

Cambridge University Press & Assessment
 978-1-108-83309-7 — Writing Gaia: The Scientific Correspondence of
 James Lovelock and Lynn Margulis
 Edited by Bruce Clarke, Sébastien Dutreuil
 Index
[More Information](#)

INDEX

- Abelson, Philip, 1, 435
- Abram, David, 268, 289
- acid rain, 26, 66
- Acquiring Genomes: A Theory of the Origins of Species* (Margulis and Sagan), 260, 341, 369, 371
- actor–network theory (ANT), 405
- Ages of Gaia, The* (Lovelock), 30, 191, 224–226, 249–250, 252, 257, 260, 282, 336, 408
 launch of, 276
- AIDS, 290
- Ait-Touati, Frédérique, 407
- Alexander, Morris, 335, 337, 398, 435
- algae, 4, 104, 108, 121–122, 323–325
- Altamira, 356
- altruism, 18, 105, 202, 209, 340
- Ambio* (journal), 315
- American Astronautical Society, 35, 44
- American Geophysical Union (AGU), 446
- Chapman Conferences, xxi, 12, 17, 21, 30, 189, 272–273, 303, 305, 309, 358, 362–367, 409, 425–426
- American Museum of Natural History, 356, 385
- American Scientist* (journal), 34, 76, 94, 98, 135–136, 160, 376, 378
- American Type Culture Collection (ATCC), 342
- ammonia, 41, 62–63, 69, 112, 129, 451
- Anderson, Don, 283, 286, 370, 435
- Andreae, Meinrat, 244, 272, 316
- anthropic principle, 344, 392
- Anthropocene, the, xvi, 21, 26, 406
- anthropocentrism, 204
- Archbishop of Canterbury, the, 274
- Archean eon, 206, 269, 280
- Arènes, Alexandra, 407
- Asikainen, Celeste, 383, 386, 435
- Asimov, Isaac, 232
- astrobiology, 23, 189, *See also* exobiology
- atmosphere. *See also* chemistry, atmospheric;
 disequilibrium; Earth; Mars; Venus
- Archean, 240
- as a system, 35, 38, 42, 47, 52, 57, 67, 92
- chemical analysis of, xiii, 57
- chemical equilibrium of, 69
- clouds, 319, 323
- disequilibrium of, 141
- dynamic equilibrium of, 140
- history of, 43, 50, 54, 59, 92, 95, 157, 206, 240, 304, 373
- homeostasis of, 41, 50, 80, 110
- lifeless model of, 132, 143
- methane in, 139, 153
- origin of, 140
- planetary, 41–42, 57, 89, 96, 116, 140, 173
- “Atmosphere as circulatory system of the biosphere: the Gaia hypothesis”
 (Margulis and Lovelock), 23
- Atmospheric Environment* (journal), xv, 46, 49, 56, 60–61, 63, 78, 86, 94
- “Atmospheric homeostasis by and for the biosphere” (Lovelock and Margulis), 97, 394
- autopoiesis, 22, 191, 237, 446, *See also* systems, autopoietic
- Avogadro’s number, 139, 153, 446
- Awramik, Stanley, 111, 244
- Ayers, Greg, 319
- Baja California, 6, 173, 179, 184, 216–220, 231, 233, 269, 273, 295, 368, 420
- Baker-roshi, Richard, 234
- Balaban, Miriam, 336
- Baldwin, Margo and Ian, 382
- Barber, Edward, 276, 282, 284, 287, 368, 435
- Barcelona meeting (ISSOL), 85, 106, 110–111, 114
- Barghoorn, Elso, 1, 13, 60, 62, 97, 99, 126, 185, 308, 421, 435
- Barlow, Connie, 281, 337, 425, 435

Cambridge University Press & Assessment
 978-1-108-83309-7 — Writing Gaia: The Scientific Correspondence of
 James Lovelock and Lynn Margulis
 Edited by Bruce Clarke, Sébastien Dutreuil
 Index
[More Information](#)

INDEX

473

- Bates, Robin, 214
- Bateson, Gregory, 424
- Beardsley, Tim, 285, 422, 435
- Ben-Shaul, Yehuda, 126
- Berkner-Marshall hypothesis, 41
- Berner, Robert, 272, 414
- Bernhard, Silke, 211, 213, 435
- Betts, Richard, 304, 413
- Biemann, Klaus, 161, 170, 435
- Bingham, Roger, 206
- biodiversity, 20, 308, 310, 312–315, 322, 356, 377
 - in Daisyworld, 310, 346, 401
 - symbiosis and, 313
- biogeology, 433
- “Biological modulation of the Earth’s atmosphere” (Margulis and Lovelock), 98
- biomineralization, 337, 360, 423
- Biosphera* (encyclopedia), 325–328, 332, 342, 363
- biosphere, 29, 33, 36, 52, 55, 75, 82, 102, 133, 195, 202, 258–259, 302, 320, 392, 400, 402, 426
- Biosphere 2, 259, 349
- Biosphere, The* (Vernadsky), 258–259
- Biospheres: Metamorphosis of Planet Earth* (D. Sagan), 291
- Biospherians, the, 279
- BioSystems* (journal), 19, 96, 177, 250, 280, 336
- Blanc, Girard, 315
- Blue Planet Prize, 385, 388
- Blumberg, Baruch, 387
- Body Politic, the, 404
- Bolin, Bert, xiv
- Boston Globe* (newspaper), 270
- Boston University Marine Program (BUMP), 86, 446
- Boston, Penelope, 243
- Botkin, Daniel, 216, 235, 348, 421, 435
- Bouricius, Bart, 308, 311, 435
- bovine spongiform encephalopathy (BSE), 290
- Bower, Frank, 153
- Bowerchalke, 3, 53, 74, 121, 127, 132, 167, 171
- Bradley, Raymond, 386–387, 436
- Brand, Stewart, 8, 23, 137, 147–149, 165, 167, 197, 245, 277, 438
- British Antarctic Survey (BAS), 419
- British secret services, 192
- Brockman, John, 221
- Broecker, Wallace, 111, 216, 316, 318, 349, 436
- Brown, Stuart, 239–240, 436
- Bryson, Reid, 134
- Buffington, Rosemary, 311
- Bunyard, Peter, 24, 234, 237, 266, 268, 274, 282, 286, 293, 338, 436
- Burris, Robert H., 421
- Caldeira, Ken, 272, 415
- Calder, Nigel, 253
- Cameron, A. G. W., 193, 217, 421
- Campbell, Philip, 222, 378, 436
- Caplan, Warren, 86, 436
- carbon dioxide (CO_2), 37, 41, 48, 51, 61, 63, 70, 90, 99, 103, 111–113, 116, 120, 122, 132, 140, 160, 186, 201, 205, 240, 294, 324, 348, 411, 424, 426, 448
- Catalan Encyclopædia*, 325
- Catalonia, 326, 328
- Cathedral of Saint John the Divine, 314, 424
- Cernan, Eugene, 304
- Challenger* (research vessel), 170
- Challenger, Frederick, 84, 436
- Chandrasekhar, Subrahmanyan, 123
- Chelsea Green Publishing, 382
- Chemical Manufacturers Association (CMA), 159–160, 447
- chemistry, 344
 - atmospheric, 48–51, 53–56, 61–64, 67–70, 91–92, 113, 124, 287
 - chlorine, 95, 131, 135
- Chesselet, Roger, 173, 181, 436
- chlorofluorocarbons (CFCs), xvi, 4, 27–28, 84, 95, 131, 138, 141–142, 157–158, 287, 447
- chloroplasts, 5
- Christianity Today* (periodical), 327
- Clarke, Bruce, xviii, 424
- CLAW hypothesis, 189
- climate change, 21, 26, 136, 192
- climate prediction, 306
- climate regulation, 28, 201, 379
 - role of ozone layer, 144
- Climatic Change* (journal), 20, 30, 305
- climatology, 242
- Clinton, William J., 367

