INDEX

Abel, J. J., 135
acetic acid, synthetic, 176
acetyl choline, 110
acromegaly, 147–8
Adams, C. W. M., 103, 104, 113
Adams, Robert, 77
Addison, Thomas, 131–3, 149
Addison's disease, 131–2, 136, 146
adenosine triphosphate, 30, 112, 113
adrenal glands, 128–9, 130, 131, 133–6, 151; cortex of, 136, 141, 145–7, 148, 149
adrenaline, 110, 135–6, 141
adrenochrome, 111
Adrian, E. D., 97, 115–16
air: carbon dioxide in, 6; composition of, 10–12, micro-organisms from, 42, 43, 45; plant nourishment from, 9
Albers, R. W., 110
Albertus Magnus, xxiv
alcaptonuria, 198
alchemy, xiv, xxv–xxvi, 7; of Arabs, xiv, xviii–xix, xxv; of Chinese, xvii–xviii, xxi; of Indians, xxii–xxiii
Alcmaeon of Croton, 61
alcohol, distillation of, xiv
alcoholic fermentation, 47–8, 49, 50
aldosterone, 147
Aldrich, T. B., 135
Allen, F. M., 138
b-aminobenzoic acid, 166
amylases, 17
amyloid bodies, 88
anabolism, equilibrium between katabolism and, 82–3
anaemia, Addisonian or pernicious, 132, 133, 166
anaerobiosis, 41, 50, 55
Anaxilaus of Larissa, xvii
Anderson, J. P., 110
androsterone, 145
aneurin, 167
Anguiano, G., 114
Animal Chemistry, Society for the Improvement of, xx n.
animal-protein dietary factor, 166
'animal spirits', x, 62, 64
Ansbacher, S., 166
anthrax, bacilli of, 53–5
antisepsis, 52
Appert, P., 42, 43
Aristotle, x, xxiv, 5, 7, 10
Arndt, R., 94
Arthus, M., 22
Aschheim, S., 144, 148
Aschner, B., 148
asepsis, 55
Ashford, C. A., 113
atomic theories, viii, xii, 4
axoplasm, flow of, 101, 112

Bach, A., 32–3
Bacon, Roger, xvi
bacteria: discovery of, 39, 40, 41; fermentations by, 48, 50; photosynthetic, 13; pure cultures of, 49, 53
Bailey, C. V., 143
Bang, I., 143
Banting, F. G., 139, 141–4
Barendrecht, 22
Bargmann, W. von, 113
Barnes, C. R., 1
Barr, M. L., 100
Bartholinus, C., 131
Bassi, A., 52
Bastian, H. C., 46
Batelli, F., 30
Baum, H. M., 166
Baumann, E., 137
Bayliss, W. M., 125, 126, 141
Beadle, G. W., 58, 198
Becher, J. J., 10
Becker, J. E., 163
beer, maladies of, 50–1
Bell, Charles, 74, 150
Bence Jones, H., 195–6
Benedictine, xv
Berger, Hans, 115
beri-beri, 157, 158, 159–60, 163, 167
Berkeley, M. J., 52
Bernard, Claude, 127, 133, 150, 192
Berthelot, P. E. M., 21
Berthold, A. A., 130

Index

Berthollet, C. L., 181
Bertram, L. F., 100
Bertrand, G., 22, 30
Berzelius, J. J., xxvii, 18–19, 174–5, 176, 178–80, 184, 187, 193
Best, C. H., 139, 143–4, 165
Biedl, A., 130
Biochemical Society, xx n.
biotin, 30, 165
Birch, T. W., 164
Bishop, K. S., 163
Black, A., 166
Black, J., 9
blood: brain function and supply of, 76–8, 104–5; brain nourished by, 62, 63, 64, 67, 69, 97, 118; coagulation of, 194–5; hormones secreted into, 125, 126, 127, 128, 129, 140, 144, 152
blood sugar, methods for determining, 143
Boerhaave, Hermann, xxiv
Bolus of Mendes, xvii, xxiii
Bonus, Petrus, of Ferrara, xix
Bordeu, T. de, 129–30
Bower, F. O., 4
Boyle, Robert, xii, xv, 7, 8
Brachet, J., 98, 99
brain: chemical composition of, 83–92; Descartes on, 63–5; disease of, 74–8, 90–2, 104, 111; oxygen supply for, 104–10, 114; Stensen on, 67–71; Vesalius on, 62–3; Waller and, 83; Willis on, 66–9
Braune, C. A., 188
Brethren of Sincerity, xviii
Brewster, David, 201
Brieger, L., 105
Briggs, G. E., 28
Brown, A. J., 27
Brown-Séquard, C.-E., 77, 104, 134
Browne, Sir Thomas, xxiv
Buchanan, A., 194–5
Buchner, E., 21, 189, 193
Budd, G., 158, 160
Buffa, P., 108
Burr, G. O. and M. M., 165
Butenandt, A., 145
butyric fermentation, 50

