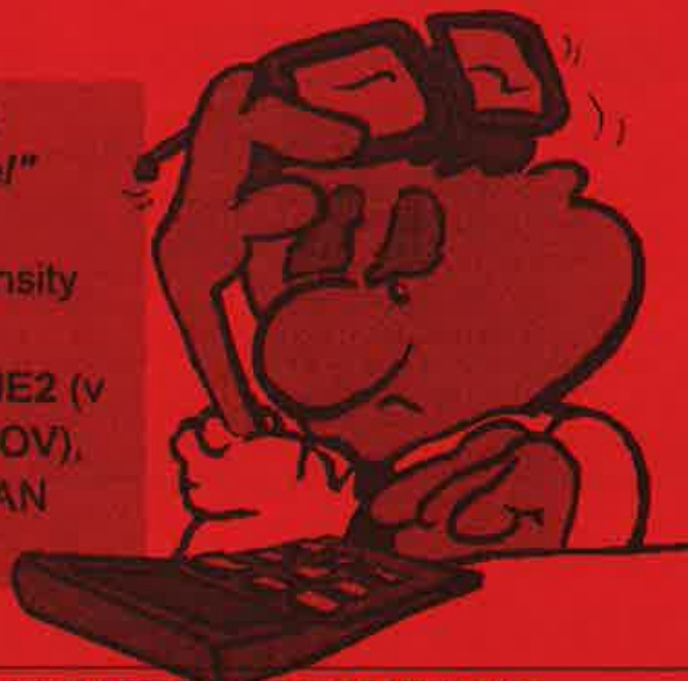*"These blinking programs are getting better all the time!"*

COMPUTERS v HUMANS: the intensity grows

..... but how do we think **DEEP BLUE2** (v World Champion GARRY **KASPAROV**), and **HIARCS6** (v Canadian I.M. DEAN **HERGOTT**) will fare!?

CONTENTS, ISSUE 69

Computer BEST BUYS - Editor's Choice

The **RATINGS** for the computers and programs which follow can be found on pages 27 and 28. I have not tried to include all available machines - this is my 'short list' of those I consider to be the current '**BEST BUYS**' at various price points and playing strengths, also bearing in mind features and quality etc.

Further info. is given in **Catalogues** available from **COUNTRYWIDE** - see their address on the front page. It is always worth ringing to check any extra cost for a mains transformer where applicable, but 48 hour insured post and packing are included free. This list is brought up-to-date for each Issue of my Magazine.

PORTABLE COMPUTERS

Kasparov (price reductions underlined!)
ADVANCED TRAINER £69! - nice plug-in
TRAVEL CHAMPION £89! - with display
TRAVEL CHAMP 2100 now **£99**! - great value, 4½"x4½" plug-in board + display
Novag
JADE2 £99 - tiny 3½"x3½" board portable
SAPPHIRE £199 - calculator style, strong

TABLE-TOP PRESS-SENSORIES

Fidelity
CHESSTER £169 - voice model, 160 BCF
Kasparov
EXECUTIVE £99 - GK-2000 Morsch prog. Display etc, plus lid cover. Terrific value!
GK-2100 now **£129**! - top quality Morsch program, clever display, recommended.
Novag
DIAMOND £249 - testing playing style.
Mephisto
DALLAS 68000XL £165 - on special offer.
NIGEL SHORT £199 - laptop lid, Staunton + disc pieces, graphic display - great!
MILANO PRO now **£249**! - TOP SELLER!
LONDON PRO 68020 £649 - Top for strength + excellent features and analysis.

WOOD AUTO-SENSORIES

Kasparov
PRESIDENT £299 - top value wood board... ever! - good display + features.
Mephisto
EXCLUSIVE MM6 £449 - new Morsch module - high class, strong & quality!
EXCLUSIVE LONDON 68030 £1395 - The PC's Genius3 (which beat Kasparov) in 68030/33MHz! - tremendous!
Tasc
R30-1995 £1249 - beautiful, piece recognition board, very strong, dynamic play.

PC PROGRAMS

HIARCS6 £89 - *NEW* - excellent 'human-like' playing style, *very* strong, great analysis features; 140,000 book. New **no.1**!
GENIUS5 (CD ROM/Disk) **£89** - excellent graphics/strength/quality; 220,000 book.
REBEL8 £89 - Ed Schroder's best ever!
FRITZ4 (CD ROM) **£89** - super graphics.
Also for Apple MAC
HiARCS4 £89 - best by far for the MAC

CLASSIC GAMES COLLECTION for PC!
20+ Games, inc. Sage 4000 Draughts (very strong program!), **Othello! £49**

PC DATABASES

ChessBASE for Windows 6.0 (CD) *NEW "The"* games and work DATABASE, now **Multi-media** and with Player 'cyclopedia.
'Basic' package 260,000 games **£225**
'Prof' package 340,000 games+ **£325**
'Mega' package 550,000 games+ **£449**
Analysis modules, to use within CBase:
FRITZ **£45** (almost indispensable?!)

BOOKUP for Windows **£159** - *very* useful tool, now incl. Zarkov analysis module.

SECOND-HAND & EX DEMO

All with 12 month guarantee & adaptor!

2 Richard LANG Computers:
Mephisto MONTREAL £285 - lovely wood board + pieces, 68000 program.
Mephisto LONDON 68000 £355 - brilliant strength, features and play. Top value.

4 Fidelity Spracklen press-sensory machines, popular at £399/499 not so long ago!
Fidelity CLUB 68000 £89
Fidelity MACH2 68000 £129
Fidelity MACH3 68000 £149
Fidelity DESIGNER MACH3 £169

NEWS and RESULTS
What's been going on... and plenty to look forward to!

Frank HOLT continues to work hard and enjoy his beloved Rebel8. As usual he is testing under a range of Time Controls from G/30-60-90 through to 40/1 and 40/2, also using different Playing Styles.

I exclude the results on the 'extreme' styles in the Selective Search Rating List, as well as those at G/30, but show them in full in the totals below for reader interest.

Rebel8 Pentium/100 v Hiarcs4 Pent/100
R8 Normal 8-4 H4 Aggressive
R8 Active 7½-4½ H4 Aggressive
R8 Solid 5½-6½ H4 Aggressive
R8 Aggressive 6-6 H4 Aggressive
R8 Defensive 7-5 H4 Aggressive

Aggressive is the suggested 'Best' setting for Hiarcs4.

Rebel8 P/100 v Rebel7 P/100
Both Normal 8-4
Both Active 7½-4½
Both Solid 7-5
Both Aggressive 6½-5½ (strangely there were 7 draws in the Aggressive-Aggressive meeting!)
Both Defensive 8½-3½

Rebel8 P/100 v Genius5 P/100
R8 Normal 6-6 G5 Active
R8 Active 7.5-4.5 G5 Active
R8 Solid 6.5-5.5 G5 Active
R8 Aggressive 4-8 G5 Active
R8 Defensive 7-5 G5 Active

Active is the suggested 'Best' setting for Genius5

Finally, the series of games against MCPro6 on its best setting:-

Rebel8 P/100 v MChess Pro6 P/100
R8 Normal 6-6 MCPro6
R8 Active 6-6 MCPro6
R8 Solid 5½-6½ MCPro6
R8 Aggressive 5½-6½ MCPro6
R8 Defensive 4½-7½ MCPro6

Frank comments: *"So, Rebel8 is knocked off its perch - I know Ed Schroder will say it's the MCPro6's Opening Book, and I must admit about **14 games** were indeed*

because of this.

"The problem as I see it is: if Kasparov studies on his DataBase games played by Karpov, and wins, he is classed as wonderful. But if a Computer does it, everyone moans and says it's unfair.

"But if we are interested in the real progress of these Computer programs, then the fairest way is to set up positions from ECO and play from there, both sides taking White and Black, and the Openings to be used not to be declared until the game starts.

"I personally found the games fascinating to watch, but MCPro6, like Genius5, has stayed the same old program only with a vastly improved Opening Book; all other features are the same".

I wouldn't quite agree with Frank about the Genius5 features all being the same, but take his other points 100%. Although Genius5 occasionally opts for a pawn-break earlier than its pre-decessors, quite a few folk have commented that, Opening Book apart, its moves <u>and</u> evaluations thereafter are mostly exactly the same as Genius4.

The same seems generally to be true for MCPro6, though its 30+ Elo improvement over MCP5 on the Rating Lists (as at March 1st) does suggest there might be a bit more to it.

HIARCS5 and an unexpected RATING conflict!

There are plenty of results now for HIARCS5, and these are of great interest because of an apparent conflict between the *Selective Search* and *SSDF (Ply)* Rating Lists.

For a couple of weeks my List indicated that HIARCS5 had actually gone to the top of the Ratings, but the arrival of over 100 results from Sweden dropped it back to second, just behind Rebel8.

The reason for the difference comparing Sweden's results and those in Britain is that hardly any British users do their testing with the Auto232 Tester, apparently preferring to watch and enjoy the games in

progress rather than 'just' compile results.

Now this is <u>not</u> a criticism of the Swedish method - not at all - we are greatly indebted to their work over many years, and I for one hope that it may continue for many more to come.

However typical British testing switches a game off when it becomes "hopeless" - for some that might be down to personal judgement, for others an evaluation of around +/-500, or +/-999, or a mate announcement.

In pre-launch HIARCS5 testing, we had the programs set to record a win when both sides showed >+/-600. This saves massive amounts of time with one side struggling lengthily against impossible odds, and enables many more test games to be played. Thus a HIARCS bug was missed completely.

With the Auto232 Testers left on almost permanently, games in Sweden are set to play right to the end, and this has brought to the surface the bug in the HIARCS' mate method involving certain piece and pawn configurations, due to analysis of mates being held in the transposition tables and then not correcting themselves if the opponent plays a different move - even if that move actually allows a quicker mate!

In the end, HIARCS5 goes round in 2 or 3 circles, and allows draw by repetition! This has cost it 8 known wins from 121 games in Sweden, the equivalent of 26 Elo points. This has not been noticed even once by other testers... almost certainly because they, like us, switched off when the result is 'obvious'!

So here is a selection of results for HIARCS5, as received from SS readers.

Dirk FRICKENSCHMIDT was the first to get a major completed Match report to us, 20 games at 40/2 on Pentium 75's between HIARCS5 and Rebel8.

He comments, *"I decided when a game was a win, to make the games faster... and I must say that I enjoyed this Match more than any other Computer-Computer encounter I have played over recent years. In particular I was impressed with the way HIARCS produced nice attacking games on a high positional level, compared to other programs. For me this is really fun to see".*

The final score was:

Rebel8 8-12 HIARCS5

Dirk sent me all of the games, but where we will find room to print a selection is not easy to see!

Thorsten CZUB was not far behind, and started to send in his results in early January, under the heading *"HIARCS5 could stop Rebel8 leading the Rating Lists!"* . As mentioned above, he was exactly right for a couple of weeks!

All Thorsten's games are played on Pentium 120's. The first arrivals were at 60/60, headed by:

HIARCS5 7½-4½ Nimzo3.5

Nimzo3/3.5 is a favourite of Thorsten's, because there is scope for the user to make some changes to the evaluation algorithms. However both progams have been thoroughly tested by the programming team, and come almost certainly set for their best possible play.

After the Nimzo score, about which Thorsten said: *"The games are real fights"*, he wrote again to say: *"In the past I have noted that HIARCS always had problems with fast chess, because it is a 'knowledge program' and prefers slower time controls. However Mark (Uniacke) has changed the algorithms and HIARCS5 now computes much faster and also selectively deeper".*

Thorsten next turned his attention to playing H5 against a couple of better-known opponents. His next set of 60/60 results were not quite as good as Dirk's, and suggested that, whilst the 'new' HIARCS <u>is</u> much better at fast chess than its predecessors, its strong point may still be at 60/2 or 40/2:-

HIARCS5 3-5 Genius3
HIARCS5 8-8 Rebel8

I have now received Thorsten's latest scores and these, at 40/2, once more show off H5 scoring at its very best :

HIARCS5 2-0 MChess Pro6
HIARCS5 3½-1½ Rebel8

Peter SCHREINER is often the operator

for MChess programs in European Events. But he very generously contacted us with his HIARCS5 results, confessing they had *"impressed him"*!

Games were played at 40/2 on Peter's Pentium 166's, with the following scores:

HIARCS5 13½-11½ Rebel8
HIARCS5 6½-3½ Nimzo3
HIARCS5 1½-3½ Genius3
HIARCS5 6-4 MChess Pro6

The HIARCS5 *Achilles Heel* seems to be FRITZ! **Gary Sedman** sent me the following (played at 60/60):

HIARCS5 P/75 5-5 Fritz3 486
HIARCS5 486 4-6 Fritz3 P/75

Keith Kitson reported a 40/2 result in which the fact that Fritz was on a much more powerful machine should also be taken into account:

HIARCS5 P/133 5-5 Fritz4 PPro/200

In **Sweden** they have (at 40/2 of course):

HIARCS5 7-2 Fritz3 486... a much better result for HIARCS (which here is on the more powerful machine) and, strangely, including no less than 4 of 'those' drawn games from totally won endings! In other words, 'bugless' HIARCS would be 9-0 up!?

