Computer Chess Reports 1992-93

Vol. 3 No. 2 $9.75

Late 1992 / Early 1993 Review

by Larry Kaufman, I.M.

This has been a year of turmoil in the computer chess industry. Almost all new product development ceased at both Fidelity and Mephisto due to severe financial problems, which led to the decision to close Fidelity's office in Florida. One consequence of this is that I will no longer be available to answer your questions on a toll-free number as I have for the past two years. Meanwhile Saitek has taken up the slack and now stands as an equal with Mephisto in the market for strong chess computers. Each company was said to be trying to buy out the other, but so far without success. A controlling interest in Mephisto is supposed to be purchased by a Swiss firm, with the result that new product development could now resume.

There was no 1992 Microcomputer championship, but the World Computer chess championship served in its place with Deep Thought and Cray Blitz absent. The winner was ChessMachine, an upgrade of the Schroeder program used in both ChessMachine and Mephisto Risc. Saitek's forthcoming Sparc program and Fritz2 also did well, while MChess Pro only managed an even score.

As for new products, the main ones of interest are several PC programs and some Saitek models. The Mephisto Lang program is now out for PC's under the name "Chess Genius", and "MChess Pro" and "Fritz2" are both significant upgrades from their predecessors. Electronic Arts announced "Kasparov's Gambit" for the Spring, featuring the "Alpha" program of Don Dailey and myself. Saitek's "Risc 2500" appears to be the first dedicated Senior Master level model to sell at a reasonable price (under $600), while its inexpensive "GK 2000" and "Travel Champion" offer quality and Expert level strength for modest prices. The Dutch company TASC now has a solid claim to making the world's strongest commercial dedicated chess computer, the"R30", which has a similar program to the Saitek RISC 2500 but running twice as fast, at three or four times the cost.

In the race to develop a super chess computer to tackle the World Champion, Deep Thought, now named Deep Blue, has progressed far enough to prepare to take on Grandmasters in matches, with Bent Larsen scheduled to be first. Eric Hallsworth reported that a quickplay training match was already held with GM David Bronstein (who tied a match for the World Championship over 40 years ago), Deep Thought winning 14-3! Of course, this is quick chess and Bronstein is 68 years old and only rated FIDE 2415, but he is a specialist at beating computers, having won 6-0 against strong computers in the 1992 Aegon tournament. So I suspect that the number of players in the world who can best Deep Thought in a match is quite small and shrinking rapidly. Unless IBM's severe financial problems interfere with the continued development of DT, it seems that my long standing prediction of 1995 as the year a computer becomes the world's best chess player may prove to be about right.

Of some interest in connection with the above, a match was held recently between the world's best human checker player (Marion Tinsley) and the best checker computer (Chinook). Chinook had earned the right to challenge the champ by placing second to him in the U.S. Open, and was generally considered stronger than all human players but the champ. The result of the match was a 4-2 victory for Tinsley, with 33 draws. If Deep Thought should challenge Kasparov in 1994 as planned, it may well be stronger than all other human players and yet lose by a similar score to the checker match (with less draws of course). It is surprising that given the much greater complexity of chess to checkers the relative strength of humans vs. computers is not so different in the two games.

***

THIS ISSUE

World Computer Championship

While there was no World Microcomputer championship in 1992, the triennial World Computer Chess Championship was held in Madrid, Spain in November. Since neither Deep Thought nor Cray Blitz chose to participate, the event was primarily a microcomputer tournament, though a few "big guns" did play. All of the PC programs were run on identical 66 MHz 16 MB 486 based computers, so for them it was a fair competition, but other programs were free to use any available hardware. The event was a five round Swiss system tournament with 22 entrants.

First place at 4 1/2 was ChessMachine, running at 32 MHz with a newer program than the one appearing in the commercial "ChessMachine" or in "Mephisto Risc". It played strong opposition, drawing RISC 2500 and defeating HiTech, MChessPro, Chess Genius, and Kasparov Sparc. Its victory is credited above all to outplaying its opponents in the endgame.