Cagniard de Latour, C., 19, 47, 186, 193
Cajal, S. R. y, 81, 83 n., 92–4, 95
calciferol, 167
Caldwell, P. C., 113
carbohydrates, chemistry of, 25, 181
carbon dioxide, x; in photosynthesis, 12, 13; in respiration, 31
carbon monoxide, compound of haemoglobin and, 199
β-carotene, 167
carotenoids, 86
Carpenter, W. B., 128, 130
Cartier, J., 158
Cary, C. A., 166
Caspersson, T., 98
Cassan, 131
catalase, 31
catalysts, catalysis, 15, 17–19, 183–4; *see also* enzymes
catechol oxidase, 33
Caton, R., 115
Caventou, J. B., 13
cells, of nervous system, 78–9
centrifugation, high-speed, 37
cerebral cortex (grey matter), 65–9, 102–3; metabolism of, 106, 107–8, 109–10, 113
cerebral medulla (white matter), 62, 67, 69–72, 103–4; metabolism of, 109
cerebrosides, 87, 88, 103
Chang Chieh-Pin, xxvii
Chang Po-Tuan, xxi
Chao Nai-An, xviii
Cheadle, W. B., 160
cheese analogy, xxiv
chemistry, inorganic and organic, 178–80, 190
Ch'en Chih-Hsü, xxi
Cheshire, J. D., 114
Chevreul, M. E., 181
ch'i (*pneuma*), ix ff.
ch'iu shih (mixed steroid hormones), xxii
chlorophyll, 13, 201
Chodat, R., 33
cholesterol, 84, 103, 145, 146
choline, 165
Chymical Physitians, Society of, xx n.
chymotrypsin, 26
citric acid cycle of metabolism, in brain, 108
Clamp, J. R., 196
Clausius, R., 32
coenzyme, A., 30
coenzymes, 22–3, 29–30, B vitamins as, 168
Cohen, J. B., 192
Cohn, F. J., 46

Index

Coindet, I. R., 136
colloids, 88, 186, 196
Comarius, xvii
competitive inhibitors of enzymes, 25
conjunction, idea of, xxiii
Conklin, R. E., 163
contagium vivum, xxvi
co-ordination of biological function: attributed to nervous system, 133, 139–40, 150; by hormones, 150–1; by nervous system mediated by hormones, 151
Cook, Capt. J., 159
cooling coils, xxvi
Coppola, F., 161
corticotropin, 148, 149, 151
Couerbe, J. P., 84
Courtois, B., 136
Cowdry, E. V., 101
'cozymase', 30
Craik, K. W., 115
Crawford, A., 180
Cummins, J. T., 114
Cushing, H., 148
cystine, 194
cytochromes, 34, 35, 108, 201

Dakin, H. D., 136, 192
Dale, H., 110
Dalton, John, viii
Dam, H., 165
Davaine, C., 53
Davis, M., 158, 162
Davy, Edmund, 184
dehydrogenases, 34–5, 36
Democritus, 4
Descartes, R., 63–5, 66, 68, 73
diabetes, 65, 137–40
diastase, 17
diffusion, 64
digestion, xxvi; chemistry of, 182–3; enzymes of, 17, 20, 21
diplosis ('doubling'), xxv
diseases, deficiency, xi, 156–61, 198; germ theory of, 52–5; mental, 74–8, 90–1, 104, 111
distillation, xiv–xv
Dixon, K. C., 101, 103, 107, 110, 113, 114, 117 n.
Dixon, M., 23, 28
DNA (deoxyribonucleic acid), in neurones, 99, 100, 117, 118
Döbereiner, J. W., 184
Doisy, E. A., 145
Drummond, J. C., 162
Dryden, L. P., 166
Du Vigneaud, V., 149
Duclaux, E., 17
Dudley, H. W., 192
Dumas, J. B. A., 179
Dusch, T. von, 43

