METALWORK AND ENAMELLING

A PRACTICAL TREATISE ON GOLD AND SILVERSMITHS' WORK AND THEIR ALLIED CRAFTS

HERBERT MARYON
Technical Attache, Research Laboratory, British Museum, 1945-1963

Line Drawings by Cyril Pearce

FIFTH REVISED EDITION

DOVER PUBLICATIONS, INC.
NEW YORK
# CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I MATERIALS AND TOOLS</td>
<td>1</td>
</tr>
<tr>
<td>II SOLDERING</td>
<td>5</td>
</tr>
<tr>
<td>III SOLDERING (continued)</td>
<td>17</td>
</tr>
<tr>
<td>IV SOLDERING (continued)</td>
<td>27</td>
</tr>
<tr>
<td>V SOLDERING (continued)</td>
<td>35</td>
</tr>
<tr>
<td>VI FILIGREE AND OTHER SMALL WORK</td>
<td>41</td>
</tr>
<tr>
<td>VII FILIGREE (continued)</td>
<td>53</td>
</tr>
<tr>
<td>VIII THE SETTING OF STONES</td>
<td>63</td>
</tr>
<tr>
<td>Tools required and their use.</td>
<td></td>
</tr>
<tr>
<td>IX THE SETTING OF STONES (continued)</td>
<td>70</td>
</tr>
</tbody>
</table>
## CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>X The Setting of Stones (continued)</td>
<td>80</td>
</tr>
<tr>
<td>XI Raising and Shaping</td>
<td>87</td>
</tr>
<tr>
<td>XII Spinning</td>
<td>104</td>
</tr>
<tr>
<td>XIII Repoussé Work</td>
<td>113</td>
</tr>
<tr>
<td>XIV Repoussé Work (continued)</td>
<td>123</td>
</tr>
<tr>
<td>XV Mouldings</td>
<td>127</td>
</tr>
<tr>
<td>XVI Twisted Wires</td>
<td>135</td>
</tr>
<tr>
<td>XVII Hinges and Joints</td>
<td>140</td>
</tr>
<tr>
<td>XVIII Metal Inlaying and Overlaying</td>
<td>148</td>
</tr>
<tr>
<td>XIX Niello</td>
<td>161</td>
</tr>
</tbody>
</table>

**Chapter X**

The Setting of Stones (continued)


**Chapter XI**

Raising and Shaping


**Chapter XII**

Spinning


**Chapter XIII**

Repoussé Work


**Chapter XIV**

Repoussé Work (continued)

- Transferring the design. Lettering. Patterns on bowls. Work in the round.

**Chapter XV**

Mouldings


**Chapter XVI**

Twisted Wires

- Their value. Analysis of each pattern.

**Chapter XVII**

Hinges and Joints


**Chapter XVIII**

Metal Inlaying and Overlaying


**Chapter XIX**

Niello

<table>
<thead>
<tr>
<th>CONTENTS</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>XX  JAPANESE ALLOYS AND STRATIFIED FABRICS</td>
<td>166</td>
</tr>
<tr>
<td>Banded alloys. Wood grain. Mixed alloys.</td>
<td></td>
</tr>
<tr>
<td>XXI  ENAMELLING</td>
<td>169</td>
</tr>
<tr>
<td>XXII  ENAMELLING (continued)</td>
<td>175</td>
</tr>
<tr>
<td>XXIII  ENAMELLING (continued)</td>
<td>182</td>
</tr>
<tr>
<td>XXIV  ENAMELLING (continued)</td>
<td>184</td>
</tr>
<tr>
<td>XXV  ENAMELLING (continued)</td>
<td>186</td>
</tr>
<tr>
<td>XXVI  ENAMELLING (continued)</td>
<td>190</td>
</tr>
<tr>
<td>XXVII  ENAMELLING (continued)</td>
<td>192</td>
</tr>
<tr>
<td>XXVIII  METAL CASTING</td>
<td>200</td>
</tr>
<tr>
<td>XXIX  METAL CASTING (continued)</td>
<td>216</td>
</tr>
<tr>
<td>Chapter</td>
<td>Page</td>
</tr>
<tr>
<td>---------</td>
<td>------</td>
</tr>
<tr>
<td>XXX Metal Casting (continued)</td>
<td>219</td>
</tr>
<tr>
<td>XXXI Metal Casting (continued)</td>
<td>228</td>
</tr>
<tr>
<td>XXXII Metal Casting (continued)</td>
<td>233</td>
</tr>
<tr>
<td>XXXIII Construction</td>
<td>237</td>
</tr>
<tr>
<td>XXXIV Setting Out</td>
<td>245</td>
</tr>
<tr>
<td>XXXV Polishing and Colouring</td>
<td>256</td>
</tr>
<tr>
<td>XXXVI The Making and Sharpening of Tools</td>
<td>267</td>
</tr>
<tr>
<td>XXXVII Design</td>
<td>274</td>
</tr>
<tr>
<td>XXXVIII Benvenuto Cellini</td>
<td>285</td>
</tr>
<tr>
<td>XXXIX Assaying and Hallmarking</td>
<td>287</td>
</tr>
</tbody>
</table>
LIST OF PLATES