Cambridge University Press & Assessment
 978-1-108-83309-7 — Writing Gaia: The Scientific Correspondence of
 James Lovelock and Lynn Margulis
 Edited by Bruce Clarke, Sébastien Dutreuil
 Index
[More Information](#)

- closure
 - cybernetic, 195
 - material, 280, 425
 - operational, 52, 195
 - thermodynamic, 195
- Cloud, Preston, 63, 94, 260, 303, 436
 - symposium, 307
- clouds, 48
- coccolithophores, 235
- CoEvolution Quarterly*, 23, 75, 95, 137, 147, 154, 165, 167, 203–204, 391, 396, 424, 447
- Cohen, Joel, 311
- cold trap, 448
- Committee on Space Research (COSPAR), 214, 448
- Commonwealth Fund, 191, 224, 232–233, 241, 245, 247
- complexity sciences, 22
- Connes, Pierre and Janine, 57
- continents, emergence of, 171
- Control Theory and Physiological Feedback Mechanisms* (Riggs), 93
- Coombe Mill, 167, 171, 231, 240, 279, 313, 398, 428
- Coulson, Joseph, 374–375, 436
- counterculture, American, xvii, 24, 137
- Cox, Peter, 304
- Crist, Eileen, 364
- Crompton, Tom, 409
- Cromwell, Oliver, 159, 179
- Crutzen, Paul, 304
- Currier, Nathan, 383
- cyanobacteria, 122, 448
- cybernetics. *See also* systems, cybernetic
 - first-order, 22
 - Gaia, and, 22, 35, 47, 57, 197, 204, 344
 - regulation in, 183, 204
 - second-order, 22, 196
- Cyppess, Raymond, 342
- Daisyworld, 17, 105, 189–190, 206, 208–211, 214, 218–220, 230, 235, 247, 261, 267, 346, 401, 417, 448, *See also* biodiversity;
 - Watson, Andrew
 - self-regulation in, 210
- Dalai Lama, the, 274
- Darwin, Charles, 19, 102, 264, 295, 372
- Darwin, Erasmus, 372
- Davie, Bruce, 353
- Dawkins, Richard, 18, 209, 214, 227, 229, 236–237, 266–267, 285, 317–318, 340, 371, 391, 436
- De Duve, Christian, 387
- de Kruif, Paul, 373
- de Properzio, James, 360
- Denbigh, Kenneth G., 154
- Dickinson, Emily, 302, 322, 369
- dimethyl sulfide (DMS), 66–67, 70, 74, 84, 108, 123, 189, 194, 243, 323, 340, 415, 448
- dimethyl sulfoxide (DMSO), 126, 242, 448
- dinosaurs, 157
- disequilibrium
 - atmospheric, 141, 143, 146
 - thermodynamic, 23, 396
- Dixon, Bernard, 168
- Dolan, Michael, 364
- Doolittle, W. Ford, xx, 13, 18, 195, 197, 200, 202–203, 205, 209, 219, 229, 391–393, 416, 436
- DuPont (company), 3, 89, 153, 155
- Dutreuil, Sébastien, xix, 407
- Dyer, Betsey Dexter, xx, 220, 231, 394–399, 436
- “Early life: evolution on the PreCambrian Earth” (Margulis), 228
- Earth
 - abiological model of, 90, 103, 138, 140, 143, 174
 - anaerobic model of, 117–121, 132–133
 - atmosphere of, xiii, 17, 23, 35–37, 57, 61, 76, 193, 242
 - memory of, 202
 - self-regulating, xiv
 - “snowball Earth”, 65
 - system, as a, 22, 35, 111, 114, 288
- Earth system science, xv, 15, 20, 31, 189, 303–304, 307, 319, 364, 417–418
- Earth System Science Partnership (ESSP), 418
- Earthrise (photograph), 270
- “Ecological considerations for space colonies” (Ballester et al.), 163, 167, 193
- Ecologist, The* (journal), 24, 234, 237, 268, 273, 278

Cambridge University Press & Assessment
 978-1-108-83309-7 — Writing Gaia: The Scientific Correspondence of
 James Lovelock and Lynn Margulis
 Edited by Bruce Clarke, Sébastien Dutreuil
 Index
[More Information](#)