Eastcott, E. V., 166
Eberle, J., 183, 184
Eccles, J. C., 110
eggs, proto-chemists' work on, xiv, xxiv
Ehrlich, P., 105, 108, 109
Eijkman, C., 156, 158, 160, 162
Einarson, L., 98, 99, 101, 103
Einthoven, W., 97
electrical activity: in brain, 115, 116, 117; innerve, 97, 111
electron microscope, 58–9
elements, five, of Chinese, xii; four, of Greeks, xii, 5–6, 9
elixir, xv–xvi, xxi
Elliott, T. R., 110, 136
Elvehjem, C. A., 164
endocrine organs, 127
energy, 3; from biological oxidations, 36; indestructible, 12; transfer of, 16
energy-rich bonds, 36; in brain and nerve, 112, 113
enzymes, 15–23; active centres of, 24–5, 26; control of synthesis and activity of, 58; hormones and, 152; in inborn errors of metabolism, 198; introduction of word, 21; kinetics of, 27–8; in photosynthesis, 13; purification of, 23–4; systems of, 29–30.
Erxleben, 186
Evans, Herbert M., 144, 148, 163, 165
Eydt, K. M., 110

Falta, W., 161
Farr, A. C., 110
fat solvents, extraction of hormones by, 145, 146
fats, chemistry of, 181
fatty acids, nutritionally essential, 165
feed-back control, of hormone secretion, 151
fermentation, 19–20, 47–52, 186–7, 189
ferments, xxiv–xxvii, 7, 13, 19, 21; *see also* enzymes
Feulgen, R., 100

Index

Fick, A., xxvii
Fildes, P., 57
Fischer, Emil, xxv, 25
Fitz, R., 138
flavoprotein enzymes, 36
Flourens, P. J. M., 150
Fludd, Robert, xx
fluorescence, in animal tissues, 196–7
Folch, J., 102
folic acid, 165, 168, 199
Fontana, F., 81
Forel, A., 92
Foster, Michael, 68–9, 85, 89
Fourcroy, A. F., 84, 101, 171, 172
Fracastorius, H., 38
Frémy, E., 84
Frey, H., 128
Frölich, T., 158, 160
function and structure, 60, 69
fungi, 52, 56
Funk, C., 156, 158, 160–1, 163

Galen, x, 129
Galenists, ix, xx, xxiii
gallstones, 86
Galvani, L., 97
Gamgee, A., 84, 89, 200, 201
Garrod, Alfred B., 197–8
Garrod, Archibald E., 198
gases, 6, 9
Gay-Lussac, J. L., 43, 181
Geber, xix, xxv
genetics, of micro-organisms, 58
George II, 74
Geren, B. B., 104
Gerhardt, C. F., 176
Gerlach, J. von, 92
Gibbon, J. H. and M. H., 108
Glees, P., 117 n.
Gley, E., 142
glucose: from liver, 127, 129; metabolized by brain and nerve, 106–7, 113
glutathione, 35
glucolysis, in brain and nerve, 107, 109, 113, 114
Gmelin, L., 85, 182–3
Gnosticism, xx
Gobley, M., 84
goitre, 136, 137, exophthalmic, 140
Goldberger, J., 163
Golgi, C., 92, 93–4
gonadotropins, 148, 149, 151
gonads, hormones of, xxii, 129, 130, 134, 141, 144–5
Goodhart, J. F., 133
gout, 197
Gräff, S., 109
Grijns, G., 158, 160
growth-stimulating hormone, 148, 149
Gull, William, 136–7
Gulliver, George, 130
György, P., 163, 164, 165

