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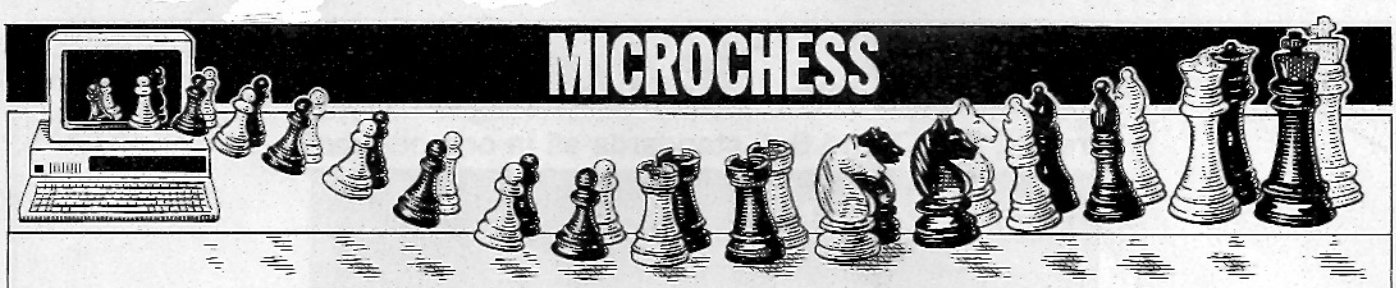


Mephisto III

Tony Harrington reports on an 'intuitive' new chess program from Hegener and Glaser.

Micro Chess readers might remember how, as reported a year ago in this column, Ossie Weiner (then with the German chess machine supplier Hegener and Glaser) told me of the breakthrough the company had made. A new chess program was on the way which would play 'intuitively', like a player. That program, the Mephisto III, is now available.

The major difference between the Mephisto III and the earlier Mephisto II is that, with the former, Hegener and Glaser has abandoned the tried and trusted concept of 'brute force' in chess programming. Brute force describes a programming strategy where the program simply crunches through all possible moves looking for the best line.

There are, of course, some cute programming tricks — like the Alpha Beta cut off — which eliminate some of the more unnecessary position crunching. But, by and large, the brute force approach looks at everything, even the most stupid and irrelevant moves. It is a wasteful approach and not particularly elegant.

But while brute force might not be particularly beautiful as a concept, in practice it is hard to beat. Hegener and Glaser has taken a bold step in investing money in a program that departs from this principle. The company has gone for the opposite route, involving selective search.

The Mephisto III program crunches through every possible move for the first two plies (one ply being a single white or black move), then it switches to consider in depth only a handful of really promising lines.

It also attempts to distinguish between tactical positions (where there is a great deal going on in the way of possible captures, sacrifices, mating attacks and so forth) and quiet positions. Chess computers are notoriously bad at quiet positions. Instead of using such positions to develop a long-term game plan, they tend to shuffle their rooks backwards and forwards and wait for their opponent to do something interesting.

Developing a program that is good at quiet positions sounds fine in theory. But in practice it is very hard to achieve. The route from the drawing board to the shop shelves has not been without its hitches. At last year's *PCW* tournament great things were expected of the Mephisto III; but it failed miserably in a couple of games, in positions where its predecessor, the Mephisto II, could have been expected to win handsomely.

I well remember one chess computer expert saying what a shame it was that such a bold new innovation in programming had failed.

As things turned out, that comment was decidedly premature. The World Microcomputer Championships, held in Budapest only a week or so after the *PCW* tournament, found the Mephisto III in better shape. Whereas it could only manage ninth place at the *PCW* tournament, in Budapest it managed to fight its way into a three-way tie for second place, with five out of a possible seven points.

The word from Hegener and Glaser was that the poor showing at the *PCW* tournament was the result of an attempted 'improvement' to the program, made a day or two before the tournament began. This modification turned out to cause more problems than it cured. The programmer, Thomas Nietzsche, worked flat out to cure the bugs and Budapest showed that his efforts were not in vain.

Then an experimental version of the Mephisto III went to New York to play in the 4th World Computer Chess Championships, against the likes of Belle and the Cray Blitz. According to Hegener and Glaser, the only difference between the experimental entry and the standard Mephisto III lay in the hardware. Instead of running on the standard 8MHz board, the experimental version ran on a souped-up, 16MHz machine. It did exceptionally well, finishing up in a three-way tie for sixth place with three out of five points.