Well, as **HIARCS6** is now out - see RE-PORT elsewhere - we'll leave it there apart from the following Cross-Table from Germany's Dr Torsten Schoop. A 60/5 Blitz Tournament with the Auto232 Tester:

60/5 TOURNAMENT on P/120's Tester: Dr Torsten Schoop							
	G5	R8	N35	H5	F3	Ka	
Genius5	*	11	11	12	12½	15	**61½**
Rebel8	9	*	12½	13	10½	13	**58**
Nimzo3.5	9	7½	*	11	10½	16	**54**
Hiarcs5	8	7	9	*	13½	15½	**53**
Fritz3	7½	9½	9½	6½	*	10½	**43½**
Kallisto1.98	5	7	4	4½	9½	*	**30**

Other Results

The **BLANDFORD**'s have been reporting on Richard Lang's 'LONDON Upgrade' and its progress in their Mephisto 68030 board. The latest scores in are:

London 68030 7-3 Vancouver 68020/20

Something of a surprise was the score, standing at 2½-4½ in SS/68, against RISC2, and that has ended up:-
London 68030 3½-6½ RISC2

The very latest results, however, are much better!

London 68030 7½-2½ Fid Elite 68030 v9
London 68030 7½-2½ RISC 2500-512k

Forthcoming Events & Product

[1] Welser, 1997
Auto232 Tournament @ 40/2

This Event is running as I write - if I get a Final, or later set of Standings, I'll try to squeeze it in somewhere.

However it seems it may be heading for a major shock... at present **Rebel7** leads with 7 after 9 Rounds! **Genius5**, **MCP6** and **Hiarcs5** are all challenging, whilst **Rebel8** languishes at 16= with just 4).

Here's the full list at the moment **Welser, 1997. After 9 rounds:**
7 Rebel7
6½ Genius5, MChessPro6
6 Hiarcs5, Hiarcs4
5½ Nimzo3.5, Nimzo3, Genius2, Kallisto1.83
5 Hiarcs3
4½ MCPro5, MCPro4, Fritz3, Fritz2
4 Genius3, Rebel8, Kallisto1.98, CometA45
3½
3 WChess, CometA42, Rebel6, Isichess2.5
2½ Gandalf
2 Diogenes315
1½
1 Diogenes31x

[2] Deep Blue v Kasparov
... the Re-Match!
May 3-10, 1997.
6 games @ 40/2 to be played in New York, the winner to receive $700,000 and the loser $400,000.

See pre-Match report elsewhere in this Issue. Our June Issue, SS/70, will contain a full Report and the games of this re-match.

This is how it went last time:

Kasparov   0 1 ½ ½ 1 1 = 4
Deep Blue   1 0 ½ ½ 0 0 = 2

[3] Aegon, the Annual Human-vs-Computer Event, April 16-23, 1997.

A 6 Round Tournament using a modified Swiss System so that the top Computers play the top Humans. Once again, our June Issue will carry full details.

'Top' humans always includes a goodly number of G.M's, keen to uphold the human's reputation. Last year's stars, Seirawan, van der Wiel, Vaganian, Speelman Bronstein and Christiansen, are expected to be present again plus, I hear, Ulf Andersson.

In 1996 Fischer clocks were in use for the first time, set at Game in 1½hrs + 20secs per move. Although the Computers gained the overall victory, it was noted that the result v G.M's went against them by 41½-12½, which rather put things into perspective!

However, using Pentium Pro/200 machines, we would expect programs such as Rebel8, HIARCS5/6, MChess Pro6 and Genius5 to each get 2500+ and score 30% against the G.M's this year - unless our Rating List is <u>still</u> too high in spite of the overall drop of just over 20 Elo points since this time last year, as my Computer Rating program makes its adjustments whenever results v-Humans reach it!

Previous Results:

	Humans	Computers
1992	84	- 60
1993	98½	- 93½
1994	114	-114
1995	132	-156
1996	137½	-162½

CS-tal undergoing latest beta-tests

We still await fulfilment of the 1995 promise of an *"out soon"* **CS_tal** - the latest forward forecast for the *"new-paradigm"* knowledge based program is *"hopefully April 1997"*.

Apparently beta-versions sent out to selected testers have brought in many suggestions and recommendations, and Chris Whittington says he is run off his feet trying to get the job finished, and may even choose to miss Aegon rather than stop the work, though Thorsten Czub has usually operated the program there for him.

The *'new paradigm'* is designed to make the program play speculative chess, which can result in both dramatic success and grim failure from time-to-time.

From various other comments filtering through, and the following (beta-test?) game posted on the Internet, it appears one thing it will also have is an absolutely massive Opening Book.

CS_tal -v- Ferret [D85], 1997.
1.d4 Nf6 2.c4 g6 3.Nc3 d5 4.cxd5 Nxd5 5.e4 Nxc3 6.bxc3 Bg7 7.Nf3 c5 8.Rb1 0-0 9.Be2 cxd4 10.cxd4 Qa5+ 11.Bd2 Qxa2 12.0-0 b6 13.Qc1 Bb7 14.Bc4 Qa4 15.Bb5 Qa2 16.Bc4 Qa4 17.Bb5 Qa2 18.Re1 Rc8 19.Qd1 e6?!
DIAGRAM

Theory suggests that this is now losing with best play, and that 19...Qc2 20.Qe2 Qc7 may be Black's best way to continue in future.
20.Ba4 Nc6 21.d5! exd5 22.Bb3 Qa3 23.exd5!
A novelty from Chernin-Dvoiris, 1993.
23...Nd4 24.Nxd4 Bxd4 25.Re4 Qc5 26.Be1 Bf6 27.Qf3
27.Bb4? Qb5! (Informator)
27...Kg7 28.Rf4 Qe7
Ferret has been on its own for a while. Here Informator indicates that best is 28...Qd6 29.Bb4, and now Rc5. However the move played is <u>still</u> known to theory, and to CS_tal!
29.Bb4 Qd8 30.Bd2!
A <u>very</u> strong move, getting acclamations at first (as it did when Chernin played it)... but later was stated to be still coming from the CS_tal Book!
30...g5 31.Rf5 h6?
The game had followed Chernin-Dvoiris to here, where Black went 31...Rc7 ('only move'), though still losing, 1-0.
32.h4 Rc7 33.Qg3 Bd4 34.Bxg5 hxg5 35.Rxg5+ Qxg5 36.Qxg5+ and 1-0.

MILANO PRO update
Mephisto's new £249 Computer continues to impress!

The number of games and results sent in so far for this excellent new Franz Morsch program is disappointing.

However the Swedish testers have said they hope to install it on their Rating List soon. In the meantime, we are still pressing on and playing games at Countrywide, and continue to be pleased with the results.

This is one of its latest efforts, which Mike Healey enjoyed as a bonus to testing out a recently repaired RISC 2500!

White **MILANO PRO (2240)**
Black **RISC 2500 (2250)**
[B45 *Sicilian, Four Knights]*. G/30

1.e4 c5 2.♘f3 e6 3.d4 cxd4 4.♘xd4 ♘f6 5.♘c3 ♘c6 6.♗e2?!
A fairly unexpected choice. Most Opening Books have this Gambit entered in not–to–be–played mode and prefer ♘db5! or ♘xc6.
6...♗b4 7.0–0 ♗xc3 8.bxc3 ♘xe4 9.♗a3 ♘xc3 10.♘xc6 ♕c7 11.♕d2
RISC 2500 exits its Book now, showing itself with a pretty healthy plus of course!
11...♘xe2+ 12.♕xe2 ♕xc6 13.♕d2 f6 14.♕b4 ♔f7

That's the end of MilanoPRO's well–prepared Book. *'Well prepared!?'* – well yes, as far as length in the line is con–cerned, but it's still somewhat speculative!
15.♕e7+ ♔g6 16.♖fe1 ♖g8?!
I prefer the immediate h6 here.
17.♖e3!
MilanoPRO clearly has the right idea!
17...h6

The only move now, as anything else loses to ♖g3+. E.g 17...d5? 18.♖g3+ ♔f5 *(18...♔h6?? 19.♕c1+ is m/4)* 19.♕f7+–
18.♗b2 e5 19.♖c3 ♕b6 20.♖b3 ♕a6?!
I think the RISC 2500 should have been trying to exchange ♕'s. E.g 20...♕e6 21.♖g3+ ♔h7 22.♕xe6 or *(22.♕a3 d5* and I wouldn't want to be White!) 22...dxe6–+
21.♖d3 ♔h7 22.♖d2 ♕b5 23.c3 ♕c4 24.♖d6 ♔h8 25.♖dd1 ♕c6
25...b5 pursuing ♕–side pawn pressure was better.
26.♖d6 ♕e4 27.♖ad1 b6 28.f3 ♕c4 29.a3 ♕c5+ 30.♔h1 a5 31.♗c1

DIAGRAM
An evaluation of 200+ for Black (moves 19–25) has now dropped to around 100.
31...♖b8?
31...♗a6 is best, according to HIARCS. Then 32.♕xd7 *(32.♖xd7 ♕xe7 33.♖xe7 ♖gd8∓)* 32...♗e2 33.♗xh6! ♕c8!∓
32.♗xh6! gxh6 33.♕xf6+
White now has at least a draw.
33...♖g7 34.♕xh6+
Or 34.♕h4! which is massive.
34...♔g8 35.♕h5 ♖f7
35...♕f2 looks to be the only chance here. The analysis isn't so easy, but perhaps 36.♖g1 *(36.♕e8+ ♔h7 37.♖h6+ ♔xh6 38.♖d6+* looks to be a draw) 36...♕c5 37.♖h6 ♔f8 38.♖h8+ ♔e7 39.♕e8+ which, in fact, still wins for White!
36.♖h6! ♔f8 37.♕g5 ♔e8 38.♖e6+ ♕e7 39.♖xe7+
Announcing m/5!
39...♔f8 40.♖e6 ♗b7 41.♕h6+ ♖g7 42.♖xd7 a4 43.♕xg7# 1–0

Milano PRO scores in as at Feb.26 1997:

Milano PRO 4:6 Montreux
Milano PRO 3:1 RISC 2500
Milano PRO 2:2 Lyon 68020
Milano PRO 6:2 Nigel Short
Milano PRO 5:3 Novag Diamond

New: it's HIARCS6!

An UPGRADE - so SOON!? - how much BETTER? - WHY/HOW!?!

Although **HIARCS5** has only been out for around 3-4 months, *Applied Computer Concepts* have recently announced the arrival of **HIARCS6**!

Price Arrangements!

I'm starting with these, to allay any fears that HIARCS5 owners, with their relatively new disks, might be expected to fork out another £49!

- **HIARCS6** new will cost the same as HIARCS5 new, i.e. **£89.95**.
- **Upgrading** from HIARCS5 to HIARCS6 will cost just **£12.95**. Folk who have purchased since Feb. 1st will probably get the upgrade free - certainly Countrywide is doing that.
- **Upgrading** from HIARCS**3/4** to HIARCS6 will cost **£49.95**.

Next the 'WHY?!'

From the HIARCS6 README.TXT file *(with occasional italicised additional explanations by Eric).*

HIARCS6 has been released early for the following reasons:

a) After extensive post-release testing at tournament time controls it has been observed that HIARCS5 occasionally takes a draw by repetition in a totally won position. *Most users have never seen this, as they will have resigned long beforehand! However when using the AUTO232 test method and playing games to an end, occasionally HIARCS5 will make a mate announcement and then go round in circles, allowing the draw instead of completing the mate!*

b) In the period since HIARCS5 was released we have made a number of improvements to the chess engine's strength. *A so-called "patch" for HIARCS5 could have been released, correcting the original disks for the fault alone. However this would have left the HIARCS5 grading on the SSDF and Selective Search Rating Lists permanently handicapped by the*
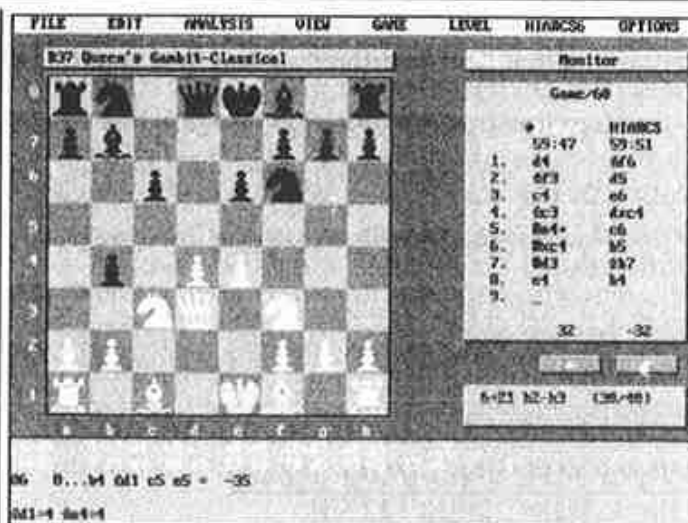
results already in for it *(we know of at least 8 drawn 'won' games in the first 120 played on the Swedish Auto232 testers = 26 Elo lost).*

It also seems a great shame to have some very definite improvements, and yet be actually taking them back out when supplying the new disks!

c) Feedback since the release of HIARCS5 has identified a need for a database filter option that will make the PGN & Chess-Base options easier to use. So we have addressed this need in HIARCS6, along with some other cosmetic improvements which will make the program easier to use and enjoy.

