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COMPUTER SECTION

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\*C\* GBR class 0400.10

The 209 reciprocal zugzwangs in the 5-man ending rook and pawn against rook are listed below, in two sequences: first, by wK position; second, by solution depth. In every case, White to move cannot win. Cross-reference between the lists is either by depth value or serial number. Attention to all but No.32 below is drawn in IGM John Nunn's computer-assisted book *Secrets of Rook Endings* (Batsford 1992). We again have to thank Lars Rasmussen in Denmark for the computer-intensive labour involved. With this force it is still (in August 1996) not known if there are any reciprocal zugzwangs of the types 'whoever moves loses' or to the advantage of the pawnless side.

The last column digits are 'black to move, White wins' solution depth values:

- 1: wKa8, Rb8, Pa7; bKc7, Rc8 4
- 2: wKa8, Ra6, Pa7; bKb4, Rb5 14
- 3: wKc7, Ra8, Pa7; bKa5, Ra6 4
- 4: wKc7, Rb7, Pa7; bKa5, Ra8 7
- 5: wKc7, Rb7, Pa7; bKc5, Ra8 9
- 6: wKf7, Re7, Pa7; bKf5, Rh8 13
- 7: wKa5, Ra8, Pa7; bKc5, Rc7 4
- 8: wKa4, Ra8, Pa7; bKc4, Rc7 7
- 9: wKe4, Ra8, Pa7; bKd6, Rd7 7
- 10: wKa3, Ra8, Pa7; bKc3, Rc7 8
- 11: wKa2, Ra8, Pa7; bKc2, Rc7 9
- 12: wKa1, Ra8, Pa7; bKc1, Rc7 10
- 13: wKb8, Ra8, Pa6; bKf6, Re7 25
- 14: wKc6, Rb6, Pa6; bKc4, Ra7 17
- 15: wKf6, Re6, Pa6; bKf4, Rh7 21
- 16: wKa4, Ra7, Pa6; bKc4, Rc6 10
- 17: wKa4, Ra5, Pa6; bKc4, Ra7 14
- 18: wKe4, Ra8, Pa6; bKe6, Rd7 12
- 19: wKa3, Ra8, Pa6; bKc3, Rc4 14
- 20: wKa3, Ra7, Pa6; bKc3, Rc6 15
- 21: wKa3, Ra5, Pa6; bKc3, Ra7 15
- 22: wKa2, Ra4, Pa6; bKc3, Ra7 13
- 23: wKc8, Ra8, Pa5; bKe7, Rd7 15
- 24: wKb6, Ra6, Pa5; bKg6, Rf5 24

- 25: wKb6, Ra6, Pa5; bKh6, Rg5 26
- 26: wKc5, Rb5, Pa5; bKe5, Ra6 15
- 27: wKe3, Ra6, Pa5; bKg5, Rf5 26
- 28: wKf3, Ra6, Pa5; bKh5, Rg5 27
- 29: wKa2, Ra3, Pa5; bKc2, Ra6 16
- 30: wKb5, Ra5, Pa4; bKh5, Rg4 27
- 31: wKe4, Rb4, Pa4; bKg4, Ra5 25
- 32: wKe4, Rd4, Pa4; bKg4, Rc5 26
- 33: wKf6, Rg3, Pa3; bKh7, Ra8 37
- 34: wKf3, Ra1, Pa3; bKh2, Ra4 22
- 35: wKd4, Rg2, Pa2; bKh5, Rc1 36
- 36: wKa1, Rh2, Pa2; bKf1, Ra8 35
- 37: wKe8, Rb8, Pb7; bKe6, Ra7 7
- 38: wKf8, Rb8, Pb7; bKf6, Ra7 7
- 39: wKg8, Rb8, Pb7; bKg6, Ra7 6
- 40: wKh8, Rb8, Pb7; bKh6, Ra7 7
- 41: wKd7, Rb8, Pb7; bKb5, Rb6 4
- 42: wKd7, Rc7, Pb7; bKd5, Rb8 7
- 43: wKf7, Re7, Pb7; bKf5, Rh8 10
- 44: wKd5, Ra7, Pb7; bKb5, Rb6 8
- 45: wKd4, Ra7, Pb7; bKb3, Rb5 7
- 46: wKf4, Rb8, Pb7; bKe6, Re7 7
- 47: wKg1, Rb8, Pb7; bKf3, Rf7 12
- 48: wKb8, Rb7, Pb6; bKd8, Ra6 8
- 49: wKf8, Rb8, Pb6; bKf6, Ra6 15
- 50: wKg8, Rb8, Pb6; bKg6, Ra6 13
- 51: wKh8, Rb8, Pb6; bKh6, Ra6 14
- 52: wKc7, Rc6, Pb6; bKa6, Rb5 7
- 53: wKc7, Rb8, Pb6; bKb5, Ra6 10
- 54: wKc7, Rb7, Pb6; bKc5, Ra6 11
- 55: wKd7, Rb7, Pb6; bKd5, Ra6 12
- 56: wKg7, Rb7, Pb6; bKg5, Rh6 16
- 57: wKd6, Rc6, Pb6; bKd4, Rb7 9
- 58: wKf6, Re6, Pb6; bKf4, Rh7 14
- 59: wKf4, Rb8, Pb6; bKf6, Re7 10
- 60: wKg7, Rb7, Pb5; bKh5, Rh6 17
- 61: wKb6, Rb7, Pb5; bKa4, Ra8 14
- 62: wKa5, Ra8, Pb5; bKc7, Rb7 9
- 63: wKd5, Rc5, Pb5; bKd3, Rb6 13
- 64: wKe5, Rc5, Pb5; bKe3, Rb6 14
- 65: wKf5, Rc5, Pb5; bKf3, Rb6 15
- 66: wKg5, Rc5, Pb5; bKg3, Rb6 16
- 67: wKg5, Rf5, Pb5; bKg3, Rd6 18
- 68: wKd4, Rd5, Pb5; bKe7, Rc1 20
- 69: wKe2, Ra5, Pb5; bKg3, Rf3 21
- 70: wKe1, Ra5, Pb5; bKg2, Rf2 24
- 71: wKb7, Rb5, Pb4; bKd6, Ra4 19
- 72: wKb6, Rb5, Pb4; bKb2, Rb3 18
- 73: wKa5, Ra4, Pb4; bKc4, Rb1 19
- 74: wKe3, Ra4, Pb4; bKg4, Rf4 23
- 75: wKf3, Ra4, Pb4; bKh4, Rg4 28
- 76: wKd1, Ra4, Pb4; bKf2, Re2 20
- 77: wKe1, Ra4, Pb4; bKg2, Rf2 23
- 78: wKb5, Rb4, Pb3; bKb1, Rb2 21
- 79: wKb4, Rb6, Pb3; bKd5, Ra8 26
- 80: wKe4, Ra3, Pb3; bKg5, Rf5 28
- 81: wKf4, Ra3, Pb3; bKh5, Rg5 29
- 82: wKd2, Re3, Pb3; bKf4, Ra3 25
- 83: wKe2, Re3, Pb3; bKf5, Ra3 38
- 84: wKe2, Ra3, Pb3; bKg3, Rf3 29
- 85: wKd1, Ra3, Pb3; bKf2, Re2 24
- 86: wKa6, Rb6, Pb2; bKa2, Ra1 17
- 87: wKb6, Rb4, Pb2; bKd5, Rb1 28
- 88: wKb5, Rb3, Pb2; bKd4, Rb1 25
- 89: wKb4, Rb6, Pb2; bKd5, Rd8 27
- 90: wKf4, Rg2, Pb2; bKh5, Rb8 31
- 91: wKf4, Rb1, Pb2; bKh3, Rb3 23