Figs. 238–43. A sampler of twisted wire patterns (1–72), between pp. 136–137.

Plates

The Royal Gold Cup, Frontispiece.

1 The “King John” Cup, King’s Lynn, Norfolk.

2 Candlestick of Bronze inlaid with Silver.

3 Silver Dish by Omar Ramsden.

4 The Bell Shrine of St. Conall Cael.

5 Golden Cover for a Copy of the Gospels.

6 The “Bacon” Cup, 1574.

7 The Birdlip Mirror.

8 The Ramsay Abbey Incense Boat.

9 The Valence Casket.

10 Standing Cup in Rock Crystal.

11 Silver Cup. Nuremberg.
LIST OF PLATES

PLATES
12 A Fine Golden Dagger Handle from China.
13 Two Japanese Sword Guards.
14 Enamelled Bronze Trappings from Polden Hill, Somerset.
15 Anglo-Saxon Buckles from Taplow.
16 The Tara Brooch.
17 Gold Bowl. Etruscan. Circa 600 b.c.
18 An Inscribed Ewer. Made at Mosul in A.D. 1232.
19 Two Golden Shoulder-clasps from the Sutton Hoo Ship Burial.
20 A French Wine Cup of the Sixteenth Century.
21 Shoulderpiece from a Cuirass. Greek. Circa 400 b.c.
22 Silver Bowl from Chaource. Roman.
23 The Central Link of the Chain of Office made in 1887-88 for the Mayor of Preston.
24 The Kingston Down Brooch.
25 A Panel in Champlevé Enamel and Millefiori Work.
26 Cire Perdue Work.
27 Two Brooches. Etruscan.
28 A Sampler of Granulation Work.
29 The Towneley Brooch.

(Plates 1–29 are inserted between pp. 320–321.)
Index

Acid burns, 25, 325
glacial acetic, 39
hydrochloric, 37
hydrofluoric, 174, 180, 194, 197
muriatic, 37
nitric, 7, 24, 48, 154, 287
splashes, 25
sulphuric, 7, 25
tannic, 25

Aesthetic precedence, 282
quality, 274
Armenia blowlamps, 31
Agate burnisher, 259
pestle and mortar, 174
Agricola, 318
Airhole, 24, 238
Alcohol flux, 37
Alloys, 5, 6, 7, 8, 11
fusible, 235
removal, 24
steel, 269
Alum, 262
Aluminium, 2, 37, 259
brass, 182, 304
Amalgam (of gold and mercury), 159, 262
American (Sellers) Screw Thread, 308
Ammonia, 266
Ammonium carbonate, 264
chloride, 265
sulphide, 263, 264, 265
Angle, grinding, 272
Anglo-Saxon buckles, 322
Annealing, 30, 93
an enamel, 180
wire, 42
Antidote for burns, etc., 25, 325
Antimony, 164
Aqua regia, 287
Arab mosque lamps, 169, 198
Ardagh chalice, 198
Arrow-head moulds, 201
Arsenic, 265
Asbestos, 21, 223
Ascending principle in metal-casting, 213, 222
Ashanti, 226
Assaying and hallmarking, 287
final, 288
preliminary, 288
Atomic weights, 205

