

Index

Page numbers in *italics* refer to illustrations or tables

A

abrasions 56, 56
 absolute anchorage 200
 abutments 204
 acid-etching 14, 86, 93
 Activa bracket 4, 4
 active systems 22, 23, 24, 34, 34
 adhesives 12
 – bond strength 12–14, 13, 14, 15
 – thermoactive adhesives 94
 – *see also* bonding
 aesthetic treatment
 – ceramic self-ligating brackets 159, 159
 – – case study 160–162
 – lingual self-ligating brackets 49, 163–164, 163, 164
 – – case studies 150–151, 165–170, 205, 233–234
 – – *see also* SOX retainers
 aesthetic zone 159, 159
 age, relapse and 215
 alignment 55, 98–122, 163
 – arch expansion 101–102, 101, 102, 103
 – biomechanics 98–100
 – – force levels 98, 99, 99
 – case studies 104–123, 131–132, 138–140, 143–144, 160–162, 193–194
 – – lingual self-ligating brackets 167–170
 – – mini-implants 211–212
 – – occlusion treatment after alignment 116–123
 – – posterior bite elevators 186–187, 189–190
 – – retention 218–221, 230–231, 233–234
 – treatment time 55–56, 55, 56
 amelogenesis imperfecta 198
 anchorage 199
 – categories 199, 199
 – endosseous 200
 – extraoral 200
 – tissue-borne 199
 – tooth-borne 199–200
 – – intermaxillary 200
 – – intramaxillary 199–200

– *see also* mini-implants
 Angle, Edward H. 2, 215
 annealing archwire distal ends 178, 179
 anterior bite elevators 57, 57, 184–185, 184, 220
 arch expansion 101–102, 101, 102, 103
 – dental versus skeletal expansion 101–102, 102, 122
 – hybrid rapid maxillary expansion 122, 135–136, 135, 136, 137
 – – case studies 138–142, 156–157, 158
 – single-arch treatment 167
 – surgical 102, 104
 – with archwires 101, 102, 103
 archwire 26–30, 34, 34
 – aesthetic 159, 159, 160
 – annealing the distal ends 178, 179
 – arch expansion 101, 102, 103
 – binding 17, 17
 – detailing bends 180, 180, 181
 – elastic properties 26–28, 27
 – forces acting on 27
 – friction 17, 17, 18
 – ligation 51, 51, 52
 – notching 17, 17
 – permanent deformation 28, 178
 – sequence 29, 29
 – shape 29–30, 29
 – – changing 178, 179
 – shifting 178, 178
 – – securing methods 178, 179
 – surface variations 28, 28
 – torque and 19–21, 19, 20, 21
 articular disk displacement 64, 150
 auxiliaries 30–31, 32, 173
 – bite planes 183–187
 – – anterior 57, 57, 220
 – – case study 186–187
 – – lateral 185, 185
 – – posterior 186, 186–187, 189, 189–190
 – – procedure 184
 – mini-implant attachments 202–204, 202–204
 – NiTi coil springs 31, 31
 – spikes 183, 183, 223, 223
 – *see also* elastomeric elements

auxiliary slots 22, 22, 191
 – use of 22, 191–192

B

Band Lok Blue 185
 bands 83
 bends 121, 180, 180, 181
 binding 17, 17, 18
 biomechanics 98–99, 99
 – *see also* force/deflection studies
 bite planes 183–187
 – anterior 57, 57, 184–185, 184, 220
 – case study 186–187
 – lateral 185, 185
 – lingual 183, 184
 – posterior 186, 186–187, 189, 189–190
 – procedure 184
 bite-blocks 154
 bite-jumping techniques 152
 – case study 153–155
 bite-opening devices 176
 blocked-out teeth
 – canines 99–100, 105–110, 128–134, 141–144
 – incisors 153–155, 190
 – *see also* crowding
 bond strength 12–14, 13, 14, 15
 – increase 86
 Bond-a-Braid 225
 bonded retainers 105, 108, 110, 117, 120, 122, 150, 160, 165, 167, 169, 170, 205, 208, 233
 – breakage 224
 – *see also* fixed retainers; retention
 bonded temporary bridge 229
 bonding 54, 86–88
 – colored bonding agents 76, 76, 88, 88
 – development and history of techniques 83, 83
 – direct 92, 92, 93, 96
 – indirect 92, 94, 95, 96, 96
 – oral hygiene measures 75, 76
 – removal of excess bonding material 176
 – time required 50
 – to enamel 86, 86, 87