Haeckel, E., 55–6
haematoporphyria, 198
haematoporphyrin, 86, 89
haemoglobin, 201; carbon monoxide compound of, 199
Haldane, J. B. S., 28
Haldane, J. S., 199
Hales, Stephen, 9
Hall, W. S., 161
Haller, A. von, 74–6, 130
hallucinogens, 111
Halstead, W. C., 117 n.
Hansen, C., 161
Harden, A., 30, 193
Harington, C. R., 141
Harris, L. J., 164
Hartman, A. M., 166
Hartmann, A. F., 143, 145
Häusermann, E., 161
Hawkins, Sir Richard, 158
Heald, P. J., 112
Hédon, E., 140
Held, H., 95, 98, 101
Helmholtz, H. L. F. von, 12
Henle, F. G. J., 54, 85
Henri, V., 27
Henriques, V., 161
Herbertson, B. M., 103
Hermetic Corpus, xx
Heron of Alexandria, 6
Herriott, R. M., 24
Hershey, J. M., 165
Herter, C. A., 109
Hildegard of Bingen, xxiv
Himwich, H., 106–7
Hippocratic Corpus, xii
Hirschberg, E., 106, 114
His, W., 92
Hiscoe, H. B., 101, 102
histohaematin, 201
histology, physiological, 95–6
Hodgkin, A. L., 97, 111, 113

Index

Hoffer, A., 111
Hokan Chi, xvii
Holmes, E. G., 109
Holmes, Gordon, 96
Holst, A., 158, 160
Hopkins, F. G., xiii, xxvii, 35, 133, 156, 158, 160, 161, 162, 164, 195, 196, 198
Hoppe-Seyler, F., 32, 84, 89, 138, 189, 190, 200, 201
hormones (animal), 125–55
Horsley, V. A. H., 137
Houssay, B. A., 149
humours, doctrine of, xii–xiii
Huntsman, M. E., 165
Hsün Ch'ing, x
Hu-Ssu-Hui (Hoshoi), xi
Hydén, J., 99, 101, 117 n.
hydrochloric acid, in stomach, 182
hydrogen, carriers of, 29, 34–5
hydrogen peroxide, 32, 33–4
5-hydroxytryptamine, 110–11
hypoglycaemia, 143
hypothalamus, 151

iatro-chemistry, xx, xxvi; Chinese, xx–xxii
impulse-propagating substances, 111–12
'indophenol oxidase', 108–9
Ingenhousz, J., 11, 12, 180
industrial revolution: and applied science, 188–9; and nutrition, 181
inositol, 166
insulin, 106, 139–40, 141–4; pituitary and, 149–50
iodine, in thyroid, 136–7
ion exchange, 146
iron, in enzymes, 31, 34

Jābirian Corpus, xiv, xviii ff., xxv
Jacob, L., 161
de Jager, 22
Joblot, L., 42
Johnson, A. C., 103

Kabat, H., 110
Kant, I., 115; 119
Kastle, J. H., 31
katabolism, equilibrium between anabolism and, 82–3
Katsoyannis, P. G., 144
Katz, J., 117 n.
Keilin, D., 34, 35, 108, 201
Kendall, E. C., 141, 147
kephalins, 87, 102
kerasin, 87
Keynes, R. D., 113
kinetics, of enzyme action, 27–8
King, T. Wilkinson, 130
Kingsbury, B. F., 37
Kirchoff, G. S. G., 184
Klein, J. R., 114
Klenk, E., 102
Knight, B. C. J. G., 57
Ko Hung (Pao P'u Tzu), xviii
Koch, Robert, 53, 54, 56
Kolbe, A. W. H., 176
Kölliker, R. A. von, 79, 96
Kramer, J. G. H., 158
krasis (balanced admixture), xiii, xiv
Kuhn, R., 163
Kühne, W., 21, 189
Kunitz, M., 24
Kützing, F., 47–8

lactic acid, in brain, 87, 107, 109
lactic fermentation, 48–9
Lancaster, J., 158
Lankester, Ray, 201
Langerhans, P., 142
Laplace, P. S. de, 180
Lashley, K. S., 115
Lavoisier, A. L., viii, xix, 10, 12, 31, 172, 178, 180–1
Lea, Sheridan, 85, 99, 201
Leeuwenhoek, A. van, 38–41, 58
lecithins, 84, 102
lei (categories), xxiii
Leiner, K. Y., 110
Lepage, L., 125
Lepkovsky, S., 165
Li Cho-Hao, 149
Li Shao-Chin, xvii, xix
Libavius, Andreas, xix
Liebig, J. von, xi, 19–20, 31, 85, 179–80, 187–9, 193
Liebreich, O., 84, 89
light, and plants, 9, 11
Likely, G. D., 166
Lillie, R. D., 163
Lind, J., xxvii, 158
Lindsay, H. A., 100
Lineweaver–Burk plot, 28
lipids: of brain, 84, 87, 88, 118; of grey matter, 102–3; intraneuronal, 96–7; of white matter, 103–4

