

INDEX

- Administrators, training of, xiii, 168, 169
- Advisory Council on Scientific Policy, 35, 54, 56, 58, 69, 76, 77
- AID (Agency for International Development), 176
- Anderson, N. G., 114
- Argonne National Laboratory, 112
- Argonne Zero Gradient Synchrotron, 30
- Arthur D. Little, Inc., 132
- Association of Scientific Workers, Britain, 9
- Atomic Energy Authority (AEA), 75, 76, 78
- Atomic Energy Centres, 203
- Atomic Energy Commission, 112–114, 117
- Australia, 97, 100, 106
- Authority, rejection of, 14, 15
- Autonomy doctrine, 124
- Bacon, Francis, 14, 119
- Basic Research and National Goals*, 120, 121
- Behavioural sciences, assessed, 29, 31
- Bentham, Jeremy, 17
- Benzer, Seymour, 116
- Berlin, Isaiah, 17
- Biological Research Committee (Royal Society), 54–57, 66, 71
- Bhabha, Homi J., 169
- Biomedical science
 - research in, 109–117
 - and scientific choice, 107–118
- Biruni, al-, 200
- Blackett, Patrick M. S., 11
- Bloch, Felix, 32
- Bragg, W. L., 11
- Britain, economic growth in, 95, 96
- British Association for the Advancement of Science, 8
- Brookhaven, 53
- Brozen, Yale, 104
- Buchanan inquiry, 72, 73
- Burke, Edmund, 17, 19
- Canada, 97
- Carter, C. F., 64, 67–69, 73, 130
- CERN (Geneva), 53, 69
- Chalk-and-Cheese Principle, 74, 76
- Cherwell, Baron (F. A. Lindemann), 77n.
- Choice
 - cardinal, 69
 - institutional, 21
 - scientific, *see* Scientific choice
 - and the scientific community, 44–62
- Cole, Kenneth, 116
- Colombo Plan, 176
- Committee on Science and Public Policy, 107, 108
- Copernicus, 14, 16
- Council for Atomic Age Studies, Columbia University, 64
- Crick, Francis, 116
- Criteria
 - external, 25, 26, 32, 33, 80, 109
 - internal, 25, 33, 80, 81, 83
 - need for, 45, 47
- Culture, role of, 119–133
- Darwin, Sir Charles, proposal for coordination of planning, 10–12
- Darwin's theory of natural selection, 73
- Delphi method, 71
- Denison, Edward F., 129
- Descartes, René, 14, 17
- Developing countries, *see* Underdeveloped countries
- Discussion, need for open, 56–58, 60, 61, 71
- Doty, Paul, 116
- Economic analysis, 135–139
- Economic growth and scientific research, 92–106
- Economics
 - as a criterion, 37, 38, 49, 67–69, 73
 - role of, vii, 39, 40, 42
- Eddington, Sir Arthur S., 192
- Education, 34, 41, 42, 164, 165, 166
 - postgraduate work, 178–182
- Egerton, Sir Alfred, 10, 11
- Einstein, Albert, 9, 24, 47, 126
- European Organisation for Nuclear Research, Geneva, 204
- Ewell, R. A., 94, 95, 97, 104
- Experts, role of, 164, 177
- Faraday, Michael, 44
- Feasibility, role of, 51, 73
- Freeman, Christopher, 130
 - and Evelyn, Richard W., analysis of British growth, 95
- Fulbright programme, 164, 176
- Galbraith, J. K., 130
- Galen, 14
- Grazia, Alfred de, 188–190
- Green Bank, W. Va., 133
- Hahn, Otto, 5, 32, 191
- Haldane Report of 1918, 77
- Handler, Philip, 107, 108
- Heckscher, August, 87

- "High civilisation" doctrine, 125, 126
 High-energy physics, assessed, 29-32, 67
 Hoyle, F., 14
 Institute of Mathematical Sciences, Madras, 203
 International Centre of Theoretical Physics, Trieste, Italy, 183, 203, 204
 International cooperation, 28, 29
 need for, 202
 Ireland, 41, 42
 Isolation, intellectual, 1, 155, 162, 163, 182-184, 200-204
 Jansky, K. G., 124
 Japan, 97, 106