92:	wKb3,	Rb5,	Pb2;	bKd4,	Ra8	29
93:	wKf3,	Rg2,	Pb2;	bKh5,	Re8	32
94:	wKf2,	Rg2,	Pb2;	bKh6,	Re8	33
95:	wKb1,	Rf6,	Pb2;	bKg4,	Rb8	37
96:	wKb1,	Rf2,	Pb2;	bKg4,	Rh8	36
97:	wKc1,	Rf2,	Pb2;	bKg4,	Rb8	35
98:	wKe1,	Ra2,	Pb2;	bKg2,	Rf2	35
99:	wKf1,	Rg2,	Pb2;	bKh7,	Re8	34
100:	wKa7,	Rb7,	Pc7;	bKa5,	Rc8	5
101:	wKa7,	Rc8,	Pc7;	bKc5,	Rc6	4
102:	wKe7,	Rc8,	Pc7;	bKc5,	Rc6	4
103:	wKe7,	Rd7,	Pc7;	bKe5,	Rc8	7
104:	wKf7,	Re7,	Pc7;	bKf5,	Rh8	9
105:	wKh7,	Rg7,	Pc7;	bKe8,	Rc6	14
106:	wKb6,	Ra7,	Pc7;	bKd7,	Rc8	4
107:	wKb6,	Rb7,	Pc7;	bKd6,	Rc8	5
108:	wKc6,	Rb6,	Pc7;	bKc8,	Ra6	2
109:	wKd6,	Rb6,	Pc7;	bKc8,	Ra8	1
110:	wKa5,	Rd7,	Pc7;	bKc5,	Rc6	8
111:	wKb5,	Rb7,	Pc7;	bKd5,	Rc8	6
112:	wKe5,	Rb7,	Pc7;	bKc5,	Rc6	8
113:	wKb4,	Rb7,	Pc7;	bKd4,	Rc8	7
114:	wKe4,	Rb7,	Pc7;	bKc3,	Rc5	7
115:	wKg4,	Rc8,	Pc7;	bKf6,	Rf7	7
116:	wKb3,	Rb7,	Pc7;	bKd3,	Rc8	8
117:	wKh3,	Rc8,	Pc7;	bKg5,	Rg7	9
118:	wKb2,	Rb7,	Pc7;	bKd2,	Rc8	9
119:	wKh2,	Rc8,	Pc7;	bKg6,	Rg7	10
120:	wKh2,	Rc8,	Pc7;	bKg4,	Rg7	11
121:	wKb1,	Rb7,	Pc7;	bKd1,	Rc8	10
122:	wKh1,	Rc8,	Pc7;	bKg5,	Rg7	12
123:	wKh1,	Rc8,	Pc7;	bKg3,	Rg7	12
124:	wKb8,	Ra6,	Pc6;	bKd8,	Rc7	9
125:	wKc8,	Rc7,	Pc6;	bKe8,	Rb6	9
126:	wKg7,	Rc7,	Pc6;	bKg5,	Rh6	14
127:	wKa6,	Rb6,	Pc6;	bKa4,	Rc7	8
128:	wKb6,	Rb7,	Pc6;	bKa8,	Rb8	4
129:	wKe6,	Rd6,	Pc6;	bKe4,	Rc7	9
130:	wKf6,	Re6,	Pc6;	bKf4,	Rh7	11
131:	wKg4,	Rc8,	Pc6;	bKg6,	Rf7	13
132:	wKh3,	Rc8,	Pc6;	bKg5,	Rg6	10
133:	wKh1,	Rc8,	Pc6;	bKg5,	Rg6	13
134:	wKc7,	Rc6,	Pc5;	bKa5,	Rb5	14
135:	wKc7,	Re5,	Pc5;	bKa5,	Rb5	12
136:	wKa5,	Rb5,	Pc5;	bKa3,	Rc6	13
137:	wKb5,	Rb8,	Pc5;	bKd7,	Rc7	9
138:	wKe5,	Rd5,	Pc5;	bKe3,	Rc6	14
139:	wKf5,	Rh5,	Pc5;	bKg7,	Rg6	18
140:	wKf5,	Rd5,	Pc5;	bKf3,	Rc6	15
141:	wKf5,	Re5,	Pc5;	bKf3,	Rh6	16
142:	wKg5,	Rd5,	Pc5;	bKg3,	Rc6	16
143:	wKg5,	Rf5,	Pc5;	bKg3,	Re6	17
144:	wKe4,	Re5,	Pc5;	bKf6,	Rd8	18
145:	wKc7,	Rc5,	Pc4;	bKe6,	Rb4	20
146:	wKb6,	Rc8,	Pc4;	bKb4,	Ra5	13
147:	wKb5,	Rb4,	Pc4;	bKd4,	Rc1	18
148:	wKe4,	Re5,	Pc4;	bKf7,	Rd8	19
149:	wKb5,	Rc8,	Pc3;	bKb3,	Ra4	18
150:	wKe5,	Rd5,	Pc3;	bKg5,	Rc6	22
151:	wKc4,	Rc6,	Pc3;	bKe5,	Rb8	23
152:	wKc4,	Rc8,	Pc3;	bKa3,	Rb3	20
153:	wKf4,	Ra3,	Pc3;	bKh5,	Rg5	36
154:	wKf4,	Ra4,	Pc3;	bKf2,	Re8	19
155:	wKb3,	Rb4,	Pc3;	bKg6,	Rf8	24
156:	wKf2,	Rg3,	Pc3;	bKh4,	Rh1	24
157:	wKe6,	Rh3,	Pc2;	bKe4,	Rd4	16
158:	wKc5,	Rc3,	Pc2;	bKe4,	Rc1	23
159:	wKd5,	Rh2,	Pc2;	bKe3,	Rc3	21
160:	wKc4,	Rc6,	Pc2;	bKe5,	Re8	24
161:	wKc1,	Rb2,	Pc2;	bKa1,	Ra4	24
162:	wKb7,	Rc7,	Pd7;	bKb5,	Rd8	5
163:	wKb7,	Rd8,	Pd7;	bKd5,	Rd6	4
164:	wKf7,	Rd8,	Pd7;	bKd5,	Rd6	4
165:	wKf7,	Re7,	Pd7;	bKf5,	Rd8	7
166:	wKc6,	Ra7,	Pd7;	bKe7,	Rd8	4
167:	wKb5,	Re7,	Pd7;	bKd5,	Rd6	8
168:	wKf5,	Rc7,	Pd7;	bKd5,	Rd6	8
169:	wKh4,	Rd8,	Pd7;	bKg6,	Rg7	7
170:	wKg2,	Rg7,	Pd7;	bKh4,	Rf8	9
171:	wKg1,	Rg7,	Pd7;	bKh3,	Rf8	10
172:	wKc8,	Ra6,	Pd6;	bKe8,	Rd7	10
173:	wKd8,	Rd7,	Pd6;	bKf8,	Rc6	15
174:	wKc7,	Rb7,	Pd6;	bKe8,	Ra8	13
175:	wKc7,	Rb7,	Pd6;	bKe6,	Ra8	13
176:	wKe7,	Rh7,	Pd6;	bKc8,	Rg8	16
177:	wKe7,	Rh7,	Pd6;	bKc6,	Rg8	16
178:	wKe7,	Rd8,	Pd6;	bKd5,	Ra6	10
179:	wKe7,	Rd7,	Pd6;	bKe5,	Ra6	11
180:	wKb6,	Rc6,	Pd6;	bKb4,	Rf8	8
181:	wKc6,	Rc7,	Pd6;	bKb8,	Rc8	9
182:	wKf6,	Re6,	Pd6;	bKf4,	Rd7	9
183:	wKd8,	Rd7,	Pd5;	bKf8,	Rc5	17
184:	wKe8,	Rh5,	Pd5;	bKf6,	Rd6	13
185:	wKd7,	Rd6,	Pd5;	bKb5,	Rc5	19
186:	wKd6,	Ra6,	Pd5;	bKd8,	Rb8	14
187:	wKa5,	Rc5,	Pd5;	bKb3,	Rd8	15
188:	wKb5,	Rc5,	Pd5;	bKb3,	Rd6	14
189:	wKf5,	Re5,	Pd5;	bKf3,	Rd6	14
190:	wKd3,	Rc5,	Pd5;	bKf5,	Re5	24
191:	wKd6,	Ra6,	Pd4;	bKd8,	Rc8	15
192:	wKd5,	Ra6,	Pd4;	bKf5,	Rc8	26
193:	wKf5,	Re5,	Pd4;	bKf3,	Rh6	19
194:	wKf1,	Rc4,	Pd4;	bKh2,	Rg2	20
195:	wKe7,	Rc4,	Pd3;	bKg5,	Rf4	23
196:	wKe6,	Rh3,	Pd3;	bKf8,	Rd4	42
197:	wKe6,	Rd6,	Pd3;	bKg6,	Ra3	28
198:	wKd5,	Re3,	Pd3;	bKf7,	Rc3	31
199:	wKg4,	Rd4,	Pd3;	bKg2,	Rf3	35
200:	wKc2,	Re1,	Pd3;	bKa3,	Rb3	23
201:	wKd2,	Rb8,	Pd3;	bKa3,	Rd7	25
202:	wKc1,	Rc3,	Pd3;	bKe1,	Re3	43
203:	wKe6,	Rd6,	Pd2;	bKg6,	Rf3	32
204:	wKc5,	Ra6,	Pd2;	bKe5,	Rh4	24
205:	wKc5,	Rd4,	Pd2;	bKa3,	Rd1	24
206:	wKd3,	Rb3,	Pd2;	bKd1,	Ra1	19
207:	wKb2,	Ra4,	Pd2;	bKf2,	Rf3	41
208:	wKf2,	Re2,	Pd2;	bKh2,	Rd3	25
209:	wKd1,	Rg7,	Pd2;	bKh3,	Ra8	39
*C* The same, sorted by solution						
depth value:						
01	109:	wKd6,	Rb6,	Pc7;	bKc8,	Ra8
02	108:	wKc6,	Rb6,	Pc7;	bKc8,	Ra6
04	001:	wKa8,	Rb8,	Pa7;	bKc7,	Rc8
04	003:	wKc7,	Ra8,	Pa7;	bKa5,	Ra6
04	007:	wKa5,	Ra8,	Pa7;	bKc5,	Rc7
04	041:	wKd7,	Rb8,	Pb7;	bKb5,	Rb6
04	101:	wKa7,	Rc8,	Pc7;	bKc5,	Rc6
04	102:	wKe7,	Rc8,	Pc7;	bKc5,	Rc6
04	106:	wKb6,	Ra7,	Pc7;	bKd7,	Rc8
04	128:	wKb6,	Rb7,	Pc6;	bKa8,	Rb8
04	163:	wKb7,	Rd8,	Pd7;	bKd5,	Rd6
04	164:	wKf7,	Rd8,	Pd7;	bKd5,	Rd6
04	166:	wKc6,	Ra7,	Pd7;	bKe7,	Rd8
05	100:	wKa7,	Rb7,	Pc7;	bKa5,	Rc8