Despite these good tournament results, even Hegener and Glaser cannot claim that the Mephisto III is definitely stronger than the old Mephisto II. The most the company would claim was that it played a totally different game. 'It has a very "human" style', a spokesman said.

It is definitely in the same bracket as far as both strength and price is concerned, as the Novag Constellation and SciSys's Superstar. Unfortunately, although it has most of the features one expects from a commercial chess computer, it still uses the overly complicated multiple-key approach of the Mephisto II in order to access these functions.

Hegener and Glaser expects great things from its new brainchild. Sales in excess of $5 million are predicted world-wide through 1984.

Welcome to Micro Chess

Micro Chess covers all the news and events in the busy world of computer chess. With new chess programs and new chess computers appearing all the time, we evaluate their strengths and weaknesses as they become available. We shall be presenting profiles of programmers, both amateurs and professionals, which will cover their methods and their interest in chess programming, and we shall be talking to suppliers and looking at their plans.

Computer Chess affects computer enthusiasts in two different ways. For some, the fact that they can now play chess against either their home computer or a dedicated chess computer has opened up the delights of the game. For others, the real interest is not so much in playing chess as in trying to build a chess program. Micro Chess aims to meet the interests of both.

Chess is a game that can be as exciting for the beginner as it is for the grand master. So if you haven't played before, get yourself a good introduction to the game — there are dozens in the bookshops — and get to it.

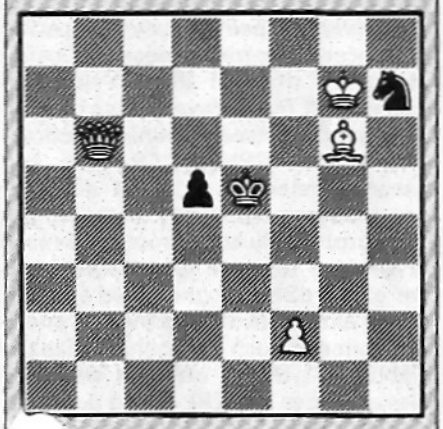
Problem composition

John Nunn looks at problem composition on a BBC Model B.

Chess problems are composed positions in which White to play can force mate in a specified number of moves.

Unlike over-the-board play, in which computers cannot yet compete with the top players, a good machine can defeat the best human problem-solver. Many commercial machines and personal computer programs have a special problem mode which takes advantage of the fact that the search depth is known in advance. After the position has been entered and the number of moves set, the machine can be left to 'think' until a solution is found. It is very useful to be able to restart the machine to see if there are any additional solutions not intended by the composer. Should one exist the problem is ruined. Much of the composer's time is spent checking that his intended solution is unique and a machine can greatly speed up this tedious process.

I composed the following problem with the aid of a BBC Model B and the White Knight Mk II program.



...ite to play and mate in three

This was published in *British Chess* (January, 1984). If you would like to compare the speed of White Knight with your own machine, it took 19secs to solve this problem and a further 26secs to check that there were no other solutions.

Although White Knight is very fast, it is not able to consider under-promotions in its analysis, so will give erratic results with any problems depending on under-promotions. This may be the case even if no under-promotion occurs in the solution, since Black may have to under-promote to counter a faulty attempt by White. Should this happen the computer will erroneously report that there is more than one solution. Many problems do in fact rely on under-promotions, so this is a significant defect. It must be added that there is little consistency on this matter among chess machines and programs. Some only consider promotions to queen and knight, others only consider under-promotions on the first move. If you intend using a machine for problem solving or composing, it is worth bearing this point in mind.

Pocket chess

SciSys has recently introduced an interesting pocket chess computer called the Explorer. This runs off three penlight batteries. The game below illustrates the limitations of the Explorer rather well.

Player vs Explorer: 1 e4 d5 2 exd Qxd 3 Nc3 Qa5 4 d4 Nf6 5 Nf3 Be6 (Explorer has a habit of playing moves like this with its Bishops once it gets out of its tiny openings library. It's after the pawn on a2, which is not only a shallow, half-baked plan, but also plays havoc with the development of its King-side by trapping its King's Bishop. The point now is how best to take advantage of the move). 6 Bd2 Nc6 7Bb5 0-0-0 (not exactly a brilliant move, either, but great fun to play against) 8 BxN bxB 9 Ne4 (played solely in order to lure the Queen into a position where it would go pawn hunting) Qb5 10 Nc3 Qxb (and the bait is taken) 11 Rb1 Qa3 12 0-0 Bxa (take one, take all) 13 NxB QxN 14 Qe2 e6 15 Ne5 Rxd 16 Ra1 Qxc2 (the pawn hunt goes on) 17 Qa6+ Kd8 18 Nxc6+ Kd7 19 NxR QxB 20 Rfd1 Qb2 21 Qc6+ Kc8 22 Rxa Kd8 23 Qxc+ Ke8 24 Qc8 checkmate.