 Johnson, Harry G., 126, 127, 128, 134, 138, 140
 Jones, Aubrey, 77
 Kant, Immanuel, 17
 Kaysen, Carl, 134, 138, 140, 141
 Kelmers, A. D., 114
 Kepler, Johannes, 16
 Keynes, John Maynard, 127, 129, 133
 Kistiakowsky, George, 108, 123
 Lewin, K., 4
 Liebig, Justus von, 44, 194
 Little, Arthur D., Inc., 132
 Lovell, Sir Bernard, 14
 Lysenko, T. D., 195
 Maddox, John, 64-66, 69-71
 Manhattan Project, 50
 Manned-space exploration, assessed, 29, 31, 33, 67
 Manpower, *see* Scientific personnel
 Menlo Park, Calif., 133
 Mill, John Stuart, 17
 Minasian, J. R., 92-95
Minerva, aims of, xiv, 64
 Molecular biology, assessed, 29, 30, 67
 Nagel, Ernest, 187
 National Academy of Sciences, 107, 120-123, 126, 134
 National Aeronautics and Space Administration (NASA), 75, 76, 78, 117, 128, 131
 National Cancer Institute, 114
 National decisions, 54, 143, 144
 National Economic Development Council, 39, 40, 73
 National Institutes of Health, 116, 124
 National Science Foundation, 90, 176
 Neumann, John von, 27
 Newton, Isaac, 16, 47, 119, 126, 188
 Nierenberg, M., 29
 Novelli, G. D., 114
 Nuclear energy, assessed, 29, 31
 Nuclear research, 112
 Office of Naval Research (U.S.A.), 119
 Office of Science and Technology, 76
 Originality
 as a criterion, 5, 16, 17, 19
 safeguarded, 196
 Overheads, 89-91, 119-133
 Overlapping neighbourhoods, principle of, 6, 28, 197, 198
 Paine, Thomas, 17, 19
 Pakistani Atomic Energy Commission, 177, 178, 202
 Atomic Energy Centre Training Program, 178, 179, 203
 Panel system, 23-25, 84
 Pasteur, Louis, 194
 Physical sciences, financial support of, 117
 Planck, Max K. E. L., 16, 44
 Plausibility, as a criterion, 4, 190, 191, 193
 Point Four, 176
 Polanyi, Michael, 14, 64-74 *passim*, 86
 Popper, Karl, 46
 Practical value, as a criterion, xi
 President's Science Advisory Committee, 23, 24, 54, 76, 108
 Price, Derek J. de S., 44
 Price, Don K., 123
 Primary industries, 127, 128, 130
 Priority, notion of, *see* Scientific choice
 Purcell, E. M., 32
 RAND Corporation, 71, 78
 Rayleigh, Lord, 4, 5, 191
 Republic of science, ix-xi, 65, 68, 70, 71, 74, 86
 defined, 18, 19
 theory of, 1-20
 see also Scientific community
 Research
 applied, xii, 36, 37, 41, 46, 84
 choice in, 49-52
 demands of, 45
 in underdeveloped countries, 165-170
 basic, *see* Research, pure
 budgetary control of, vii, 81-84
 as consumption good, 139-142
 cooperative, 167, 184
 and economic growth, 92-106
 financial support of, vi, 45
 national expenditures on, 143, 144
 problem-oriented, 72
 product-oriented, 72
 pure, xii, 36, 37, 41, 42, 46, 72
 cultural aspects of, 84-89
 demands of, 45
 as investment or consumption good, xi, 134, 135
 as overhead, 89-91
 in underdeveloped countries, 165-170
 warrants for, 134-142
 and social aims, 18
 types of, 72
 Research centres, regional, 183
 Research contract system, 78, 79
 Research grants, distribution of, 7, 8, 12
 Research institutes, role of, 52, 53, 57, 58, 78, 115, 116, 203

- Resources, 21, 22, 38
 Royal Society, London, 12, 15, 54, 71, 119
 Russell, Bertrand, 17
 Russell, W. L., 113
 Rutherford, Ernest, 11, 191
 Ryle, Martin, 14
- Saif-ud-din Salman, 200
 Salam, Abdus, 170
 Sayre, Wallace S., 70
 Schuster, Arthur, 11
- Science
 applied, *see* Research, applied
 character of, 46–49
