, 68, 69, 75, 76, 108, 116.  
   *See also* Boards of health: Louisiana State Board of Health  
   populist movement, 55, 76  
 Louisiana Petroleum Company, 62, 73  
 Lawson, James, 83  
 Lulman, Robert, 38  
 Luthy, David. *See* Fumigation apparatus:  
   Luthy's machine  
 Lyon, Washington, 53
- Maglen, Krista, 13, 14, 44, 106  
 Mahamari, 83  
 Malbrán, Carlos, 152–154, 160, 162  
 Manchester, 52  
 Manson, Patrick, 106, 125  
 Marble, 90, 91, 96, 100  
 Maritime Security Congress (1901), 95  
 Markel, Howard, 44  
 Marot, René, 166  
 Marseilles, 96, 110, 111, 112, 190, 192, 253n65, 254n82  
 Maurice (friar). *See* Fumigation apparatus: Maurice's apparatus  
 Mayhew, Henry, 82–83  
 Measles, 37  
 Mecca, 86  
 Mediterranean, 20, 34, 85, 86, 95, 120, 227n17  
 Mendelsohn, Andrew, 49
- Mercier, Louis-Sebastian, 11  
 Mercury, 23–24, 212n1  
   bichloride of, 2, 72, 74, 157  
 Miasma, 19, 23, 30–31, 32, 35, 37, 57, 83, 97, 150, 152, 155, 164, 167, 214n28  
 Mississippi River, 1, 13, 56, 62, 70, 71, 75, 76, 188  
 Modernity, 10, 152, 205  
   hygienic, 15, 17, 103, 143, 144, 147, 168, 173, 204  
 Mol, Annemarie, 17  
 Molasses, 88, 90  
 Monod, Henri, 110, 111  
 Mooney, Graham, 52–53, 106, 208n13  
 Mordtmann, Andreas David, 93, 95, 231n56, 231n60  
 Morris, William, 10  
 Mosquito, 5, 6, 7, 55, 62, 116, 167, 208n9  
 Mouse, 35, 37, 38, 98, 102, 119, 120, 132, 236n29  
 Muriatic acid. *See under* Fumigation gas
- Napoleon Bonaparte, 39  
 Nazi Germany, 21, 205. *See also* Third Reich  
 Neoliberalism, 211n52  
 Netter, M., 161  
 New Orleans, 1–4, 6, 19, 55, 116, 117, 149, 182, 184, 185, 186, 188, 200, 203  
   Chamber of Commerce, 64  
   Medical Plague Conference Committee, 177  
 New Philosophers, 9  
 New York, 4, 44, 63, 67, 105, 175, 182, 185, 190. *See also* Quarantine: Staten Island Quarantine Station  
 New York & Porto Rico Steamship Company, 183  
 Nha Trang, 144–145  
 Nocht, Bernhard, 20, 97–103, 129–130, 140