INDEX

475

- ecology
 - ecosystem, 258
 - global, 421, 423
 - microbial, 401
- ecopoiesis, 349
- ecosystems, 194, 357
 - forest, 315
 - planetary, 35, 46, 349
- Ecotechnics group, the, 259, 264
- Ehhalt, Dieter, 120, 152, 437
- Ehrlich, Anne, 315, 437
- Ehrlich, Paul, 272–273, 315–316, 318, 437
- Einstein, Albert, 264
- Eldredge, Niles, 333
- electron capture detector (ECD), xvi, 2, 4, 130, 418
- email, 337, 377–378
- End of Nature, The* (McKibben), 283
- entropy, xiii, 23, 154
 - reduction, xiii, 67, 89
- Environmental Evolution (course), 188, 342, 360, 386
- Environmental Evolution: Effects of the Origin and Evolution of Life on Planet Earth* (Margulis and Olendzenski), 294, 301, 357
- Ephron, Julia, 256
- Epton, Sydney, 30, 136
- eukaryote, 449
- European Economic Community (EEC), 327
- evolution, 28, 287, 341, 371–372, *See also*
 - natural selection
 - atmospheric, 92, 95
 - cellular, 37, 59
 - cosmic, 210
 - environmental, 196, 267
 - group selection in, 391
 - microbial, 5, 81, 119
 - molecular, 5
 - planetary, 60
 - solar, 110
 - theory of, xiv, 119
- evolutionary biology, 18–19, 104–106, 371
- exobiology, 56–60, 62, 66, 77, 102–103, 127, 162, 420–421
- extinction, 157
- Fellgett, Peter, 154
- Fersman, Alexander, 255
- Feynman, Richard, 372
- Five Kingdoms: An Illustrated Guide to the Phyla of Life on Earth* (Margulis and Schwartz), 213, 232, 357
- Fleck, Ludwik, 253
- Fleischacker, Gail, 280, 310, 437
- Flohn, Hermann, 437
- forests, 111, 183, 192, 220, 315, 361
- Fortey, Richard, 363
- Fox, George, 244
- Fox, Sidney W., 437
- Fremont-Smith, Frank, 1, 437
- Friedman, Helene, 224, 233, 236, 239, 253–254, 437
- funding, 7, 10, 185, 192, 225, 230, 246, 306, 329, 342, 347, 376, 385
- Fuzaro, Ben, 291
- Gaia
 - aerobic sector of, 160
 - anthropological considerations of, 136
 - authorship of, xvii, 11
 - British popular reception of, 24, 189
 - contemporary evidence for, 115, 140, 173
 - control, problem of, 134, 233
 - Cornwall conferences, 24, 268, 278, 281, 283, 286
 - coupling of environment and life in, 205–206, 320
 - critics of, 9, 104, 111, 197, 202, 204, 214–215, 272, 303, 307, 352, 415, 434
 - Darwin, and, 196
 - evolution, and, 267, 289, 340, 372, 391
 - feedback loops in, 161, 323, 344, 429
 - geoengineering, and, 304
 - historical evidence for, 115
 - homeostasis, and, 16, 18, 74–75, 205, 214, 285, 302
 - Japanese interest in, 252
 - mechanisms for, 18, 29, 52, 67, 80, 105, 173, 189, 201–204, 209, 227, 239, 348, 429
 - microorganisms in, 184
 - Mother Earth notions of, 195, 201
 - name of, xiii, 37
 - natural selection, and, 18, 196–197, 289, 391, 411

Cambridge University Press & Assessment
 978-1-108-83309-7 — Writing Gaia: The Scientific Correspondence of
 James Lovelock and Lynn Margulis
 Edited by Bruce Clarke, Sébastien Dutreuil
 Index
[More Information](#)

- Gaia (cont.)
 - niche construction, and, 196
 - organism, as an, 15, 136, 288, 349
 - pollution, and, 27
 - reception of, xvii, 180
 - regulation by, 241, 295
 - rock weathering in, 324, 380
 - social theory of, 406
 - status of, xv, xvii, 16–17, 47, 76, 91, 112, 119, 200, 299, 362
 - superorganism, as, 405
 - symbiosis, and, 347
 - system, as a, 46, 57, 121, 133, 257, 280, 295, 434
 - water retention by, 294, 320–321, 348, 357, 376, 379–381, 400–403
- “Gaia and geognosy” (Margulis and Lovelock), 30, 238
- “Gaia and natural selection” (Lenton), 182
- “Gaia and the evolution of machines” (Sagan and Margulis), 192, 256
- “Gaia as seen through the atmosphere” (Lovelock), xv, 75
- Gaia Books, 191, 278, 332, 337
- Gaia in Oxford meetings, 31, 303, 306–307, 316, 319–320, 335, 340, 357, 359–360, 409, 413, 426
- Gaia Society (American), 334
- Gaia Society (British), 304, 340
- Gaia: Goddess of the Earth* (documentary), 95, 189
- Gaia: A New Look at Life on Earth* (Lovelock), 96, 137, 187–190, 195, 221, 224, 396, 408
- Gaia: The Growth of an Idea* (Joseph), 291
- Gaia: The Practical Science of Planetary Medicine* (Lovelock), 302
- Gaiam bottleneck, 102
- Gaillardet, Jérôme, 407
- gaiology, 139–140
- Galileo, xvi, 407
- Garrels, Robert, 13, 160, 175–177, 185, 244, 412, 437
- gas chromatography, 2, 5, 144, 170, 179, 220, 449
- Geographical Magazine*, 171
- Geological Society of America (GSA), 299, 347
- geology, xiii, 13, 18, 21, 110, 115, 231, 401, 432–434
- geophysiology, 265, 289, 306, 319, 343, 409, 411
- George, Philip, 359
- Giffin, C. E., 44, 437
- Gilbert, Daniel, 185, 187, 437
- global warming, 378, 408
- Goldberg, Edward D., 185
- Golden, Daniel, 336
- Golding, William, xiii, 46, 48
- Goldsmith, James, 338
- Goldsmith, Teddy, 24, 268, 274, 279, 286, 350, 377
- Golubic, Stjepko, 43, 111, 421, 437
- Goody, Richard, 90, 98, 108, 217, 437
- Gordon conferences, 38, 40, 42–43, 61
- Gould, Stephen J., 372
- granite as Gaian indicator, 294, 348, 356, 376, 379–380, 402
- Great Extinction, The: The Solution to One of the Great Mysteries of Science, the Disappearance of the Dinosaurs* (Allaby and Lovelock), 236
- Great Oxidation Event (GOE), 27, 95
- Greening of Mars, The* (Lovelock and Allaby), 246
- Greenpeace International, 317
- Grimm, Kurt, 355
- Grimstone, A. V., 353–354
- Grinevald, Jacques, 268, 319, 437
- Groom, John, 356
- Guardian, The* (newspaper), 27, 318
- Guerrero, Dani, 377, 382, 437
- Guerrero, Ricardo, 7, 31, 237, 243, 322, 338, 370, 398, 438
- Gutowsky, Herbert, 160
- Hadley Centre, 304, 345
- Haldane, J. B. S., 373
- Hall, John, 386
- Halvorson, Harlyn O., 421
- Hamilton, W. D., 19, 340, 343–344, 346, 361, 371, 413, 415, 438
- “Hands up for the Gaia hypothesis” (Lovelock), 285, 288
- Hansen, James, 192
- Haraway, Donna, 305