Index

lipofuscin, 97, 102–3
Lister, Joseph, 52–3
Litten, M., 104–5
Liu An, xxiii
Liu Hsiang, xvii
Loeb, 147
Loewi, O., 110
Lohmann, K., 168
Long, C. N. H., 149
Long, J. A., 148
Lord, J. R., 96
Lower, Richard, 69, 129
Lowry, O. H., 110
Lucas, Keith, 97
Lucretius, 6
Ludwig, Carl, 150
Lukens, F. D. W., 149
Lull, Raymond, xix
Lullian Corpus, xv, xix
Lunin, N., 156, 158, 161
lysozyme, 26–7

McCaman, R. E., 110
McCollum, E. V., 158, 162, 163
Macdougal, D. T., 1
McHenry, E. W., 165
McIlwain, H., 114
MacIntyre, W., 196
Macleod, J. J. R., 106, 142
MacMunn, C. A., 201
McNabb, A. R., 103
Madden, R. J., 164
Magath, T. B., 106
Magendie, F., 74, 150, 181, 182, 185
malt, enzyme from, 17
al-Majriti, xviii
Maly, R., 200
Mann, F. C., 106
Mann, Gustav, 95, 99
Marie, P., 147–8
Marinesco, G., 102, 106, 109
Mariotte, E., 8
Marrian, G. F., 145
Mars, life on, xi
Mary the Jewess, xvii
Matthews, B. H. C., 97
Mattill, H. A., 163
Mayer, J. R., 12
Mayow, J., 20, 30
mechanist–vitalist controversy, xi
Medicus, F. C., 172
von Mehring, J., 137, 138, 139
Mei Piao, xviii
melanocyte-stimulating hormone, 147, 149
Mellanby, E., 162
membrane permeability: hormones and, 152; in injured nerve cells, 80
memory, 65, 66, 67, 75, 115–16
Mêng Shen, xviii
mescaline, 111
metabolism: inborn errors of, 198; introduction of word, 186
methyl groups, transfer of, 30, 199
de Meyer, J., 142
Michaelis, L., 27
microbiology, 38–59
microscopes: electron, 58–9; Leeuwenhoek's, 38, 39–41; Monro's, 73
Minkowski, O., 137, 138, 139
mitochondria, 36–7, 109
mixed bodies, analysis of by fire, xii
Monro, Alexander, 72–4
Montagna, W., 81
moon, xxvii
Mörner, H., 194
'mosaic gold', xiv
Müller, J., 177, 185
Murphy, E. A., 165
Murray, G. R., 137
muscles: irritability of, 75; nerves and, 63, 64, 73–4
mutation, of micro-organisms, 58
myelin, 79, 96; of degenerating nerves, 80, 81; and propagation of nerve impulse, 103–4, 111
Myers, V. C., 143
myohaematin, 201

Nāgārjuna, xxii
Naturphilosophie, xi, xiii
Naunyn, B., 137, 138
Needham, J., 175
Needham, W., xxiv
Negelein, E., 106
Neo-Platonism, xx
nerves: brain and, 62, 63, 64, 69, 74; conduction of impulse in, 111–12; degeneration of, 80–3, 94–5, 96–7, 102, 104; motor and sensory, 72–4; nutrition of, 69, 81, 82, 95, 101–2, structure of, 67; *see also* neurones
nervous system, hormones and, 150, 151
Neumann, K. A., 181
neurology, biochemical landmarks in, 60–124