 financial support of, 80, 81
 growth of, 119, 187–199
 planning of, *see* Republic of science
 popular interest in, 14, 44
 public support of, 50, 61
 pure, *see* Research, pure
 social goals of, 81
 in underdeveloped countries, 143–163
- Science policy, v–xiv
 Scientific activities, 1–3, 18, 45
 Scientific authority, 6, 7, 14–16, 196
 Scientific choice, vii, xii–xiv, 21
 and biomedical science, 107–118
 complexity of, xi, 63–79, 119–133
 criteria for, xi, xii, 21–33, 80–91
 Minerva, debate in, 64–68, 72, 107–109
 problems of, 22, 23
 Scientific community, 70, 195–199
 and choice, 44–62
 international, 35
 organised, 1–20
 see also Republic of science
 Scientific effort, distribution of, 34–43
 Scientific inquiry and public welfare, 8, 13
 Scientific judgement
 components of, 187–193
 consensual ground of, 193, 194
 Scientific literature, importance of, 24, 25, 52, 183, 184
 Scientific merit, as an external criterion, xii, 26–28, 32, 65–67, 69, 109
 Scientific personnel, v, vi, xiii, 22, 35, 100–102, 104, 173
 effective use of, 36, 38
 in production and sales, 42, 43
 Scientific progress, autonomy of, 8, 9, 10–12
 Scientific standards, 4–8, 15
 Scientific value, as a criterion, xi, 5, 196, 197
 Seaborg (Glenn) panel, 120, 125, 141
 Secondary industries, 127, 128, 130, 133
 Self-determination versus tradition, 17, 18
 Semenov, N. N., 87
 Seshchar, B. R., 204
 Shils, Edward, 64
 Sloan-Kettering Institute, 116
 Smith-Mundt programmes, 164, 176
 Snow, C. P., 69n., 77n.
 Social merit, as an external criterion, xii, 26, 28–32, 66, 109
 Soddy, Frederick, 191
- Soviet Russia, 35, 74, 104, 188, 195
 scientific research in, 9, 13, 168
 Specialisation, 35
 Sprat, Thomas, 119
 Stanford Research Institute, 78
 Strassmann, Friedrich, 32
 Stulberg, M. P., 114
 Syndicalism, 67
- Tata Institute, Bombay, 203
 Taube, Mortimer, 24, 25
 Technical assistance programme, 171–176
 Technical developments
 decisions in, 58–61
 reassessments of, 58, 59, 61, 62
 Technological merit, as an external criterion, xii, 26, 30–32, 66, 69, 109
 Technological unemployment, 127
 Technology
 development pattern of, 51, 52
 and economic growth, 92–95
 speculative, 72
 Teller, Edward, 82, 83
 Tertiary industries, 135
 emergence of, 126–129, 130
 social patterns of, 131–133
 Thomson, George P., 50
 Toulmin, Stephen, 81, 82n., 134, 135, 141
 Townes, Charles H., 124
 Tradition, xiii, xiv, 16, 17, 19, 157, 168
 Trend Report, 64, 77, 78
 Tusi, Nasir Al-Din, 200
- Underdeveloped countries
 basic research in, 164–176
 isolation in, 200–204
 research policy in, 145–159
 science in, vi, vii, 143–163, 177–186
 scientific education in, 170, 171, 178–180, 201
 scientific personnel in, xiv, 159, 160, 162, 170, 171, 173, 185
 technical assistance in, 164–176
 visitors' programmes for, 174–176, 183, 184
 United States, science budget in, 21, 22
 Universities, role of, 53, 204
 University Grants Committee, 10, 11, 13
 Unpredictability, argument from, 124, 125
 Usmani, I. H., 169
- Velikovsky Affair, 187–199
 Vesalius, Andreas, 14
- Watson-Crick development, 116
 Weinberg, Alvin M., xii, 64, 66, 67, 69, 120–122, 125, 133
 Wiesner, Jerome, 76n., 119
 Wigner, Eugene, 89
 Williams, B. R., 130
 Woehler, Friedrich, 194
 World Health Organization, 116
Worlds in Collision, 188