05	107:	wKb6,	Rb7,	Pc7;	bKd6,	Rc8	13	050:	wKg8,	Rb8,	Pb6;	bKg6,	Ra6
05	162:	wKb7,	Rc7,	Pd7;	bKb5,	Rd8	13	063:	wKd5,	Rc5,	Pb5;	bKd3,	Rb6
06	039:	wKg8,	Rb8,	Pb7;	bKg6,	Ra7	13	131:	wKg4,	Rc8,	Pc6;	bKg6,	Rf7
06	111:	wKb5,	Rb7,	Pc7;	bKd5,	Rc8	13	133:	wKh1,	Rc8,	Pc6;	bKg5,	Rg6
07	004:	wKc7,	Rb7,	Pa7;	bKa5,	Ra8	13	136:	wKa5,	Rb5,	Pc5;	bKa3,	Rc6
07	008:	wKa4,	Ra8,	Pa7;	bKc4,	Rc7	13	146:	wKb6,	Rc8,	Pc4;	bKb4,	Ra5
07	009:	wKe4,	Ra8,	Pa7;	bKd6,	Rd7	13	174:	wKc7,	Rb7,	Pd6;	bKe8,	Ra8
07	037:	wKe8,	Rb8,	Pb7;	bKe6,	Ra7	13	175:	wKc7,	Rb7,	Pd6;	bKe6,	Ra8
07	038:	wKf8,	Rb8,	Pb7;	bKf6,	Ra7	13	184:	wKe8,	Rh5,	Pd5;	bKf6,	Rd6
07	040:	wKh8,	Rb8,	Pb7;	bKh6,	Ra7	14	002:	wKa8,	Ra6,	Pa7;	bKb4,	Rb5
07	042:	wKd7,	Rc7,	Pb7;	bKd5,	Rb8	14	017:	wKa4,	Ra5,	Pa6;	bKc4,	Ra7
07	045:	wKd4,	Ra7,	Pb7;	bKb3,	Rb5	14	019:	wKa3,	Ra8,	Pa6;	bKc3,	Rc4
07	046:	wKf4,	Rb8,	Pb7;	bKe6,	Re7	14	051:	wKh8,	Rb8,	Pb6;	bKh6,	Ra6
07	052:	wKc7,	Rc6,	Pb6;	bKa6,	Rb5	14	058:	wKf6,	Re6,	Pb6;	bKf4,	Rh7
07	103:	wKe7,	Rd7,	Pc7;	bKe5,	Rc8	14	061:	wKb6,	Rb7,	Pb5;	bKa4,	Ra8
07	113:	wKb4,	Rb7,	Pc7;	bKd4,	Rc8	14	064:	wKe5,	Rc5,	Pb5;	bKe3,	Rb6
07	114:	wKe4,	Rb7,	Pc7;	bKc3,	Rc5	14	105:	wKh7,	Rg7,	Pc7;	bKe8,	Rc6
07	115:	wKg4,	Rc8,	Pc7;	bKf6,	Rf7	14	126:	wKg7,	Rc7,	Pc6;	bKg5,	Rh6
07	165:	wKf7,	Re7,	Pd7;	bKf5,	Rd8	14	134:	wKc7,	Rc6,	Pc5;	bKa5,	Rb5
07	169:	wKh4,	Rd8,	Pd7;	bKg6,	Rg7	14	138:	wKe5,	Rd5,	Pc5;	bKc3,	Rc6
08	010:	wKa3,	Ra8,	Pa7;	bKc3,	Rc7	14	186:	wKd6,	Ra6,	Pd5;	bKd8,	Rb8
08	044:	wKd5,	Ra7,	Pb7;	bKb5,	Rb6	14	188:	wKb5,	Rc5,	Pd5;	bKb3,	Rd6
08	048:	wKb8,	Rb7,	Pb6;	bKd8,	Ra6	14	189:	wKf5,	Re5,	Pd5;	bKf3,	Rd6
08	110:	wKa5,	Rd7,	Pc7;	bKc5,	Rc6	15	020:	wKa3,	Ra7,	Pa6;	bKc3,	Rc6
08	112:	wKe5,	Rb7,	Pc7;	bKc5,	Rc6	15	021:	wKa3,	Ra5,	Pa6;	bKc3,	Ra7
08	116:	wKb3,	Rb7,	Pc7;	bKd3,	Rc8	15	023:	wKc8,	Ra8,	Pa5;	bKe7,	Rd7
08	127:	wKa6,	Rb6,	Pc6;	bKa4,	Rc7	15	026:	wKc5,	Rb5,	Pa5;	bKe5,	Ra6
08	167:	wKb5,	Re7,	Pd7;	bKd5,	Rd6	15	049:	wKf8,	Rb8,	Pb6;	bKf6,	Ra6
08	168:	wKf5,	Rc7,	Pd7;	bKd5,	Rd6	15	065:	wKf5,	Rc5,	Pb5;	bKf3,	Rb6
08	180:	wKb6,	Rc6,	Pd6;	bKb4,	Rd7	15	140:	wKf5,	Rd5,	Pc5;	bKf3,	Rc6
09	005:	wKc7,	Rb7,	Pa7;	bKc5,	Ra8	15	173:	wKd8,	Rd7,	Pd6;	bKf8,	Rc6
09	011:	wKa2,	Ra8,	Pa7;	bKc2,	Rc7	15	187:	wKa5,	Rc5,	Pd5;	bKb3,	Rd8
09	057:	wKd6,	Rc6,	Pb6;	bKd4,	Rb7	15	191:	wKd6,	Ra6,	Pd4;	bKd8,	Rc8
09	062:	wKa5,	Ra8,	Pb5;	bKc7,	Rb7	16	029:	wKa2,	Ra3,	Pa5;	bKc2,	Ra6
09	104:	wKf7,	Re7,	Pc7;	bKf5,	Rh8	16	056:	wKg7,	Rb7,	Pb6;	bKg5,	Rh6
09	117:	wKh3,	Rc8,	Pc7;	bKg5,	Rg7	16	066:	wKg5,	Rc5,	Pb5;	bKg3,	Rb6
09	118:	wKb2,	Rb7,	Pc7;	bKd2,	Rc8	16	141:	wKf5,	Re5,	Pc5;	bKf3,	Rh6
09	124:	wKb8,	Ra6,	Pc6;	bKd8,	Rc7	16	142:	wKg5,	Rd5,	Pc5;	bKg3,	Rc6
09	125:	wKc8,	Rc7,	Pc6;	bKe8,	Rb6	16	157:	wKe6,	Rh3,	Pc2;	bKe4,	Rd4
09	129:	wKe6,	Rd6,	Pc6;	bKe4,	Rc7	16	176:	wKe7,	Rh7,	Pd6;	bKc8,	Rg8
09	137:	wKb5,	Rb8,	Pc5;	bKd7,	Rc7	16	177:	wKe7,	Rh7,	Pd6;	bKc6,	Rg8
09	170:	wKg2,	Rg7,	Pd7;	bKh4,	Rf8	17	014:	wKc6,	Rb6,	Pa6;	bKc4,	Ra7
09	181:	wKc6,	Rc7,	Pd6;	bKb8,	Rc8	17	060:	wKg7,	Rb7,	Pb5;	bKh5,	Rh6
09	182:	wKf6,	Re6,	Pd6;	bKf4,	Rd7	17	086:	wKa6,	Rb6,	Pb2;	bKa2,	Ra1
10	012:	wKa1,	Ra8,	Pa7;	bKc1,	Rc7	17	143:	wKg5,	Rf5,	Pc5;	bKg3,	Re6
10	016:	wKa4,	Ra7,	Pa6;	bKc4,	Rc6	17	183:	wKd8,	Rd7,	Pd5;	bKf8,	Rc5
10	043:	wKf7,	Re7,	Pb7;	bKf5,	Rh8	18	067:	wKg5,	Rf5,	Pb5;	bKg3,	Rd6
10	053:	wKc7,	Rb8,	Pb6;	bKb5,	Ra6	18	072:	wKb6,	Rb5,	Pb4;	bKb2,	Rb3
10	059:	wKf4,	Rb8,	Pb6;	bKf6,	Re7	18	139:	wKf5,	Rh5,	Pc5;	bKg7,	Rg6
10	119:	wKh2,	Rc8,	Pc7;	bKg6,	Rg7	18	144:	wKe4,	Re5,	Pc5;	bKf6,	Rd8
10	121:	wKb1,	Rb7,	Pc7;	bKd1,	Rc8	18	147:	wKb5,	Rb4,	Pc4;	bKd4,	Rc1
10	132:	wKh3,	Rc8,	Pc6;	bKg5,	Rg6	18	149:	wKb5,	Rc8,	Pc3;	bKb3,	Ra4
10	171:	wKg1,	Rg7,	Pd7;	bKh3,	Rf8	19	071:	wKb7,	Rb5,	Pb4;	bKd6,	Ra4
10	172:	wKc8,	Ra6,	Pd6;	bKe8,	Rd7	19	073:	wKa5,	Ra4,	Pb4;	bKc4,	Rb1
10	178:	wKe7,	Rd8,	Pd6;	bKd5,	Ra6	19	148:	wKe4,	Re5,	Pc4;	bKf7,	Rd8
11	054:	wKc7,	Rb7,	Pb6;	bKc5,	Ra6	19	154:	wKf4,	Ra4,	Pc3;	bKf2,	Re8
11	120:	wKh2,	Rc8,	Pc7;	bKg4,	Rg7	19	185:	wKd7,	Rd6,	Pd5;	bKb5,	Rc5
11	130:	wKf6,	Re6,	Pc6;	bKf4,	Rh7	19	193:	wKf5,	Re5,	Pd4;	bKf3,	Rh6
11	179:	wKe7,	Rd7,	Pd6;	bKe5,	Ra6	19	206:	wKd3,	Rb3,	Pd2;	bKd1,	Ra1
12	018:	wKe4,	Ra8,	Pa6;	bKe6,	Rd7	20	068:	wKd4,	Rd5,	Pb5;	bKe7,	Rc1
12	047:	wKg1,	Rb8,	Pb7;	bKf3,	Rf7	20	076:	wKd1,	Ra4,	Pb4;	bKf2,	Re2
12	055:	wKd7,	Rb7,	Pb6;	bKd5,	Ra6	20	145:	wKc7,	Rc5,	Pc4;	bKe6,	Rb4
12	122:	wKh1,	Rc8,	Pc7;	bKg5,	Rg7	20	152:	wKc4,	Rc8,	Pc3;	bKa3,	Rb3
12	123:	wKh1,	Rc8,	Pc7;	bKg3,	Rg7	20	194:	wKf1,	Rc4,	Pd4;	bKh2,	Rg2
12	135:	wKc7,	Re5,	Pc5;	bKa5,	Rb5	21	015:	wKf6,	Re6,	Pa6;	bKf4,	Rh7
13	006:	wKf7,	Re7,	Pa7;	bKf5,	Rh8	21	069:	wKe2,	Ra5,	Pb5;	bKg3,	Rf3
13	022:	wKa2,	Ra4,	Pa6;	bKc3,	Ra7	21	078:	wKb5,	Rb4,	Pb3;	bKb1,	Rb2