- North-Eastern Marine Engineering Company, 234n10
- Northumberland, 234n10
- Odessa, 28
- Odier, Louis, 39, 216n63
- Odyssey*, 30
- Oedipus Rex*, 30
- Olliphant, Samuel, 4, 64, 72–78, 105, 108, 224n64
- Opelousas (Louisiana), 55
- Oran, 114
- Ottoman Empire, 20, 46, 81–97, 102, 119–123, 125, 126, 144, 204, 226–227nn16–18, 229n34
- Palmer, Steven, 148
- Paracelsus, 24
- Paraguay, 159–160
- Paris, 20, 24, 26, 28, 49, 105, 137, 166, 175
- Paris Commune, 11
- Parsons, Franklin, 53
- Pass A L'Outre (Louisiana), 1
- Pasteur, Louis, 49–50, 68
- Pasteur Institute, 49, 110, 114, 144, 189, 237n41
- Pemberton, Neil, 82–83
- Pembrey, M. S., 134
- Penna, José, 147, 153–158, 161–169
- Perón, Juan, 174
- Perrier, Anthony, 45
- Perry, A. W., 61, 63–64, 69
- Peru, 144
- Pesthouse, 43, 155
- Pestilence, 12, 30, 69, 75
- Phenol, 50, 111. *See also* Carbohic acid/phenic acid
- Philadelphia, 63, 105. *See also* Quarantine: Philadelphia Station
- Pictet, Raoul, 99
- Pictolin. *See under* Fumigation gas
- Pietsch, Tamson, 13
- Pinel, Philippe, 28, 31
- Plague, 6, 12, 17, 32, 34, 43, 44, 46, 52, 81–90, 92–94, 97–98, 108–113, 122, 126, 129, 137–141, 149, 177, 192, 203. *See also* Rat(s): and plague attenuation, 87–88, 93, 122 foyer, 88, 92–93 reservoir, 87, 110, 122, 185 and soil, 87, 110, 121, 122, 155, 192 transmission, 6, 20, 93, 109, 110, 122, 149, 155, 156, 162, 177, 200
- Plato, 11
- Pliny, 214n28
- Plutarch, 214n28
- Poincaré, Raymond, 110
- Pollution, 30, 214n24
- Popper, Karl, 9
- Port Eads, 70
- Port Sulphur, 74
- Potassium cyanide. *See under* Fumigation gas
- Power, W. S., 125
- Prophylaxis, 154
- general, 171–174, 204
- Proust, Adrien, 47, 116–119, 137–141
- Prussia, 41–42
- Public health, 6–7, 43, 45, 65, 69, 85, 96, 113, 119, 129, 143, 145, 148, 149, 152, 153, 156, 171, 204
- Puerto Rico, 185, 191
- Putrefaction, 36, 37, 50, 66, 83, 90
- Quarantine, 3, 9, 11, 13, 14, 16, 41–45, 52, 54, 56, 59, 69, 71, 80, 85, 93, 95, 117, 122, 129, 139, 155, 162, 199, 200, 205
- abolition of, 14, 80, 94, 95, 199
- Alexandria Quarantine Office, 111
- Angel Island Quarantine, 181, 183
- antiquarantinism, 44, 93, 94
- detention, 46–47, 52, 56, 58–59, 60, 61, 63, 65, 69, 80, 97, 159
- English System, 106

- Quarantine (cont.)  
 historiography of, 42–45, 106  
 interstate conference, 68  
 laws and regulations, 56, 64, 85, 106, 137, 159  
 Lower Mississippi Station (Service Quarantine Station), 1, 188  
 Philadelphia Station, 48  
 Quarantine Council, Istanbul (Meclis-i Tahaffuz), 85, 87, 95, 96, 120–123, 126  
 Quarantine Council of Egypt, 111  
 sentinel device, 94  
 Staten Island Quarantine Station, 191, 195  
 stations, 5, 13, 14, 44–45, 47, 56, 58, 61, 68, 71–73, 76, 118, 120, 181, 196, 200  
 system, 16, 44, 46, 57, 58, 60, 63, 69, 75, 93  
 Upper Mississippi Quarantine Station, 1, 58, 61, 62, 64, 65, 70, 182, 184, 187  
 Quarantine Act (UK), 106  
 Quicksilver. *See* Mercury
- Rabbit, 67  
 Ransom, William, 53  
 Rat(s), 20, 35, 81–94, 96–100, 102, 109, 110, 112, 114, 116–122, 125–129, 131, 139, 141–143, 156, 160–169, 173, 176–180, 182–185, 192, 196, 203–204  
 black, 82  
 brown, 82, 83  
 cadavers, 90, 91, 113, 126, 132, 191  
 catching, 82, 98, 184, 185, 228n25  
 deratization (rat destruction), 6, 81, 82, 84, 89, 90, 92–100, 110, 111, 112, 114, 119–123, 125, 126, 128, 139, 141, 143, 146, 152, 165, 166, 168, 169, 170, 176, 181, 182, 184, 189–195, 202, 203, 204, 236n31, 243n79  
 experiment, 134–135, 139, 188  
 and flea, 83–84  
 harborage, 169, 196  
 international conferences, 192  
 and plague, 20, 47, 82–84, 86–88, 93, 97, 98, 102, 109, 110, 122, 126, 129, 138, 150, 155, 161–164, 171, 177–179, 185, 191, 203, 204  
 poisoning, 98, 144, 169, 184, 185, 228n47, 233n83  
 proofing, 204  
 Ratin, 243n79  
 Rawson, Guillermo, 150, 152  
 Raymond, J. H., 67  
 Redfield, Peter, 17, 211n52  
 Red Sea, 20, 95  
 Reed, Walter, 6, 208n9  
 Ridlon, J. R., 196  
 Ridvan Pasha, 228n22  
 Rif War, 204  
 Rigolets Pass, 58  
 Rio de Janeiro, 1, 71, 144, 149, 172  
 Risse, Guenter, 43  
 Rivero, Pedro, 169–171  
 Roark, R. C., 190  
 Roberts, Norman, 185  
 Rocher, Emile, 86  
 Rodríguez, Julia, 156  
 Rodwell, James, 83  
 Rogaski, Ruth, 242n69  
 Rohe, George, 65  
 Rosario, 159–160  
 Rosenstiehl, Daniel-Auguste, 114  
 Roux, Émile, 144  
 Royal Albert Docks, 126  
 Ruggiero, Kristin, 152, 153  
 Runge, Friedlieb Ferdinand, 50, 66  
 Russell, Alexander, 52  
 Russia, 46, 85
- Saigon, 145  
 Sampson, Peter, 126  
 San Francisco, 105, 149, 196