Cambridge University Press & Assessment
 978-1-108-83309-7 — Writing Gaia: The Scientific Correspondence of
 James Lovelock and Lynn Margulis
 Edited by Bruce Clarke, Sébastien Dutreuil
 Index
[More Information](#)

INDEX

477

- Harding, Stephan, xx, 31, 305, 321, 346, 354, 379, 381–382, 386, 400–403, 411, 438
- Hardy–Weinberg principle, 208
- Harvey, William, 75, 288
- Hatch–Slack pathway, 449
- Havel, Vaclav, 344, 346, 355, 438
- Hawking, Stephen, 317, 372, 438
- Haynes, Robert, 349, 438
- H-bomb tests, 87
- Healing Gaia: Practical Medicine for the Planet* (Lovelock), 361
- Henderson-Sellers, Ann, 21, 205, 240, 272, 438
- Herm, Dietrich, 199, 438
- Hermana, Luis Angel Fernandez, 326, 331, 438
- Hewlett Packard (HP), xvi, 192, 233, 249, 253, 274, 283, 285, 307–308, 312, 449
- Hinkle, Gregory, 266, 297–298, 438
- Hitchcock, Diane, 127, 438
- Ho, Mae-Wan, 268, 286
- Hodgkin, Alan, 267, 438
- Hoffman, Donald, 387
- Hoffmann, Roald, 387
- Holland, Heinrich D., 13, 41, 43–44, 109–111, 113–114, 122, 126, 195, 200–203, 248–249, 270, 272, 294, 318, 324, 374, 426, 438
- Holligan, Patrick, 326, 439
- Holling, C. S., 265–266, 439
- Homage to Gaia* (Lovelock), 321, 335, 339, 350, 352, 354, 359, 362, 366–368
- homeorhesis, 215, 285–286, 289, 422, 449
- homeostasis, 15, 50, 67, 79, 107, 202–203, 379, 417, 449
- steady state, 15, 41, 110, 145, 209, 285
- “Homeostatic tendencies of the Earth’s atmosphere” (Lovelock and Margulis), 83, 97
- Horowitz, Norman, 1, 61, 124, 150, 159, 167, 439
- Horton, Peter, 383, 411, 414
- Hsu, Kenneth, 311
- Hull, David, 393
- Human Dimensions of Global Environmental Change Program (HDP), 417
- Humboldt, Alexander von, 372
- Hunter, J. Robert, 299
- Hutchinson, G. Evelyn, xx, 76–77, 81–83, 97–98, 103, 119–124, 232, 255, 257–258, 264, 295, 351, 372, 439
- Hutton, James, 266, 295, 372, 432
- Huxley, Thomas, 372
- hydrogen, 40–41, 52, 118–119, 141, 379, 402
- hydrogen sulfide, 41
- Icarus* (journal), xiv, 78, 98, 133, 395
- ice ages, 68
- information theory, 22
- Intergovernmental Panel on Climate Change (IPCC), 192
- International Association of Meteorologists and Atmospheric Physicists (IAMAP), 203
- International Geosphere–Biosphere Programme (IGBP), 21, 31, 189, 305, 417–419
- International Polar Year, 419
- International Society for the Study of the Origins of Life (ISSOL), 98, 328, 336, 450
- Ireland, 73, 118, 140, 159, 328
- Irish Republican Army, 186
- Irish republicanism, 318
- “Is nature really motherly?” (Doolittle), 24, 195, 391
- Ishida, Yuzaburo, 108
- Janson Smith, Peter, 165
- Japan, 323, 325, 327, 354–355, 367–368
- Jeffries, Peter, 329
- Jensen, Kirk, 368
- Jernelöv, Arne, 175, 179, 439
- Jet Propulsion Laboratory (JPL), xiii, xvi, 1, 44, 103, 161–163, 169, 417
- John, Philip, 237, 348, 439
- Joseph, Lawrence E., 189, 315
- Journal of Molecular Evolution*, 53, 60, 64
- Junge, Chris, 74, 439
- Kansas City Star* (newspaper), 328
- Kant, Immanuel, 19
- Kaplan, Isaac R., 140, 182, 439
- Kaplan, Lewis D., 57
- Kasting, James, 244, 273, 318, 439
- Kauffman, Stuart, 409
- Kellogg, William, 26
- Kelly, Kitty, 297
- King, James, Jr., 154

Cambridge University Press & Assessment
 978-1-108-83309-7 — Writing Gaia: The Scientific Correspondence of
 James Lovelock and Lynn Margulis
 Edited by Bruce Clarke, Sébastien Dutreuil
 Index
[More Information](#)