21 159: wKd5, Rh2, Pc2; bKe3, Rc3  
 22 034: wKf3, Ra1, Pa3; bKh2, Ra4  
 22 150: wKe5, Rd5, Pc3; bKg5, Rc6  
 23 074: wKe3, Ra4, Pb4; bKg4, Rf4  
 23 077: wKe1, Ra4, Pb4; bKg2, Rf2  
 23 091: wKf4, Rb1, Pb2; bKh3, Rb3  
 23 151: wKc4, Rc6, Pc3; bKe5, Rb8  
 23 158: wKc5, Rc3, Pc2; bKe4, Rc1  
 23 195: wKe7, Rc4, Pd3; bKg5, Rf4  
 23 200: wKc2, Re1, Pd3; bKa3, Rb3  
 24 024: wKb6, Ra6, Pa5; bKg6, Rf5  
 24 070: wKe1, Ra5, Pb5; bKg2, Rf2  
 24 085: wKd1, Ra3, Pb3; bKf2, Re2  
 24 155: wKb3, Rb4, Pc3; bKg6, Rf8  
 24 156: wKf2, Rg3, Pc3; bKh4, Rh1  
 24 160: wKc4, Rc6, Pc2; bKe5, Re8  
 24 161: wKc1, Rb2, Pc2; bKa1, Ra4  
 24 190: wKd3, Rc5, Pd5; bKf5, Re5  
 24 204: wKc5, Ra6, Pd2; bKe5, Rh4  
 24 205: wKc5, Rd4, Pd2; bKa3, Rd1  
 25 013: wKb8, Ra8, Pa6; bRf6, Re7  
 25 031: wKe4, Rb4, Pa4; bKg4, Ra5  
 25 082: wKd2, Re3, Pb3; bKf4, Ra3  
 25 088: wKb5, Rb3, Pb2; bKd4, Rb1  
 25 201: wKd2, Rb8, Pd3; bKa3, Rd7  
 25 208: wKf2, Re2, Pd2; bKh2, Rd3  
 26 025: wKb6, Ra6, Pa5; bKh6, Rg5  
 26 027: wKe3, Ra6, Pa5; bKg5, Rf5  
 26 032: wKe4, Rd4, Pa4; bKg4, Rc5  
 26 079: wKb4, Rb6, Pb3; bKd5, Ra8  
 26 192: wKd5, Ra6, Pd4; bKf5, Rc8  
 27 028: wKf3, Ra6, Pa5; bKh5, Rg5  
 27 030: wKb5, Ra5, Pa4; bKh5, Rg4  
 27 089: wKb4, Rb6, Pb2; bKd5, Rd8  
 28 075: wKf3, Ra4, Pb4; bKh4, Rg4  
 28 080: wKe4, Ra3, Pb3; bKg5, Rf5  
 28 087: wKb6, Rb4, Pb2; bKd5, Rb1  
 28 197: wKe6, Rd6, Pd3; bKg6, Ra3  
 29 081: wKf4, Ra3, Pb3; bKh5, Rg5  
 29 084: wKe2, Ra3, Pb3; bKg3, Rf3  
 29 092: wKb3, Rb5, Pb2; bKd4, Ra8  
 31 090: wKf4, Rg2, Pb2; bKh5, Rb8  
 31 198: wKd5, Re3, Pd3; bKf7, Rc3  
 32 093: wKf3, Rg2, Pb2; bKh5, Re8  
 32 203: wKe6, Rd6, Pd2; bKg6, Rf3  
 33 094: wKf2, Rg2, Pb2; bKh6, Re8  
 34 099: wKf1, Rg2, Pb2; bKh7, Re8  
 35 036: wKa1, Rh2, Pa2; bKf1, Ra8  
 35 097: wKc1, Rf2, Pb2; bKg4, Rb8  
 35 098: wKe1, Ra2, Pb2; bKg2, Rf2  
 35 199: wKg4, Rd4, Pd3; bKg2, Rf3  
 36 035: wKd4, Rg2, Pa2; bKh5, Rc1  
 36 096: wKb1, Rf2, Pb2; bKg4, Rh8  
 36 153: wKf4, Ra3, Pc3; bKh5, Rg5  
 37 033: wKf6, Rg3, Pa3; bKh7, Ra8  
 37 095: wKb1, Rf6, Pb2; bKg4, Rb8  
 38 083: wKe2, Re3, Pb3; bKf5, Ra3  
 39 209: wKd1, Rg7, Pd2; bKh3, Ra8  
 41 207: wKb2, Ra4, Pd2; bKf2, Rf3  
 42 196: wKe6, Rh3, Pd3; bKf8, Rd4  
 43 202: wKc1, Rc3, Pd3; bKe1, Re3

**\*C\* All Reciprocal Zugzwangs in the GBR class 1300.01**

Next in our gripping serial *RECIZUGS FOR ALL* it is the turn of queen against rook and pawn. There are 240 'normal' Type 1 instances, and two 'reverse' cases where the 'inferior side' wins, but there are no Type 3 cases of 'whoever moves loses'. Our thanks, as usual, to Lars Rasmussen. The sequence is by pawn rank within pawn file. For the subgroup of recizugs with the pawn on the same square the sequence depends on the rank of the white king, then on the file. Given the algebraic system and that we are 'running down the board from the top' this means that higher numbers precede lower numbers.

1: wKc1, Qc2; bKa1, Rb3, Pa4 2  
 2: wKa6, Qa2; bKb4, Rb3, Pa3 37  
 3: wKc5, Qh2; bKb3, Rb7, Pa3 11  
 4: wKc4, Qb8; bKa2, Rh3, Pa3 5  
 5: wKc4, Qb7; bKa2, Rg3, Pa3 5  
 6: wKc4, Qb6; bKa2, Rf3, Pa3 4  
 7: wKc4, Qb5; bKa2, Re3, Pa3 6  
 8: wKd3, Qa1; bKb3, Rb2, Pa3 10  
 9: wKe3, Qa1; bKb4, Rb2, Pa3 16  
 10: wKg2, Qc1; bKe2, Rd3, Pa3 7  
 11: wKf1, Qd5; bKb4, Rh4, Pa3 27  
 12: wKh1, Qd1; bKe3, Rc3, Pa3 25  
 13: wKa8, Qd1; bKc8, Rc4, Pa2 8  
 14: wKa7, Qd1; bKc7, Rc4, Pa2 7  
 15: wKc7, Qd1; bKe7, Re6, Pa2 3  
 16: wKd7, Qa1; bKb7, Ra4, Pa2 12  
 17: wKg7, Qf1; bKe7, Re6, Pa2 5  
 18: wKd6, Qc1; bKd3, Rb3, Pa2 11  
 19: wKh6, Qh1; bKa8, Rb7, Pa2 9  
 20: wKg5, Qf1; bKe7, Re6, Pa2 7  
 21: wKd4, Qf1; bKd2, Rc2, Pa2 4  
 22: wKc3, Qd1; bKc5, Rb4, Pa2 6  
 23: wKc3, Qa5; bKe1, Rd2, Pa2 22  
 24: wKd3, Qa1; bKb3, Ra3, Pa2 5  
 25: wKe3, Qd4; bKg3, Rc2, Pa2 10  
 26: wKf3, Qd4; bKe1, Rc2, Pa2 2  
 27: wKe2, Qc3; bKe4, Re5, Pa2 8  
 28: wKf2, Qc1; bKd3, Rb3, Pa2 5  
 29: wKh2, Qc3; bKf2, Re2, Pa2 24  
 30: wKh2, Qa5; bKf1, Re3, Pa2 26  
 31: wKa1, Qe3; bKc4, Rc2, Pa2 3  
 32: wKa1, Qf3; bKh4, Rh2, Pa2 2  
 33: wKa1, Qb3; bKd2, Rc2, Pa2 6  
 34: wKa1, Qc3; bKe2, Rd2, Pa2 8  
 35: wKa1, Qa4; bKd1, Rc2, Pa2 7  
 36: wKf1, Qd4; bKf3, Rf5, Pa2 5  
 37: wKf1, Qe1; bKf3, Rf5, Pa2 11  
 38: wKf1, Qa3; bKh2, Rc2, Pa2 4