- to previously filled or altered tooth surfaces 86, 86, 87
 - *see also* bond strength
 - box elastics 209, 209
 - Boyd bracket 3, 3
 - bracket base 10–14
 - bond strength 12–14, 13, 14, 15
 - shape of 10–12, 11, 12
 - *see also* self-ligating (SL) brackets
 - bracket body 15, 15, 16
 - block design 15, 16
 - marking 15, 16, 90
 - tie-wing design 15, 16
 - *see also* self-ligating (SL) brackets
 - bracket positioning 83–84, 88, 89, 90, 91
 - horizontal positioning 84, 85
 - vertical positioning 83–84, 84, 85
 - bridge 229
 - buccally positioned canines 108, 110, 128, 141, 218
- C**
- calculus accumulation 52, 52
 - camouflage treatment 142, 145, 148
 - canines
 - blocked-out 99–100, 105–110, 128–134, 141–144
 - buccally positioned 108, 110, 128, 141, 218
 - ectopic 104, 119, 132
 - impacted 63, 165–166, 193–194
 - *see also* crowding
 - caries 73, 74
 - epidemiology 74
 - erupting teeth 78
 - etiology 73–74
 - *see also* oral hygiene
 - Carriere LX bracket positioning 90
 - cephalometric analysis 62, 113, 121
 - case studies 65–70, 130, 139, 147, 161, 229
 - ceramics
 - aesthetic self-ligating brackets 159, 159
 - - case study 160–162
 - bonding to 87
 - injection molding (CIM) 11–12
 - chairside time 50–54, 50
 - bonding of brackets 50
 - debonding 53, 53
 - ligation of archwires 51, 51, 52
 - repairs 53–54, 53, 54
 - chlorhexidine 78, 78
 - cinching tool 179
 - Clarity SL bracket 6, 6, 42, 42, 47
 - archwire issues 51
 - oral hygiene and 59, 59
 - class II malocclusions 105, 116, 120–121, 148–155, 158, 169, 206, 216, 220
 - Easy-Fit Jumper 152, 152
 - - case study 153–155
 - Functional Mandibular Advancer (FMA) 148–149, 149, 222, 222
 - - case study 150–151
 - retention 222
 - *see also* malocclusion
 - class III malocclusions 65, 155, 158
 - case studies 65–71, 110, 141–142, 156–158
 - retention 222
 - *see also* malocclusion
 - clips 22–23
 - active systems 22, 23, 24, 34, 34
 - passive systems 23, 23
 - reasons for defects 177
 - stresses and strains on handling 24, 26, 176
 - *see also* locking mechanism
 - coil springs 31, 31
 - closed 203
 - open 203
 - composite fillings and veneers, bonding to 86, 86, 87
 - computed tomography (CT) 165
 - cone-beam CT (CBCT) 62, 63
 - congenitally missing teeth 206–208, 216, 227
 - *see also* spaced dentition
 - crimpable hook 203
 - cross-tubes 203
 - crossbite 186, 186–187, 189
 - bilateral 122, 123, 138
 - buccal 56, 184
 - lateral 65, 141
 - crowding 103, 104
 - case studies 105–123, 150–151, 153–155, 220–221, 227–228, 233–234
 - - aesthetic treatment 160–162, 167–170
 - - blocked-out teeth 99–100, 105–110, 128–134, 141–144, 153–155, 190
 - - hybrid appliances 189–190
 - - transverse crowding 105, 108, 110–111
 - class III malocclusion and 158
 - retention 220–221, 224, 227–228, 233–234
 - *see also* space creation
- D**
- Damon brackets 5, 5
 - archwire issues 51, 52
 - Damon 3 35, 35, 47
 - - oral hygiene and 59
 - - positioning 91
 - - problems with 52, 53, 53, 56, 56
 - - removal 53
 - Dass lip activator 224
 - debonding 53, 53
 - decayed, missing, and filled teeth (DMFT) index 74
 - deep bite 184, 189, 206, 220
 - retention after treatment 223
 - demineralization 73, 74
 - prophylactic measures 76, 76
 - - *see also* oral hygiene
 - derotation 191
 - derotating spring 32, 191
 - *see also* rotation
 - detailing bends 180, 180, 181
 - diagnosis 62
 - tools 62–65, 63, 64, 71
 - treatment planning case study 65–71
 - Discovery SL bracket 6, 6, 34, 46, 47, 48
 - instruments for opening 175
 - oral hygiene and 58
 - distalization 124–127
 - case studies 128–134
 - DMFT (decayed, missing, and filled teeth) index 74
- E**
- Easy-Fit Jumper 152, 152
 - case study 153–155
 - ectopic teeth 132, 195
 - canines 104, 119, 132
 - *see also* blocked-out teeth
 - Edge software package 62