Index

neurones: anoxia of, 105, 106; cerebral, as independent units, 92–4; chemistry of, 94–7; macromolecular fabric of, 98–104, 116–17; as metabolic units, 79–83; *see also* nerves
neurosecretion, by hypothalamus, 113
nicotinamide, 164
nicotinamide-adenine dinucleotides (NAD, NADP), 36
nicotinic acid, 164
Nielson, E., 166
Nissl, F., 94
Nissl substance, 94–6, 98, 99
nitrogen, in nutrition, 182
Noback, C. R., 81
Noeggerath, C. T., 161
noradrenaline, 110, 135
Norris, L. C., 165
Northrop, J. H., 24
nucleic acid: cytoplasmic, 95, 99; in neurones, 98, 99, 118
nucleoprotein, 95, 98
nutrition: of bacteria, 57, 58; chemistry and physiology of, 180–1; of nerves, 69, 81, 82, 95, 101–2

Oliver, George, 134, 147, 148
Olsen, N. S., 114
Olympiodorus, xviii
Opie, E. L., 139
Ord, W. M., 137
Osmond, H., 111
'outer' and 'inner' elixirs, xxi
oxidations, 30–7; by brain, 105, 114
oxygen, 12; in respiration, 31; supply of, for brain and nerve, 78, 104–10, 113; utilization of, by cells, 16, 35
oxygenase, 33
oxytocin, 149
ozone, 31–2

pancreas: and diabetes, 137–40; insulin from, 141–4; secretin and, 126
pantothenic acid, 165
Pappenheim, S. M., 184
Paracelsians, x, xi, xii, xx, xxiii
Paracelsus, xix ff., 136
parathyroid glands, 141
Parmenides of Elea, 4
Pasteur, L., xi, 19, 20, 43–6, 48–51, 53, 56, 189, 193
Pasteur effect, 107
Pavcek, P. L., 166
Payen, A., 17
Pekelharing, C. A., 158, 161
pellagra, 158, 163, 164, 167
Pelletier, B., 13
P'êng Ssu, xxi
pepsin, 17, 22, 183, 184
peroxidase, 31, 32, 33
peroxides, 32
Persoz, J. F., 17
Peters, R. A., 108
Pfeffer, W., 1
Pfiffner, J. J., 145–7
Pflüger, E., 150, 190–1
Phillipeaux, M., 134
Phillips, D. C., 26
Philon of Byzantium, 6
phlogiston theory, 10, 11, 12, 31
phosphate bonds, high-energy, 112, 113
phosphatides (phospholipids), 84, 87, 88, 118
phosphocreatine, in brain, 112
phosphoprotein, in nerve, 112
photosynthesis, 1–14
phrenosin, 87
physiological chemistry, and biochemistry, 186–91
physiology, relations of chemistry and, 180–6
pineal gland, 64, 65, 67
pituitary gland, 129, 135, 141, 144, 147–50, 151
plants, 1–2; nutrition of, 7–8; and water 3, 4, 7
Plato, xii, 4, 5
Pliny the elder, 6
pneuma, ix–xi
polypeptide hormones, 141, 149
Pope, Alexander, 119
Popielski, L., 125, 126
Posener, K., 106
potassium, in nerve metabolism, 111, 113, 114
Pouchet, F. A., 45–6
prana (*pneuma*), ix
pregnancy, test for, 149
Priestley, Joseph, 10, 11, 30, 180
prolactin, 149
'protagon', 84, 89, 200
proteins: of brain, 84, 101; chemistry of, 25, 181–2; denaturation of, 199; enzymes as, 22, 24, 25, 51; in neurones, 99, 101–2, 112–13, 116, 117, 118

Index

Prout, William, 182, 195
Pseudo-Albertus, xxv
Pseudo-Cleopatra, xvii
Pseudo-Democritus, xvii, xxiii
pteridines, 199
Purkinje, J. E., 79, 184
pyridoxal phosphate, 30
pyridoxin, 164
pyruvic acid, 108, 168