39:	wKh1,	Qc3;	bKf1,	Re2,	Pa2	25
40:	wKe8,	Qe5;	bKc8,	Rc6,	Pb7	10
41:	wKf7,	Qb8;	bKb6,	Rh5,	Pb7	46
42:	wKg5,	Qh8;	bKc7,	Re2,	Pb7	41
43:	wKa4,	Qd4;	bKa6,	Rb1,	Pb7	25
44:	wKd4,	Qd8;	bKc6,	Rb5,	Pb7	20
45:	wKd4,	Qd5;	bKb4,	Rc6,	Pb7	3
46:	wKa3,	Qd6;	bKa5,	Rb5,	Pb7	5
47:	wKa3,	Qe5;	bKc4,	Rc6,	Pb7	28
48:	wKa3,	Qf5;	bKc4,	Rb6,	Pb7	27
49:	wKb3,	Qa8;	bKb5,	Rb6,	Pb7	23
50:	wKc3,	Qe6;	bKc5,	Rb5,	Pb7	7
51:	wKc3,	Qa3;	bKd5,	Rb5,	Pb7	63
52:	wKb2,	Qb8;	bKa4,	Rc6,	Pb7	21
53:	wKb1,	Qb8;	bKa4,	Rc5,	Pb7	22
54:	wKb4,	Qd7;	bKa6,	Rc5,	Pb6	29
55:	wKb3,	Qd7;	bKa6,	Rc1,	Pb6	30
56:	wKa2,	Qa6;	bKb8,	Rb4,	Pb6	16
57:	wKa1,	Qa6;	bKb8,	Rb3,	Pb6	17
58:	wKd3,	Qa5;	bKb3,	Rc5,	Pb5	26
59:	wKd2,	Qd3;	bKb2,	Rc4,	Pb5	3
60:	wKf1,	Qb2;	bKc5,	Rh3,	Pb5	33
61:	wKf6,	Qb3;	bKd6,	Rb5,	Pb4	20
62:	wKe4,	Qa4;	bKc4,	Rc3,	Pb4	12
63:	wKf4,	Qb5;	bKd4,	Rc4,	Pb4	17
64:	wKf4,	Qc5;	bKa3,	Rb1,	Pb4	28
65:	wKf3,	Qh6;	bKb3,	Re1,	Pb4	26
66:	wKa1,	Qd1;	bKa3,	Rc3,	Pb4	15
67:	wKd1,	Qd2;	bKb1,	Rc3,	Pb4	14
68:	wKh8,	Qh1;	bKc7,	Ra2,	Pb3	10
69:	wKa7,	Qc4;	bKa5,	Rb5,	Pb3	2
70:	wKb7,	Qd4;	bKb5,	Ra5,	Pb3	14
71:	wKc7,	Qf2;	bKc5,	Rd4,	Pb3	13
72:	wKd7,	Qf2;	bKd5,	Rd4,	Pb3	31
73:	wKh6,	Qh4;	bKa5,	Rf1,	Pb3	6
74:	wKc4,	Qa4;	bKc2,	Rb8,	Pb3	8
75:	wKf4,	Qc1;	bKd3,	Rd5,	Pb3	21
76:	wKd3,	Qb2;	bKb5,	Rb4,	Pb3	16
77:	wKe3,	Qa6;	bKc3,	Rc4,	Pb3	15
78:	wKe3,	Qe2;	bKc3,	Rb4,	Pb3	15
79:	wKb2,	Qd6;	bKc8,	Rb7,	Pb3	5
80:	wKb2,	Qc8;	bKd6,	Rb6,	Pb3	9
81:	wKe2,	Qe6;	bKc5,	Rd5,	Pb3	16
82:	wKg2,	Qa6;	bKc5,	Rf7,	Pb3	9
83:	wKb1,	Qd8;	bKc6,	Rb7,	Pb3	11
84:	wKe1,	Qd1;	bKe3,	Rc2,	Pb3	3
85:	wKf1,	Qd1;	bKe3,	Rc3,	Pb3	12
86:	wKg1,	Qe4;	bKc5,	Rf7,	Pb3	6
87:	wKg1,	Qd1;	bKe3,	Rc2,	Pb3	13
88:	wKh1,	Qd2;	bKc4,	Rg8,	Pb3	23
89:	wKf8,	Qb6;	bKd7,	Rg2,	Pb2	29
90:	wKd7,	Qe4;	bKb8,	Rh2,	Pb2	16
91:	wKf7,	Qb6;	bKd7,	Rd2,	Pb2	22
92:	wKf7,	Qb5;	bKd6,	Rg2,	Pb2	24
93:	wKg7,	Qe1;	bKd7,	Rd4,	Pb2	25
94:	wKg7,	Qf1;	bKg5,	Rd2,	Pb2	30
95:	wKe6,	Qh7;	bKb8,	Rd2,	Pb2	18
96:	wKf6,	Qb5;	bKd6,	Rd2,	Pb2	22
97:	wKf6,	Qe1;	bKf4,	Rh2,	Pb2	27
98:	wKg6,	Qb5;	bKe6,	Rd2,	Pb2	23
99:	wKa5,	Qf1;	bKc5,	Rd5,	Pb2	32
100:	wKe5,	Qg6;	bKc7,	Rd2,	Pb2	21
101:	wKe5,	Qb3;	bKa5,	Rd2,	Pb2	15
102:	wKg5,	Qb1;	bKg8,	Rb7,	Pb2	11
103:	wKg5,	Qb4;	bKe6,	Rd2,	Pb2	25
104:	wKg5,	Qb4;	bKe5,	Re2,	Pb2	24
105:	wKd4,	Qd3;	bKb4,	Ra4,	Pb2	4
106:	wKd4,	Qb1;	bKd2,	Rc2,	Pb2	1
107:	wKg2,	Qd1;	bKe3,	Rc3,	Pb2	5
108:	wKh2,	Qe4;	bKf2,	Rd2,	Pb2	25
109:	wKb1,	Qc6;	bKd8,	Rb8,	Pb2	2
110:	wKb1,	Qc4;	bKb6,	Rb5,	Pb2	13
111:	wKb1,	Qc7;	bKd5,	Rb5,	Pb2	21
112:	wKf1,	Qb3;	bKh2,	Rd2,	Pb2	6
113:	wKg1,	Qb3;	bKe1,	Rd2,	Pb2	23
114:	wKh1,	Qd4;	bKe1,	Ra2,	Pb2	2
115:	wKh1,	Qe4;	bKf1,	Rd2,	Pb2	26
116:	wKh1,	Qb3;	bKf1,	Rd2,	Pb2	26
117:	wKh1,	Qd3;	bKf1,	Re2,	Pb2	25
118:	wKe6,	Qd2;	bKc8,	Rh7,	Pc7	34
119:	wKa5,	Qb4;	bKa7,	Ra8,	Pc7	40
120:	wKa5,	Qe8;	bKd6,	Rb6,	Pc7	16
121:	wKd5,	Qh6;	bKc8,	Rf2,	Pc7	20
122:	wKd5,	Qc4;	bKb7,	Re3,	Pc7	14
123:	wKa4,	Qb4;	bKa8,	Rh2,	Pc7	38
124:	wKb4,	Qb5;	bKd7,	Rc6,	Pc7	36
125:	wKb4,	Qa8;	bKb6,	Rc1,	Pc7	28
126:	wKc4,	Qe6;	bKd8,	Ra5,	Pc7	42
127:	wKb3,	Qa7;	bKb5,	Rc6,	Pc7	4
128:	wKc3,	Qb8;	bKc5,	Rc6,	Pc7	21
129:	wKb2,	Qa7;	bKb4,	Rc6,	Pc7	41
130:	wKe2,	Qb5;	bKa8,	Rg1,	Pc7	35
131:	wKf2,	Qb5;	bKa8,	Ra1,	Pc7	34
132:	wKa2,	Qa3;	bKc2,	Rb4,	Pc5	3
133:	wKa7,	Qb7;	bKa4,	Re2,	Pc4	25
134:	wKe6,	Qg5;	bKb4,	Rd1,	Pc4	44
135:	wKf6,	Qg8;	bKb3,	Rb5,	Pc4	48
136:	wKe1,	Qe2;	bKc1,	Rd3,	Pc4	2
137:	wKd8,	Qd7;	bKc5,	Rf3,	Pc3	5
138:	wKe8,	Qf8;	bKc5,	Rd6,	Pc3	7
139:	wKa7,	Qa4;	bKc5,	Rf6,	Pc3	23
140:	wKa7,	Qe4;	bKc5,	Rc6,	Pc3	21
141:	wKb6,	Qd1;	bKe3,	Re5,	Pc3	17
142:	wKa5,	Qe3;	bKc4,	Rd4,	Pc3	16
143:	wKb5,	Qc2;	bKd7,	Rc8,	Pc3	8
144:	wKh5,	Qg8;	bKd5,	Re6,	Pc3	4
145:	wKa4,	Qa3;	bKc4,	Rb2,	Pc3	15
146:	wKe4,	Qd3;	bKa3,	Rc6,	Pc3	10
147:	wKe4,	Qg3;	bKa3,	Rc5,	Pc3	11
148:	wKf4,	Qb5;	bKd4,	Re1,	Pc3	22
149:	wKg4,	Qc5;	bKe4,	Rd3,	Pc3	3
150:	wKe3,	Qc4;	bKa3,	Rb2,	Pc3	16
151:	wKg3,	Qc2;	bKe3,	Rd3,	Pc3	9
152:	wKh3,	Qg4;	bKd5,	Rf8,	Pc3	16
153:	wKh3,	Qc2;	bKf3,	Re3,	Pc3	16
154:	wKh3,	Qb3;	bKf2,	Re4,	Pc3	14
155:	wKc2,	Qe6;	bKd8,	Rc7,	Pc3	5
156:	wKc2,	Qd8;	bKe6,	Rc6,	Pc3	11
157:	wKe8,	Qh1;	bKb8,	Rd6,	Pc2	25
158:	wKf8,	Qc4;	bKd6,	Re2,	Pc2	25
159:	wKf8,	Qc3;	bKd5,	Re2,	Pc2	26
160:	wKg8,	Qf1;	bKg6,	Rg5,	Pc2	28
161:	wKh8,	Qg1;	bKh6,	Rh3,	Pc2	20
162:	wKf7,	Qc4;	bKd6,	Rg2,	Pc2	23
163:	wKh7,	Qf1;	bKe7,	Re4,	Pc2	19
164:	wKa6,	Qe3;	bKc8,	Rd7,	Pc2	28
165:	wKf6,	Qc4;	bKd6,	Re2,	Pc2	17
166:	wKg6,	Qf1;	bKg4,	Rh2,	Pc2	20
167:	wKd5,	Qf4;	bKd7,	Rd8,	Pc2	17
168:	wKa4,	Qe3;	bKc4,	Rd4,	Pc2	8
169:	wKa4,	Qb2;	bKc4,	Re2,	Pc2	17
170:	wKe4,	Qa3;	bKc4,	Rb4,	Pc2	5
171:	wKe4,	Qd2;	bKc4,	Ra2,	Pc2	10
172:	wKe4,	Qc1;	bKe2,	Rd2,	Pc2	1