EdgeLok bracket 3, 3
 elastomeric elements 30, 30, 51, 55, 55, 181
 – box elastics 209, 209
 – class II malocclusion 151
 – intermaxillary arrangements 182
 – loss of elasticity 30, 59
 – tension testing 30
 electric toothbrushes 76–77, 77
 enamel
 – bonding to 86, 86, 87
 – reduction *see* stripping (enamel reduction)
 everStick Ortho 225, 226
 Evolution LT bracket 163
 extraction 195
 – crowding and 104
 – malocclusion and 65
 – space closure case study 205
 – space creation 142–148
 – – case studies 143–147
 extrusion 99, 100

F

facemask 155, 156, 156
 Fauchard, Pierre 2
 fillings, bonding to 86, 86, 87
 finishing 56–57
 finite-element analysis 24, 26, 99, 176
 fixed retainers 81, 81, 111, 114, 115, 162, 189, 193, 224
 – breakage 224
 – procedures and materials 225
 – *see also* bonded retainers; retention
 Flair bracket 5, 5
 fluoride-containing materials 76, 76
 food debris 58–59, 58, 59
 force levels 98, 99, 99
 force/deflection studies
 – archwires 27
 – elastomeric chains 30, 30
 – NiTi coil springs 31
 Ford Bracket 3, 3
 friction 17, 17, 18, 23–24, 25
 – measurement 23, 25
 Frog appliance 124, 124, 125, 127, 133

– case studies 128–134
 Functional Mandibular Advancer (FMA) 148, 149, 222, 222
 – case study 150–151
 – modified 148–149, 149

G

gingival contouring 155
 gingival graft 132
 gingivitis 74–75, 75
 growth 70, 155, 215

H

hammerhead pliers 178, 179
 Hawley retainers 105, 108, 110, 128, 131, 145, 206, 211, 220, 221, 222, 227
 – modified 217, 219
 – *see also* retention
 Herbst appliance 148
 hooks 203
 hybrid appliances 188
 – case studies 189–190
 hybrid rapid maxillary expansion 122, 135–136, 135, 136, 137
 – case studies 138–142, 156–157, 158
 – *see also* arch expansion
 hyperplasia
 – mandibular 155
 – maxillary 141
 hypoplastic maxilla 66, 155, 227

I

impacted teeth 195
 – canines 63, 165–166, 193–194
 – molars 211
 – – uprighting 211–212
 In-Ovation brackets 5, 5
 – In-Ovation C5, 5, 37, 37, 47, 159
 – – oral hygiene and 58
 – – problems with 52
 – In-Ovation L 163
 – In-Ovation R 36, 36, 48
 – instruments for opening 175
 incisors
 – blocked-out 153–155, 190
 – congenitally absent 216

– proclination 107, 112, 145
 – recontouring of edges 197, 197
 – – case study 198
 – retroclination 114, 118, 118, 119, 120, 128, 153
 – surface morphology 11
 – *see also* crowding
 incompetent lips 148, 223, 224
 interdental brushes 76, 77
 interproximal reduction (IPR) *see* stripping (enamel reduction)
 intrusion 99
 – reciprocal 100
 intrusion spring 209