- Sanitary conferences  
 1851 Sanitary Conference, 45, 48, 85  
 1858 Sanitary Conference, 45  
 1892 Sanitary Conference, 46, 162  
 1897 Sanitary Conference, 46, 47, 48, 98, 137, 138, 162  
 1903 Sanitary Conference, 20, 100, 137, 142, 143, 144, 157, 181  
 1926 Sanitary Conference, 192
- Sanitary cordon, 42, 93
- Sanitation, 19, 61, 65, 75, 76, 95, 114, 122, 125, 147, 148, 150, 151, 152, 159, 161, 162, 163, 167, 169, 171–174, 176, 181, 192, 197, 199–204  
 authorities, 92, 106, 109, 113, 143, 152, 157, 164  
 brigade, 149, 156–158, 164, 168, 169, 172  
 campaigns, 165, 168, 171  
 maritime, 1, 3–5, 7–8, 13, 15–21, 43, 46, 54, 68–72, 75, 84, 97, 103, 106, 121, 144, 147, 161, 175, 176  
 reform, 152  
 Sanitary Museum, 163  
 station, 47, 144
- San Juan, 185, 190
- Scabies, 26, 28, 29
- Schaffer, Simon, 16
- Schnurrer, Friedrich, 41
- Scotland, 76, 131, 220n120
- Scoutetten, H., 42
- Scurvy, 33
- Securitization, 201
- Septicemia, 67
- Serlin, David, 16
- Serrano, Elana, 40–41
- Shefer-Mossensohn, Miri, 82
- Shiga, 134
- Ship (vessel), 7, 12, 34, 44, 61, 70, 106, 120–121, 123, 141, 163, 178, 191, 200–201  
*Bavaria*, 131  
*Berenice*, 92  
*Bessie Dollar*, 183  
*Bulgaria*, 100, 102  
*Centauro*, 159–160  
*Chios*, 96  
*City of Perth*, 113  
 classification, 46, 128–129, 138–139  
*Couldson*, 118  
*Ethelhilda*, 184  
 insurance company, 119  
*La Marguerite*, 118  
*Laos*, 236n28  
*Manora*, 107, 126  
*Maria*, 71  
*Matapan*, 116, 117  
*Niger*, 92, 236n28  
*Pamet Eustaphia*, 39  
*Polis Mytilini*, 84, 88, 89, 90, 95, 100  
*René*, 114, 134  
*Sénégal*, 109–112  
*Simla*, 236n28  
*Sophie Goerlitz*, 1, 2  
*Union, The*, 38  
*Westmoreland*, 127
- Shipowner, 107, 111, 119, 143, 166, 184
- Shoah, 19, 202
- Simon, John, 220n120
- Simond, Paul-Louis, 83, 86, 109, 161–162
- Simpson, W. J., 178
- Smallpox, 2, 37, 52, 155
- Smart, Charles, 65
- Smoke, 1, 32, 34, 35, 64, 76
- Smyrna, 92, 93
- Smyth, James Carmichael, 36–39, 41
- Sodium carbonate, 96, 186
- Sophocles, 30
- Souchon (physician), 116, 117
- Spain, 40, 190
- Stchepotiew, Vladimir, 93–95, 232n72
- Steaming, 47, 71, 73, 75
- Stekoulis, C., 87, 88, 93, 95
- Stench, 32, 35, 99, 150, 171, 176, 214n30