Second place on tiebreak at 4 was Zugzwang, a monster with 1024 transputer processors! It played a fairly strong field. Third (at 4) was Cumulus2, a European PC program which only had to face one opponent among the top ten finishers.

Fourth, at 3 1/2, was Kasparov Sparc, the Spracklen Saitek program. It was said to be running at more than four times the anticipated commercial speed (52 MHz vs. 12 MHz.). It played four of the top ten finishers and so performed quite well. Fifth at 3 1/2 was Fritz2, an upgrade of the Fritz/KnightStalker PC program. Since it faced 3 of the top ten, it really made the best showing of the PC entrants.

Sixth at 3 was RISC 2500, the Saitek RISC program by Koning running at twice commercial speed (28 MHz vs 14). Since it faced top ten opposition in four out of five rounds, this was a good result. Next on tiebreak was Hitech B*, an upgrade of the machine long considered the world's second best (after DeepThought). It played three games with the top ten. Since HiTech is well established as a Senior Master, results like this confirm that the top micros are indeed of Senior Master strength, at least on fast hardware. The B* apparently refers to a different type of search strategy than the Alpha-Beta strategy used by nearly all other programs, including the normal Hitech. Eighth on tiebreak was Chess Genius, the PC program by Richard Lang based on Mephisto Vancouver. Since it only played two games with top ten, this was a disappointing result. It failed to win one game in which it had a huge material advantage, repeatedly refusing to exchange queens to a trivially won endgame, finally allowing perpetual check. I'm told that the commercial version corrected this flaw and will gladly trade down in such situations. Also at 3 was Woodpusher, a British PC program which faced just 2 of the top ten.

Tenth, at 2 1/2, was M Chess Pro, which faced 3 of the top ten. This was clearly a disappointing result for the program that has been considered in the past to be the top PC program. Next at 2 1/2 were Hiarcs 6.88, a PC program, Lachex (running on a Cray Supercomputer), and the PC program Pandix.

At 2 points (in order of tiebreak) were Kallisto (PC), Ulysses (mainframe), Prochess and Centaur (the Russian PC program). At 1 1/2 came Nimzo-Guernica and Echec (both PC). At 1 point were Nightmare and Mirage, and last place at 1/2 went to Delicate Brute by British search expert Don Beal.

I would like to emphasize that although tournaments such as this are interesting, the results of five games are dominated by luck, and have very little meaning when compared to the ratings of "Ply" and other magazines that use hundreds of games per machine to rate them.

ACM International Computer Chess Championship

The 23rd annual ACM (Association for Computing Machinery) International Computer Chess Championship was held in Indianapolis, Indiana from February 14-17, 1993. As was the case last year (actually late '91), there were twelve participants. Eight were considered "small computing systems" (meaning portable enough to be carried to the tournament) and the other four were deemed "large" (meaning they played by telephone because they were either too large or too valuable to be present). Unlike last year, every one of the large systems finished ahead of each of the small systems, with one exception: the winner.