K

K-pendulum 127, 133, 134

L

lateral bite planes 185, 185
 learning curve 175, 175
 leveling phase 55–56, 55, 56
 – *see also* alignment
 leveling spring 32, 191, 192
 lingual bite elevators 183, 184
 lingual self-ligating brackets 49, 163–164, 163, 164
 – case studies 150–151, 165–170, 205, 233–234
 – hybrid appliances 188
 – – case studies 189–190
 – *see also* SOX retainers
 lip incompetence 148, 223, 224
 locking mechanism 22–23, 173–174
 – active systems 22, 23, 24, 34, 34
 – damage 173–176, 173, 174, 176, 177
 – handling 174–175, 175
 – instruments for opening 174–175, 175
 – passive systems 23, 23, 34, 34, 56, 57
 – repair 174
 lower jaw displacement 116

M

Magill, E.W.E. 83
 magnetic resonance imaging (MRI) 62–65, 64
 malocclusion
 – extraction and 65
 – treatment planning case study 65–71
 – *see also* class II malocclusion; class III malocclusion
 Mandibular Anterior Repositioning Appliance (MARA) 148
 mandibular expansion 104
 – *see also* arch expansion
 mandibular hyperplasia 155
 mandibular prognathism 66, 122, 158, 227, 227
 marking pins 201–202, 201
 maxillary expansion 135–136, 135, 136, 137
 – case studies 110–111, 138–142
 – *see also* arch expansion
 maxillary hyperplasia 141
 maxillary hypoplasia 66, 155, 227
 maxillary prognathism 110, 145, 145, 148
 maxillary protraction 156, 156, 158
 MBT values 19, 19, 20
 memory effect 26–28
 Memory Maker 178, 179, 180
 metal injection molding (MIM) 11–12
 metal surfaces, bonding to 86, 87
 mini-implants 124, 125, 126, 135, 135, 199–204
 – attachments 202–204
 – – partly prefabricated parts 202, 202
 – – pre-fabricated parts 202, 203–204
 – – standard parts 202
 – case studies 131, 138, 156, 205–212
 – choice of system 200
 – congenitally absent teeth and 216, 216, 227–228
 – Functional Mandibular Advancer (FMA) and 149, 149
 – indications 200
 – placement 200–202, 201
 – versus adhesive bridge 229
 Mini-Mold system 184–185, 184
 MIRA-2-Tone plaque indicators 79

misalignment *see* alignment

Mobil-Lock bracket 3, 4
 molars
 – impacted 211
 – rotated 133
 – supernumerary 169, 170
 – uprighting 211–212

N

Newman, G.V. 83
 NiTi coil springs 31, 31
 noncompliance functional appliances 148
 nonocclusion 56, 56
 notching 17, 17, 18

O

O-Drive system 196, 196
 occlusal stops 105
 – *see also* stops
 occlusion correction 181
 – case studies 112–113, 198
 – – after alignment 116–123
 – Kim/Sato technique 209
 – *see also* malocclusion; nonocclusion
 Onyx Ceph 62
 Opal brackets 6, 6, 38, 38, 47
 – bond strength 13, 14
 – bonding 54
 – elastomeric chains and 52
 – Opal M 6, 6, 39, 39, 48
 – oral hygiene and 58
 – problems with 56, 56
 open bite 101, 117, 122, 141, 209, 216, 218
 – lip incompetence 148, 223, 224
 – retention after treatment 223, 223
 Oppenheim, A.J. 215
 Optra Gate 92
 oral hygiene 58–59, 58, 59, 73
 – active measures 78–79, 78, 79, 80
 – after treatment 81, 81
 – chairside care 80
 – plaque accumulation 58–59, 58, 59, 73
 – prophylactic measures 75–77
 – – active tooth movement 76–77, 76, 77, 78

– – bonding 75, 76
 Ortho-Easy system 124, 126, 200
 Ortho-FlexTech 225
 osteogenic distraction 102, 104
 overbite
 – increased 110, 145
 – preservation 118
 – reduced 65, 117
 – traumatic 116
 overjet
 – increased 110, 120, 150
 – reduced 65, 117, 138, 141