On the *Swedish SSDF* rating list, despite the 4 pts lost, **HIARCS5** was close to being the strongest chess engine available, and it was actually (just) top in the British *Selective Search* list for Issue 68! We believe that **HIARCS6** has a very strong chance of reaching the top of all the rating lists.

New Features

Sticky menus - To make it easier for the user to cycle through the values of various HIARCS options we have made the appropriate menus stay on screen during use of these options. When finished and to remove it, simply click away from the menu. Options affected are: Show Analysis, Selectivity, Style, Variations and Book.

Coloured text - To make it clearer which

'The chess playing strength of HIARCS is still being increased significantly!'

side is to play when HIARCS is displaying analysis, we have made the analysis text the colour of the side to play.

Database Filter - This option allows the user to specify a filter to be used when importing PGN or ChessBase games.

The filter can be applied to the white player name, black player name, event or ECO code. If a field is left blank no filter is applied for that field. So if all 4 fields are empty the whole database is displayed.

The filter works by searching for a match of the characters specified in the filter. A game must match all parts of the defined filter to pass. If you enter a * as the first character of a player name then this part of the filter is applied to both the white and black names. The best way to understand how to use this option is to try it out, but here is an example:-

```
Event  Moscow
White  *Kasp
Black  *Karp
ECO    B
```

Hiarcs

This finds all games played in Moscow between Karpov & Kasparov, as either white or black, with ECO openings B00-B99.

Chess Strength

The chess playing strength of HIARCS is still being increased significantly! The H6 extra over HIARCS 4 is estimated at 95 Elo, and the increase over HIARCS5 is estimated at 55 Elo *(26 Elo saved from the drawn 'won' games, plus 30 Elo from new improvements found in late January! There may even be a little more as HIARCS5 went out with Aggressive as its optimum setting, whereas it is believed Normal now suits the program even better).*

Here is a list of the optimum settings:
- Selectivity = 5.
- Style = Normal.
- Best Play ON.
- Hash table ON (extended memory for time controls Game/15 and longer).
- Permanent Brain ON.
- Max Depth 31 plies.

- Max Time infinite.
- The Tournament book must be used for all serious Computer v Computer testing.

The Normal and Wide Books can give extra variety against Human opposition, whilst the Fun book is ONLY for user variety and pleasure.

The size of the Book is now 138,000 unique positions, with all transpositions immediately recognised!
- The maximum hash table size supported is 63Mb.
- There is no difference between HIARCS5 and 6 saved files. The program H4_TO_H6 converts HIARCS4 saved files to version 6.
- Included on the HIARCS6 distribution disk is 1 PGN database and 1 EPD database.

The First Beta Test Report

Understandably (!) a longer beta-test period was allowed for HIARCS6 than usual, to ensure that it is now 'bug' free!

And the earliest report in was very encouraging: *"Yes, indeed, I have just finished beta testing, and folks, I think we have a Grandmaster on our hands".*

I couldn't go that far, but it's the opinion of Canada's likeable **Alan Tomalty** on the Internet.

Alan supports his view with a HIARCS6 P/90 result against two Canadian I.M's in which H6 scored +11-2=3 at G/5. The I.M's would have scored slightly worse, but were allowed to continue a couple of games they'd actually lost on time. Blitz is not 40/2 of course, but Alan says the I.M's were *"shell-shocked"*.

One said the program simply outplayed him, whilst the other (2500+ Elo) said that, though he thought H6 was sometimes too daring, he'd found it hard to prove.

Alan has challenged any I.M to a 6 game 40/2 Match against H6 on a Pentium Pro, and predicts that HIARCS6 will win. Over-optimistic?!.... perhaps!

In the meantime the first Computer-v-Computer test scores in, on P/90, P/100 and P/150 machines @ G/60 and 60/30, were:-

HIARCS6 **7½-2½** v Rebel8
HIARCS6 **11½-5½** v Genius5
HIARCS6 **9½-6½** FRITZ4
HIARCS6 **10-2** v MCP6
HIARCS6 **6-4** v Hiarcs5

STOP PRESS
Hiarcs6 Gamma-Test Rating:
Elo   Games +/-
2583 127   41

VIRTUAL v (the real) Nigel SHORT
A relative unknown takes on Britain's best!

France's pride and joy, **Virtual Chess**, recently played a two game exhibition match, 15 minutes per player, against **Nigel Short** at the Cap d'Agde Chess festival - this during the first European rapid chess championship organised by the CCAS. Cap d'Agde is near Montpellier, in the South of France.

SS readers have occasionally asked why Virtual Chess has never made it to either ours or the SSDF Rating Lists. Co-programmer Weill says it's *"...probably because we do not want to be there! Virtual is designed to be good opposition against humans.... and we found this is not exactly the same as being good opposition against computers."*

Short had been enabled to play some practice games against Virtual Chess -the organisers provided him with the computer and CDROM- and of course Virtual had not been able to hypnotise him to make him forget about it.

Nor did the programmers have time to prepare anything special, since when they learned of the opportunity, they had to jump straight on the next plane to Montpellier.

Weill says: *"Many top players seem only to know about Fritz: after his training games Nigel said Virtual Chess played better positional chess than his Fritz 4, and thought it might be strong enough to make a two game G/15 mini-Match interesting."*

Game 1. <u>White **Virtual Chess**</u>
<u>Black GM **Nigel Short** 2695</u>

1.e4 e5 2.Nf3 Nc6 3.c3!? *(A customary surprise opening of Virtua's!)* **3...Nf6 4.d4 Nxe4 5.d5 Ne7! 6.Nxe5 Ng6** *(Short plays a sound variation and doesn't go for wild complications)* **7.Bd3?** *(Not that this is such a bad move, but it plunged Virtual into something of a nightmare, as this is certainly not the best bit of 'Book' you'll ever see! It comes from Echec - Zugzwang, 2nd computer Olympiad, 1990. 7.Qd4 might be stronger, as in Rebel-Virtual Chess, Hong-Kong 1995)* **7...Nxe5 8.Bxe4 Bc5 9.Qh5?** *(At this stage the game seems*

lost for white) **9...d6 10.Bg5 Bg4!** *(This refutes white's idea)* **11.Bxd8** *(If 11.Qh4?! f6 12 Bc1 Qe7 13.O-O g5 14.Qg3 f5 M. Kuijf - V. Anand Wijk aan Zee 1990 and white is in trouble)* **11...Bxh5 12.Bxc7 Rc8! 13.Ba5 b6 14.Bb4** *(The Echec - Zugzwang went 14.b4 Bxf2 15.Kxf2 bxa5 16.bxa5 Rc5 and Zugzwang won in 57 moves)* **14...Bxb4 15.O-O!** *(Not 15.cxb4? Rc1+ 16.Kd2 Rxh1 17.g4 Rxh2 -+)* **15...Bc5 16.b4 O-O** *(Virtual thinks it is about a pawn down. As two nasty endgame bugs had been corrected since Jakarta, this was an interesting test)* **17.Bf5 Rc7 18.Nd2 Bxf2+ 19.Rxf2 Bg6!? 20.Bxg6 hxg6 21.Ne4 Rd8 22.Re2 f6 23.Rae1 g5 24.b5? 24...Rc4 25.Rd1 Kf7 26.Rf1 Ke7 27.Rfe1 Rdc8 28.Rf1 Kd7 29.Rd1 Ra4 30.Ng3!** *(Virtual Chess sacrifices its weak pawn to get some activity)* **30...Rxc3 31.Nh5 Rb4 32.Nxg7 Rxb5 33.Ne6 Ra5 34.h3 Rca3 35.Rdd2 Rd3 36.Nf8+ Kc8 37.Rxd3 Nxd3 38.Nh7 Rxd5?!** *(Why not 38...Nf4 39.Rc2+ Kd8 40.Nxf6 Nxd5)* **39.Nxf6 Rd4?! 40.Ne4 g4 41.hxg4 Nf4 42.Re3 Ng6 43.Kf2 b5 44.g5 b4 45.Nf6 Ne5 46.Ke2 Rf4 47.Rh3** *(Now Virtual thinks the position is about equal)* **47...Rf5 48.Ne4 Kc7 49.Rh7+ Kc6?** *(Safer was 49...Kb6 50.Rb7+ Kxb7 51.Nxd6+ with a slight advantage for white)* **50.Rxa7 d5?! 51.Ra6+ Kc7 52.Rf6 Rxf6 53.Nxf6 Kd6 54.Ke3 Ke6?** *(Black had to try 54...Ng6 55.Kd4 Ne7 56.g4 Nc6)* **55.Kd4 Ng6? 56.Nxd5 Kf5 57.Nxb4 Nf4 58.a4 Nxg2 59.a5 Nf4 60.Kc5 Kxg5 61.a6 Ne6+ 62.Kc6** 1-0

Short did not want to take any rest time, and the next game started immediately.

Game 2. <u>White GM **Nigel Short** 2695</u>
<u>Black **Virtual Chess**</u>

1.d4 Nf6 2.c3 d5 3.Bg5 e6 *(Already out of book. It was obvious in this game that Short knew what to do with white, and may even be repeating something from his practice games!)* **4.e3 Bd6 5.f4 O-O 6.Nd2 Nbd7 7.Ngf3 c5 8.Bd3 b6 9.Ne5 h6??** *(As Bob Hyatt would rightly point out, this is a really horrible case of an early h6 by a computer)* **10.Bh4 Qc7 11.Qf3 a6 12.g4 Bb7 13.Rg1 cxd4 14.exd4 Rfc8 15.g5**

hxg5 16.Bxg5 b5 17.a3 Bf8 18.Rg3 Rab8 19.Kf2! *(During his training games Short must have found out that this kind of attack, when white doesn't castle long, was an easy road to victory)* **19...Be7 20.Rag1 g6 21.Bxf6 Bxf6 22.Bxg6 Kf8 23.Bxf7 Ke7 24.Rg7 Bxg7 25.Rxg7 Kd6 26.Bxe6 Nf6 27.Rxc7 Kxc7 28.Bxc8 Bxc8** 1-0

The organizers, and Short, wanted a third game! Unfortunately Virtua drew black.

Game 3. <u>White GM **Nigel Short**</u> 2695
<u>Black **Virtual Chess**</u>

1.d4 Nf6 2.c3 d5 3.Bg5 e6 *(Repeating game 2!)* **4.e3 Bd6 5.f4 O-O 6.Nd2 Nbd7 7.Bd3 c5 8.Ngf3 h6??** *(Short said here that he thought this was stupid, and was amazed that Virtua was allowing him to play game 2 again. He'd assumed it would 'learn' and find a variation. I think everyone felt pretty ridiculous. Anyway, he decided to take on f6!)* **9.Bxf6 Nxf6 10.Ne5 Qb6 11.Rb1 Rd8 12.O-O Bd7 13.Qe2 Be8 14.Kh1 a6 15.g4 Bb5 16.Bxb5 axb5 17.a3 Ra4 18.Rbe1 Rda8 19.Rg1 R8a7 20.g5 hxg5 21.Rxg5 Bxe5 22.fxe5 Ne8 23.Reg1 Kf8 24.Nb3 cxd4 25.exd4 Qc6 26.Nc5 Rc4 27.Nd3 Rca4 28.Qf3 b6 29.Rh5 Ke7 30.Rh8 g6 31.Rh7 Kd8 32.Rxf7 Rxf7 33.Qxf7 Qd7 34.Qxd7+ Kxd7 35.Rxg6 Ke7 36.Nf4 Nc7 37.Rg7+ Kd8 38.h4 b4 39.cxb4 Ne8 40.Nxe6+ Kc8 41.Re7 Ra6** 1-0

Test your Computer!

The 'standard' type of test seems to follow the idea of using positions in which there is <u>only one</u> correct move (i.e. it wins when all else draws, or it draws when all else loses) and the test is *"How soon can your program find it."*

Some <u>years</u> ago Steve Maughan and I (where is Steve now?) produced a new **Computer Test** idea. In these positions, often matters of judgement, initiative etc., there were a variety of possibilities, and marks were scored according to whether the one chosen by the Computer was a good/really good/medium... or poor one!

I thought it was a pretty interesting method, but expect that many current readers have never seen or tried it. So here is a small

group of new middle-game positions, to give you an idea of what it's like... if there's a positive response, maybe we'll create **a new 'Test Set'**?!

I reckon a max. of **5 minutes** should be allowed, sufficient to judge what your program would play under typical Tournament conditions.

White to play	
Ng4	10
Rg1	9
Ncd1	8
hxg6	8
Qh6	8
Bd3	5
a3	3
Rc1	3
Others	0

Black to play	
Bxg2	10
Qa8	9
g6	5
Qc8	2
Others	0

• Of course there might be a 'points' disagreement - someone might even find a good 'other' move! If so, please send analysis for SS70

Black to play	
Rxg2	10
Rge8	8
Rde8	7
Nxf7	5
Others	0

Black to play	
e4	10
Bxe3	8
Rc5	7
f5	5
b5	5
Qh3	5
Bc5	3
Bd4	3
Ba4	3
Others	0

The INTERNET:
And a look at some of the WEB sites worth visiting!

Computer Chess: NEWS

The first port of call should be the standard NEWS sections under:
rec.games.chess and their **analysis, computer, news** and **political** groups.

