

SUBJECT INDEX

- α -activity, limits of detection, 2
 α -disintegration, change of spin in, 53, 61, 65
 'difficulty' factor in, 47, 52, 62
 Geiger-Nuttall rule, 27
 Swinne's rule, 28
 wave-mechanical theory of, 28, 34, 53
 α -disintegration energies, empirical regularities, 64, 67, 88
 α -emitters, 'artificially' produced transuranic, 34, 42
 of medium atomic number, 2, 71, 73
 'pure', 47, 83, 87
 α -particles, emitted in fission, 76
 Anomaly, polonium, 40, 45
- β -activity, limits of detection, 3
 β -disintegration, 'allowed' and 'forbidden', 3, 93
 change of spin in, 83, 93
 'comparative half-life', 100, 117, 118
 double, 5, 10
 'internal', 8
 of bare nucleus, 8
 'structure-dependent' factor in, 96, 105, 110
 theory of, 96, 100
 'unobserved' modes of, 94
 β -disintegration energies, empirical regularities, 119, 121, 124, 131, 137, 141
 expressions for difference of two, 124, 128
 β -emitters, naturally occurring, 4
 Binding energy, proton, information from β -disintegration energies, 129, 134, 136, 137, 142
 Binding energy, neutron, from (d , p) reactions, 78
 information from β -disintegration energies, 128, 134, 136, 137, 143
- Capture-active species, naturally occurring, 4
 Capture of fission neutrons, effective nuclear cross-section for, 80
 Capture of thermal neutrons, nuclear cross-section for, 81
- Diagram, Geiger-Nuttall, 34, 42, 46
 Sargent, 92, 104, 109, 113
- Electron-capture activity, limits of detection, 4
 Electron-capture process, theory of, 114
 Electrons, extranuclear, energy of adiabatic reorganisation of, 9, 50, 119
 Elements, 'missing', 13, 16
 number of the, 91, 151
 Even-even nuclei, 13
 Even-odd distinction, 10, 20, 136
- Fission, 'delayed' neutrons of, 144
 emission of α -particles in, 76
 negative proton not found in, 146
 spontaneous, 1, 91, 148
 Fission 'chains', mass-yield curve, 77
 successive β -disintegration energies in, 142
- Helium, 'unexplained', in minerals, 73
- Isobars, neighbouring stable, 6, 24
 Isotope, 'representative', 48, 149
 defined, 47
 Isotopic number (neutron excess), 15, 19, 64, 121, 124, 131, 149
 Isotopic shift in atomic spectra, 78
- 'Magic' numbers, 26
 'Missing' elements, 13, 16
 'Missing' stable species, 15, 18, 22
- Negative proton, not found in fission, 146
 Neutron-proton asymmetry, 13, 66, 80, 123, 136
 Neutrons, 'delayed', emitted by fission fragments, 144
 Nuclear mass, precision determination of, 77
 Nuclear radius, from β -disintegration energy in 'mirror' transitions, 120
 from scattering of high-energy neutrons, 82

Nuclear radius (<i>cont.</i>)	Positron-emission, competition with
in theory of α -disintegration, 29, 41,	electron-capture process, 108
46, 47, 50	Proton-neutron asymmetry, 13, 66, 80,
in theory of β -disintegration, 100	123, 136
Nuclei, α -particle constituted, 14	Radioelements, 'classical', 2, 27, 93
even-even, 13	Shell structure of nuclei, 23, 26, 69, 71,
'mirror', 96, 104, 109, 118, 119	77, 80, 81, 90, 123, 127, 132, 135,
Nucleon parity types defined, 11	142, 145
Nucleus, electric polarisability of, 79	Species, 'pure α -active', 47, 83, 87
electrostatic energy of, 67, 119, 126,	Stability, nuclear, defined empirically, 1
132, 139	Stable species, 'favoured', 25, 72, 143,
'symmetry' energy of, 126, 132	145
Odd-even distinction, 10, 20, 136	'missing', 15, 18, 22
'Polonium anomaly', 40, 45	Super-multiplet group (of nuclear
	energy states), 112