BACKGROUNDING, 116

Backing an enamel, 175
a pearl, 79
“Bacon” cup, 320
Ball, 24, 53
-faced hammer, 91
joint, 146
Banded alloys, 166
Band setting, 81, 170
Baryum sulphide, 253, 264, 265
Barthel blowlamp, 31
Bassettaille enamels, 171, 186, 319
Bath or dish (etching), 157
Bathbrick dust, 208, 260
Battersea enamels, 198
Bead, 24, 50, 58
Reading tool, 110
Bearers for hinge, 140
for stones, 71, 82
Beeswax, 219
Bell casting, 236
metal, 304
shrine, 319, 320
Bellows, 3, 27, 28, 33, 48
Bench, 3
jeweller’s, 51, 52
pin, 51, 52, 71, 74
Bending sheet metal, 241
strip, 132
Beclín, 226
Benzine, 266
Berule enamelling, 318
Bessel, 72, 73, 82
Bibliography, 318
Bick-iron or sparrow-hawk, 15, 51, 55, 88, 237
Binding wire, 17, 18, 26, 43, 48, 61
Birdlip mirror, 171, 320
Biringuccio, 216, 318
Birmingham, 7, 171
metal gauge, 309
wire gauge, 309
Bismuth, 235
Biting a plate (etching), 157
Black polish, on silver, 257, 258
stone, 1, 68, 72
Blind, 288, 289
Blotting paper, 54, 193
Blowlamp, 31
Blowpipe, 3, 21, 27
flame, 28
mouth, 27, 28, 48
Blue stone, 257
Board for repoussé, 114, 117

327
INDEX

"Boiling out," 23, 61
Bolas, Mr., 164, 318
Bone, powdered, 223, 224
Bonney, S. R., Colouring of Metals, 318
Borax, 18-20, 59
dissolve to, 24
glass, 10, 19
slate, 19, 48
Boss, 55
Boring hole in stone, 243
Bosse's etching ground, 154
Bosse's etching ground, 154
Bottom stakes, 88
Bowl from five-shilling piece, 92
hanging, Sutton Hoo, 323
Roman, Chaource, 323
Boxes, casting, 216
Box, iron, 54
Bracelets, 9, 199
Branches, filigree, 58
Brass, 2, 11-13, 23, 234
colouring, 254
tongs, 25
Brazing, 12, 26
spelters, 12, 13
Breaking down mould, 236
Brick dust, 208, 222
Britannia Standard, 11, 291
British Association lecture, 166
screw threads, 307
British Museum, 9, 149, 171, 187, 191, 201, 263, 319
Standards, 12
Bronze, 234, 304
Brooch catch, 147
Etruscan, 324
joint, 144
Kingston Down, 323
pin, 145
Towneley, 324
Brown and Sharpe wire gauge, 317
Brunswick black, 156
Buckle or warp, 242
Bullstickers, 64, 71
Bunsen burners, 172
Burin or graver, 152, 153
Burnisher, 51, 259
Burns acid, 25, 325
Burnt areas, 17, 39, 176, 253
joints, 39
steel, 268
Byzantine jewels, 86, 175

Carborundum wheel, 4
Carlungic, enamel, 199
Carron oil, 25
Case-hardening, 268
Casting, 200
flasks or boxes, 216
flexible mould, 210
in metal, 200
irons, 210, 211, 218, 221, 224
mouldings in plaster, 133
Castor oil, 25
Calor gas, 31

Chinese dagger handle, 321
enamels, 181
piece-mould, 205
wine vessel, 205
Chisel, 48, 58, 176, 243
Chloride of zinc, 37
Chocks for spinning, 105
Circles, areas of, 301
properties of, 301
Cire perdue casting, 209, 219, 226, 228, 232
Centrifugal casting, 232, 318
Chain of Office, Preston, 167, 323
Chalice, 238
Champlevé enamels, 171, 184, 321, 323
Chaource treasure, 323
Chaplets, 265
Charcoal block, 9, 33
fumes, 33, 34
powder, 54
Chasing, 113, 186, 236
tools, 118, 122
China, 216
colours, 197
Chinese dagger handle, 321
enamels, 181
piece-mould, 205
wine vessel, 205
Chisel, 48, 58, 176, 243
Chloride of zinc, 37
Chocks for spinning, 105
Circles, areas of, 301
properties of, 301
Cire perdue casting, 209, 219, 226, 228, 232
Centrifugal casting, 232, 318

Clamp, 68
Claws, 71
Claw setting, 70
Clay bands for piece moulding, 207
or loam moulds, 200
Cloisonné enamels, 170, 175, 320
Cloisons, 170, 176
Closing tool, 74
Cobalt, 2
Coinage, 304
Coin, setting for, 85
Collet, 70
hammer, 91
Colouring gold, 8, 25, 261
metals, 260, 318
silver, 25, 148, 161, 263
Colour of metals, 318
INDEX