Popular World Wide Web CHESS addresses are:

http://www.elhchess.demon.co.uk/
Eric Hallsworth's Index Page: leads to Selective Search info, some top Ratings, mini-Reviews, personal Photos etc. Only light news aimed at being an appetiser to get new readers for SS! But if you want to see a photo of me, our dog, or read about my other interests, Christian faith etc, you know where to look!

http://www.gambitsoft.com/gambit1e.htm
GAMBIT-SOFT Chess Software Homepage: run by Bert Seifriz. An excellent set of pages with extra addresses of other good sites for users to 'leap-frog' to.
    Bert is also covering the **Korrespondence Komputer Kup** at present, between 5 programs on very slow time controls (from 1½ hrs per move and slower!), aiming to simulate their abilities at CORRESPONDENCE play. This is to challenge Vincent Diepaaven's wild boast that his DIEP program is the strongest there is at slow/Correspondence levels. The players are: **Diep, Crafty, MacChess, Rebel8** and **CM5000.**
    The Korrespondence Komputer Kup is at **http://www/gambitsoft.com/kup.htm**

http://www.nsc.liu.se/~bosj/SSDF/
The renowned Swedish Chess Computer Association pages, plus the Ply Rating Lists.

http://www.xs4all.nl/~rebchess/edindex.htm
Ed Schroder's INDEX PAGE - his Rebel8 News and Games.
    Ed is also running a 10 game Match between Rebel and Crafty at present, but with the programs on very different time controls. Bob Hyatt (of Crafty) considers that a power difference such as that between Deep Blue and any PC program means that Deep Blue is 99% certain to win *'crushingly'* any such Match. Bob believes that massive speed gaps Computer-v-Computer give the lower-powered program *'no chance'* and that Computer-v-Computer head-on will show DB with a winning margin of 90%, though this difference will not necessarily be translated into Elo points when they play against Humans. Against Humans he views Deep Blue as being 200+ Elo stronger and, if Deep Blue is approx. 2650, then the PC progs can only be 2450 max.
    Ed's opinion is that the superior programming in the top PC programs means they genuinely are 2550 or higher on PPro/200 machines, and he believes a Rebel v Deep Blue Match would end up quite close, maybe 6-4 (for DB).
    Of course we are given no way to test against Deep Blue but, in the Match, Crafty will have 100x more time than Rebel8 which will give an approximate indication as to who might be right!
    The Rebel-v-Crafty Challenge is at **http://www.xs4all.nl/~rebchess/match.htm**

http://www.demon.co.uk/oxford-soft/
Oxford Softworks Web Development Page: CS_tal News and Games, plus Bridge, Go etc.

http://www.tasc.nl/
Tasc Chess Products

http://www.users.dircon.co.uk/~amscott/home.htm
Chess Desktop Publishing: various Tools and Utilities provided by long-time SS reader

and supporter, Alastair Scott .... just after writing these notes, I learned this site is temporarily closed

Chess News General

http://www.tcc.net/twic/twic.html
The Week in Chess by Mark Crowther: the best place to visit in Britain for up-to-date
World Chess News, Results and Comment from all the major Tournaments.

http://www.bluemtn.com/~duif/
Duif's Place: Chess for Fans and Tournament Players, including coverage for beginners.

http://www.uschess.org/
USChess Online. Another good US site is **http://www.chess.net/welcome.html**

PGN and ChessBase Game-files

http://www1.pitt.edu/%7Eschach/Archives/
Pitt Chess Archives: the place to go to get your Games and Opening Book collections,
which are usually available in PGN, ChessBase, Chess Assistant and NicBase format.

http://www.coil.com/~bookup/
Mike Leahy's BOOKUP site, where a BookUp demo Viewer file can be downloaded. Non-
Internet folk can send me £5, and I'll mail it to you on a disk.

Chess Things to Do: Studies, Problems, Ideas

I haven't visited these too often, especially recently, so I'm not sure how frequently they're
updated, or if they are necessarily the best of their kind.

http://www.planetchess.com/
Planet Chess

http://www.chesscafe.com/
The Chess Cafe

http://www.usyd.edu.au/su/tri/chess/
Perhaps a strange one to include... but it's a 'CHESS on STAMPS' site and catalogue.

Search Sites

Go to these, enter **'Computer Chess'** or just **'Chess'** as your 'title' and they will list plenty
of Chess places worth visiting for you. Use the Search Sites to obtain **www** info on Man-
chester United, Film Reviews, Bridge, Go, Star Trek... or any other favourite subject.
    These are not the only such Search Sites, but are generally agreed to be just about the
best in terms of being easy-to-use, quick, and fairly comprehensive.

http://www.yahoo.com/
Yahoo!: Main Page

http://www.altavista.digital.com/
AltaVista: Main Page

Other Games?

http://www.britgo.demon.co.uk/
The British GO Association's Home

*I hope readers find these, or some of them, helpful!
Non-PC, and non-Internet folks, please forgive this
use of 2 pages.... however I've been inundated with
requests for Internet and World Wide Web infor-
mation over recent weeks.*

*Happy hunting... but remember to keep an eye on
that phone bill!*
                                            Eric

Page, giving plenty of info on the game and addresses for buying Go programs.

DEEP BLUE v KASPAROV
Match#2 - May 3 -10: the Computer's Revenge.... or!?

Can **Deep Blue2/1997** version win the rematch? What changes and/or improvements can we expect, compared with the Deep Blue which lost 4-2 in the 1st. Match?

Indicated Improvements

In a rare interview, reclusive computer 'genius' JACK A. SHULMAN, inventor of windowing and father of the connection machine, made the following statement:

"I assisted Garry in the last round because I felt he deserved some way to understand how the POWER PARALLEL 6000 Architecture worked when programmed most efficiently.

With the input from his acquaintences, such as myself and others, Garry formulated his most effective mental reserve and triumphed over IBM's machine, after nerves and the unknown capabilities of the machine beat him in the opening game of the match.

But, this time around, IBM and Lucent Technologies have Garry isolated. His own supporters, such as Robert Rice of the PCA, Fred Friedel of Chessbase and Ken Thompson of AT&T have formed a barricade of disinformation around Garry Kasparov. Advisory Chess Masters, such as Michael Khodarkovsky and others have been manipulated into potentially leading Garry Kasparov, thought of worldwide by other than myself, as unbeatable, into a suicide run against Deep Blue, driven by hopes of extending his financial self sufficiency.

A complex contract, drawn between IBM, the match sponsors, and Garry are causing him to tread heavily and cavalierly treat the 1.4 ton machine as "no contest".

What Garry doesn't know yet (well, he will now! ...Eric) *is that IBM:*
■ *Replaced the 200 MHZ Power PC CPUS in Deep Blue with more potent 400 MHz units.*
■ *Increased the individual and L3 cache on Deep Blue with 4 times the cache.*
■ *Increased the "shared memory buffer"*
size and speed with one by Jerry Brody that has 10 times the capabilities.
■ *Paid Grandmasters to analyze and provide logic and book analysis and shortcuts based on Garry's own play against Deep Blue in the Chess Challenge earlier this year.*
■ *Added a new adjunct logic processor which has been designed to allow Deep Blue to recover from crashes without giving a "crash indicator", almost instantaneously.*
■ *Repaired errors in the original logic which biased the Computer to fail to recognize lines of logic that would lead to inevitable draws more than 7 moves away.*
■ *Increased Deep Blue's play ahead depth 2-3 full moves (7-9 total) as a result.*

Garry is going to need more than a bit of luck to defeat Deep Blue in the rematch. Deep Blue has even been programmed with thousands of logically obscure lines to attack "safe positions" and knock the champion off of his guard. Deep Blue may even play openings of Garry's own against him, and has the ability to change its own logic in a single move - for the first time maintaining a full play book for each potential position, after every move.

I believe this Machine could actually overwhelm Kasparov, if he isn't extremely careful.

Garry has stepped on IBM's toes. IBM isn't one to remain in that position very long. IBM is out for blood and payback. It want's Kasparov's title as the strongest player of chess in the World. It is placing its Corporate reputation on the line.

If it defeats Kasaprov - he is going to want a rematch - IBM might not give it to him, preferring to offer Anatoly Karpov a chance at the title!"

Mr. Shulman, rumoured to have once been a competition chess player before moving exclusively into computer science, said he was disappointed more Americans weren't developing their skills to challenge Garry Kasparov.

"We have the abilities, but not the dedication or patience, here in the USA.

"In the Kasparov match#1, some of the new DB chess chips' features were not used to their full potential'.

'DB is now very strong compared to PC programs'.
Hsu, Sept 1996

There are plenty of tutors and teachers around, but the demand for financial security in the United States often lures the best of the best into commercial jobs. I'm as guilty of this as the rest, and it disappoints me that I didn't stay with chess long enough to have taken on Garry, even if he is 10 years younger than me."

As reported in the ACSA Journal, 1996.

Plenty of ego and hype, and a little gobble-de-gook for good measure! Nevertheless, there's food for thought in there, and indications that DB 1997 might just be quite a bit stronger.

Now we turn to extracts from a report of a talk by the DB main programmer **Hsu**, which can be taken to be highly reliable.

The View According to Hsu, Sept 1996!

This information is gleaned from **Hsu**'s talk at the *3rd. Game Programming Workshop* in Hakone, Japan, September 1996. It was given, therefore, 7 months after the first *Kasparov-v-Deep Blue* match.

Most of the folk present were more interested in computer Shogi than computer Chess, so that not all of the discussion centred on the matter that interests us. However the following emerged:
■ The chess chips used in DEEP THOUGHT and DEEP BLUE are very different. It took 3 years to design the DB chess chip!
■ These chips were only delivered to Hsu a fortnight before DB's 'friendly' match with the Women's World Champion in Sept. 1995, a match that was drawn. That DB was a single RS/6000 with a 2DB chess chip.
■ Against Kasparov, in Feb. 1996, DB had 32 SP's with a 256DB chess chip. These chips were only delivered to Hsu 'in the nick of time' in mid-Jan. 1996! This explains some of the problems experienced by the DB operators in the match.

A 4 ply root was searched by the master SP which sent the positions to the other 31 'slaves'. The last 4 ply were then searched by the DB chess chip.
■ In the Kasparov match#1 (says Hsu), some of the new DB chess chips' features were not used to their full potential.
■ Speed in match#1!
400,000,000 nodes per second: Max theoretically possible .
200,000,000 nodes per second: Max observed.
100,000,000 nodes per second: the estimated Average, still a figure whch still has rather more 0's on it than a PC program ever achieves!
■ Hsu believes that the hardware speed has now (9/1996) been pushed close to the extreme, so they are now concentrating on improving the software (the chess part of DB) in order to beat Kasparov this time. These include a better evaluation function and deepening the selective search.
■ They are now doing automatic tuning of the evaluation function, using 600,000 Grandmaster game records.
■ They used to test against PC programs, but not any more - *"DB is now very strong compared to PC programs"*.

Our thanks to **Nobuhiro Yoshimura**, who attended Hsu's talk, for the majority of this information.
Since this **Hsu** has indicated that **DB2** beats the **DB1** from the first Match by 3:1! Of course this does not mean that DB2 is now a 2850 Elo player, though a 3:1 ratio against an estimated 2650 opponent would normally imply this.
As has and is being discussed in other articles:
■ A Speed advantage means more in Computer-Computer than it does when it becomes Computer-Human.
■ Program Updates always imply a bigger Elo improvement against their own predecessors than they do against other opponents.

For the record: **Bob Hyatt** has suggested that DB2/1997 will achieve 1,000,000,000 nodes per second, though I am not clear whether that is the theoretical max (i.e it's 'only' 2½ times faster than DB 1996!), or an observed figure (which means it's at least 5 and maybe 10 times faster!).

PROGRAMMING:
Search Systems, Speed, and likely Progress

Deep Blue(2) v Kasparov

The approach of the forthcoming re-Match inevitably causes questionning minds to compare the potential of **Deep Blue** and the various top **PC programs**, especially as PC hardware has made further significant advances since the first DB(1)-GK event.

How strong is Deep Blue2? After Match 1, the general view gave DB1 a grading between 2600 and 2650 - during the first 4 games, folk were actually talking of 2750, but Kasparov rather demolished the illusion in the last 2 games!

The much faster DB2 is reportedly scoring 75% against DB1, but we think this unlikely to mean it is now 2600/2650 + 200 = 2800/2850 Elo!

How Strong are the PC programs?

Another good question - and, if anyone is allowed to ask, *"Can it be answered by simply turning to the SELECTIVE SEARCH Rating List?!"* it must be me!

Interestingly many of our customers at Countrywide tell us that we are *"pretty stingy (mean)"* with our Ratings! It is always good to hear that purchasers find our Computers stronger than they had expected!

But others believe there is an average downward trend of around 25-50 Elo per year. This is, no doubt, due to the large number of players who now own and use programs, and the publicity given to their bad games. There was a time when only a Computer's 'shock' wins against titled players ever got into print, but now some chess magazine editors take even greater delight in revealing their (occasional!?) shortcomings in grim defeats!

The average downward trend, if it is 25 Elo per year, is generally offset by continuing Computer progress. So that, whilst the grading for, say, a Kasparov RISC 2500 might steadily drop over the months/years (2340 in Nov 1992, cp. 2250 in Feb 1997), the grading at the top of the List (for whichever PC program sits there), is still increasing, even though the rate of progress appears to be slowing.