Quastel, J. H., 57
quinine, fluorescence of, 196–7
quintessence, xiv–xv

radicals: electrochemical theory of, 178–9; substitution theory of, 179
Raistrick, H., 192
Ramsden, W., 199
Raper, H. S., 192
rasa (elixir), xxii
Raulin, J., 49
al-Razī, xviii
reflex action, 64
Reichstein, T., 147
Reil, J. C., 172–4, 180
Remak, R., 79
respiration, 20, 31, 34
'respiratory ferment' of Warburg, 34, 35
riboflavin, 163
ribonuclease, 26, 98
rickets, 158, 162–3, 167
Ridout, J. H., 165
Ringrose, A. T., 165
RNA (ribonucleic acid), in nerve and brain, 98, 99, 100, 112, 117, 118
Roberts, N. R., 110
Robins, E., 110
Rogers, L. M., 163
Rogoff, J. M., 145
Rosenheim, O., 200
Rosenthal, I., 79
Rossen, R., 107
Rossenbeck, H., 100
Rossiter, R. J., 103
Rostan, L., 76
rūḥ (*pneuma*), ix
Rumford, Count, 10
Rupescissa, John of, xix
Rusznyak, S., 166
Ruzicka, L., 145

saccharase, 21, 27
von Sachs, J., 9, 11, 12
san chiao (three coctive regions), xxvii
san yuan (three primary vitalities), xiii
Sanger, F., 26, 144
Saussure, N. T. de, 180
Savory, H., 196
Schäfer, E. A., 135, 147, 148
Schardinger, F., 23
Scharrer, E. and B., 113
Schiff, M., 136, 137
schizophrenia, 111
Schneider, M., 112
Schönbein, C. F., 31, 32
Schröder, H., 43
Schulze, F., 43
Schuster, P., 168
Schwann, T., 17, 47, 78–9, 103, 183, 184, 185–6, 187
scurvy, 157, 158, 159, 160, 167
secretin, 125, 126, 141
Sédillot, C. E., 41
Séguin, A., 180
Sehrt, E., 97
Senebier, J., 11, 180
sex chromosomes, 100
sex hormones, *see* gonads
Shaffer, P. A., 143
Shakespeare, W., 63
Shaw, T. I., 113
Shipley, P. G., 163
Shorb, M. S., 166
Simon, Sir John, 87
Simmonds, N., 163
Simpson, S. A., 147
ibn Sīnā, xviii
Sloper, J. C., 113
Smith, D. E., 110
Smith, Philip E., 148
Smythies, J., 111
Socin, C. A., 161
sodium in nerve metabolism, 111, 113, 114
soma, xv
Sorby, H. C., 13
souls, Aristotelian doctrine of, x
Spallanzani, L., 42
specificity: of enzymes for substrates, 25; between organisms and diseases, 53, 54, 55, 56
sphingolipids, 102
sphingomyelins, 87, 103
sphingosine, 87, 102
spirits, Galenic theory of, x
spleen, 128, 130

Index

spontaneous generation, 41–2
spores of micro-organisms, 41, 46–7
Stahl, G. E., 10
starch, photosynthesis of, 13
Starling, E. H., 125–6, 141
Steinmann, J., 181
Stensen, Nicolaus, 69–72
Stephanus of Alexandria, xviii
Stephenson, M., 56, 57, 58
Stepp, W., 161
sterilization, microbiological, 42–7, 55
Stern, L., 30
steroids, xxii, 145, 147
Stewart, N. C., 145
Stillman, E., 138
Stokes, William, 77, 104
Stoll, A., 13
Stolz, F., 136
Strecker, A. A., 84
streptogenin, 166
Strong, F. M., 164
structure and function, 60, 69
sugar, fermentation of, 20
'sulphur water', xiv
Sumner, J. B., 24
Sun Ssu-Mo, xviii
Sure, B., 163
surgery: antiseptic, 52; aseptic, 55; of endocrine glands, 151
Swingle, W. D., 145–7
Sydenham, Thomas, 197
sympathetic nervous system, 136
synaptic transmitters, 110–11, 136
synthetic diets, 161
synthetic media, 49, 55
Szent-Györgyi, A., 166