Colour in tempering steel, 270
Compo for moulds, 203, 225
Composition of various alloys, 304
Conall Cael, 319, 320
Cong, Cross of, 86
Construction, 237
Cope or mother mould, 207, 217
Copper, 2, 6, 7, 11, 23, 234
annealing, 93
nitrate, 265
oxide, 9, 10
salts, 9
sulphate, 264
Core, 201, 209, 216, 218, 220, 236
supports, 209, 218, 221, 224, 236
vents, 210
Cort, 289
Coronet setting, 70, 71, 73, 74, 229
Cow or horse dung, 223
Cramp setting, 83
Crus, 257
Crucible, 15, 233, 234
tongs, 236
Cuilet; 63, 71, 76
Cumynghame, H., 174, 318
Cup "Bacon," 320
Enkomi, 161, 199
French wine, 323
King's Lynn, 187, 319
Nuremberg, 321
Rock Crystal, 321
Royal Gold or St. Agnes, 187, 319
Cupel, 287
Curls (metal), 82
Cut-down setting, 74
Cuttlefish bone moulds, 202
Cuzner, B., 318
Cyprus, 170
Dagger handle, Chinese, 321
Damascening, 151
Decagon, 251
Decimals of inch, 299
of ounce, 300
De la pirotechnia, 216, 318
De Re Metallica, 318
Descending principle in metal-casting, 213
Design, 274
Diamonds, 86, 296
Dies, 129
Directional quality, 111
Discs, 55
Doming block, 49, 55
Drawbench, 4, 131
plate, 41, 46, 57
swage, 46, 129
tongs, 41
Drawing on metal, 246
Drill and drillstock, 49, 65
stone, to, 243
Drop-stone, setting for, 85
Dublin Museum, 86, 135, 498
Duodecagon, 249
Ecuador, 226
Eggshell polish, 181
Egypt, 8, 170, 216
Electroplating, 158, 258, 262
Electrum, 8
Ellipse, 250
Emerson, A. R., 318
Emery, 257
Enamelled glass, 169, 318
alterations, 197
Anglo-Saxon, 184
backing or counter-enamel, 175, 176
backplate or ground, 176, 186
bassaiell, 171, 186
Battersea, 196
Belgium, from, 199
Byzantine, 175
Carlungie, 199
Celtic, 171, 184
champleve, 171, 184
china colours on, 197
Chinese, 181
cloisonne, 171, 175
crusted, 172, 190
firing an, 178
Greek, 171
grinding and washing, 177, 193
grisaille, 196
Japanese, 177
Limoges, 184, 192
modern, 183
painted, 172, 192
plique-a-jour, 171, 182
polishing, 180, 188
samplers, 173
setting for, 84
tools required, 174
Enamelling glass, 169
Engraving, 153
Enrichment of surface, 8
Essay on various arts, 318
Etching, 154, 318
biting, 154, 157
ground, 154
needle, 154
stopping-out varnish, 154
Ettruscan gold bowl, 322
goldsmiths, 9
Ewer, Arabic work, 322
Eyeglass, 51
Ferric chloride, 40
Field, S., Colouring of Metals, 318
INDEX

| Files, 48 |
| Filigree, 9, 41, 53, 58 |
| Filings, 1, 52, 53 |
| Finger-ring, 228 |
| Fion, 67 |
| Fire or firestain, 258 |
| free silver, 259 |
| First-aid, 25, 325 |
| Fixing, wall-tablet, 243 |
| Flasks for sand-casting, 216, 229, 231 |
| Fletcher's furnaces, 172, 221, 233 |
| Flint, 169 |
| Flooding, 9 |
| Flushing, 262 |
| Flush setting, 80 |
| Flux, 10, 12, 15, 18, 19, 36, 37, 39 |
| “Alchohre,” 37 |
| for enamelling, 169 |
| Foil, 79, 195 |
| Folding iron, or tool, 241 |
| Forme, for spinning, 104 |
| Foxing, 257 |
| Francis I salt-cellar, 191, 285 |
| French chalk, 203, 217, 218, 229, 231 |
| Frit (clear enamel), 169 |
| Frosted surface, 260 |
| Fryolux solder, 36, 39, 59 |
| Furnace, 27, 33, 34, 223, 233 |
| enamelling, 172 |
| Fusible alloys, 233 |