- Stenhouse, John, 189
- Sterilization, 46, 71, 115, 134, 157, 164, 165
- Sternberg, George M., 65–67
- Stevenson, William David Henderson, 179–181, 251n24
- St. Landry parish (Louisiana), 4, 46, 76
- Sturdy, Steve, 131
- Suez Canal, 11, 47, 113, 138
- Sugar, 62, 107, 127, 135
- Sulfurozador. *See* Fumigation apparatus: Aparato Marot
- Sulphur, 62, 73, 99, 163  
 alchemy, 199  
 Frasch process, 73–75  
 mining, 62–63, 74–75  
 sulphuric acid (*see under* Fumigation gas)
- Sulphur dioxide (SO<sub>2</sub>). *See under* Fumigation gas
- Superior Council on Public Hygiene of Belgium, 92
- Surgery, 50, 66, 106, 122, 129, 157, 159
- Surveillance, 43, 57, 106, 154, 159
- Switzerland, 28
- Sydenham, Thomas, 36, 216n50
- Syphilis, 23–24, 29, 212n4
- Tanzimat*, 85
- Taptas, Nikolas, 86–87, 228n26
- Taylor, Alfred Swaine, 89
- Technoscience, 3, 8, 9, 10, 11, 15, 16, 25, 32, 54, 82, 96, 103, 201, 204
- Temkin, Owsei, 48, 49
- Terrain, 147, 150, 155–156, 159, 165, 168, 169, 171, 172
- Tesch, Bruno, 195
- Texas, 60
- Third Reich, 19. *See also* Nazi Germany
- Thucydides, 214n28
- Tianjin, 242n69
- Tobacco, 7, 11, 34, 48, 62, 115, 116, 130, 135, 200
- Tomsk, 243n79
- Trade, 5, 11, 14, 19, 43, 45, 60, 82, 95, 106, 109, 123, 137, 143, 162, 199, 200
- Treaty of Versailles, 195
- Trieste, 88, 92
- Tropical medicine, 16, 18, 99, 106, 172, 200
- Trotter, Thomas, 39
- Trouillot, Michel-Rolph, 13
- Tuberculosis, 53
- Tucker, Jennifer, 16
- Tunis, 114, 130, 237n41
- Typhoid fever, 88, 114, 127, 128, 134, 135, 140, 149, 167
- Typhoid Mary, 14
- United Kingdom. *See* Britain
- United States, 48, 55, 62, 71, 176, 180, 183, 195  
 American Medical Association, 177  
 American Public Health Association, 61, 65  
 Department of Agriculture, 176  
 Farmers' Union/Farmers' Alliance, 4, 76  
 Public Health and Marine Hospital Service, 178, 183, 184, 192
- Urban planning, 11, 151
- Utopia, 8–15  
 hygienic, 8–11, 16, 21, 82, 149, 150, 156, 167, 168, 171, 176, 177, 195  
 sulphuric, 3, 8, 11–15, 23, 54, 81, 147, 175, 199, 201–203
- Vaccination, 28, 52, 66, 67, 153, 155
- Vallin, Émile-Arthur, 66, 112–113
- Varlik, Nükhet, 86, 226n16, 228n47
- Vermin, 34–35, 107, 116, 118, 119, 125, 165, 180, 186, 191, 235n16
- Verne, Jules, 9
- Vladivostok, 243n79

- Wade, John, 133–137, 141
- Wars
- Civil War (US), 60
  - Crimean War, 227n19
  - Rif War, 204
  - World War I, 4, 21, 176, 188, 189, 191
- Waterton, Charles, 83
- Weindling, Paul, 194, 195
- West Virginia (US), 105
- White, Charles B., 61, 64
- Whitewashing, 7
- Whyte, Rebecca, 51
- Wilde, Eduardo, 152–153
- Williams, C. L., 196
- Winchester (UK), 36–38
- Wool, 11, 52, 130, 132, 134, 135
- Worboys, Michael, 155
- Worcester (UK), 35, 180
- World's Columbian Exposition,
  - Chicago, 75
- World War I, 4, 21, 176, 188, 189, 191
- Wyman, Walter, 77
- Xenopsylla cheopis*, 83
- Yalçinkaya, Alper, 82
- Yellow fever, 1, 2, 6, 19, 40, 47, 49, 55–60, 61–65, 69, 71, 77, 105, 106, 116, 138, 151, 161, 164, 201, 203, 208n9
- Yersin, Alexandre, 47, 83, 87, 109
- Yıldırım, Nuran, 85
- Yunnan (Qing Empire), 83
- Zavitziano, Spyridon, 91
- Zika, 10
- Zitterer, Charles, 95
- Zuschlag, Emil, 143
- Zyklon B. *See under* Fumigation gas



## Inside Technology Series

Edited by Wiebe E. Bijker, W. Bernard Carlson, and Trevor J. Pinch

David Demortain, *The Science of Bureaucracy: Risk Decision-Making and the US Environmental Protection Agency*