173:	wKd3, Qf2;	bKa2, Rc7, Pc2	4	240:	wKf1, Qb1; bKd3, Rc2, Pd2	7
174:	wKd3, Qb3;	bKd1, Ra2, Pc2	4	The same sorted by ascending depth		
175:	wKe3, Qb2;	bKg2, Rc7, Pc2	17	value:		
176:	wKg3, Qh6;	bKd7, Re2, Pc2	15	106:	wKd4, Qb1; bKd2, Rc2, Pb2	1
177:	wKg3, Qe4;	bKf1, Rd2, Pc2	3	172:	wKe4, Qc1; bKe2, Rd2, Pc2	1
178:	wKh3, Qh6;	bKd7, Rf2, Pc2	16	225:	wKb4, Qd1; bKb2, Rc2, Pd2	1
179:	wKh2, Qc3;	bKf2, Re2, Pc2	18	229:	wKf4, Qd1; bKf2, Re2, Pd2	1
180:	wKa1, Qe1;	bKc3, Rd2, Pc2	8	1:	wKc1, Qc2; bKa1, Rb3, Pa4	2
181:	wKc1, Qd6;	bKe8, Rc8, Pc2	2	26:	wKf3, Qd4; bKe1, Rc2, Pa2	2
182:	wKc1, Qd7;	bKe4, Rc3, Pc2	7	32:	wKa1, Qf3; bKh4, Rh2, Pa2	2
183:	wKc1, Qd6;	bKe4, Rc4, Pc2	6	69:	wKa7, Qc4; bKa5, Rb5, Pb3	2
184:	wKc1, Qb5;	bKa3, Rc4, Pc2	2	109:	wKb1, Qc6; bKd8, Rb8, Pb2	2
185:	wKe1, Qa1;	bKc3, Rb2, Pc2	5	114:	wKh1, Qd4; bKe1, Ra2, Pb2	2
186:	wKg1, Qf1;	bKg3, Re2, Pc2	4	136:	wKe1, Qe2; bKc1, Rd3, Pc4	2
187:	wKh1, Qc3;	bKf1, Re2, Pc2	20	181:	wKc1, Qd6; bKe8, Rc8, Pc2	2
188:	wKd5, Qa5;	bKb7, Rb6, Pd7	8	184:	wKc1, Qb5; bKa3, Rc4, Pc2	2
189:	wKf4, Qc4;	bKd8, Ra5, Pd7	30	209:	wKa1, Qb1; bKa3, Rc2, Pd3	2
190:	wKg8, Qg4;	bKe5, Rc2, Pd3	39	235:	wKd1, Qc6; bKb8, Rd8, Pd2	2
191:	wKc6, Qh7;	bKc2, Ra5, Pd3	32	236:	wKd1, Qe6; bKf8, Rd8, Pd2	2
192:	wKe6, Qh1;	bKd2, Rd4, Pd3	35	15:	wKc7, Qd1; bKe7, Re6, Pa2	3
193:	wKc5, Qd2;	bKe7, Rd8, Pd3	8	31:	wKa1, Qe3; bKc4, Rc2, Pa2	3
194:	wKc5, Qa6;	bKe2, Rh4, Pd3	22	45:	wKd4, Qd5; bKb4, Rc6, Pb7	3
195:	wKd5, Qh7;	bKc3, Rg4, Pd3	29	59:	wKd2, Qd3; bKb2, Rc4, Pb5	3
196:	wKd5, Qg6;	bKc2, Rf4, Pd3	23	84:	wKe1, Qd1; bKe3, Rc2, Pb3	3
197:	wKd5, Qa6;	bKc3, Rb4, Pd3	23	132:	wKa2, Qa3; bKc2, Rb4, Pc5	3
198:	wKe5, Qd2;	bKc7, Rd8, Pd3	7	149:	wKg4, Qc5; bKe4, Rd3, Pc3	3
199:	wKb4, Qa3;	bKe3, Rc7, Pd3	23	177:	wKg3, Qe4; bKf1, Rd2, Pc2	3
200:	wKf4, Qg3;	bKc3, Re7, Pd3	32	212:	wKg1, Qf1; bKg3, Re2, Pd3	3
201:	wKb2, Qa3;	bKe3, Rc7, Pd3	25	6:	wKc4, Qb6; bKa2, Rf3, Pa3	4
202:	wKb2, Qb3;	bKc3, Rc6, Pd3	19	21:	wKd4, Qf1; bKd2, Rc2, Pa2	4
203:	wKd2, Qb6;	bKc8, Rd7, Pd3	5	38:	wKf1, Qa3; bKh2, Rc2, Pa2	4
204:	wKd2, Qf6;	bKe8, Rd7, Pd3	5	105:	wKd4, Qd3; bKb4, Ra4, Pb2	4
205:	wKd2, Qe8;	bKf6, Rd6, Pd3	9	127:	wKb3, Qa7; bKb5, Rc6, Pc7	4
206:	wKd2, Qa6;	bKc5, Rd5, Pd3	7	144:	wKh5, Qg8; bKd5, Re6, Pc3	4
207:	wKf2, Qf3;	bKc3, Re6, Pd3	19	173:	wKd3, Qf2; bKa2, Rc7, Pc2	4
208:	wKf2, Qg3;	bKc3, Re7, Pd3	34	174:	wKd3, Qb3; bKd1, Ra2, Pc2	4
209:	wKa1, Qb1;	bKa3, Rc2, Pd3	2	186:	wKg1, Qf1; bKg3, Re2, Pc2	4
210:	wKd1, Qa6;	bKc5, Rd7, Pd3	13	4:	wKc4, Qb8; bKa2, Rh3, Pa3	5
211:	wKe1, Qh1;	bKc1, Rf6, Pd3	16	5:	wKc4, Qb7; bKa2, Rg3, Pa3	5
212:	wKg1, Qf1;	bKg3, Re2, Pd3	3	17:	wKg7, Qf1; bKe7, Re6, Pa2	5
213:	wKg8, Qh5;	bKf6, Rf2, Pd2	27	24:	wKd3, Qa1; bKb3, Ra3, Pa2	5
214:	wKh8, Qg1;	bKh8, Rh3, Pd2	24	28:	wKf2, Qc1; bKd3, Rb3, Pa2	5
215:	wKb7, Qa1;	bKd7, Rg4, Pd2	16	36:	wKf1, Qd4; bKf3, Rf5, Pa2	5
216:	wKb7, Qg1;	bKd7, Rf4, Pd2	15	46:	wKa3, Qd6; bKa5, Rb5, Pb7	5
217:	wKf7, Qa1;	bKd7, Rb4, Pd2	11	79:	wKb2, Qd6; bKc8, Rb7, Pb3	5
218:	wKf7, Qg1;	bKd7, Ra4, Pd2	13	107:	wKg2, Qd1; bKe3, Rc3, Pb2	5
219:	wKh7, Qd4;	bKe6, Rg2, Pd2	20	137:	wKd8, Qd7; bKc5, Rf3, Pc3	5
220:	wKa6, Qb1;	bKa3, Rc3, Pd2	10	155:	wKc2, Qe6; bKd8, Rc7, Pc3	5
221:	wKh6, Qd4;	bKf5, Rg2, Pd2	19	170:	wKe4, Qa3; bKc4, Rb4, Pc2	5
222:	wKg5, Qa4;	bKe5, Rb2, Pd2	16	185:	wKe1, Qa1; bKc3, Rb2, Pc2	5
223:	wKb4, Qf3;	bKd4, Re4, Pd2	7	203:	wKd2, Qb6; bKc8, Rd7, Pd3	5
224:	wKb4, Qc2;	bKd4, Rf2, Pd2	16	204:	wKd2, Qf6; bKe8, Rd7, Pd3	5
225:	wKb4, Qd1;	bKb2, Rc2, Pd2	1	227:	wKf4, Qb3; bKd4, Rc4, Pd2	5
226:	wKe4, Qf2;	bKa2, Rd7, Pd2	16	232:	wKe3, Qc3; bKe1, Rb2, Pd2	5
227:	wKf4, Qb3;	bKd4, Rc4, Pd2	5	7:	wKc4, Qb5; bKa2, Re3, Pa3	6
228:	wKf4, Qe2;	bKd4, Rb2, Pd2	12	22:	wKc3, Qd1; bKc5, Rb4, Pa2	6
229:	wKf4, Qd1;	bKf2, Re2, Pd2	1	33:	wKa1, Qb3; bKd2, Rc2, Pa2	6
230:	wKh4, Qd1;	bKh8, Rd7, Pd2	11	73:	wKh6, Qh4; bKa5, Rf1, Pb3	6
231:	wKe3, Qc7;	bKd1, Rf2, Pd2	11	86:	wKg1, Qe4; bKc5, Rf7, Pb3	6
232:	wKe3, Qc3;	bKe1, Rb2, Pd2	5	112:	wKf1, Qb3; bKh2, Rd2, Pb2	6
233:	wKf3, Qd1;	bKd3, Rb4, Pd2	14	183:	wKc1, Qd6; bKe4, Rc4, Pc2	6
234:	wKb1, Qf1;	bKd3, Re2, Pd2	8	239:	wKd1, Qe6; bKf4, Rd4, Pd2	6
235:	wKd1, Qc6;	bKb8, Rd8, Pd2	2	10:	wKg2, Qc1; bKe2, Rd3, Pa3	7
236:	wKd1, Qe6;	bKf8, Rd8, Pd2	2	14:	wKa7, Qd1; bKc7, Rc4, Pa2	7
237:	wKd1, Qc6;	bKb4, Rd4, Pd2	7	20:	wKg5, Qf1; bKe7, Re6, Pa2	7
238:	wKd1, Qe7;	bKf4, Rd3, Pd2	7	35:	wKa1, Qa4; bKd1, Rc2, Pa2	7
239:	wKd1, Qe6;	bKf4, Rd4, Pd2	6	50:	wKc3, Qe6; bKc5, Rb5, Pb7	7