- Kirchner, James, 273, 316, 439
- Kirschvink, Joe, 422
- Klinger, Lee, 411
- Kloster, Knut, 306, 315
- Krebs, John, 345
- Krumbein, Wolfgang, 139, 197–198, 254, 283, 291, 316–318, 421, 431, 439
- Kuhn, Thomas, 62
- Kumar, Satish, 8, 24, 289, 379, 439
- Kump, Lee, 272, 293, 323–325, 425, 439
- La Vanguardia* (newspaper), 330, 336, 342
- Langmuir, David, 259
- Last Universal Common Ancestor (LUCA), 393
- lateral gene transfer, 393
- Latour, Bruno, xvi, xx, 12, 305, 404–407, 416
- Lawless, James, 220–221
- Lawton, John, 371
- Lederberg, Joshua, 59, 439
- Leggett, Jeremy, 317
- Lennon, John, 378
- Lenton, Tim, xx, 12, 14, 22, 31, 304, 321, 340, 350, 354, 359, 363, 374, 384, 405, 407–416, 426, 440
- Leverhulme Trust, 245
- Levine, Joel, 240
- life
 - definition of, 61, 205
 - deletion of, 36, 138
 - detection of, 35, 57, 76, 92, 96, 325
 - early, 206
 - origin of, 193, 260–261, 280, 349, 395
 - planetary phenomenon of, 279
 - sparse, 103
- Lincoln, Tim, 290, 440
- Lindisfarne Association, 191, 196, 198–200, 233, 277, 323, 424, 450
 - in Crestone, Colorado, 325
 - Perugia meeting, 274–275, 289, 292
- Linnean Society, 283–284, 329, 364
- Liss, Peter, 285, 440
- List, Robert J., 64, 84
- Lodge, James, 54, 440
- Londer, Randi, 249
- Lord Rothschild, 154
- Lotka, Alfred, 196, 266, 295, 372
- Lounsbery Foundation, 329, 331, 342, 347
- Lovejoy, Thomas, 235, 332, 440
- Lovelock, Andrew, 273, 275, 284–285, 440
- Lovelock, Christine, 271, 440
- Lovelock, Helen, 4, 10, 192, 227, 230, 265, 267, 276, 408, 440
- Lovelock, James. *See also* Daisyworld; exobiology; Ozone War, the
 - as independent scientist, 3–4, 8, 225
 - awarded Companion of Honor, 375
 - career of, xvi, 2, 30, 33, 293
 - cybernetics, and, 15, 52, 75, 105, 182, 195, 205
 - environmentalism, and, 26–27, 107, 375, 380
 - experimentalist, as, 419, 430
 - health issues of, 222, 226–227, 229–230, 244, 246–249, 279, 293, 323, 362
 - independent scientist, as, 239
 - NASA and, 149, 232
 - national context of, 14
 - neo-Darwinism, and, 340–341, 371
 - scientific preparation of, 12
 - support for nuclear energy, 382, 384
 - Tyler Prize, 156, 247, 292, 350–352
 - Vernadsky, on, 372–373
 - Volvo Prize, 321, 353–354
- Lovelock, Jane, 275, 440
- Lovelock, Sandy, 10, 275, 279, 383, 409, 440
- Lovelock–Margulis collaboration, xiv–xv, xvii, 11, 43, 75, 116, 141, 206, 231, 248, 262, 270, 285, 321, 359, 384, 406
 - in the 1980s, 189–192, 204
 - launch of, 33, 37
 - material aspects of, 8, 70–72
- Lowenstam, Heinz, 196–198, 329, 331, 337, 360, 440
- Lowman, Paul, 377
- Luminous Fish: Tales of Science and Love* (Margulis), 387
- “Lynn Margulis: science’s unruly Earth Mother” (Mann), 288, 297
- MacConnell, Adam, 377
- Mackenzie, Fred T., 176
- Maddox, John, 290
- Maggs, Robert, 99, 440
- Mainz symposium, 86, 94–95, 106, 108, 114–116
- Manabe, Syukuro, 93

Cambridge University Press & Assessment
 978-1-108-83309-7 — Writing Gaia: The Scientific Correspondence of
 James Lovelock and Lynn Margulis
 Edited by Bruce Clarke, Sébastien Dutreuil
 Index
[More Information](#)

INDEX

479

- Margaret Thatcher, 14
 Margulis, Jennifer, 363, 440
 Margulis, Lynn, 400, 409, 419, 427–430
 as Fairchild Distinguished Scholar,
 CalTech, 159
 as Guggenheim Foundation Fellow, 184
 autopoiesis, and, 250–252, 255–257
 career of, xvi, 1, 5, 29, 33
 dispute with *Science*, 321–323
 environmentalism, and, 28, 356
 evolution, and, 6, 371
 exobiology, and, 193
 field research, and, 15
 health issues of, 278, 343–345
 Humboldt Fellowship, 370
 institutional location, 14, 395
 Interactive Lectures, 53, 235, 283, 351, 377, 382
 NASA, and, 39, 57, 60, 217–218, 235, 238,
 336, 421
 National Medal of Science, 367
 neo-Darwinism, and, 19, 106, 287, 341
 on planetization, 280
 research of, 342
 review of Lovelock's *Gaia*, 190, 207, 211
 scientific preparation, 13, 38
 Symbiosis course, 394
 teaching style, 394
 visiting professorship at Balliol College, 386
 Margulis, Nick, 440
 Margulis, Zachary, 440
 Marine Biological Association (MBA), 245,
 249, 267, 450
 Marino, Bruno, 349
 Mark, Hans, 217
 Markos, Anton, 336
 Mars, 253, 261, 400
 atmosphere of, xiii, 44, 53, 57, 90, 150, 162
 lifelessness of, 23, 96, 168, 251
 terraformation of, 235
 Martin, Archer, 3, 374
 mass spectrometer, 449
 Maturana, Humberto, 22, 191, 234–235, 440
 May, Robert, 316, 318, 372–373, 441
 Maynard Smith, John, 19, 236, 298, 340,
 343–345, 371, 391, 411, 444
 Mazur, Peter, 168, 170, 441
 McCarthy, Ray, 89, 248, 441
 McCord, Thomas B., 144
 McElroy, Michael, 144, 149, 161, 216–217, 283, 441
 McElroy, William, 1, 441
 McHenry, Alan, 329, 331, 441
 McIntosh, F. C., 154
 McKay, Chris, 220
 McKibben, Bill, 283, 441
 McMenamin, Mark, 360
 Mead, Margaret, 26
 Mereschkowski, Konstantin, 289
 Merkel, Angela, 21
 Merryman, H. T., 154
 Meteor (research vessel), 122, 128
 methane, 12, 29, 41, 52, 55, 59, 61, 93, 120, 153,
 161, 447
 as a ventilating gas, 179
 atmospheric, 181
 residence time, 174, 294
 methane–oxygen cycle, 68, 96, 152, 156
 methanogenesis, 96, 173
 methanogens, 177, 206
 methyl chloride, 28–29, 135, 142–147
 Mezholy, Laszlo, 217, 342, 441
 microbes, 41, 46, 53, 88, 185, 239, 344, 356, 358,
 406
 microbial mats, 220, 239, 269, 397, 423
Microcosmos (Margulis and Sagan), 191
 microwaves, 164
 Midgley, Mary, 304, 374
 Milankovitch, Milutin, 111
 Miller, James R., 63, 364
 Miller, Stanley, 1, 441
 Mitchell, Ralph, 350–352, 441
 mitochondria, 5, 112, 362
 Mochales, Sagario, 342
 Monty, Claude, 198, 215–217, 228, 441
 Moores, Eldridge, 299
 Morgan, Clay, 358, 441
 Morrison, Philip, 1, 97–98, 127, 441
 Morrison, Reg, 364
 multiple sclerosis (MS), 159
 Myers, Norman, 348
 Naess, Arne, 412
 National Academy of Sciences (NAS), 30, 81,
 95, 158, 160, 191, 193, 216–217, 261, 283,
 309, 337, 339, 342, 352, 383, 451