Tait, J. F., 147
Takamine, J., 135
T'ao Hung-Ching, xviii
Taoists, three primary vitalities of, xiii
Tatum, E. L., 58
tetrahydrofolate, 30
Thales of Miletus, 3
Thénard, L. J., 181
Theophilus Presbyter, xvii
thermal injury, to protoplasm, 88
thiamine, 167, 197
thiamine pyrophosphate, 30, 168
thiochrome, 197
thiol groups, in enzymes, 26
thought: brain the site of, 61, 63, 78; cerebral fabric and, 66, 69, 71, 115
Thudichum, L. J. W., 85–92, 101, 104, 111, 199, 200, 202
Thunberg, T., 34–5, 106
thymus gland, 128, 130
thyroid gland, 128, 130, 136–7, 140, 151
thyrotropin, 148, 149, 151
thyroxine, 141
Tiedemann, F., 182–3
tocopherols, 168
Todd, R. B., 128, 129
toxicity, differential, 49
transfer reactions, 29–30
Traube, M., 19, 22, 189, 193
Trousseau, A., 132
Tsou Yen, xvii
Ts'ui Fang, xxi
Tswett, M., 13
turacin, 201
Turpin, P. J. F., 193
Tyndall, John, 46–7

ubiquinone, 36
ultra-violet light, absorption of, by nucleic acids and proteins, 98–9
ibn 'Umail, xxv
urea: denaturation of proteins by, 199; transformation of ammonium cyanate into, 176–7
urease, 24
uric acid, 194, 197
urine: analysis of, 195; preparation of sex hormones from, xxii
urobilin, 198
urochrome, 86

Vaiśeśika atomism, xii
Valentin, G. G., 79
van Helmont, J. B., x, xxvi, xxvii, 6, 7–8, 10
van Niel, C. B., 13
vasopressin, 135, 149
Vauquelin, L. N., 84, 101, 103, 171, 181
Vernon, H. M., 108
Vesalius, A., 61–3, 66, 129
Villanova, Arnold of, xix
Villanovan Corpus, xix, xxv
Virchow, R., 76
vital force, vitalism, xi, 172, 174–8, 183, 185, 192
vitalities, theory of three primary, xiii
vitamin A, 162, 167
vitamin B, 162
vitamin B_1, 160, 163, 167

Index

vitamin B_2, 163
vitamin B_6, 164
vitamin B_{12}, 30, 165, 166
vitamin C, 160, 162, 167
vitamin D, 162–3
vitamin D_2, 167
vitamin D_3, 167–8
vitamin E, 103, 163, 168
vitamin F, 165
vitamin H, 165
vitamin K, 165–6
vitamin P, 166
vitamins, 156–70
Voit, C. von, 189
'volunty' and 'nolunty', xx
Vulpian, A., 133–4

Wagner-Jauregg, T., 163
Waldeyer, W., 93
Waller, Augustus, 69, 73, 79–83, 92, 102, 118, 200
Wang Chieh, xxi
Wang Ying-Lai, 144
Warburg, O., 34, 37, 106, 107, 109
water, distilled, 12; in photosynthesis, 11, 13; plants and, 3, 4, 7
Webb, E. C., 28
Wei Po-Yang, xvii
Weinberger, L., 107, 108
Weiss, P., 101, 102, 112
Wellesley, Dorothy, xii
Wertheimer, E., 125
Wettstein, A., 147
Wheeler, G. A., 163
Wieland, H., 34, 199
Wilks, Samuel, 132
Willis, Thomas, 65–9, 71, 73, 83, 102, 118–19, 129
Willstätter, R., 13, 23
wine, distillation of, xiv ff.
wines, maladies of, 50; Thudichum on, 90
Winoradski, S., 57
Winslow, J.-B., 70
Winterstein, H., 105–6, 109, 114
Wintersteiner, O., 147
Wislecenus, J., xxvii
Wöhler, F., 175–8, 192, 193
Wollaston, W. H., 194–5
Woodall, J., 158
Woods, D. D., 166
Woolf, B., 28
Woolley, D. W., 164, 166
Wu, M.-L., 110

xanthine oxidase, 23, 34
X-ray methods, for study of enzyme structure, 26

yeast, xxiv, 47, 49, 186; enzymes of, 21, 30, 189, 193–4
Yeats, W. B., xii
Yin and Yang, xiii, xx, xxiii
Young, F. G., xxvii
Young, J. E., 101
Young, W. J., 30

Zahn, H., 144
Zondek, B., 144, 148
Zosimus of Panopolis, xviii, xxv
Zuelzer, G. L., 143