138:	wKe8,	Qf8;	bKc5,	Rd6,	Pc3	7
182:	wKc1,	Qd7;	bKe4,	Rc3,	Pc2	7
198:	wKe5,	Qd2;	bKc7,	Rd8,	Pd3	7
206:	wKd2,	Qa6;	bKc5,	Rd5,	Pd3	7
223:	wKb4,	Qf3;	bKd4,	Re4,	Pd2	7
237:	wKd1,	Qc6;	bKb4,	Rd4,	Pd2	7
238:	wKd1,	Qe7;	bKf4,	Rd3,	Pd2	7
240:	wKf1,	Qb1;	bKd3,	Rc2,	Pd2	7
13:	wKa8,	Qd1;	bKc8,	Rc4,	Pa2	8
27:	wKe2,	Qc3;	bKe4,	Re5,	Pa2	8
34:	wKa1,	Qc3;	bKe2,	Rd2,	Pa2	8
74:	wKc4,	Qa4;	bKc2,	Rb8,	Pb3	8
143:	wKb5,	Qc2;	bKd7,	Rc8,	Pc3	8
168:	wKa4,	Qe3;	bKc4,	Rd4,	Pc2	8
180:	wKa1,	Qe1;	bKc3,	Rd2,	Pc2	8
188:	wKd5,	Qa5;	bKb7,	Rb6,	Pd7	8
193:	wKc5,	Qd2;	bKe7,	Rd8,	Pd3	8
234:	wKb1,	Qf1;	bKd3,	Re2,	Pd2	8
19:	wKh6,	Qh1;	bKa8,	Rb7,	Pa2	9
80:	wKb2,	Qc8;	bKd6,	Rb6,	Pb3	9
82:	wKg2,	Qa6;	bKc5,	Rf7,	Pb3	9
151:	wKg3,	Qc2;	bKe3,	Rd3,	Pc3	9
205:	wKd2,	Qe8;	bKf6,	Rd6,	Pd3	9
8:	wKd3,	Qa1;	bKb3,	Rb2,	Pa3	10
25:	wKe3,	Qd4;	bKg3,	Rc2,	Pa2	10
40:	wKe8,	Qe5;	bKc8,	Rc6,	Pb7	10
68:	wKh8,	Qh1;	bKc7,	Ra2,	Pb3	10
146:	wKe4,	Qd3;	bKa3,	Rc6,	Pc3	10
171:	wKe4,	Qd2;	bKc4,	Ra2,	Pc2	10
220:	wKa6,	Qb1;	bKa3,	Rc3,	Pd2	10
3:	wKc5,	Qh2;	bKb3,	Rb7,	Pa3	11
18:	wKd6,	Qc1;	bKd3,	Rb3,	Pa2	11
37:	wKf1,	Qe1;	bKf3,	Rf5,	Pa2	11
83:	wKb1,	Qd8;	bKc6,	Rb7,	Pb3	11
102:	wKg5,	Qb1;	bKg8,	Rb7,	Pb2	11
147:	wKe4,	Qg3;	bKa3,	Rc5,	Pc3	11
156:	wKc2,	Qd8;	bKe6,	Rc6,	Pc3	11
217:	wKf7,	Qa1;	bKd7,	Rb4,	Pd2	11
230:	wKh4,	Qd1;	bKh8,	Rd7,	Pd2	11
231:	wKe3,	Qc7;	bKd1,	Rf2,	Pd2	11
16:	wKd7,	Qa1;	bKb7,	Ra4,	Pa2	12
62:	wKe4,	Qa4;	bKc4,	Rc3,	Pb4	12
85:	wKf1,	Qd1;	bKe3,	Rc3,	Pb3	12
228:	wKf4,	Qe2;	bKd4,	Rb2,	Pd2	12
71:	wKc7,	Qf2;	bKc5,	Rd4,	Pb3	13
87:	wKg1,	Qd1;	bKe3,	Rc2,	Pb3	13
110:	wKb1,	Qc4;	bKb6,	Rb5,	Pb2	13
210:	wKd1,	Qa6;	bKc5,	Rd7,	Pd3	13
218:	wKf7,	Qg1;	bKd7,	Ra4,	Pd2	13
67:	wKd1,	Qd2;	bKb1,	Rc3,	Pb4	14
70:	wKb7,	Qd4;	bKb5,	Ra5,	Pb3	14
122:	wKd5,	Qc4;	bKb7,	Re3,	Pc7	14
154:	wKh3,	Qb3;	bKf2,	Re4,	Pc3	14
233:	wKf3,	Qd1;	bKd3,	Rb4,	Pd2	14
66:	wKa1,	Qd1;	bKa3,	Rc3,	Pb4	15
77:	wKe3,	Qa6;	bKc3,	Rc4,	Pb3	15
78:	wKe3,	Qe2;	bKc3,	Rb4,	Pb3	15
101:	wKe5,	Qb3;	bKa5,	Rd2,	Pb2	15
145:	wKa4,	Qa3;	bKc4,	Rb2,	Pc3	15
176:	wKg3,	Qh6;	bKd7,	Re2,	Pc2	15
216:	wKb7,	Qg1;	bKd7,	Rf4,	Pd2	15
9:	wKe3,	Qa1;	bKb4,	Rb2,	Pa3	16
56:	wKa2,	Qa6;	bKb8,	Rb4,	Pb6	16
76:	wKd3,	Qb2;	bKb5,	Rb4,	Pb3	16
81:	wKe2,	Qe6;	bKc5,	Rd5,	Pb3	16
90:	wKd7,	Qe4;	bKb8,	Rh2,	Pb2	16
120:	wKa5,	Qe8;	bKd6,	Rb6,	Pc7	16
142:	wKa5,	Qe3;	bKc4,	Rd4,	Pc3	16
150:	wKe3,	Qc4;	bKa3,	Rb2,	Pc3	16
152:	wKh3,	Qg4;	bKd5,	Rf8,	Pc3	16
153:	wKh3,	Qc2;	bKf3,	Re3,	Pc3	16
178:	wKh3,	Qh6;	bKd7,	Rf2,	Pc2	16
211:	wKe1,	Qh1;	bKc1,	Rf6,	Pd3	16
215:	wKb7,	Qa1;	bKd7,	Rg4,	Pd2	16
222:	wKg5,	Qa4;	bKe5,	Rb2,	Pd2	16
224:	wKb4,	Qc2;	bKd4,	Rf2,	Pd2	16
226:	wKe4,	Qf2;	bKa2,	Rd7,	Pd2	16
57:	wKa1,	Qa6;	bKb8,	Rb3,	Pb6	17
63:	wKf4,	Qb5;	bKd4,	Rc4,	Pb4	17
141:	wKb6,	Qd1;	bKe3,	Re5,	Pc3	17
165:	wKf6,	Qc4;	bKd6,	Re2,	Pc2	17
167:	wKd5,	Qf4;	bKd7,	Rd8,	Pc2	17
169:	wKa4,	Qb2;	bKc4,	Re2,	Pc2	17
175:	wKe3,	Qb2;	bKg2,	Rc7,	Pc2	17
95:	wKe6,	Qh7;	bKb8,	Rd2,	Pb2	18
179:	wKh2,	Qc3;	bKf2,	Re2,	Pc2	18
163:	wKh7,	Qf1;	bKe7,	Re4,	Pc2	19
202:	wKb2,	Qb3;	bKe3,	Rc6,	Pd3	19
207:	wKf2,	Qf3;	bKc3,	Re6,	Pd3	19
221:	wKh6,	Qd4;	bKf5,	Rg2,	Pd2	19
44:	wKd4,	Qd8;	bKc6,	Rb5,	Pb7	20
61:	wKf6,	Qb3;	bKd6,	Rb5,	Pb4	20
121:	wKd5,	Qh6;	bKc8,	Rf2,	Pc7	20
161:	wKh8,	Qg1;	bKh6,	Rh3,	Pc2	20
166:	wKg6,	Qf1;	bKg4,	Rh2,	Pc2	20
187:	wKh1,	Qc3;	bKf1,	Re2,	Pc2	20
219:	wKh7,	Qd4;	bKe6,	Rg2,	Pd2	20
52:	wKb2,	Qb8;	bKa4,	Rc6,	Pb7	21
75:	wKf4,	Qc1;	bKd3,	Rd5,	Pb3	21
100:	wKe5,	Qg6;	bKc7,	Rd2,	Pb2	21
111:	wKb1,	Qc7;	bKd5,	Rb5,	Pb2	21
128:	wKc3,	Qb8;	bKc5,	Rc6,	Pc7	21
140:	wKa7,	Qe4;	bKc5,	Rc6,	Pc3	21
23:	wKc3,	Qa5;	bKe1,	Rd2,	Pa2	22
53:	wKb1,	Qb8;	bKa4,	Rc5,	Pb7	22
91:	wKf7,	Qb6;	bKd7,	Rd2,	Pb2	22
96:	wKf6,	Qb5;	bKd6,	Rd2,	Pb2	22
148:	wKf4,	Qb5;	bKd4,	Re1,	Pc3	22
194:	wKc5,	Qa6;	bKe2,	Rh4,	Pd3	22
49:	wKb3,	Qa8;	bKb5,	Rb6,	Pb7	23
88:	wKh1,	Qd2;	bKc4,	Rg8,	Pb3	23
98:	wKg6,	Qb5;	bKe6,	Rd2,	Pb2	23
113:	wKg1,	Qb3;	bKe1,	Rd2,	Pb2	23
139:	wKa7,	Qa4;	bKc5,	Rf6,	Pc3	23
162:	wKf7,	Qc4;	bKd6,	Rg2,	Pc2	23
196:	wKd5,	Qg6;	bKc2,	Rf4,	Pd3	23
197:	wKd5,	Qa6;	bKe2,	Rb4,	Pd3	23
199:	wKb4,	Qa3;	bKe3,	Rc7,	Pd3	23
29:	wKh2,	Qc3;	bKf2,	Re2,	Pa2	24
92:	wKf7,	Qb5;	bKd6,	Rg2,	Pb2	24
104:	wKg5,	Qb4;	bKe5,	Re2,	Pb2	24
214:	wKh8,	Qg1;	bKh6,	Rh3,	Pd2	24
12:	wKh1,	Qd1;	bKe3,	Rc3,	Pa3	25
39:	wKh1,	Qc3;	bKf1,	Re2,	Pa2	25
43:	wKa4,	Qd4;	bKa6,	Rb1,	Pb7	25
93:	wKg7,	Qe1;	bKd7,	Rd4,	Pb2	25
103:	wKg5,	Qb4;	bKe6,	Rd2,	Pb2	25
108:	wKh2,	Qe4;	bKf2,	Rd2,	Pb2	25
117:	wKh1,	Qd3;	bKf1,	Re2,	Pb2	25
133:	wKa7,	Qb7;	bKa4,	Re2,	Pc4	25
157:	wKe8,	Qh1;	bKb8,	Rd6,	Pc2	25
158:	wKf8,	Qc4;	bKd6,	Re2,	Pc2	25
201:	wKb2,	Qa3;	bKe3,	Rc7,	Pd3	25
30:	wKh2,	Qa5;	bKf1,	Re3,	Pa2	26



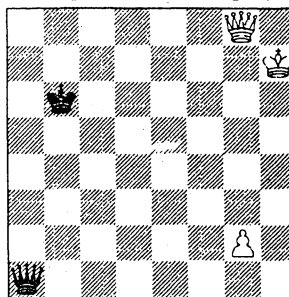
58: wKd3, Qa5; bKb3, Rc5, Pb5 26  
65: wKf3, Qh6; bKb3, Re1, Pb4 26  
115: wKh1, Qe4; bKf1, Rd2, Pb2 26  
116: wKh1, Qb3; bKf1, Rd2, Pb2 26  
159: wKf8, Qc3; bKd5, Re2, Pc2 26  
11: wKf1, Qd5; bKb4, Rh4, Pa3 27  
48: wKa3, Qf5; bKc4, Rb6, Pb7 27  
97: wKf6, Qe1; bKf4, Rh2, Pb2 27  
213: wKg8, Qh5; bKf6, Rf2, Pd2 27  
47: wKa3, Qe5; bKc4, Rc6, Pb7 28  
64: wKf4, Qc5; bKa3, Rb1, Pb4 28  
125: wKb4, Qa8; bKb6, Rc1, Pc7 28  
160: wKg8, Qf1; bKg6, Rg5, Pc2 28  
164: wKa6, Qe3; bKc8, Rd7, Pc2 28  
54: wKb4, Qd7; bKa6, Rc5, Pb6 29  
89: wKf8, Qb6; bKd7, Rg2, Pb2 29  
195: wKd5, Qh7; bKc2, Rg4, Pd3 29  
55: wKb3, Qd7; bKa6, Rc1, Pb6 30  
94: wKg7, Qf1; bKg5, Rd2, Pb2 30  
189: wKf4, Qc4; bKd8, Ra5, Pd7 30  
72: wKd7, Qf2; bKd5, Rd4, Pb3 31  
99: wKa5, Qf1; bKc5, Rd5, Pb2 32  
191: wKc6, Qh7; bKc2, Ra5, Pd3 32  
200: wKf4, Qg3; bKc3, Re7, Pd3 32  
60: wKf1, Qb2; bKc5, Rh3, Pb5 33  
118: wKe6, Qd2; bKc8, Rh7, Pc7 34  
131: wKf2, Qb5; bKa8, Ra1, Pc7 34  
208: wKf2, Qg3; bKc3, Re7, Pd3 34  
130: wKe2, Qb5; bKa8, Rg1, Pc7 35  
192: wKe6, Qh1; bKd2, Rd4, Pd3 35  
124: wKb4, Qb5; bKd7, Rc6, Pc7 36  
2: wKa6, Qa2; bKb4, Rb3, Pa3 37  
123: wKa4, Qb4; bKa8, Rh2, Pc7 38  
190: wKg8, Qg4; bKe5, Rc2, Pd3 39  
119: wKa5, Qb4; bKa7, Ra8, Pc7 40  
42: wKg5, Qh8; bKc7, Re2, Pb7 41  
129: wKb2, Qa7; bKb4, Rc6, Pc7 41  
126: wKc4, Qe6; bKd8, Ra5, Pc7 42  
134: wKe6, Qg5; bKb4, Rd1, Pc4 44  
41: wKf7, Qb8; bKb6, Rh5, Pb7 46  
135: wKf6, Qg8; bKb3, Rb5, Pc4 48  
51: wKc3, Qa3; bKd5, Rb5, Pb7 63  
Type 2 reciprocal zugzwang: White to move loses, Black to move draws:  
001: wKa1, Qa2; bKe2, Rc6, Pc2 2  
002: wKa1, Qa2; bKf2, Rc7, Pc2 2

**\*C\* QPQ - or GBR class 4000.10 - in practice!**

With grateful acknowledgement to *Rochade Europa* 9/96 (which itself acknowledges borrowing from *Schachreport* 8/96) EG offers its readers this fascinating insight into the o-t-b skill level of top-level masters confronted by (or confronting?) a Q+P vs. Q ending. The game conclusion comes from the top board in a hard-fought pre-Olympiad

training match between Germany and Armenia.