Cambridge University Press & Assessment
 978-1-108-83309-7 — Writing Gaia: The Scientific Correspondence of
 James Lovelock and Lynn Margulis
 Edited by Bruce Clarke, Sébastien Dutreuil
 Index
[More Information](#)

- National Aeronautics and Space
 - Administration (NASA), 14, 30, 35, 103, 170, 217–218, *See also* Margulis, Lynn; Lovelock, James; Jet Propulsion Laboratory
 - Ames Research Center, 57, 60, 217–220, 232, 304, 373, 412
 - Earth system science, and, 21
 - Habitability, initiative on, 217
 - planetary biology, 14–15, 395
 - Viking mission, 96, 150, 162–163, 251, 256
 - Voyager program, 26
- National Center for Atmospheric Research (NCAR), 451
- National Institute for Medical Research (UK), 2
- National Oceanic and Atmospheric Administration (NOAA), 452
- National Research Council (NRC), 193
- National Science Foundation (NSF), 162, 298
- Natural Environment Research Council (UK), 343, 345
- Natural History* (periodical), 137, 147
- natural selection, 195, 241, 319, 344, 377, 392, 404
- Nature* (journal), 54, 56, 65, 74, 77–78, 85, 94, 139, 177–178, 222, 248–249, 285
- NCAR (National Center for Atmospheric Research), 26, 54, 192, 324
- Nealson, Kenneth, 234, 238, 243, 421, 442
- neo-Darwinism, 318, 340–341, 391–393, 429
- neoliberalism, 404
- Névraumont, Peter, 333, 337, 352, 442
- New Scientist* (periodical), 30, 135–136, 167, 241, 265–266, 269, 346, 417
- New York Academy of Sciences, 1
- New York Times* (newspaper), 283
- Newsweek*, 142
- Newton, Isaac, 372
- Nietzsche, Friedrich, 102
- nitric oxide, 90, 170, 172
- nitrogen, 36, 50–51, 56, 62, 64, 103, 132, 140
 - as biologically controlled, 50
 - as life indicator, 36
 - buried, 60, 62–63
 - cycle, 393, 422
 - fermenters of, 53
 - on Mars, 44, 150, 161–162, 168
 - organic, 165
- oxides of, 55, 133
- under abiological conditions, 122
- nitrous oxide, 50, 90, 161, 165
- “noncybernetic nature of ecosystems, The” (Engelberg and Boyarsky), 317
- O’Connor, Rev. Kevin, S.J., 219
- oceans, 62, 92, 320, 348, 368
 - as CO₂ reservoir, 186
 - regulation, and, 29, 121, 134, 138, 233
- Olendzenski, Lorraine, 270, 283
- Omni* (periodical), 252
- “Open systems living in a closed biosphere” (Barlow and Volk), 377, 415
- Open University, 268, 319
- Orgel, Leslie, 1, 336, 442
- Origin of Eukaryotic Cells* (Margulis), 40, 82, 189
- Origins of Life* (journal), 94, 98, 127, 131, 395
- Origins of Life conferences, 1–3, 56, 116, 133
- Origins of Sex: Three Billion Years of Genetic Recombination* (Margulis and Sagan), 191, 236, 257
- Oró, Joan, 1, 99, 121, 123, 421, 442
- overpopulation, 136
- Owen, Tobias, 122
- Oxford University, 296, 303, 312, 335, 348
- Oxford University Press, 30, 137, 165, 201, 221, 368
- oxygen, xiii, 28–29, 41, 44, 50, 52, 66, 68–69, 71, 92, 103, 113, 118, 122, 140, 146, 157, 160, 184, 186, 287, 324, 426
 - and CO₂ regulation, 186
 - nitrogen, and, 165
 - photosynthesis, and, 401
 - poison, as a, 396
 - regulation of, 173, 261, 422, 428
 - water, and, 403
- Oyama, Vance, 170
- ozone, 28, 66, 73, 90, 452
 - as UV shield, 29, 66, 68
- Ozone War, the, 10, 26, 28, 30, 95, 131, 136, 150, 156, 160, 164, 248, 258, 351, 354, 428
 - “freon doom story”, 132, 142
- paleontology, 228
- paradigm shift, 62, 288, 434
- Pareto, Vilfredo, 207

Cambridge University Press & Assessment
 978-1-108-83309-7 — Writing Gaia: The Scientific Correspondence of
 James Lovelock and Lynn Margulis
 Edited by Bruce Clarke, Sébastien Dutreuil
 Index
[More Information](#)