Progress: Evolution or Breakthrough?!

Progress comes in 2 main ways:

[1] **Program improvement**.
Here there is the constant battle between knowledge and speed: which is the more important? Most people (you can include me) believe that increasing chess knowledge is the main way forward if a Computer program is ever to catch or beat Kasparov.

But others concentrate on speed, relishing the new processors which give their programs a boost, and only adding knowledge if it seems totally vital. This method believes that programs will solve their own problems if they can eventually be enabled to see far enough ahead.

[2] **Hardware improvement**.
a. Processor speed.
b. Memory capabilities (allowing bigger opening books, more knowledge etc).
Adding more knowledge always slows a program down to some degree, but faster hardware can be used either to add more knowledge whilst still maintaining or even slightly increasing the speed... or 'just' to allow the program to run ever faster!

Current Processors: the State of Play

The inside Back Cover of SS always carries a brief Table, indicating the type of Elo figures which should be added to or substracted from Rating List figures, where the user has a different processor to the 'average' one, for which a Grading is given.

Knowledge, Speed, Search Selectivity

I interrupt myself here, in true Murray Walker fashion, because the fact is that the different types of program search themselves affect the gains made by extra speed. Which means that we can't easily generalise - even though we try to!

MMX! Ply Depth
PENTIUM PRO

SPEED RULES

200MHZ
New Technology
Hash Tables
KNOWLEDGE!

E.g. it is well-known that Richard Lang's Genius and Franz Morsch's Fritz programs are particularly strong at Blitz. But their gains moving to slower speeds tend not to be quite as good as the advances of programs such as, say, Mark Uniacke's Hiarcs which, whilst it is rated around 4th or 5th at Blitz, is 1st or 2nd at 40/2!

Therefore faster and yet faster processors are, we think, more likely to suit programs like Hiarcs and Rebel than Genius and Fritz - a likelihood which Ed Schroder's Tests have also been 'proving', from which he shows that Rebel8 and Hiarcs5/6 are further ahead of the chasing group when the comparison takes place on Pentium Pro machines.

So, when I write:

If Pentium/100 = 0,
PentiumPro/200 = +60,

..... that might be true for a Hiarcs or a Rebel, but maybe not a Genius or a Fritz! Frankly even the +60 is no more than the best estimate that an expert (me!) can give, based on result comparisons in so far, and our (1997) view that a doubling in speed is nowadays worth around 50 Elo.... aah. yes, for some programs!

The Impact of Speed

There is also a growing view that **speed** today makes less difference in Computer-v-Human chess than it does in Computer-v-Computer! In other words, the 'speed doubling = 50 Elo' might apply Computer-v-Computer, but the figure is lower playing against Humans.
    The argument for this is that, as the

effect on ever-more-distant tactics decreases, faster speeds do not change the still-inherent positional and long-term planning weaknesses in Computers which strong humans are able to take full advantage of, but other programs can't/don't.

To put this into the **Deep Blue v Kasparov** context, the big speed increase enjoyed by **DB2** may mean it will crush PC programs to a greater degree than ever (despite the advent of Pentium Pro machines?!) ... but will make little or no difference against Kasparov! We'll see!

It is some time since Selective Search had a look at the figures in **'the Speed Question'**, so we now turn our attention to that.

Diminishing Effects of Speed

The general fact that the effects of speed do diminish can be seen as fairly obvious, when one considers that speeding a program up for an extra Ply of search is bound to be more effective when that takes it from a 1 ply to a 2 ply search, than when it increases the search from 9 ply to 10 ply!
    The further the search goes from the root position, the less impactive any new findings are likely to be.

This can help explain why speed increases are less effective for, say, Fritz than Hiarcs. And I am not a Fritz-knocker, either, so apologise that it's the best-known example we have. But the same 'truths' apply to all the 'fast search at all costs' programs.

In a set position, Fritz3/4 might well get into its 10th or 11th ply, whilst Hiarcs is still getting to 8 or 9! This is largely because one is a speed program, whilst the other is slowed by its extra knowledge whilst searching more thoroughly and, hopefully, accurately!

Now note that any hardware speed increase - and let's suppose that it's big enough to push the programs forward an extra ply! - will send Fritz3/4 from 11 to 12 ply, and Hiarcs from 9 to 10.
    The law of diminishing returns therefore clearly implies that Fritz would be likely to gain less than Hiarcs from the speed increase. Perhaps it is true, therefore, that hardware improvements will generally

benefit the knowledge programs more than the speed programs!?

Just give me the Facts!

Many efforts have been made to convert +1 Ply Search figures into Elo terms. Unfortunately we all seem to be able to disagree as to where we were at in the beginning, what's actually been happening, and especially where we are now!

However, according to my records, just as it used to be said that a doubling of speed was worth 80 Elo, it was also calculated that extending the search by 1 ply was worth 250 Elo. Maybe it was (and still would be), going from 1 ply to 2 ply, or even 2 ply to 3 ply. But the value diminishes, and quite rapidly, as the depth of search increases.

The Charts I have are:

[1] Thompson's 1983 BELLE figures
All-play-All, 20 games each Match.

	P4	P5	P6	P7	P8	P9	T	Elo
Ply4	x	5	½	0	0	0	5½	**1235**
Ply5	15	x	3½	3	½	0	22	**1570**
Ply6	19½	16½	x	4	1½	1½	43	**1826**
Ply7	20	17	16	x	5	4	62	**2031**
Ply8	20	19½	18½	15	x	5½	78½	**2208**
Ply9	20	20	18½	16	14½	x	89	**2328**

In CHART FORM
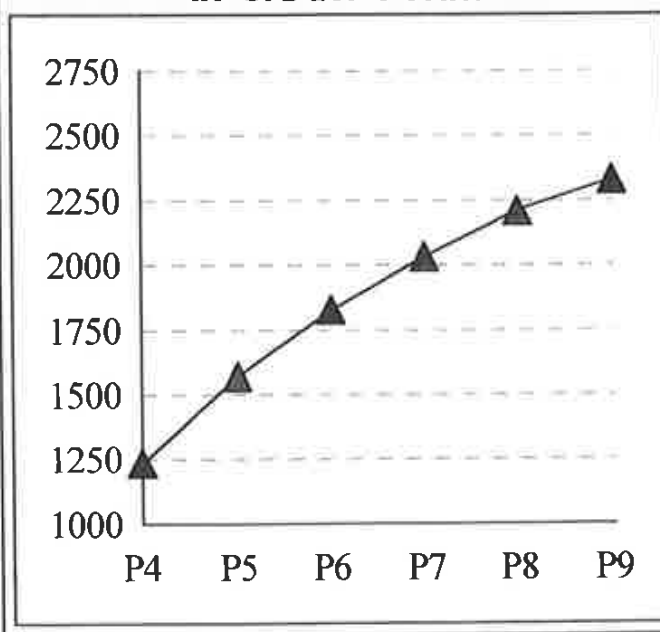
Continually dwindling gains via speed were thus expected over 10 years ago, and the tailing-off is already visible in the above Chart, though it only reaches ply 9!

[Note 1] BELLE was estimated to be Brute Force searching 160,000 nodes per second in 1983.

[Note 2] For BELLE, a 2208 Elo figure was assigned to its Ply 8 rating on the basis of various Tournament performance results, in which Ply 8 tended to be just about the average depth of search reached at 3 mins per move.

[Note 3] It was suggested, by extending these figures, that BELLE would need to reach a ply depth of 18 ply to get to a 2700 grading, and that a further 5 ply beyond that (i.e. 23 ply) would only make an extra 50 Elo difference. Kasparov's grade would <u>never</u> be possible, as the projected curve flattened out before 2800 was reached!

In fact 2700 would never be realistically possible either, as it would take BELLE <u>2 weeks</u> to get to 13 ply, and over **300 years** to get to 18 ply!! What chance here for speed alone?!

They were the days when, in the main, Brute Force reigned, and it required a speed increase of something in the order of 6x to move from one ply to the next.

I.e. if, for BELLE, 5 ply took 1 sec. 6 ply required 6 sec. 7 ply required 36 sec. and 8 ply needed 3½ mins!

With the advent of search selectivity and extension methods, plus hash tables etc. it would now be more accurate to work on the basis of a figure of between 3x and 4x as being required to extend a search for each extra ply.

I.e. if 5 ply takes 1 sec. 6 ply may take 3½ secs, 7 ply could take 12, and 8 ply around 40 secs. etc., in rounded figures.

These figures can be seen on some of today's PC programs on fast Pentium, Pentium MMX or Pentium Pro machines.

Once again we must state: 'knowledge' programs might take a little longer, and 'speed' programs could be faster. Equally users would need to test their own programs to find out whether their's takes 3x or 4x as long (or something else!) to move up the plys.

Ed Schröder's www. REBEL pages!

Ed has some interesting pages on view at his World Wide Web site (see the Internet

address elsewhere in this Issue, for those wanting to 'visit').

I popped by the other day, and found he has devoted a section himself to this very same topic. Of course Ed is, quite naturally, very interested in the subject!

Readers may recall SS/65, in which we showed the likely Rating jump for various programs, based on the amount of speed improvement they have been found to gain when moving from Pentium/100 machines to Pentium Pro/200 processors. The Elo improvement calculations were based on a doubling in speed = 60 Elo, and we repeat the Chart for those who either missed it, or have used that particular copy of SS for something else!

Program	Speed jump P/100-PP/200	Est. Elo increase
Hiarcs4/5	2.81	**84** Elo
Rebel7/8	2.76	**82** Elo
MChessPro5/6	2.42	**72** Elo
Genius4/5	1.90	**57** Elo
Fritz3/4	1.88	**56** Elo

Ed now writes: *"It's generally known that chess programs will perform much better on fast machines than on slow ones! A common rule is that a speed-up by a factor of 2 or 3 will enable chess programs automatically to play about 30-50-80 Elo points stronger!*

"These figures are very closely related to the chess program in question: ProgramX will gain 30 Elo due to a doubling of speed, but ProgramY will gain 60 Elo for the same doubling!"

Ed's discoveries on the subject of **Progress by Speed thanks to the Pentium Pro**, and capitalising on the extra speed through **program improvements**:

1. Computer-wise: to gain maximum benefit from the extra speed and processor structures of the new machines, and
2. Chess-wise: related to chess knowledge and search methods

... resulted in his conclusion that **Deep Blue** might be only about 50 Elo stronger than **Rebel8** when the latter is on a top-of-the-range PPro/200 with all the bells and whistles, 512K pipeline burst cache etc. As mentioned elsewhere, **Rebel** is now playing a Match with Bob Hyatt's **Crafty**, with the

latter having a much longer time control allowance, in an attempt to validify or disprove Ed's theory!

Ed also proposed an update to the earlier BELLE CHART for ply depths. I have adjusted his figures, slightly improving the logic <u>as I see it</u>, but the basic idea/credit for same belong to Ed. Here's 'our' CHART:

[2] The SCHRODER-HALLSWORTH estimated PLY PROGRESS Table

Ply	1 Ply Elo Gain	Elo Total Gain
Ply 1	0	-----
Ply 1-2	400	400
Ply 2-3	308	708
Ply 3-4	237	945
Ply 4-5	183	1128
Ply 5-6	141	1268
Ply 6-7	108	1377
Ply 7-8	83	1460
Ply 8-9	64	1524
Ply 9-10	49	1574
Ply 10-11	38	1612
Ply 11-12	29	1641
Ply 12-13	23	1664
Ply 13-14	17	1681
Ply 14-15	13	1694
Ply 15-16	10	1705

In CHART FORM
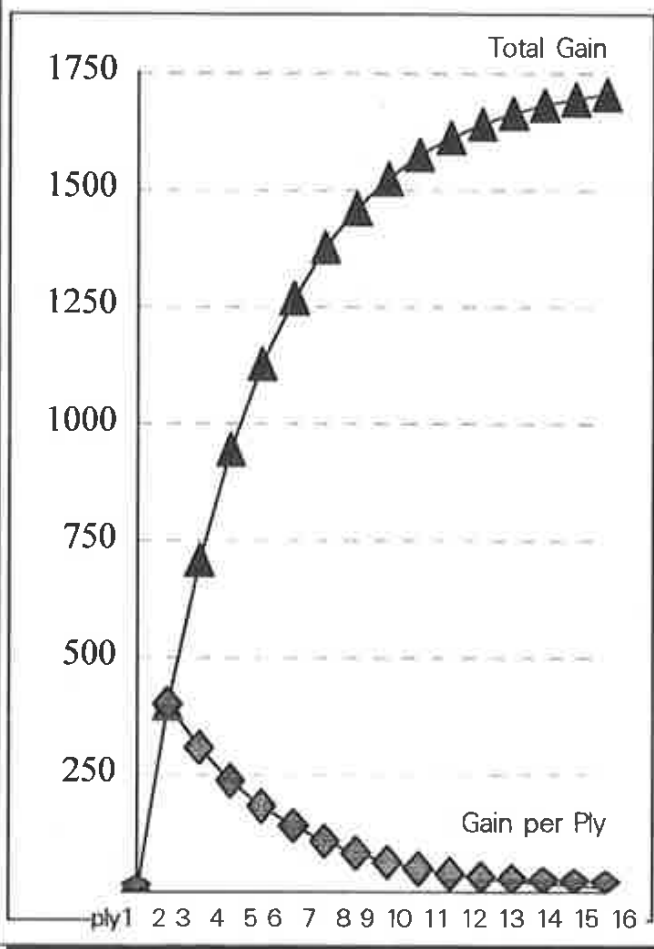
Interpreting the Chart

1■ Let's take a typical PC upgrade, where I move up from a Pentium/90 to a Pentium Pro/200. It would seem that, if on my current PC, **ProgramY** reaches an average of 8 ply in 3 mins., on my new PC which runs 3 times faster, ProgramY will now reach 9 ply on average and gain **64 Elo** from the change of PC.