**GALENA, 164**

**Gallery, 74**

**Gallipoli oil, 40**

**Gas, blowpipe, 27**

for soldering, 27

supply, 3

**Gates or jets in a mould, 206, 221, 236**

**Gauges, 309**

**Birmingham, metal, 309**

wire, 309

**Brown and Sharpe, 317**

**Imperial wire, 309**

**Morse Twist drill and steel wire, 309**

**Stub's steel wire, 309**

**Shakespeare jewellers’, 316**

**Geometrical drawing, 249**

forms, 278

problems, 247

**German silver, 2, 304**

**Ghiberti, Lorenzo, 286**

**Gilbert, Sir Alfred, 167, 274, 323**

**Gilding metal, 304**

with mercury, 159, 181, 262

**Gipsy setting, 80**

**Girdle of a stone, 63**

**Glacial acetic acid, 39**

**Glass, 169**

enamelled, 198

**Glasspaper, 256**

**Gloucester Museums, 171**

**Glue, 10**

**Gold, 1, 8, 23, 300**

bowl, Etruscan, 322

colouring of, 261

fine, 6

plating, 262

smithing and sculpture, 318

solders, 6-11, 13

standard, 6

upon enamel, 196, 197

**Goldsmiths’ Hall Research Centre, 228**

**Gospel Cover, 320**

**Gothic setting, 79**

**Graining tools, 64, 78**

**Grains, 78, 300**

**Granulation, 1, 9, 10, 58, 324**

Graver or burin, 152, 153

**Greek bronzes, 125, 323**

enamels, 171

goldsmiths, 9

soldering, 36

**Greensand moulding, 204**

**Green stick, 235, 236**

**Grinding a tool, 271**

**Grindstone, 3**

**Ground for etching, 154**

Grounding a plate (etching), 155

**Growth, 278**

**Gum, 18, 19, 61, 217**

**Gunmetal, 304**

**HARMATTER (iron) burnisher, 259**

**Half-round wire, 44**

**Hall-marking, 11, 289**

**Handle, hollow, 237**

**Handvice, 47, 56**

**Hardening Japanese sword blade, 266, 270**

steel, 268

**Hard solders, 5-12, 22**

**Hare’s foot, 1**

**Head of metal, 236**

**Heartstone moulds, 14, 15**

**Hendrie’s Theophilus, 9, 162**

**Heptagon, 249**

**Hexagon, 249**

**High relief repoussé, 125**

**Hinges and joints, 140**

**Horn tip, 90**

**Horse, 88**

trappings, Polden Hill, 322

**Hydrocal, 228**

**Hydrochloric acid, 37, 40, 157**

**Hydrogen peroxide, 39**

330
INDEX

IMPERIAL Standard Wire Gauge, 309
Inches and millimetres, 299, 300
Ingot moulds, 13, 14, 15
Injector for wax, 230
Inkpot tops, 244
Inlaysing, 148, 149
coloured stones, 170
electro-plated, 158
fused, 158
parquetry work, 149
repousse, 148
Inscriptions, 123
Irish work, 86, 135, 158, 198, 319, 320, 322
Iron box, 54
perchloride, 265
supports, 221, 224, 236
wire, 17, 18, 43, 48, 224
Japanese work, 102, 166, 168, 223, 263, 270, 321
Jets or gates in a mould, 206, 221, 236
Jewellers’ bench, 51
eyeglass, 51
gauge (Shakespeare), 316
jet, 27, 28, 48, 52
mouth blowpipe, 27, 28, 48
rouge, 257
Joint, brooch, 144
file, 141
hinge, 140
tool, 142
Keys or wedges, 208, 217
Killed spirit, 37
King’s Lynn Cup, 113, 187, 319
Kingston Down Brooch, 323
Knuckles, 141
Koukia, 170
Lacquers, 159
Lamp, 52
Lathe, 3, 104
Lavender, oil of spike, 196
Lead, 24, 38, 39–40, 162, 234
pipes, 37, 39
red, 167
Leaves, 38
Lectures at Goldsmith’s Hall, 318
Lemel, 1
Limoges enamel, 184
Line composition, 279
Lithium fluoride, 259
Littlecald, Mr., 10, 11, 59
Loam, 19, 22, 61, 222
Lucca della Robbia, 286
Lugs, for fixing, 221, 235
Lycopodium as parting powder, 217
Making and sharpening tools, 267
Mallet, horn, 51
Materials for moulds, 14, 200, 204, 216, 222, 228
Matt surface, tools, 122
Measures of capacity, 296
of lengths, 294, 300
of surface, 294
of temperature, 297
of weight, 295
Melting point, 7–8, 12, 15, 23, 35, 255, 305
wax model, 219, 222, 225, 227
Metal casting, 200, 318
centrifugal, 232, 318
cire perdue, 219, 318
flasks or boxes, 216, 229
ingots, 15–15
pressure, 232, 318
Metal, colouring of, 260
Metal gauge, 309
inlaying and overlaying, 148
moulds, 201
Metallic oxides, 169
Methylated spirit, 30, 31
Metric measures, 294–300, 307–317
Mexico, 226
Mica backing for enamel, 182
Middle Ages, 9
Mildenhall Treasure, 115
Millefiori, 323
Millegriff setting, 75
Milligrams, 300
Millimetres and inches, 299
Mirror, Birdlip, 171, 320
Mills, flattening, 44
Mixing plaster of Paris, 21, 133
Modelling tools, 122
Mokume, 167
Mond Nickel Co. Research Department, 228
“Mop,” 22, 29, 48, 60
Mordants, 157
Morris’s Geometrical Drawing, 250
Morse twist drill and steel wire gauge, 309
Moss, Dr. A. A. Niello, 318
Mother mould, 207, 209, 217
“Motifs” in jewellery, 53
Mouldings, 127, 238–240
turning, 240
Moulds, 13, 16–18, 48, 200, 219, 224, 235
breaking down, 296
cire perdue or waste wax, 219
clay, 200
cuttlefish bone, 202
drying, 205
firing, 223
hearthstone, 14–15
investment powder, 228, 231