INDEX

481

- Parsons, Maria, 282
- Pasteur, Louis, 120
- Payne, Roger, 383
- Pearce, Fred, 304
- Pearson, Joss, 191, 278, 300, 302, 332, 442
- peer review, 9, 245, 386, 396
- Peretó, Juli, 362–363, 442
- Perkins, John, 382
- Petengill, Gordon, 302
- Petford, Nick, 358
- Philosophical Transactions of the Royal Society* (journal), 312
- photosynthesis, 287
- Pimm, Stuart, 316, 318, 442
- Planetary Biology and Chemical Evolution (PBCE) committee, 185, 190, 193–194, 217, 421, 452
- Planetary Biology and Microbial Ecology (PBME), 218, 238, 397, 421–422
- planetary boundaries, 21
- plate tectonics, 177, 203, 270, 283, 286, 302, 320, 348, 370, 402, 425, 433
- Plymouth Marine Laboratory (PML), 231, 409, 413
- pollution, 27, 136
 - air, 134
- Ponnampерuma, Cyril, 1, 40, 60, 64–65, 127, 235, 442
- Ponsonby, Julia, 382
- Popper, Karl, 119
 - criterion of testability, 273
- population biology, 242, 265
- population genetics, 202, 208, 452
- Porritt, Jonathon, 8, 14
- Porterhouse Blue* (Sharpe), 408
- Poundstone, William, 360
- Primavesi, Anne, 412
- Prinn, Ronald, 217
- Prior, Tory, 368
- prokaryotes, 37, 453
- Proterozoic eon, 262, 377
- protocist, 453
- Pure and Applied Geophysics* (journal), 177
- “quest for Gaia, The” (Lovelock and Epton), 136, 141
- quorum sensing, 423
- Radford, Tim, 317
- Rambler, Mitch, 227, 229, 231–232, 240, 442
- Rapley, Chris, xxi, 304, 417–419
- Rasmussen, Rei, 123, 128, 130, 133, 139, 142, 172, 179, 442
- Rasool, S. I., 99, 135, 442
- Raven, Peter, 366, 387, 442
- Reales, Luis, 328, 330, 333, 442
- Redfield, Alfred C., 266, 295, 372
- Reppard, Donna, 442
- Resurgence* (journal), 24, 289
- Revenge of Gaia, The* (Lovelock), 382, 384
- Reviews of Geophysics* (journal), 21, 30
- Riggs, Douglas S., 75, 79
- Right Livelihood Award, 198
- Ringwood, A. E., 116, 132, 442
- Rothschild, Lynn, 412
- Rothschild, Miriam, 317
- Rowland, F. Sherwood, 156, 350–353, 443
- Royal Dutch Academy of Sciences, 292
- Royal Society, 95, 129–130, 140, 164, 232, 304, 374, 383, 415, 453
- Royal Society of Canada, 349
- Ruse, Michael, 391
- Russian Academy of Sciences, 373
- Ryan, Frank, 370
- Sacred Balance, The* (Suzuki), 376
- Sagan, Carl, 1, 33, 53, 55, 62, 64, 77, 102, 123, 126, 221, 274, 325, 360, 443
- Sagan, Dorion, 6, 30, 191, 236, 348, 352, 364, 443
- Sagan, Jeremy, 331, 443
- Sagan, Tonio, 348, 382
- Sahtouris, Elizabeth, 189, 253–254, 278–279, 286, 443
- salinity, 29, 218, 368, 423
 - control of, 138
 - ocean, 138, 299, 368
- Samuelson, Arthur, 236
- Santa Fe Institute, 22
- Saunders, Peter, 346, 413
- Schaadt, Jim, 80, 85, 108, 443
- Schaffer, Simon, 409
- Schellnhuber, Hans Joachim, 21
- Schidlowski, Manfred, 272
- Schneider, Stephen H., 20, 245, 249, 272, 285, 301, 359, 362, 364, 425, 443

Cambridge University Press & Assessment
 978-1-108-83309-7 — Writing Gaia: The Scientific Correspondence of
 James Lovelock and Lynn Margulis
 Edited by Bruce Clarke, Sébastien Dutreuil
 Index
[More Information](#)

- Schopf, William, 1, 13, 99
 Schrödinger, Erwin, xiii
 Schumacher College, 24, 295, 338, 357,
 376–379, 382, 401, 453
 Schwartz, Alan, 119, 187, 443
 Schwartzman, David, 272, 414, 425
 Schweickart, Rusty, 248
Science (journal), 16, 34, 54–56, 62, 74, 77–78,
 83, 85, 192, 308
 rejection by, 85
Science News, 131
Sciences, The (journal), 167, 169, 171, 262
Scientific American (periodical), 285, 289
 Scientific Committee on Problems of the
 Environment (SCOPE), 198
 scientist entrepreneur, 3
 Scientists for Global Responsibility, 317
Scientists on Gaia (Schneider and Boston),
 272, 301
 scrapie, 290
 Scripps Institution of Oceanography, 185
 Searcy, Dennis, 342
 selfish gene, 345
 serial endosymbiosis theory, 5, 191, 391, 396,
 399
Shackleton (research vessel), 38, 352
 Shackleton, Nick, 409
 Shearer, Walter, 274
 Sheldrake, Rupert, 284, 295, 443
 Shell, 5, 11–12, 26, 119, 136
 Siever, Raymond, 272, 283
 Sigma Xi, 161, 376, 453
 Sillen, L. G., 48, 51, 116, 295, 443
 Simmonds, Peter, 161–162, 168–170, 172,
 443
 Smil, Vaclav, 377
 Smith, David, 237, 313, 348, 444
 Smithsonian Institution, 326–328, 332
 sociobiology, 404
 sociology, 404
 of science, 253
 solar luminosity, 110, 112–113, 171, 312
 South Pole, 142
 Space Science Board (SSB), 170, 185, 193, 453
 Spaceship Earth, 108, 279
 Stengers, Isabelle, 12, 305, 407
 Stevens, W. K., 281
 Stoltz, John F., xxi, 198, 228, 331, 420–423,
 444
 stratosphere, 73, 87, 90, 135, 145
 Strick, James, 366
 stromatolites, 141
 Strum, Shirley, 404
 sulfur, 71, 220, 261, 342, 402
 oxidation, 423
 sulfur bacteria, 238
 sulfur cycle, 234, 242, 244, 317, 363
 Suomi, Verne, 216
 superorganism, 404
 supersonic transports (SSTs), 87, 95, 131, 453
 Suter, Sherman J., 367
 Suzuki, David, 376, 382, 444
 Swain, Tony, 139, 173, 444
 symbiogenesis, 5, 289, 311, 317, 349, *See also*
 serial endosymbiosis theory
 symbiosis, xvi, 11, 298, 313, 341, 347, 371, 392,
 419, 429
Symbiosis (journal), 336, 342
*Symbiosis in Cell Evolution: Life and Its
 Environment on the Early Earth*
 (Margulis), 96, 213
Symbiotic Planet (Margulis), 366
 systems, 115, 126
 autopoietic, 250–252, 255–257
 circulatory, 37, 75
 closed-loop, 107, 273
 control, 22
 coupled, 16, 320
 cybernetic, 252, 257
 cybernetic, biological, 35, 75, 79, 124
 life support, 107
 living, 22, 252, 273, 337
 low-entropy, xiii
 marine, 130
 mechanical, 61
 nonautopoietic, 251, 257
 self-organizing, 22, 434
 self-regulating, xiv, 47, 241, 255, 361
 technological, 15
 Tarcher, Jerome, 201
 Tatsumura, Jim, 367
 Tauber, Alfred I., 386
 technosphere, the, 251