Kindermann vs. A.Petrosian  
position after 63.g8Q a1Q



h7b6 4000.10 g8a1.g2 3/2 WTM.

The commentator reports with some astonishment that the player of Black, trainer to the Armenian team (and, incidentally, chosen to write the obituary piece on Kasparian for *New in Chess*), confessed to having no idea of how to play this ending.

Numbers between square brackets record the \*C\* optimal win-depth resulting from the immediately preceding half-move (even if the latter precedes the left-bracket).

64.Qg6+? [Qg5! 55] Ka5 65.Qf5+ Ka6?  
[K-4=] 66.g4 [47] Qh1+ 67.Kg7 Qb7+  
68.Qf7 [Kf6! 45] Qg2 [47] 69.Qf6+?  
[Qf5 45] Ka5 70.g5 Qb7+ 71.Kg6 Qg2?  
[Qc7/Qh1=] 72.Qe6? [Qc3+ 63] Qh1  
73.Kg7 Qb7+? [31 Ka4/Kb4!] 74.Kf6  
[30] Qh1 75.g6 [29] Qh4+ 76.Kg7(?) [39  
Kf7! 28] Qd4+(?) [27 Ka4! 39] 77.Kf7(?)  
[29 Kg8 27] Qf2+ [19 Qf4+ 28] 78.Ke7?  
[27 Kf6 19] Qa7+(?) [4 Qh4+ 18] 79.Kf6  
Qb8?? {Well! Time trouble, apparently.  
Yawn.} 80.Qe7?? [Qe5+ (or Qa2+ AJR)]  
Qb6+? [25] 81.Kf7 [26] Qb3+ 82.Kf8?  
[40 Ke6 26] Qf3+ 83.Kg8 [41] Qd5+  
[38] 84.Kg7 [39] Qd4+ [23] 85.Kf7(?)  
[30] Qd3 [15 Qf4+ 30] 86.Qe5+ [16]. At  
this point the scoresheet dried up. White,  
we read, had 8 seconds left. It was

enough because Black resigned a few moves later. An ('optimal') win from here on: Ka4 87.g7 Qf3+ 88.Ke7 Qb7+ 89.Kf6 Qf3+ 90.Kg5 Qg2+ 91.Kh4 Qh1+ 92.Kg4 Qd1+ 93.Kg5 Qd8+ 94.Qf6 Qd5+ 95.Qf5 Qd8+ 96.Kg6 Qa8 97.Qc2+ Kb4 98.Qb2+ Kc5 (Kc4;Qa2+) 99.Qc3+ Kd6 100.Qf6+ Kc7 101.Qf7+.

The *Rochade* commentary concludes: "Anyone scared stiff by this endgame can take comfort. IGM Roberto Cifuentes scanned 457,000 games electronically to find just 321 QPQ endings. This means that on average one game in 1424 reaches this material. And even 24-carat masters commit blunder after blunder, unpunished! Cifuentes found 45% won by the stronger side - 144 were wins and 177 were draws, which, he says, was about 'right' according to the theoretically 'correct' results. cP/fP scored best (41 wins in 70 - 58.6%); dP/eP 16 from 31 - 51.6%; aP/hP 33 from 110 - 30%. AJR plans a database-assisted book on QPQ - unless someone else gets in first!

### Stillier and the 6 pieces endgames

In the august 1996 edition of the Dutch magazine *Computerschaak* contains two articles - in Dutch - about endgamedatabases. The second article is a more or less technical story how to construct those databases. The first is a historical overview, including the 243 maximin in GBR-class 0107. From this first article we give here a list of GBR, maximin, percentage wins and number of zugzwangs. In the article the list is sorted by maximin, we give the list three times: once on GBR, once on percentage of wins and once on number of zugzwangs:

Remark: in these lists:

0009 = KNNNKN, 0039 = KNNNKB,  
0390 = KBBBKR, 3900 = KRRRKQ,  
1090 = KQKBBB, 1009 = KQKNNN,

### List by GBR:

GBR	maximin	wins	zugzwangs
0009.00	86	94%	12,918
0024.00	31	99%	58
0026.00	38	63%	1,662
0039.00	92	86%	6,300
0107.00	243	78%	18,176
0116.00	223	96%	456
0134.00	190	72%	8,030
0143.00	98	87%	1,478
0161.00	140	77%	1,634
0161.00	52	65%	256
0170.00	75	72%	95
0260.00	37	94%	26
0312.00	49	53%	1,270
0321.00	68	95%	83
0390.00	69	80%	48
0503.00	73	81%	1,410
0510.00	54	73%	1,030
0800.00	18	67%	16
1009.00	35	75%	17,688
1063.00	63	85%	6,670
1090.00	51	82%	2,820
1601.00	153	86%	1,858
1610.00	85	92%	342
3021.00	12	62%	18
3111.00	99	69%	1,010
3120.00	44	75%	396
3201.00	101	94%	1,520
3210.00	82	96%	388
3900.00	65	98%	6
4002.00	72	94%	2,228
4004.00	29	63%	152
4013.00	36	68%	78
4031.00	32	61%	35
4040.00	46	66%	22
4103.00	71	90%	1,780
4130.00	73	87%	1,410
4301.00	27	57%	3
4310.00	32	62%	6
4400.00	92	83%	243
5300.00	48	92%	32
8000.00	44	83%	32

There are two cases of 0161 in this list, the maximin of 52 is for bishops on different colours, the other one is for the general case. And now the same list by win percentage:

GBR	maximin	wins	zugzwangs
0312.00	49	53%	1,270
4301.00	27	57%	3
4031.00	32	61%	35
3021.00	12	62%	18

4310.00	32	62%	6
4004.00	29	63%	152
0026.00	38	63%	1,662
0161.00	52	65%	256
4040.00	46	66%	22
0800.00	18	67%	16
4013.00	36	68%	78
3111.00	99	69%	1,010
0170.00	75	72%	95
0134.00	190	72%	8,030
0510.00	54	73%	1,030
3120.00	44	75%	396
1009.00	35	75%	17,688
0161.00	140	77%	1,634
0107.00	243	78%	18,176
0390.00	69	80%	48
0503.00	73	81%	1,410
1090.00	51	82%	2,820
8000.00	44	83%	32
4400.00	92	83%	243
1063.00	63	85%	6,670
1601.00	153	86%	1,858
0039.00	92	86%	6,300
4130.00	73	87%	1,410
0143.00	98	87%	1,478
4103.00	71	90%	1,780
1610.00	85	92%	342
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0009.00	86	94%	12,918
0260.00	37	94%	26
3201.00	101	94%	1,520
4002.00	72	94%	2,228
0321.00	68	95%	83
0116.00	223	96%	456
3210.00	82	96%	388
3900.00	65	98%	6
0024.00	31	99%	58

And finally the list by number of zugzwangs:

GBR maximin	wins	zugzwangs	
4301.00	27	57%	3
3900.00	65	98%	6
4310.00	32	62%	6
0800.00	18	67%	16
3021.00	12	62%	18
4040.00	46	66%	22
0260.00	37	94%	26
8000.00	44	83%	32
5300.00	48	92%	32
4031.00	32	61%	35
0390.00	69	80%	48
0024.00	31	99%	58
4013.00	36	68%	78

0321.00	68	95%	83
0170.00	75	72%	95
4004.00	29	63%	152
4400.00	92	83%	243
0161.00	52	65%	256
1610.00	85	92%	342
3210.00	82	96%	388
3120.00	44	75%	396
0116.00	223	96%	456
3111.00	99	69%	1,010
0510.00	54	73%	1,030
0312.00	49	53%	1,270
4130.00	73	87%	1,410
0503.00	73	81%	1,410
0143.00	98	87%	1,478
3201.00	101	94%	1,520
0161.00	140	77%	1,634
0026.00	38	63%	1,662
4103.00	71	90%	1,780
1601.00	153	86%	1,858
4002.00	72	94%	2,228
1090.00	51	82%	2,820
0039.00	92	86%	6,300
1063.00	63	85%	6,670
0134.00	190	72%	8,030
0009.00	86	94%	12,918
1009.00	35	75%	17,688
0107.00	243	78%	18,176
			93,683

So there are still a lot of zugzwangs to come, and we just might publish them all in *EG*.

EvdG - Siv97

### GBR code

(after Guy/Blandford/Roycroft) concisely denotes chessboard force in at most 6 digits. Examples: two white knights and one black pawn codes into **0002.01**; wQ bQ wR codes as **4100**; wBB vs bN codes as **0023**; the full complement of 32 chessmen codes as **4888.88**. The key to encoding is to compute the sum '1-for-W-and-3-for-BI' for each piece type in QRBN sequence, with white pawns and black pawns uncoded following the 'decimal point'. The key for decoding is to divide each QRBN digit by 3, when the quotient and

remainder are in each of the 4 cases the numbers of Bl and W pieces respectively. The *GBR* code permits unique sequencing, which, together with the fact that a computer sort of several thousand codes and the reference attached to each is a matter of a second or two, enormously facilitates the construction of look-up directories.

A consequence of the foregoing is the code's greatest overall advantage: its user-friendliness. The *GBR* code has the unique characteristic of equally suiting humans and computers. No special skill or translation process is required whether the code is encountered on a computer printout or whether it is to be created (for any purpose, including input to a computer) from a chess diagram.

A natural extension of the *GBR* code is to use it to represent a complete position. A good convention is to precede the *GBR* code with the squares of the kings, and follow the code with the squares of the pieces, in W-before-Bl within code digit sequence, preserving the 'decimal point' to separate the pieces from the pawns, if any (where all W pawns precede all Bl). The 223-move optimal play solution position in the endgame wR wB bN bN would be represented: a7d3 0116.00 b2b3c6d6 3/3+. The '3/3' is a control indicating 3 W and 3 Bl men, with '+' meaning W wins, while '=' would mean White draws. The win/draw indicators are optional. Note that although in this example there are no pawns the *GBR* code decimal point and immediately following pair of zeroes are obligatory (enabling a scan of a text file searching for encoded chess positions) but the absence of a decimal point in the list of squares confirms that there are no pawns. A position with pawns but no pieces would be coded in this manner: a2c4 0000.32 .d4e3f2e4f3 4/3 WTM. To indicate Black to move (but still with the implied win or draw for White) it is

suggested that '-+' and '-=' be employed. Where the position result is unknown or undecided or unknowable it is suggested that the computer chess convention 'WTM' (White to move) and 'BTM' be followed. The redundancy check piece-count (including the '/' separator) and terminating full stop are both obligatory.

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