Games section

White: Mephisto X. Black: Ostrich. New York Chess Championships 1983. Centre Counter Game. Notes by David Levy.

1	e2-e4	d7-d5
2	e4xd5	Ng8-f6
3	d2-d4	Nf6xd5
4	c2-c4	Nd5-b6
5	Ng1-f3	Bc8-g4
6	Bf1-e2	

(6c4-c5 Nb6-d5 7 Qd1-b3 is a more aggressive idea.)

6	...	Nb8-c6
7	d4-d5	Bg4xf3
8	Be2xf3	Nc6-e5
9	b2-b3	

(9 Bf3-e2 is met by 9...c7-c6, and not 9...Ne5xc4?? 10 Be2xc4 Nb6xc4 11 Qd1-a4+, winning a piece.)

9	...	g7-g6
10	Bc1-b2	Bf8-g7
11	Nb1-c3	

(Not 11 Bf3-e2? because of 11...Ne5-f3+! and 12...Bg7xb2, trapping the rook in the corner.)

11	...	0-0?

(Black should trade on f3, since the White bishop is a better long-term prospect than the Black knight.)

12	Bf3-e2	Ne5-d7
13	f2-f4	Bg7xc3+?
14	Bb2xc3	a7-a5
15	Qd1-d2	a5-a4
16	0-0	a4xb3
17	a2xb3	Ra8xa1
18	Rf1xa1	

(White has a big advantage. In addition to the long-term plus of the two bishops for two knights, which bodes well for the endgame, White also dominates the a-file and has chances of an attack against the vulnerable Black King.)

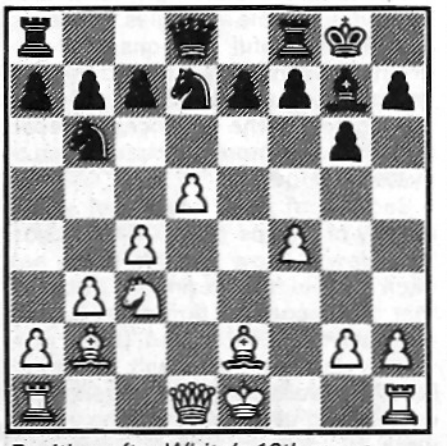
18	...	Rf8-e8
19	Qd2-b2	e7-e6
20	d5xe6	Re8xe6
21	Ra1-a7	Qd8-b8
22	Ra7-a5	Re6-e4
23	Be2-f3	Re4-e3
24	Qb2-d2	Re3-e7
25	Qd2-d4	

(Threatening mate, thereby compelling Black to weaken its K-side still further. In fact this move is the start of a long-forcing sequence which wins material, but it is difficult to tell at what point White saw that the win was inevitable.)

25	...	f7-f6
26	c4-c5	Nb6-c8
27	Bf3-g4	b7-b6
28	Qd4-d5+	Kg8-g7
29	Ra5-a8	c7-c6
30	Ra8xb8	c6xd5
31	Bg4xd7	Re7xd7
32	Rb8xc8	b6xc5
33	Rc8xc5	d5-d4
34	Bc3-d2	d4-d3

(White has an easily won position, and apart from observing the accuracy with which Mephisto plays the remainder of the game there is little real chess interest in the concluding moves.)

35	Kg1-f2	Rd7-e7
36	Kf2-f3	Re7-e2
37	Bd2-c1	Re2-a2
38	Rc5-c7+	Kg7-g8
39	Rc7-d7	Ra2-c2
40	Bc1-e3	Rc2-c3
41	Be3-d4	Rc3xb3
42	Bd4xf6	Rb3-a3
43	Bf6-e5	d3-d2+
44	Kf3-e2	d2-d1=Q+
45	Rd7xd1	h7-h5
46	Rd1-d6	Ra3-a2+
47	Ke2-f1	Kg8-f7
48	h2-h4	Ra2-c2
49	Rd6-f6+	Kf7-e7
50	Rf6xg6	Ke7-f7 and Black Resigned



Position after White's 13th move