P

palatal bite-blocks 154
 parafunctional habits 216
 passive systems 23, 23, 34, 34
 – rotational control 56, 57
 pendulum appliance 124, 127, 133, 134
 periodontitis 74–75
 Phantom bracket 163
 Philippe brackets
 – 2 D 163, 231
 – 3 D 163
 piggyback technique 119, 166, 193–194
 Plak-Check indicator 79
 plaque
 – accumulation 58–59, 58, 59, 73, 73
 – indicators 79, 79
 – *see also* oral hygiene
 polishing 79, 196, 197
 posterior bite elevators 186, 189, 190
 – case studies 186–187, 189–190
 power arm 202, 205
 premolar extraction 142
 – case studies 143–147
 – *see also* extraction
 prognathism
 – mandibular 66, 122, 158, 227, 227
 – maxillary 110, 145, 145, 148
 Prophy-Jet 79, 80
 protraction facemask 155, 156, 156
 protraction spring 207

Q

- quad helix 102
- Quick brackets 6, 6
 - bracket base 14
 - instruments for opening 175
 - positioning 90
 - Quick 2 34, 40, 40, 48
 - - leveling and alignment 55
 - - removal 53
 - Quick C 6
- QuicKlear bracket 47, 159

R

- Radiographic Pin 201
- rapid palatal expansion (RPE) 122, 135, 136, 137
 - case studies 67, 138–142, 156–157, 158
 - *see also* arch expansion
- recontouring of incisal edges 197, 197
 - case study 198, 198
- relapse 215
 - influencing factors 215–217
 - - active tooth movement 215
 - - age 215
 - - functional parameters of the orovestibular system 215
 - - tooth morphology 216–217
 - management 230–231
 - - individual set-up for vacuum-formed aligners 231
 - - interproximal enamel reduction (stripping) 230, 230–231
 - *see also* retention
- remineralization 73
- repairs 53–54, 53, 54
- retention 57, 215
 - class II cases 222
 - class III cases 222
 - crowding treatment 224
 - deep bite treatment 223
 - open bite treatment 223, 223
 - oral hygiene 81, 81
 - protocol 217
 - rapid short treatments 111
 - rotation treatment 224
 - standard retainers 217
 - - case studies 218–221
 - therapeutic monitoring 217, 217
 - transverse corrections 222

- *see also* relapse; *specific types of retainers*
- retrognathia 105, 145, 145
- rotation 23, 24, 120, 133, 191
 - derotating spring 32, 191
 - retention 224
 - rotational control 54, 56, 57
- Roth values 19, 19, 20
- Russell attachment 3, 3

S

- Sander uprighting technique 192
- Schwartz plate 222
- self-conditioning primers 14, 15
- self-ligating (SL) brackets 7, 10–25, 10, 34, 49
 - advantages and limitations 7–8, 50
 - bracket base 10–14
 - - bond strength 12–14, 13, 14, 15
 - - shape of 10–12, 11, 12
 - bracket body 15, 15, 16
 - ceramic 159, 159
 - - case study 160–162
 - history of development 2–6, 3–6
 - hybrid appliances 188
 - - case studies 189–190
 - learning curve 175, 175
 - lingual 49, 163–164, 163, 164
 - - case studies 150–151, 165–170, 205, 233–234
 - - *see also* SOX retainers
 - locking mechanism 22–23, 173–174
 - - active systems 22, 23, 24, 34, 34
 - - damage 173–176, 173, 174, 176, 177
 - - instruments for opening 174–175, 175
 - - passive systems 23, 23, 34, 34, 56, 57
 - - repair 174
 - manufacturing processes 15
 - molar brackets 176, 177
 - nonocclusion side-effect 56, 56
 - positioning 83–84, 88, 89, 90, 91
 - - horizontal positioning 84, 85
 - - vertical positioning 83–84, 84, 85
 - practical application 173–176, 173–177
- slot 16–22, 17
 - stresses and strains on 176
- silicone transfer trays 94, 94
- skeletal discrepancies 148–158
 - class II malocclusions 105, 116, 120–121, 148–155, 150–151, 153–155, 158, 169, 206, 216, 220
 - - Easy-Fit Jumper 152–155, 152–155
 - - Functional Mandibular Advancer (FMA) 148–151, 149–151
 - - retention 222
 - class III malocclusions 65, 155, 158
 - - case studies 65–71, 110, 141–142, 156–158
 - - retention 222
- sliding hook 203
- slop (torque loss) 19–21, 19, 20
- slot 16–22, 17
 - auxiliary 22, 22, 191
 - - use of 22, 191–192
 - friction 17, 17, 18
 - quality differences 17, 17
- SmartClip bracket 6, 6, 41, 41, 48, 159
 - bond strength 13
 - instruments for opening 175
 - oral hygiene and 59
 - positioning 88, 89
- social six 159, 159
- soft-tissue three-dimensional reconstruction 62–65, 64
- SOX retainers 231–232, 231, 232
 - case study 233–234
- space analysis 67
- space closure 56–57, 56
 - case studies 205–208
- space creation 98
 - alignment 98–122
 - arch expansion 135–142
 - distalization 124–134
 - options 98
 - tooth extraction 142–148
 - *see also* stripping (enamel reduction)
- Space-Jet 32, 206, 207
- spaced dentition 226–229, 226, 229
 - case study 227–228
 - *see also* congenitally missing teeth
- Speed bracket 4, 4, 43, 43, 48, 57
- spikes 183, 183, 223, 223
- staff requirements 60
- step-up bends 180