2■ On the other hand, if I use **ProgramX** which already reaches an average of 10 ply in 3 mins., my PC upgrade will enable it instead to reach 11 ply on average, and my gain from that could be 'only' **38 Elo**.

Let's move on a couple of years! I next purchase a *'Quantum Leap PC'*, which runs 3 times faster than the Pentium Pro/200! Now we'll do a 1a and a 2a....

1a■ ProgramY moves from 9 ply to 10 ply, and I gain 49 Elo (total 113 Elo since my P/90).

2a■ ProgramX moves from 11 ply to 12 ply, and gains 29 Elo (total 67 Elo since my P/90).

Again, please, remember that these are inevitably generalities to some degree. Just as one Pentium/100 PC really can be 25% faster than another Pentium/100, so two different programs can and will, for programming reasons, also be affected either more or less than the figures proposed. E.g ProgramX is in 16 bit coding, and ProgramY has been optimised into 32 bit coding; or ProgramY has an aggressive move pruning system which speeds the time ratio it takes to move between the plys.
  One thing will not change: every next ply will give less Elo points than the previous one. More and more speed, whatever the program, will give diminishing returns in every case for each specific program, even if:

1■ The exact ratio of percentage fallaway does vary from one program to another, and

2■ The difficulty of advancement via speed is even more pronounced Computer v Human than it is Computer v Computer!

However, even accepting these variables, our figures do tell us more about likely future progress than we would know without them. And I think they also tell us that speed alone is not going to beat Kasparov.

All it needs now is for **Deep Blue2** to prove me wrong!

And, finally, we get back to....

Deep Blue2 v PC progs Pro/200

Would it be one-sided? Would DB2 win easily?

Bob Hyatt (and many others) say a resounding 'yes!' They also firmly expect that **Crafty**, on a 100x time control, will comfortably smash **Rebel** on its 1x time control in the Internet Challenge Match just getting under way.

The other side of the argument goes like this:

We know that **Deep Blue1** was no longer safe from defeat by a PC program - **Fritz3** beat it in the World Championships, 1995.
  Equally Rebel, Hiarcs, Genius and MChessPro are no longer safe from defeat by many of today's best amateur programs! As was seen in both the 1995 and 1996 World Micro Championships, though in the end the commercial programs still filled most of the top placings when they all competed in 1995, there was always a chance they would lose some games - and they did!

Why?! Perhaps with today's ever faster machines, the tactical barrier is narrowing with every extra ply of search achieved, so that the gaps between programs (Computer v Computer) is reducing all of the time.
  Could it be that the 1995-6 'bunching' at the top of our Rating Lists, once dominated by Richard Lang's Genius versions, is proof of this? And does this mean that more and more speed has an 'equalising' effect? That playing **ProgramX** v **ProgramY** on a couple of old 286/16 machines might result in the better programmed effort winning 15-5, but put the same pairing on a couple of Pentium Pro/200's and there'll not be much between them? A sobering thought, if true... but is it?! **DB2- Kasparov, Crafty-Rebel**, and **Hiarcs6-Hergott** will tell!

The Ingo ALTHOEFER story:
Improving COMPUTER PERFORMANCE with a touch of HUMAN input!

In SS Issue 64, under our report of the 1996 Aegon Event, we referred to **Ingo Althoefer**'s adventures with **Drei-Hirn/3-Hirn**, and how he enters Tournaments with 2 Computers/Programs aiming to improve on the combination by selecting from their chosen moves himself!

So what is 3/Drei-Hirn?

In Althoefer's own words: *"3-Hirn is the German name for a man+machine symbios playing chess. It consists of two different chess computers (or programs) and one human chess player, the co-ordinator.*

When 3-Hirn has to make a move, the co-ordinator starts both computers. He watches their search processes and, at an appropriate moment, he stops them again:

▪ If now both computers propose the same move, this move has to be executed.
▪ But if Computer I proposes move x and Computer II proposes another move y, the co-ordinator has the final choice between x and y. However, the co-ordinator is not allowed to execute a third move z.
▪ The co-ordinator is responsible for time control management, and also setting up the programs in the manner he thinks best re playing style, hash tables, permanent brain etc.

Althoefer says: *"I started my 3-Hirn experiments early in 1985.*

I had always been interested in computer chess but never found the time to write a program of my own. In 1985 my naive but simple idea was to take two good chess programs and to write a co-ordinator program which "simply" makes the final decision between the proposals of these two programs.

"But before writing this coordinating program, I wanted first to make a test with a human co-ordinator to see if it is, in general, possible to increase the playing strength by using such a co-ordinator.

Over the 12 years (!) I have learned a lot. In particular I am no longer sure if there is a way to improve two different chess computers by the help of an automated co-ordinator.

"But another thing I have learned: 3-Hirn with two commercial chess computers and a human co-ordinator is able to play chess on a very high level, and the games are completely different from typical computer vs human games... also it is great fun to be the co-ordinator in a strong 3-Hirn set-up.

About Ingo Althoefer

In earlier years I, myself, had also played normal tournament chess. My rating was never above 2000 (my best was in the year 1980), and never went below 1900, until I stopped tournament play completely in 1993.

But my knowledge about chess computers and their operating modes has helped me to achieve play, I believe, on Grandmaster level in the "3-Hirn mode".

"In the 12 years from 1985 to now I have been the 3-Hirn co-ordinator in about 130 chess games against human players or computers under tournament conditions. Here "tournament conditions" means that each side had at least 120 minutes for the whole game. I used products of 8 programmers and programming teams:

Thomas Nitsche, Dave Kittinger, Ed Schroeder, Dan & Kate Spracklen, Richard Lang, Johan de Koning, Frans Morsch & Mathias Feist, Marty Hirsch... thanks to all of them for their nice products!

"The weakest computer in my 1985-96 3-Hirn experiments had a rating of about 1500 in the SSDF-list (Mephisto III), and the best one a value clearly above 2400 (Genius 3 on a Pentium 120).

The 3-Hirn performance record!

In the following list Ingo Althoefer was the human co-ordinating element on all occasions.

December 1989:
Fidelity Mach IV + Mephisto Roma II -v-
IM Dr. Helmut Reefschlaeger (Elo 2400)
2½:5½ (+2=1-5)

January 1992:
Mephisto Lyon 68030 + Chessmachine TheKing/16MHz -v-
IM Dr. Helmut Reefschlaeger (Elo 2400)
5:3 (+4=2-2)

May 1992:
Mephisto Lyon 68030 + Chessmachine TheKing (16 MHz) -v-
Zugzwang (parallel chess program on 256 transputers)
7½:2½ (+7=1-2) in only 3 days!
(Zugzwang got second place in the Computer World Championship in Madrid, November 1992)

April 1993:
Mephisto Lyon 68030 + Chessmachine TheKing/16MHz -v-
Deep Thought (operated by Peter Jansen, CMU Pittsburgh)
0½:1½

May 1993:
Mephisto Lyon 68030 + Tasc R30-beta version
at AEGON, 4 out of 6 (+3=2-1). Performance about 2400

October 1995:
Genius 3 + Fritz 3 (both on P/120) -v-
GM Christopher Lutz (Elo 2570)
3½:4½ (+1=5-2)

April 1996:
Rebell 7 + MChessPro 5.0 (both on 486/DX4-100 without Cache)
at AEGON, 3½ out of 6 (+2=3-1). Performance about 2380

August 1996:
Double Fritz 4.01 (on PPro/200) and **Boss** (i.e Ingo Althoefer)
at Apolda Open, 5½ out of 7 (+4=3-0). Performance about 2500

October 1996:
Double Fritz 4.01 (on PPro/200) and **Boss** -v-
GM Gennady Timoshchenko (Elo 2530)
4½:3½ (+2=5-1)

"In 1997 I intend to write a book on 3-Hirn. Part of this book will be a diary on my 3-Hirn experiences - the nicest games, the greatest victories, the most terrible losses,

the funniest anecdotes, the psychological processes, and many little details I learned during the games.

I want to put about 30 of the games in this diary, and to present them together with some annotations and comments in **rgcc** *on the Internet, maybe one per week or so.*

Examples sent for Selective Search

"We should start at the beginning, with the very first 3-Hirn game I played. The Computers were Mephisto II and Mephisto III, both programmed by Thomas Nitsche.

They were not "top of the charts" in March 1985, when the game was played. But in those days my intention was simply to show that a strong co-ordinator could improve the strength of two different (and weak!) chess computers.

One more reason for using exactly these machines was that they were very 'handy' in comparison with other products - remember: I had to put always two chess computers in my bag, when I travelled to the playing places.

"Although both programs were written by the same author their ways of "thinking" and also their styles of play were very different: **Mephisto II** *was rather solid whereas* **Mephisto III** *played very speculative chess.*

"Our opponent was a young clubmate with a rating of about 1850 at the time. Both Mephisto II and III had ratings of about 1500 in the SSDF lists.

25.03.1985
White: **3-Hirn** (Mephisto II, Mephisto III, Ingo Althoefer)
Black: **Thomas Hanf**
Times: 120 minutes for 40 moves, afterwards 60 minutes for every 20 moves;

1.e4 e6 2.d4 d5 3. c3 Bb4 4.e5 c5 5.a3 cxd4 6.axb4 dxc3 7.Qg4 Ne7 8.Qxg7 Rg8 9.Qxh7 Qc7 10.f4 Nbc6 11.bxc3 Nxe5 12.Ne2 N5g6 13.Bd2 Bd7 14.h3 Bb5 15.Nd4 Bxf1 16.Rxf1 Nf8 17.Nb5 Qd7 18.Qd3 a6 19.g3 Rc8 20.Nd4 e5 21.fxe5 Qxh3 22.Bf4 Ne6 23.Nxe6 fxe6 24.b5 Ra8 25.bxa6 bxa6 26.Rxa6 Rb8 27.Qd1 Rxg3 28.Bxg3 Qxg3+ 29.Kd2 Qxe5 30.Qg4 Rc8

31.Qa4+ Kd8 32.Rf8+ Kc7 33.Ra7+ Kb8
34.Ra8+. 1-0 (Black resigned)
Times used: White 88 minutes, Black 42
minutes

The Good, the Bad and....

*"My most disappointing 3-Hirn experience
in all 12 years (1985-1996) was at AEGON
1996. For this tournament I had had the
following ideas:*

■ *Starting with very weak hardware, i.e.,
two 486/DX4-100 notebooks without cache,
to prove that 3-Hirn nontheless can com-
pete with the best PC programs on the
strongest possible hardware.*

■ *Using two very different programs,
namely Rebell 7 and MChessPro 5. And I
had done no work at all with MCP5 before
the tournament (except one afternoon to
become familiar with the operating
mode/s)!*

*"3-Hirn started well with 2½ out of 3. How-
ever, in round 4 it lost a nice 2-wings game
against IM Hoeksema (Elo 2425) due to a
tactical mistake of both computers (in the
decisive position they did not find the only
winning move within 10 minutes; on a
PPro/200 Rebel7 would have found it in 60
seconds, MCP5 within 5 minutes). So we
had just 2½/4 and thus no more chance to
win the tournament.*

*"Therefore I switched my intention for the
last two rounds: now I wanted to produce a
single fantastic game for the "magazines".
And I seemed to get my chance straight
away in round 5 against Sofia Polgar.*

*"Our opening is well known from the first
game of Deep Blue-Kasparov (1996). In
that game Kasparov introduced the new
move Bb4 and lost later.*
    *One of the reasons for Deep Blue's win
was a pseudo pawn sacrifice (with d4-d5) at
move 23. I also knew that, in this system,
GM Michael Adams sometimes played
d4-d5 around move 10 as a real pawn sac-
rifice (however, I never understood his
plans behind these sacrifices!). Now, in the
game with Sofia Polgar, we came to move
15 and MCP5 proposed this strange pawn
sacrifice d4-d5 with a positive evaluation.
Wild thoughts went through my head: "I do*

*not understand where the compensation for
the pawn is, but, if I select it and 3-Hirn
wins, then this game will go around the
world (playing a true pawn sacrifice in a
type of position where Deep Blue "only"
found a pseudo sacrifice)."*

*"I let M-Chess think for 8 minutes, and it
still favoured d4-d5. So I made this move
("of course" Rebel never proposed d4-d5).*

*"Sofia's reaction was interesting: she shook
her head, smiled shortly, thought briefly
(10 seconds) and then took the pawn. I en-
tered the move to both computers, and im-
mediately the evaluation of MCP5 fell into
the cellar! What a mess!*
    *So this would not become a game for
the world!... after finding my balance
again, I changed policy and only tried to
save a draw. To achieve this I played as
boring as possible and especially very slow
(I had got the impression that Sofia Polgar
did not like to play dull endgames for hours
and hours). And indeed, finally at move
58 (Ne5?) she lost her extra pawn, and only
the draw remained.*