Joeri Bruyninx, *Listening in the Field: Recording and the Science of Birdsong*

Edward Jones-Imhotep, *The Unreliable Nation: Hostile Nature and Technological Failure in the Cold War*

Jennifer L. Lieberman, *Power Lines: Electricity in American Life and Letters, 1882–1952*

Jess Bier, *Mapping Israel, Mapping Palestine: Occupied Landscapes of International Technoscience*

Benoît Godin, *Models of Innovation: The History of an Idea*

Stephen Hilgartner, *Reordering Life: Knowledge and Control in the Genomics Revolution*

Brice Laurent, *Democratic Experiments: Problematizing Nanotechnology and Democracy in Europe and the United States*

Cyrus C. M. Mody, *The Long Arm of Moore's Law: Microelectronics and American Science*

Tiago Saraiva, *Fascist Pigs: Technoscientific Organisms and the History of Fascism*

Teun Zuiderent-Jerak, *Situated Interventions: Sociological Experiments in Healthcare*

Basile Zimmermann, *Technology and Cultural Difference: Electronic Music Devices, Social Networking Sites, and Computer Encodings in Contemporary China*

Andrew J. Nelson, *The Sound of Innovation: Stanford and the Computer Music Revolution*

Sonja D. Schmid, *Producing Power: The Pre-Chernobyl History of the Soviet Nuclear Industry*

Casey O'Donnell, *Developer's Dilemma: The Secret World of Videogame Creators*

Christina Dunbar-Hester, *Low Power to the People: Pirates, Protest, and Politics in FM Radio Activism*

Eden Medina, Ivan da Costa Marques, and Christina Holmes, editors, *Beyond Imported Magic: Essays on Science, Technology, and Society in Latin America*

Anique Hommels, Jessica Mesman, and Wiebe E. Bijker, editors, *Vulnerability in Technological Cultures: New Directions in Research and Governance*

Amit Prasad, *Imperial Technoscience: Transnational Histories of MRI in the United States, Britain, and India*

Charis Thompson, *Good Science: The Ethical Choreography of Stem Cell Research*

Tarleton Gillespie, Pablo J. Boczkowski, and Kirsten A. Foot, editors, *Media Technologies: Essays on Communication, Materiality, and Society*

Catelijne Coopmans, Janet Vertesi, Michael Lynch, and Steve Woolgar, editors, *Representation in Scientific Practice Revisited*

Rebecca Slayton, *Arguments that Count: Physics, Computing, and Missile Defense, 1949–2012*

Stathis Arapostathis and Graeme Gooday, *Patently Contestable: Electrical Technologies and Inventor Identities on Trial in Britain*



Jens Lachmund, *Greening Berlin: The Co-Production of Science, Politics, and Urban Nature*  
Chikako Takeshita, *The Global Biopolitics of the IUD: How Science Constructs Contraceptive Users and Women's Bodies*

Cyrus C. M. Mody, *Instrumental Community: Probe Microscopy and the Path to Nanotechnology*

Morana Alač, *Handling Digital Brains: A Laboratory Study of Multimodal Semiotic Interaction in the Age of Computers*

Gabrielle Hecht, editor, *Entangled Geographies: Empire and Technopolitics in the Global Cold War*

Michael E. Gorman, editor, *Trading Zones and Interactional Expertise: Creating New Kinds of Collaboration*

Matthias Gross, *Ignorance and Surprise: Science, Society, and Ecological Design*

Andrew Feenberg, *Between Reason and Experience: Essays in Technology and Modernity*

Wiebe E. Bijker, Roland Bal, and Ruud Hendricks, *The Paradox of Scientific Authority: The Role of Scientific Advice in Democracies*

Park Doing, *Velvet Revolution at the Synchrotron: Biology, Physics, and Change in Science*  
Gabrielle Hecht, *The Radiance of France: Nuclear Power and National Identity after World War II*

Richard Rottenburg, *Far-Fetched Facts: A Parable of Development Aid*

Michel Callon, Pierre Lascoumes, and Yannick Barthe, *Acting in an Uncertain World: An Essay on Technical Democracy*

Ruth Oldenziel and Karin Zachmann, editors, *Cold War Kitchen: Americanization, Technology, and European Users*

Deborah G. Johnson and Jameson W. Wetmore, editors, *Technology and Society: Building Our Sociotechnical Future*

Trevor Pinch and Richard Swedberg, editors, *Living in a Material World: Economic Sociology Meets Science and Technology Studies*