331
| Moulds, joined to crucible, 226 |
| materials for, 208, 222 |
| metal, 201 |
| moulding, 280 |
| outer or mother, 207 |
| piece, 205, 220, 222 |
| qualities required for, 204 |
| rubber, 228 |
| sand, 204, 216 |
| sticks in clay, 20 |
| stone, 200, 201 |
| Mouth blowpipe, 27, 28 |
| Muffle furnace, 172, 260, 288 |
| Muriatic acid, 37 |
| Mycenian daggers, 161 |
| gold rings, 170 |
| NEEDLE, 54 |
| etching, 154 |
| files, 48, 71 |
| Nelson-Dawson, Mrs., Enamels, 318 |
| National Art Library, 285 |
| Nature, 275 |
| Nickel, 2 |
| tongs, 25 |
| Niello, 158, 161, 199, 263, 318 |
| Nitric acid, 7, 24, 48, 154, 287 |
| Nonagon, 249 |
| Number and letter punches, 122 |
| Nuremberg Cup, 321 |
| Nymph of Fontainbleau, 223 |
| OCTAGON, 249 |
| Oil of spike lavender, 196 |
| turpentine, 196 |
| Olive oil, 37, 111 |
| soap, 42 |
| Ornamental wires, 135 |
| Otten, Enamelling, 318 |
| Oval, 250 |
| Overlaying, 148, 150, 151 |
| Ox bone, 223, 225 |
| "Oxidized Silver," 263 |
| PAILLONS, 19, 20, 59, 195 |
| Painted enamels, 172, 192, 196 |
| Pala d'Oro, 283 |
| Paraffin wax, 42 |
| Parting dust or powder, 201, 219 |
| Patent, 11, 318 |
| Pattern for metal casting, 201, 217, 229 |
| for spinning, 104 |
| Pave setting, 79 |
| Peaflour as parting powder, 217 |
| Pearce, Mr. G., iii |
| Pearl, setting for, 84, 85 |
| Pearlash, 13, 234 |
| Pearls, seed, 58 |

| Pennyweights, 300 |
| Pentagon, 249 |
| Perchloride of iron, 157 |
| Perseus, 224 |
| Persian repoussé inlays, 150 |
| Petroleum jelly, 19, 37 |
| Pewter, 2, 39, 304 |
| Phosphorus, 13 |
| Piccadilly Fountain, 275 |
| Pickle, 7, 16, 23, 24, 25, 43, 48, 54, 61 |
| Piece mould, 205, 216, 219, 228 |
| Piercing saw, 48, 56 |
| Pin, bench, 51, 52, 71, 74 |
| spinning, 104 |
| Pitch, 114, 117, 219 |
| bowl, 118 |
| removal, 118 |
| Planishing, 97 |
| hammer, 91 |
| Plaque for enamelling, 176 |
| Plaster of Paris, 21, 133, 190, 208, 228, 235 |
| Plasticine, 18 |
| Plastics, 159 |
| Platinum, 1, 234 |
| chloride, 264 |
| Pleats, 95, 111 |
| Pliers, 47 |
| Pliny, 9 |
| Pliq' -a-jour enamels, 171, 182 |
| Pio' s Cellini, 285 |
| Plumber's solder, 35, 304 |
| Golden Hill horse trappings, 322 |
| Polishing an enamel, 180 |
| head, 4 |
| materials, 256 |
| Polythene, 181 |
| Port-chenier, 143 |
| Potash, 169, 260 |
| Potassium chlorate, 206 |
| nitrate, 261, 262 |
| sulphide, 264, 265 |
| Pour, 15, 200, 202, 218, 221, 226, 286 |
| plug, 226 |
| or sprue, 229 |
| Powdered bone, 208 |
| Precautions, acids, 25, 93, 325 |
| against loss, 1, 52 |
| Precious quality, 282 |
| stones, 281 |
| Pressure casting, 232, 318 |
| Preston Mayor's Chain, 167, 323 |
| "Proflavine," 25 |
| Properties of circles, 301 |
| Proportion, 276 |
| Furnace, 21, 256, 260 |
| Pumps, 28 |
| Punches, cutting, 49, 55 |
| doming, 49, 50 |
| Push tool, 60 |
INDEX