*"In round 6 I had another bad game with
Ad van den Berg: From the first move on,
he avoided any risk and played only for a
draw, exchanging piece after piece. And he
succeeded, so 3-Hirn ended with only 3½
points.*

Date: 16.04.1996
Site: AEGON 1996, round 5
White: **3-Hirn** (Rebell7 , MCPro5, Ingo
Althoefer)
Black: IM **Sofia Polgar** (Elo 2495)

1.e4 c5 2.c3 d5 3.exd5 Qxd5 4.d4 Nf6
5.Nf3 Bg4 6.Be2 e6 7.0-0 Nc6 8.Be3 cxd4
9.cxd4 Bb4 10.h3 Bh5 11.a3 Ba5 12.Nc3
Qd6 13.b4 Bb6 14.Nb5 Qb8 15.d5 ??
Nxd5 16.Bxb6 axb6 17.Rc1 0-0 18.g3 Rd8
19.Qb3 Ne5 20.Nfd4 Bxe2 21.Nxe2 Nc6
22.Rfe1 Qe5 23.Qf3 Qf6 24.Qe4 Qg6
25.Qxg6 hxg6 26.h4 Kf8 27.Red1 Ke7
28.Rc2 Nf6 29.Rdc1 Ne4 30.Kg2 Nd6
31.Nxd6 Rxd6 32.Rc3 Rd7 33.Re3 Rad8
34.f4 Rd3 35.Kf3 R8d6 36.b5 Na5
37.Rc7+ Rd7 38.Rxd7+ Rxd7 39.Rc3 Kd8
40.Ke4 Rd5 41.Nd4 Rc5 42.Kd3 Kd7
43.a4 Kd6 44.Nf3 f6 45.Ra3 Rd5+ 46.Ke2
Kc5 47.Re3 Kd6 48.Ra3 Nc4 49.Rc3 Kc5
50.Rb3 e5 51.fxe5 fxe5 52.Ke1 e4 53.Ng5

Kd4 54.Ne6+ Ke5 55.Nf4 Rd6 56.Rc3
Kd4 57.Rc2 e3 58.Ke2 Ne5? 59.Ng2 Nc4
60.Nxe3 Nxe3 61.Rd2+ Kc5 62.Rxd6
Kxd6 63.Kxe3 Ke5 64.Kf3 Kf5 65.g4+
Ke5 66.Ke3 g5 67.h5... draw by mutual
agreement.

New Ideas and Experiments

*"Over the years I have made several ex-
periments with two different interactive
chess playing entities.*

■ *3-Hirn (as discussed thus far): 2 different
chess computers propose one move each,
and a human has the final choice between
these proposals.*

■ *DoubleComputer&Boss: One chess com-
puter is running in the 2-variation mode
(i.e it needs to be a program which will
show its own 'Best two' lines of play simul-
taneously, such as Fritz3/4 or Hiarcs4),
and a human has the final choice between
the two moves proposed.*

*"In all cases the human organises time con-
trol and permanent brain of the computers.*

Both of these interesting arrangements have
been successful against strong human play-
ers in matches under tournament condi-
tions, as our earlier Chart shows.

■ *"Recently I have made some new, mixed
experiments: I used **Fritz 4** and **Hiarcs 5** si-
multaneously, both running in their
3-variation modes. I was the co-ordinator
and had the final choice among these, at
most, 6 proposals.*

*"This "**List-3-Hirn**" has an advantage over
traditional 3-Hirn: in almost all situations
the co-ordinator has at least 3 different
candidate moves. The price is that the en-
gines are running slower in the 3-var mode,
compared with the normal 1-var mode.*

*"**List-3-Hirn** also has an advantage over
my later **DoubleComputer&Boss** (using
Fritz4.01 in Aug/Oct 1996):*
    *Looking at the evaluation functions of
two different programs gives you a more
reliable estimate of the "true value" of the
position: Fritz4 alone or Hiarcs5 alone are
sometimes biased in their evaluation - not
only in the evaluation of a single move, but*

*also in the overall evaluation of the pos-
ition.*
    *There is, however, a disadvantage in
List-3-Hirn, in that it is stressing to operate
two different chess programs in the 3-var
mode simultaneously.*
    *Nevertheless, all round, **List-3-Hirn**
should be much more successful than both
3-Hirn and **DoubleComputer&Boss**.*

Could we play Kasparov, please?!

*"Imagine, to compare, matches between
        (a) **Deep Blue and Kasparov**,
and a fictitious one between
        (b) **List-3-Hirn** (Fritz4, Hiarcs5, Alt-
hoefer) **and Kasparov**.*

"I would like to conjecture the following:

*(i) If the matches were over 4 games, then
Deep Blue should have a 60 percent
chance to perform better than List-3-Hirn.*

*(ii) If the matches were over 8 games, then
List-3-Hirn should have a 70 percent
chance to perform better than Deep Blue.*

*"The longer the matches the better
List-3-Hirn should do in comparison with
Deep Blue.*

*"Why? Kasparov is very clever in adapting
to an opponent within a few games (see his
first match with DB, especially the result-
ing games 5 and 6). But List-3-Hirn, be-
cause of its human component, would be
able to adapt at least partially to its oppo-
nent, in this case, even perhaps Kasparov.*

■ *In both matches with GM Lutz and GM
Timoshchenko, 3-Hirn/DoubleCom-
puter&Boss scored 50 percent (2-2) in the
second half of the matches;*
■ *DB is not at all able to adapt to an oppo-
nent (an exception being the opening
preparations, which are done by humans
again).*

*"Observe that my conjectures do not say
much about the absolute chances of either
Deep Blue and List-3-Hirn versus Kas-
parov. However, in the 8 games scenario,
Kasparov should still have at least a 50
percent chance to beat List-3-Hirn, I think.
I would dearly love to test my conjecture,*

but are there any <u>sponsors</u> who would pay for the matches of List-3-Hirn against Kasparov, as in Deep Blue v Kasparov?!

So, how big is the gap between Deep Blue and current top PC programs ?

"This is difficult to quantify because IBM and its Deep Blue team do not make their test results public. I think they have good reasons not to do so at present, bearing in mind the forthcoming match with Kasparov, who is a player who learns <u>very</u> rapidly from the games of his opponents."

"Probably it is not too wrong to assume that every tournament game with Deep Blue helps him something like 30 Elo points for play against Deep Blue, and every "Deep Blue vs. X" game would still help him by 10 or more rating points."

Another Althoefer Experiment!

"Accepting that there is no legal way to get more concrete Deep Blue data before May, I have made <u>an experiment using game 1 of the 1996 match between Deep Blue and Kasparov</u>.

"Several commercial chess programs (like Fritz4 and Hiarcs4 or 5) have a 'k-variation' mode: not only the best but the 'k' best moves are computed and shown for each position.

So, I have replayed the DB-Kasparov game from move 11 on, in the 3-variation mode both with Fritz4.01 and with Hiarcs5. In almost all situations the Deep Blue move was among the three proposals of <u>both</u> micros!

"In the following game notation, for instance, 20.Nxb6 (1,2) means that Nxb6 was computed by Fritz to be the best (1) and by Hiarcs to be second best (2).
Similarily 23.d5 (-,1) means that this move was not among the three best proposals of Fritz (-), but number 1 in the Hiarcs list (1).

"In almost all situations the proposals were taken after 10 to 15 seconds of computing time (using PPro/200 machines). The few exceptions are mentioned at the end of the game and notation.

"Most interestingly, **Hiarcs5** had the Deep Blue move among its 3 best proposals <u>always</u> in this game, which means that <u>I</u> could have chosen it!

What this means is that **Triple-Hiarcs** with a good enough "omnipotent" boss would have been able to reproduce this impressive game of Deep Blue completely. Unfortunately, though, we must also admit that Hiarcs and Fritz are <u>not</u> able to cover all of Kasparov's moves in a similar way!

Match Game 1: **Deep Blue v Kasparov**

1.e4 c5 2.c3 d5 3.exd5 Qxd5 4.d4 Nf6 5.Nf3 Bg4 6.Be2 e6 7.h3 Bh5 8.0-0 Nc6 9.Be3 cxd4 10.cxd4 Bb4

11.a3	(2,1)	**Ba5**
12.Nc3	(2,1)	**Qd6**
13.Nb5	(1,1)	**Qe7**
14.Ne5	(2,2)	**Bxe2**
15.Qxe2	(1,1)	**0-0**
16.Rac1	(2,1)	**Rac8**
17.Bg5	(1,1)	**Bb6**
18.Bxf6	(1,1)	**gxf6**
19.Nc4	(1,1)	**Rfd8**
20.Nxb6	(1,2)	**axb6**
21.Rfd1	(2,2)	**f5**
22.Qe3	(2,1)	**Qf6**
23.d5!	(-,1)	**Rxd5**
24.Rxd5	(1,1)	**exd5**
25.b3	(3,3)	**Kh8**
26.Qxb6	(1,1)	**Rg8**
27.Qc5	(1,2)	**d4**
28.Nd6	(1,1)	**f4**
29.Nxb7	(2,1)	**Ne5**
30.Qd5	(1,1)	**f3**
31.g3	(1,1)	**Nd3**
32.Rc7	(2,2)	**Re8**
33.Nd6	(1,1)	**Re1+**
34.Kh2	(1,1)	**Nxf2**
35.Nxf7+	(1,1)	**Kg7**
36.Ng5+	(2,2)	**Kh6**
37.Rxh7+	(1,1)	**1-0**

<u>Comments:</u>
■ Third proposals were only "necessary" at move 25.b3
■ 21.Rfd1 became No. 2 in Hiarcs' list after 23 seconds
■ 25.b3 became No. 3 in Hiarcs' list after 61 seconds (in a control run afterwards it became No. 3 in Hiarcs' list after 14 seconds)
■ Concerning Fritz 4, only the move 23.d5 was missed by its 3-variation lists. Hiarcs5 missed none at all.

Computer Disasters!
REVENGE as an 'OLDIE' strikes back, by Andrew Shepherd

"Noting the article, 'Computer Disasters, Old, very Old etc' in SS/68, I wondered if you may be interested in the accompanying game", writes Andrew.

"The 'Old' strikes back against the 'New' - though it's a rather/very bad new! Of course 'Expert Software' is a budget label... but there are limits!"

Championship Chess P/133
[Powerful 32 bit Chess engine, Windows 95 version, 1997 cutting edge technology, straight out of the box]
Colossus4 6128
[A late 1980's program on a slow old circa−1985 Amstrad 6128 computer]
C00, French Defence. Played 1997, 15 secs per move.

1.e4 e6 2.♘f3?!
2.d4 is 99% normal, of course!
2...d5 3.♘c3 dxe4?!
Here Colossus is playing out of Book, 3...Nf6 being the theory move. However, in the case of the 1980's Colossus4, pro−grammed under the then extreme memory restrictions, a small Book is quite under−standable... especially in the strange line the Champ has gone for! Colossus doesn't really put a foot wrong after this, though Champ Chess hardly gives it an excuse to do so anyway.
4.♘xe4 ♗b4 5.a3 ♕d5 6.♘fg5 ♗a5 7.♕f3 f6

8.♗e2?
No comment is really necessary, unless the Champ viewed this as a brilliant sac'!?
8...fxg5 9.b4 ♗b6 10.♗b2 ♗d4 11.♖f1?
We'll not bother with further remarks,

as I'm sure readers can already form their own opinions re this piece of powerful cut−ting edge 1997 technology!
11...♗xb2 12.♖b1 ♗f6 13.♖b3 ♗d4 14.♖d3 ♘c6 15.c3 ♘e5! 16.♕h5+ g6 17.♖xd4 gxh5 18.♖xd5 exd5 19.♗xh5+ ♔d8 20.♘xg5 ♕f5 21.♘f7+ ♘xf7 22.♗xf7 ♕d3 23.♗xd5 c6 24.♗f3 ♕xf1 25.♔xf1 ♘f6 26.d4 ♖e8 27.g3 ♔d7 28.♔g2 ♖ad8 29.♗h3+ ♔d6 30.♗f5 ♔d5 31.f3 ♖e3 32.♗e4+ ♘xe4 33.fxe4+ ♔xe4 34.♔f2 ♖xc3 35.a4 ♖c2+ 36.♔g1 ♖xd4 37.a5 ♖d1# 0–1

"I've tried the top Expert level", says An−drew, *"but it's not much better, though the programmers seem to feel it is stronger than 'Grandmaster' standard! However, if you want a budget title, even at £10, I per−sonally think this one's a poor deal".*

Rating List Notes

JUNIOR is a new entry in the PC Section of our Rating Lists. A frequent player in major Computer Tournaments over the past 2-3 years, with a growing reputation. Pro−grammed in Israel, by Amir Ban and Shay Bushinsky.

RATING LISTS and NOTES

A brief guide to the purpose of each of the HEADINGS should prove helpful for everybody.