Christopher R. Henke, *Cultivating Science, Harvesting Power: Science and Industrial Agriculture in California*

Helga Nowotny, *Insatiable Curiosity: Innovation in a Fragile Future*

Karin Bijsterveld, *Mechanical Sound: Technology, Culture, and Public Problems of Noise in the Twentieth Century*

Peter D. Norton, *Fighting Traffic: The Dawn of the Motor Age in the American City*

Joshua M. Greenberg, *From Betamax to Blockbuster: Video Stores and the Invention of Movies on Video*

Mikael Hård and Thomas J. Misa, editors, *Urban Machinery: Inside Modern European Cities*

Christine Hine, *Systematics as Cyberscience: Computers, Change, and Continuity in Science*

Wesley Shrum, Joel Genuth, and Ivan Chompalov, *Structures of Scientific Collaboration*  
Shobita Parthasarathy, *Building Genetic Medicine: Breast Cancer, Technology, and the Comparative Politics of Health Care*

Kristen Haring, *Ham Radio's Technical Culture*

Atsushi Akera, *Calculating a Natural World: Scientists, Engineers and Computers during the Rise of U.S. Cold War Research*

Donald MacKenzie, *An Engine, Not a Camera: How Financial Models Shape Markets*

Geoffrey C. Bowker, *Memory Practices in the Sciences*

Christophe Lécuyer, *Making Silicon Valley: Innovation and the Growth of High Tech, 1930–1970*

Anique Hommels, *Unbuilding Cities: Obduracy in Urban Sociotechnical Change*

David Kaiser, editor, *Pedagogy and the Practice of Science: Historical and Contemporary Perspectives*

Charis Thompson, *Making Parents: The Ontological Choreography of Reproductive Technology*

Pablo J. Boczkowski, *Digitizing the News: Innovation in Online Newspapers*

Dominique Vinck, editor, *Everyday Engineering: An Ethnography of Design and Innovation*

Nelly Oudshoorn and Trevor Pinch, editors, *How Users Matter: The Co-Construction of Users and Technology*

Peter Keating and Alberto Cambrosio, *Biomedical Platforms: Realigning the Normal and the Pathological in Late-Twentieth-Century Medicine*

Paul Rosen, *Framing Production: Technology, Culture, and Change in the British Bicycle Industry*

Maggie Mort, *Building the Trident Network: A Study of the Enrollment of People, Knowledge, and Machines*

Donald MacKenzie, *Mechanizing Proof: Computing, Risk, and Trust*

Geoffrey C. Bowker and Susan Leigh Star, *Sorting Things Out: Classification and Its Consequences*

Charles Bazerman, *The Languages of Edison's Light*

Janet Abbate, *Inventing the Internet*

Herbert Gottweis, *Governing Molecules: The Discursive Politics of Genetic Engineering in Europe and the United States*

Kathryn Henderson, *On Line and On Paper: Visual Representation, Visual Culture, and Computer Graphics in Design Engineering*

Susanne K. Schmidt and Raymund Werle, *Coordinating Technology: Studies in the International Standardization of Telecommunications*

Marc Berg, *Rationalizing Medical Work: Decision Support Techniques and Medical Practices*

Eda Kranakis, *Constructing a Bridge: An Exploration of Engineering Culture, Design, and Research in Nineteenth-Century France and America*

Paul N. Edwards, *The Closed World: Computers and the Politics of Discourse in Cold War America*

Donald MacKenzie, *Knowing Machines: Essays on Technical Change*

Wiebe E. Bijker, *Of Bicycles, Bakelites, and Bulbs: Toward a Theory of Sociotechnical Change*

Louis L. Bucciarelli, *Designing Engineers*

Geoffrey C. Bowker, *Science on the Run: Information Management and Industrial Geophysics at Schlumberger, 1920–1940*

Wiebe E. Bijker and John Law, editors, *Shaping Technology/Building Society: Studies in Sociotechnical Change*

Stuart Blume, *Insight and Industry: On the Dynamics of Technological Change in Medicine*

Donald MacKenzie, *Inventing Accuracy: A Historical Sociology of Nuclear Missile Guidance*

Pamela E. Mack, *Viewing the Earth: The Social Construction of the Landsat Satellite System*

H. M. Collins, *Artificial Experts: Social Knowledge and Intelligent Machines*

Lukas Engelmann and Christos Lynteris, *Sulphuric Utopias: A History of Maritime Fumigation*

<http://mitpress.mit.edu/books/series/inside-technology>