QUALITY, aesthetic, 281
   of gold or silver, 1, 6, 11
Quartation, 288
Queen Elizabeth book cover, 191
Quenching, 93

RAGS, 224
Raising, 87, 94
   hammer, 89, 94
   mallet, 90
Ramsay Abbey Incense Boat, 320, 321
Ramsden, O., dish by, 319
Rathbone, R. L. B., Simple Jewellery, 53, 318
Red lead, 169
Refining, 1
Register marks, 201, 208, 217
   pins, 202, 216
Relief, mould for, 204
Remedy for burns, 25, 325
Removal of lead, 24, 39-40
   of soft solder, 39-40
Repoussé, 113, 114, 242
   high relief, 125
   lettering, 123
   tools, 119
   work on pitch, 114
   on wood, 114
Research Departments, 228
Resin, 37, 40, 219
Retsil Jewellers' Handbook, Selwyn, 318
Rhind's etching ground, 154
Ring, 54, 55, 59, 228, 239
   tools, 122
Roberts-Austen, Sir W. C., 166, 318
Rock crystal cup, 321
Rocked or wriggled cut, 154
Rolls, fluting, 44
Roman enamel, 199
   setting, 81
Rotaprint brush, 40
Rouge, 19, 22, 61, 257
   Roulette, 67, 83
Royal Gold Cup, 187, 319
Rubbed-over setting, 81
Rubber for mould, 228, 230
Rubstone, 69
Ruby drawplate, 46
Ruger, 9
Sal-ammoniac, 37, 40
Saltcellar, Cellini, 191, 285
Salt, bath, 258
   table or common, sodium chloride, 13, 234, 261, 262
Sampler, enamel, 173
   granulation, 324
Sand, 169, 228
   bag, 50
Sand, blasting, 260
   mould moulding, 204, 216, 228
Sawdust, 211, 229
Saw, piercing, 48
Saxon hanging bowl, 171
Scandinavia, 227
Sceptre, 171
Scissors or snips, 43
Scollopers, 153
Scorpers, 48, 64
Scramaxes, 149
Scratch-brushing, 261
Scratches, removal, 256
Screw threads, American National coarse, 308
   British Association, 307
   Whitworth, 306
Seal stone, setting, 81
Secco-cotone, 10
Selwyn, A., Retail Jewellers' Handbook, 318
Setting out, 245
   inscriptions, 253
   tools required, 245, 246
   stones, 63, 70, 77, 80
   tool, 68, 72
Sezenious, Valentin, 199
Shaku-do, 168
Sharpening graver, 152
   tools, 272
Sheepskin, 52
Sheffield lime, 67, 259
Shibu-ichi, 168
Shoulder clasps, 322
   of a stone, 63
   piece from cuirass, 323
Shrinkage, 202, 236
Sieves, for grains, 54, 55
Silfbs, 13
Silicate of soda, 203
Silver, 1, 7, 11, 23, 284
   annealing, 93
   Britannia, 11, 291
   chloride, 40
   German, 304
   new sterling, 11
   nitrate, 43
   oxidized, 263
   solders, 11, 13
   standard, 11
   sulphide, 263
   sulphurized, 263
   work and jewellery, 318
Simple Jewellery, Rathbone, 318
Sinking, 87, 102
   block, 88-89
   hammer, 91
   a tray, 243
Sion gospel's cover, 320
INDEX