BCF. These are British Chess Federation ratings. They can be calculated from Elo figures by (Elo - 600) /8, or from USCF figures by (USCF - 720) /8.
Elo. This is the Rating figure which is in popular use Worldwide. The BCF and Elo figures shown in SELECTIVE SEARCH are calculated by combining each Computer's results v computers with its results v humans. This determines the ranking order and, we believe, makes our Rating List the most accurate available anywhere for computers and programs.
+/-. The maximum likely future rating movement, up or down, for that particular machine. The figure is determined from the number of games played and calculated on precise standard deviation principles.
Games. The total number of Games on which the computer or program's rating is based.
Human/Games. The Rating obtained and the total no. of Games played in Tournaments v rated humans.

A guide to PC Program Gradings:
386-PC represents the program running on an 80386 at approx. 33MHz with 4MB RAM.
486-PC represents the program running on an 80486 at between 50-66MHz with 4-8MB RAM.

Pent-PC represents programs on a Pentium at approx. 100-133MHz, with 8-16MB RAM.
PPro-PC represents programs on Pentium Pro/200 (or a Pentium/200 MMX).
Users will get slightly more (or less!) in each case, if the speed of their PC is significantly different. A doubling or halving in **MHz** speed = approx. **50** Elo; a doubling or halving in **MB RAM** = approx. **5-10** Elo.

Approx. guide if Pentium/100 = 0

Pentium Pro/200	+60	Pentium/166	+40
Pentium/133	+20	486DX4/100	-60
486DX2/66	-80	486DX/50	-100
486DX-SX/33	-100	386DX/33	-200

RATING LIST (c) Eric Hallsworth. PC PROGS — BCF Computer — Elo — SS/69 +/- — Games — Apr 1997 Pos — Human/Games

BCF	PC PROGS	Elo	+/-	Games	Pos	Human	H/Games
239	REBEL8 PENT-PC	2516	13	1218	1	2429	19
239	HIARCS5 PENT-PC	2513	20	530	3	2242	11
237	M. CHESS PRO6 PENT-PC	2501	15	887	3	2403	6
235	M. CHESS PRO6 PENT-PC	2486	16	696	5	2368	6
235	CHESS GENIUS5 PENT-PC	2481	15	841	6	2299	6
234	CHESS GENIUS3 PENT-PC	2476	15	947	7	2662	6
234	CHESS GENIUS4 PENT-PC	2474	19	926	8	2145	2
233	HIARCS4 PENT-PC	2468	14	574	9	2323	24
233	REBEL6 PENT-PC	2466	10	997	10	2414	12
233	REBEL7 PENT-PC	2465	11	869	10	2394	7
232	REBEL7 PENT-PC	2458	12	240	11	2499	13
231	HIARCS3 PENT-PC	2452	16	791	12	2497	13
231	CHESS GENIUS4 486-PC	2451	13	257	12	2631	6
231	CHESS GENIUS4 PENT-PC	2448	18	633	13		
230	NIMZO3.5 PENT-PC	2444	18	608	15		
229	NIMZO3.0 PENT-PC	2436	24	356	16	2215	6
227	NIMZO3.5 PENT-PC	2422	19	577	17	2199	20
227	FRITZ4 PENT-PC	2421	12	1374	18	2292	7
227	FRITZ3 PENT-PC	2417	16	423	18	2267	12
226	CHESSMASTER 5000 PENT-PC	2416	21	833	19	2193	13
225	CHESSMASTER PENT-PC	2412	22	80	22	2432	3
225	CHESS GENIUS3 PENT-PC	2400	17	691	21	2376	7
224	M. CHESS PRO4 PENT-PC	2400	17	707	22	2309	23
224	JUNIOR3.5 PENT-PC	2399	24	1606	24	2277	9
223	HIARCS3 PENT-PC	2392	18	641	25	2391	21
221	CHESS GENIUS4 486-PC	2385	17	699	26	2345	25
220	M. CHESS PRO5 486-PC	2374	12	1340	27	2359	25
220	FRITZ4 PENT-PC	2365	14	712	28	2187	8
220	REBEL7 486-PC	2364	12	1030	29		
219	MEPH. GENIUS2 486-PC	2363	17	1418	30		
217	KALLISTO1.98 PENT-PC	2355	10	1103	31		
216	W. CHESS PENT-PC	2339	16	738	32		
216	HIARCS3 486-PC	2335	16	2120	33	2276	28
215	CHESSMASTER 4000 PENT-PC	2328	31	1375	34	2226	17
214	CHESS GENIUS3 486-PC	2321	30	728	35	2209	6
214	M. CHESS PRO4 PENT-PC	2315	32	1157	36	2267	21
212	M. CHESS PRO4 PENT-PC	2313	34	537	37	2184	18
212	REBEL6 486-PC	2296	35	326	38		
210	CMACHINE GIDEON3.X/30-PC	2287	33	1332	39		
210	CMACHINE THE KING2/30-PC	2283	36	650	40		
208	M. CHESS GENIUS1 486-PC	2271	37	468	41		
206	W. CHESS PRO4 486-PC	2253	25	323	42		
204	CHESS GENIUS1 486-PC	2236	20	1217	43		
203	CHESSMASTER 4000 486-PC	2228	29	1124	44		
203	FRITZ3 486-PC	2226	28	753	45		
202	MEPH. GIDEON PRO 486-PC	2219	27	1012	46		
	M. CHESS PRO3.5 486-PC						
	CHESS PRO3.1 486-PC						
	CMACHINE GIDEON3.0/30-PC						
	HIARCS2.1 486-PC						
	COMET32 PENT-PC						
	CHESS GENIUS1 386-PC						
	KALLISTO1.8 486-PC						
	KALLISTO1.8 386-PC						
	M. CHESS GIDEON2/15-PC						
	M. CHESS 486-PC						
	CMACHINE GIDEON2/15-PC						
	FRITZ2.1 386-PC						
	HIARCS2.1 386-PC						
	FRITZ2 486-PC						
	CMACHINE THE KING1/15-PC						

RATING LIST (c) Eric Hallsworth. SS/69 — Apr 1997

BCF	Computer	Elo	+/-	Games	Pos	Human	Games
226	TASC R30-1995	2410	19	586	1	2304	12
224	NEPH LONDON 68030	2398	51	624	3	2306	23
219	NEPH GENIUS2 68030	2359	18	1346	5	2336	66
219	TASC R30-1993	2358	12	1346	4		
216	NEPH LONDON PRO 68020/24	2357	66	46	5	2059	
216	NEPH RISC2 1MB	2335	27	295	6	2237	
214	NEPH LYON 68030	2318	15	868	7	2392	51
213	NEPH RISC 2500-512K	2305	26	313	8	2384	10
212	NEPH BERLIN PRO 68020/24	2303	13	1167	9	2224	23
212	NEPH PORTOROSE 68030	2301	20	525	10	2340	82
211	NEPH PORTOROSE 68030	2296	18	656	11	2347	54
211	NEPH VANCOUVER 68030	2294	27	286	12	2327	10
211	NEPH LYON-VANT 68020/20	2290	32		13		
211	NEPH LYON-VANC 68020/12	2290	12				
211	NEPH LONDON 68020/12	2290		2476	14	2232	95
210	NEPH RISC1 1MB	2281	9	2476	14	2200	18
208	KASPAROV SPARC/20	2270	15	930	15	2288	54
206	NEPH MONTREUX	2252	17	721	16	2270	67
206	KASP RISC 2500-128K	2250	9	2483	17		
204	NEPH LONDON 68000	2238	18	333	18		
202	FID ELITE 68040-V10	2219	53	75	19	2215	21
202	NOVAG VANCOUVER 68020/12	2216	9	2340	20	2121	33
201	NEPH LYON 68020/12	2210	8	3289	21	2250	80
199	NEPH MILANO PRO	2193	59	62	22	2156	4
197	NEPH PORTOROSE 68000	2183	10	1865	23	2240	188
197	NEPH BERLIN 68000	2180	13	1261	24	2221	25
197	FID ELITE 68030-V9	2180	15	849	25	2169	13
195	NEPH LYON 68000	2166	11	1682	26	2083	33
195	NEPH VANCOUVER 68000	2165	12	1311	27	2126	23
194	NEPH ALMERIA 68020	2157	14	1053	28	2172	215
194	NEPH ALMERIA 68020	2157	14	1229	29	2177	65
193	NOVAG SAPPHIRE-DIAMOND	2149	11	1683	30	2179	130
191	NEPH PORTOROSE 68000	2132	11	2101	31	1888	2
191	NEPH PORTOROSE 68000	2132	10	290	32	2182	42
187	NEPH MACH4-DES2325 68020-V7	2129	27	1074	33		
187	FID ELITE 2x68000-V5	2101	14	698	34	2080	54
186	NEPH KASPAROV BRUTE FORCE	2099	17	1083	35	2041	64
186	NEPH POLGAR/10	2098	14	996	36	2069	197
185	NEPH ROMA 68020	2087	14	1025	37	2093	31
185	NEPH DALLAS 68020	2086	10	2065	38	2132	129
184	NEPH DALLAS 68020	2074	14	1104	39	2032	48
184	NEPH ALMERIA 68000	2072	17	701	40	2072	65
183	NEPH SCORPIO-DIABLO	2065	45	282	41	2136	5
180	NOVAG JADE2-ZIRCON2	2045	27	5742	42	2105	230
180	KASP PRESIDENT-TC+6K2100	2044	6	1741	43	1902	11
180	NEPH NIGEL SHORT	2042	11	1593	44	1988	50
179	FID MACH3-DES2265 68000-V2	2035	11	1123	45	2063	13
178	NEPH MM5/5	2026	13	2783	46	2076	17
178	NEPH DALLAS 68000	2023	8	2976	47	2000	24
177	NEPH MILANO	2022	8	873	47	2049	77
177	NEPH POLGAR/5	2020	47	873	48		
177	NOV SUPER FORTE-EXP C/6	2012	48		48		
176	NEPH MONDIAL 68000XL	2012	15				

BCF	Computer	Elo	+/-	Games	Pos	Human	Games
175	NEPH MONTREAL-ROMA 68000	2006	9	2625	49	1968	56
174	NEPH ACADEMY/5	1996	9	2361	50	2024	109
173	NEPH AMSTERDAM	1991	9	2373	51	2054	182
172	NEPH SUPER FORTE-EXP B/6	1980	12	1464	52	2017	84
172	NEPH MEGA4/5	1978	8	2691	53	2029	169
171	KASPAROV MAESTRO D/10	1974	12	1319	54	1956	109
171	FID MACH2C	1972	6	2704	55	2059	127
171	KASP 6K2000-EXECUTIVE	1972	14	990	56	1862	20
171	FID MACH2B	1971	26	302	57	1960	25
170	NEPH MODENA	1963	16	753	58		
169	NEPH MK4/5	1957	18	2928	59	2006	97
169	NEPH MK4/5	1955	10	648	60	1917	63
168	FID TRAVELMASTER	1948	16	752	61	1981	48
167	NEPH SUPERMOND2-MCARLO4	1943	27	287	62	2074	22
167	NOVAG RUBY-EMERALD	1941	29	253	63	1862	22
167	KASP TRAVEL CHAMPION	1941	12	1453	64	2021	176
167	NOV SUPER FORTE-EXP A/6	1931	26	313	65	1999	98
166	KASPAROV MAESTRO C/8	1929	28	262	66	2046	10
166	NEPH MONTE CARLO	1925	16	814	67	1870	15
165	CONCH PLY-VICTORIA/5.5	1924	9	2426	68	1943	155
165	KASP SPRINX/4	1922	14	1055	69		
165	KASP TURBOKING2	1920	25	338	70		
163	FID MACH2A	1904	11	1548	71	1912	35
161	NEPH EXPERT/6	1893	31	222	72	2026	22
161	NOV SUPER FORTE-EXP A/5	1888	12	1459	73	1825	29
161	FID CLUB B	1888	26	316	74	2012	68
161	NOVAG EXPERT/5	1882	9	2645	75	1916	220
161	FID PAR E-ELITE+DES2100	1881	10	1917	76	1965	208
160	NEPH FORTE B	1881	10	2333	77	1940	69
160	NEPH REBELL	1878	11	1738	78	1852	80
159	FID AVANT GARDE/5	1873	11	1890	79	1890	48
159	KASP STRATOS-CORONA	1871	9	2186	80	1921	134
158	NOVAG FORTE A	1866	11	2251	81	1990	6
158	NEPH SUPERMONDIAL1	1863	29	242	82	1767	6
157	FID CLUB A	1860	14	1611	81	1923	55
157	CONCH PLYMATE/5.5	1860	9	2353	83	1864	131
157	KASP SIMULTANO	1859	13	1149	84	1824	36
157	KASP TURBOKING1	1857	24	364	85	1900	61
156	CONCHESS/6	1855	45	106	86	2017	8
155	FID EXCELLENCE/4	1846	11	1756	87		
155	NOV EXPERT/4	1845	14	1059	88		
155	NOVAG JADE1-ZIRCON1	1844	106	19	89	1960	43
154	CONCH PLYMATE/4	1838	28	372	90	2007	6
154	SCI TURBO KASP/4	1834	20	524	91	1933	6
153	FIDELITY ELITE C	1830	34	182	92	1869	11
152	FID ELEGANCE	1822	17	702	93	1852	40
152	MEPHISTO MH2	1816	16	791	94	1776	8
152	SCI TURBOSTAR 432	1816	12	1407	95	1872	67
151	SCI EXCELLENCE-DES2000	1811	11	1664	96	1852	52
149	CONCHESS/4	1794	20	515	98	1875	28