Cambridge University Press & Assessment
 978-1-108-83309-7 — Writing Gaia: The Scientific Correspondence of
 James Lovelock and Lynn Margulis
 Edited by Bruce Clarke, Sébastien Dutreuil
 Index
[More Information](#)

INDEX

483

- teleology, 19, 246
- Tellus* (journal), xiv, 21, 94–95, 97, 115, 117, 133, 222, 394
- Ternes, Alan, 137, 147
- Thatcher, Margaret, 192
- thermodynamics, 22, 67–69, 357
 - steady state, 35, 57, 67, 69, 76, 92
- Thomas, Lewis, 191, 214, 224, 236, 239, 242, 244–245, 323, 421, 444
 - Lewis Thomas Prize, 329
- Thomasson, Jane, 414
- Thompson, William Irwin, 250, 256, 269, 293, 301, 314, 323, 325, 444
 - Lindisfarne Association, 24
 - on planetization, 280
- Thoreau, Henry David, 330
- Tickell, Lady Penelope, 348, 445
- Tickell, Sir Crispin, 14, 286, 294, 306, 312, 326, 335–336, 355, 364, 370, 374, 444
- tipping elements, 21
- Todd, John and Nancy, 198
- transmission electron microscopy (TEM), 420
- Tyrrell, Toby, 413
- ultraviolet (UV) radiation, 70, 92, 152, 156–158, 168, 240
 - Ozone War, and the, 352
 - skin cancer and, 158
- UN University, 233, 274, 453
- Unispace, 221
- University of Cambridge, 408
- University of Reading, 133, 159, 428
- Uranus, 158, 160
- Urbanowski, Frank, 283, 286
- Van Allen, James, 144
- Van Valen, Leigh, 52, 55, 111, 444
- Varela, Francisco, 22, 191, 424
- Vatican encyclical, 21
- Velikhov, Evgeny, 373
- Venus, 270, 302, 400
 - atmosphere of, 73, 90
 - lifelessness of, 23
- Vernadsky, Vladimir, 238, 255, 258–260, 264–266, 280, 295, 304, 353, 444
- volcanism, 65, 73
- Volk, Tyler, xxi, 12, 272, 281, 293, 304, 414, 424–427, 444
- von Foerster, Heinz, 154
- Waddington, Conrad, 289
- Wadebridge Ecological Center, 268
- Wakeford, Tom, 353, 357, 409, 444
- Walker, James, 122, 131, 156–157, 205, 240, 272, 412, 421
- Walker-Holland model, 160
- Warburg effect, 160, 453
- Wasserburg, Gerald, 144
- “Water Gaia” (Harding and Margulis), 31, 402
- Watson, Andrew, xxi, 12, 14, 96, 137, 160, 173–178, 190, 208, 214, 216, 222, 227–228, 237, 284, 286, 397, 421, 428–430, 445
 - and Daisyworld, 15, 208
- Weaver, Ellen, 232, 243, 268, 445
- Weiner, Jonathan, 285
- Weiner, Steve, 329, 331, 445
- Wells, H. G., 373
- West, Oona, 342
- Westbroek, Peter, xxi, 21, 198, 215, 235, 268–269, 282, 284, 314, 317, 339, 344, 431–434, 445
- Wharton, Edith, 363
- What is Life?* (Margulis and Sagan), 259, 333, 337, 342, 347–348
- Whatley, Jean, 237
- Whiteside, Jessica, 364
- Whitfield, Michael, 190, 198, 201, 237, 254, 286, 360, 445
- Whittaker, R. H., 77
- Whole Earth Catalog*, 23, 137, 149
- Whole Earth Review*, 24
- Wier, Andrew, 364
- Wiesel, Elie, 355
- Wigley, Tom, 319
- Wilde, Oscar, 225, 245, 357
- Wilkinson, David, 426
- Williams, Janet, 142
- Williams, Mike, 386, 388, 445
- Williamson, Donald, 363
- Willmer, Edward N., 80
- Wilson, Edward O., 186, 265, 372, 374, 445
- Wilson, Stewart, 53, 301, 445

Cambridge University Press & Assessment
978-1-108-83309-7 — Writing Gaia: The Scientific Correspondence of
James Lovelock and Lynn Margulis
Edited by Bruce Clarke, Sébastien Dutreuil
Index
[More Information](#)

484

INDEX

- wind turbines, 380
Wired (magazine), 348
Woese, Carl, 177, 391
Wofsy, Steven C., 138, 141, 145, 445
Woods Hole Marine Biological Laboratory,
99, 103, 107–108, 158, 351
Woodwell, George M., 158, 421
World Climate Research Program (WCRP), 417
World Wildlife Fund, 235
Wynne-Edwards, V. C., 391
Yale University Press, 82
Young, J. Z., 201, 203–204, 206, 267, 445
Young, Richard S., 132