Siris bronze, 323
Slide tongs, 47, 56
Snarling-irons, 122
Snicks, 77
Society of Arts, 166
Soda (baking) bicarbonate, 25
removal of acids or grease, 26, 260-261
silicate, 203
washing, 23, 208
Sodium cyanide, 268
Solder, 5-10, 11-13, 16, 19, 20, 36
for enamels, 11
gold, 6-11, 13
plumbers', 35
silver, 7, 8, 11-13
tinman's, 35, 36, 39
Soldering, 5, 9-18, 22, 59, 60
bit or iron, 36
can, 10
hearth, 3, 20, 21, 33
jet, 27, 28
lamp, 30, 31
Roman, 9
South Kensington Museum, 186, 187, 191, 199, 263, 285, 319
Sparrow-hawk, 51
Specific gravity, 305
Speculum metal, 304
Spelter, 12-13, 26, 304
Spinning, 104
chucks, 105
followers, 108
forme, 104
tools, 104, 109
Spiral, 248
Spirit lamp, 30, 48
of salts, 37
Spitstickers, 64
Stanni, Workshop Receipts, 165, 318
St. Agnes Cup, 187, 188, 319
St. Conan Caed shrine, 319
St. Mark's, Venice, 282
Stakes, 51, 87, 102
Standard gold, 6, 304
silver, 11, 304
Star setting, 79
Starch, 25
Statuette, casting in metal, 207
Stearin, 40
Steel, 267
to harden, 268, 270
to temper, 269, 270
Stirrup, 125
Stone moulds, 200, 201
setting, 63
Stopping-out varnish, 154, 262
Straighten an enamel, 197
a wire, 36
Stripping, 258

Stropping a tool, 272
Stubs iron wire gauge, 309
steel wire gauge, 300
Sulphur, 162, 164, 264
Sulphuric acid, 7, 16, 23, 25, 263
Sumeria, 8, 36
Surface-plate, 3
Sutton Hoo Ship Burial, 108, 171, 322, 323
Swage, 45, 46, 130
Sweet oil, 40
Sword Guards, Japanese, 321
mould, Viking, 201
Tables and Standards, 294
Tablet, fixing, 241
Talc, 231
Tallow, 37, 40, 111, 219
Tannic acid, 25
Tapping, sizes screw, 308
Tara Brooch, 322
Tarentum, 171
Temperature, measures of, 297
Temperatures, high, 298
Tempering steel, 269, 270
Theophilus, 9, 162, 165, 216, 318
Thickness of metal casting, 200, 210
Thio-urea, 40
Thread and grain setting, 76
polishing, 259
Tim, 2, 35, 39, 235, 304
canister, 38
foil, 39
Tinman's solder, 35, 36
Tinning a "bit," 37
Tone, 282
Tongs, crucible, 236
enamelling, 173
Tortoise brooches, 227
Tortoise-shell, 259
Touch needle, 1, 287
stone, 1, 288
Tracers, 119, 120
Tracing, 119
and transferring design, 123, 156, 176, 192, 246
Triblets or mandrels, 50, 51, 57, 64
Tripoli, 19, 257
Troy weight, 300
T-stake, 57
Tube or chenier, 43
drawing, 44
Tulip setting, 79
Turning-over tool, 127
a moulding, 239, 240
Tweezers, 48, 58
Twisted stem, 252
wires, 38, 135, 149
Typemetal, 235
INDEX

Undecagon, 249
Undercut pieces, 217
Unity in design, 278
Unsoldering a joint, 5, 24

Vacuum chamber, 258
Valence Casket, 321
Vaseline, 10, 42
Venice, 86, 282
turpentine, 65, 219
Vent, 24, 204, 207, 218, 220, 221, 224, 236, 238
for core, 210
Vertical or horizontal lines, 280
Vice, 3, 89
hand, 47, 56
pin, 47
Vienna, Cellini's saltcellar, 191, 285
Viking sword mould, 201
Vitriol (sulphuric acid), 25, 48
Vulcanizing, 229

Wax, paraffin, 42, 156, 219
sealing, 202
stick, 65, 72
Weight of aluminium, brass, copper 303
of precious stones, 296
of silver sheet, 302
of various metals, 305
West Africa, 226
Whiting, 19, 22, 61
Whitworth screw threads, 306
"Wig," 22, 29, 40, 60
Wigley, T. B., Art of the Goldsmith, etc., 318
Wilson, H., Silverwork and Jewellery, 318
Wine cup, French, 323
"Wiping" a joint, 35
Wire, binding, 17, 18, 26, 60
drawing, 41
inside a moulding, 128
or filigree, 9, 43, 58
square, oblong, etc., 43
twisted, 58, 135
Wood-grain, 167
Work-bench, 3, 4
Workshop First Aid, 325
Workshop Receipts, Spon, 318
Wriggled or rocked cut, 154

Zinc, 11, 12, 13, 36, 235
chloride, 37, 40, 265