- stops 110, 114, 178, 203
- composite 178, 179
 - crimpable 178, 179
 - occlusal 105
- stripping (enamel reduction) 195–196
- advantages and disadvantages 195
 - case studies 105–109, 112–115, 117–123, 148, 158, 160–162, 167, 168, 230–231
 - guidelines 195–196, 195
 - indications 195
 - instrumentation 196, 196
 - relapse management 230, 230–231
- superelasticity 28
- supernumerary molar 169, 170
- supracrestal fibers 215
- surgical arch expansion 102, 104
- T**
- temporomandibular joint disorder 150, 186
- tension-induced martensite (TIM) 28
- therapeutic monitoring 217, 217
- thermoactive adhesives 94
- three-dimensional reconstruction 62–65, 63, 64
- Time brackets 5, 5
- Time 2 44, 44, 48
 - - positioning 91
 - Time 3 45, 45, 48
- tipping 99
- distalization and 133
 - occlusal plane 112
- Tomas X-marker 201
- tongue interposition 117, 183
- tongue thrust 101, 183, 209, 216, 223
- tooth extraction *see* extraction
- tooth morphology
- retention and 216–217, 216
 - size discrepancies 216–217
 - surface morphology 10–11, 11, 12
- tooth movement 98–99
- force levels required 98, 99
 - relapse and 215
 - time required 98–99, 99
- torque 18, 19, 19
- errors due to bracket positioning 21, 21
 - errors due to tooth morphological variation 21, 21
 - loss (slop) 19–21, 19, 20
- transfer trays 94, 94
- transpalatal arch 146, 209, 209
- *see also* Frog appliance
- treatment 50
- intervals between adjustments 59
 - phases 98
 - staff requirements 60
 - treatment planning case study 65–71
- treatment time 55–58
- active treatment 55–57
 - - leveling and alignment phase 55–56, 55, 56
 - - retention phase 57
 - - space closure and finishing 56–57, 56, 57
 - chairside time 50–54, 50
- Triad VLC Gel 185
- twin-block appliance 154–155
- TwinLock bracket 5, 5
- two-foil tray technique 94, 95
- U**
- ultrasonic scaler 79, 79
- ultrasound cleaning 52, 52
- uprighting spring 32, 192, 202, 211
- V**
- vacuum-formed retainers 112, 169, 170, 231
- individual set-up 231
 - *see also* retention
- vacuum-formed transfer trays 94, 95
- Van der Linden retainer 219
- veneers, bonding to 86, 86, 87
- Vision LP bracket 6, 6, 46, 46, 48
- W**
- wax markers 180, 181
- Weingart pliers 232
- Williams appliance 152, 152
- case study 153–155