NOTES

THE KPK ENDGAME: A UNIT CORRECTION

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We would like to make a few comments on the endgame summary in the previous issue of the Journal (Herschberg and Van den Herik, 1985). Firstly, both of us have constructed a KPK data base and therefore we compared the published q-value for KPK to the value following from our own work. In doing so we discovered a minor discrepancy from Clarke's results (Clarke, 1977). Clarke gives the following statistics (WTM only):

Won   : 62,479 positions

Drawn : 19,185 positions (including stalemate)

Illegal: 16,640 positions

Our data bases, however, give: 62,480 won positions and 19,184 draws. We believe our figures to be correct because we developed our data bases independently from each other. In addition we mention that Van der Storm's database locates the discrepancy at depth zero, where he finds 12,750 wins as against Clarke's 12,749. So it seems that in Clarke's construction an initialization error occurred. Of course, it would be very interesting to know whether other KPK data bases agree with us.

Secondly, we have a remark about the worst-case mating distance for endgames that are won by conversion into KQK, e.g., KQKR and KPK. We have proved that White (assumed to be the stronger side) can always avoid conversion into the worst-case KQK position. The proof follows almost immediately from the fact that (apart from symmetry) there is only one worst-case KQK position, viz. White Kh8 Qg7, Black Kd3. In every other position at most nine moves are

needed to mate. In the worst-case position as given above, it is clear that White's previous move cannot have been a promotion, so this position cannot have resulted from a KPK endgame while in other cases White's previous move must have been a capture either on g7 or h8. In either case, however, that capture could also be made by the other white piece, avoiding the worst-case KQK position.

Hence, in a derived KQK endgame, nine moves at most are needed. For KPK this maximum is achieved indeed, as shown recently (Van Bergen, 1985). For KQKR we can now sharpen the upper bound for the worst-case mating distance from 41 to 40. As chess-players, we feel, however, that this sharpened upper bound is still too high.

REFERENCES

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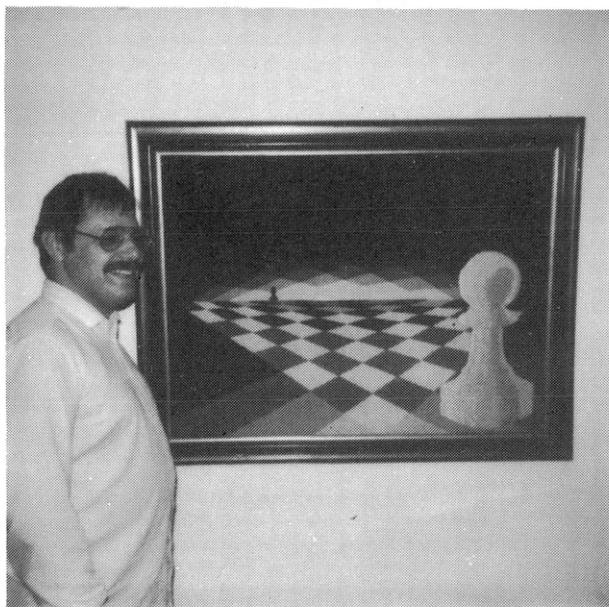
DO THE DUTCH DESIGN THE THRIFTIEST DATA BASES?
Harry J. Nefkens, pawn-proud before his thesis-present painting.

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