The winning entry was "Socrates II", by Don Dailey and myself (Larry Kaufman). It was entered by Heuristic Software with the expectation that they will purchase it for eventual marketing by Electronic Arts, though this is not yet definite as of this writing. Socrates II scored 4 1/2 out of a possible 5, drawing (nearly beating) Cray Blitz and defeating the World Champion 32 MHz ChessMachine Schroder, pc programs MChess Pro and Kallisto, and the MacIntosh program Innovation. Socrates ran on a 50 MHz 486 dx computer with 8MB RAM (512k position hash table). This was the first time in its 23 year history that the ACM event was won by a pc program or a micro. Needless to say, Socrates was also awarded the "Small Computing System" trophy. In clear second, a point behind at 3 1/2, was Cray Blitz, which ran mostly (except for its games against "Now" and MChess) on a Cray C90 with 12-16 processors each rated at 500 MIPS (for comparison, a 486dx 50 MHz has been rated at 22 MIPS by one measure). This new supercomputer is about 2 1/2 times the speed of the Cray YMP used in the previous ACM event, and is about 200 times faster than the fastest 486 pcs! It costs $35,000,000 and looks at about half a million positions per second, about forty times as much as Socrates. Cray beat "Now" and "MChess", but drew with Socrates, ChessMachine, and "Startech". It should have won against ChessMachine but barely drew with Startech and Socrates. Third place with 3 points, in order of tiebreak, was "Startech", "B* Hitech", and "Zarkov", all playing by telephone. Startech is a new M.I.T. project utilizing 512 SPARC 33 MHz processors, each about equivalent to a 486/66 pc, and using the evaluation function of Hitech. The 512 chips produce about a hundred to one speedup over just one, with the result that it searches about twice as many nodes per second (200k vs 100k) as Hitech, but because the search is not as sophisticated it is thought that Startech is not yet quite as strong as Hitech, but close. In my opinion (and others) the choice of the Hitech program was a poor one, because its strength on a single Sparc appears to be far below that of today's top micro programs on similar hardware. Startech defeated Zarkov and Bebe, drew with Hitech and Cray, but lost to MChess. "B* Hitech" is the old Hitech machine using a radically different type of search than the normal Hitech (and all other competitors). Whether the B* search is superior to the normal "Alpha-Beta" remains to be proven. Hitech beat Bebe and ChessMachine, drew Startech and BP, and lost to Zarkov. Zarkov is the latest version of the pc program by John Stanback, but in this event it ran by telephone on a powerful HP computer said by the programmer to be four times as fast as a 486 50 MHz dx. Zarkov defeated Bebe, Hitech, and MChess, but lost to Startech and Kallisto. Both Zarkov and Socrates II are written in "C" and hence can run on nearly any computer, not only on pcs, but only Zarkov was able to take advantage of this fact in this event, because Stanback works for HP (Hewlett-Packard).

Sixth thru ninth in tiebreak order, all at 2 1/2, were the World Champion ChessMachine Schroder (32 MHz ARM Risc processor, running at an effective speed of nearly a 486/66, according to its operator Jan Loumann), Kallisto (a Dutch pc program on a 486/50 dx), "BP" and "Now" (both American amateur pc programs on 486/50 dx by Robert Cullum and Mark Lefler respectively). ChessMachine beat Kallisto and BP, drew Cray, and lost to Socrates and Hitech; Kallisto beat Innovation and Zarkov, drew Now, and lost to ChessMachine and Socrates. This last game went so long that we were given the first place trophy at the banquet while the game was still in progress, since we were clearly going to either win or draw (we won after Kallisto made an inaccurate move defending with rook & knight against our rook and 3 pawns) and in either case we were clear first. BP beat Now and Innovation, drew Hitech, and lost to MChess and ChessMachine, and Now beat Innovation and Bebe, drew Kallisto, and lost to Cray and BP. Tenth, at 2, was MChess Pro on a 486/66, though in all fairness I must point out that MChess faced probably the toughest opposition (Socrates, Cray, Startech, Zarkov, and BP) of all. As was the case in the previous ACM event, Bebe finished next to last with just one win over the tailender (Innovation, by Jeff Mallett, on a Mac Quadra with a 28 MHz 68040, which scored 0). Bebe is essentially the same machine which used to regularly finish second in ACM and World Championship events, but time has passed it by, even though it searches 40,000 nodes per second, more than all but three of the participants.

One curiosity of the event was that an amazing number of games featured unbalanced material, usually 3 pawns for a piece or two pieces for rook and two pawns. In general the games were very exciting and I believe that none were decided by time, human or hardware failure, or forfeit, although a faulty time control algorithm may have cost Innovation a game. Some went a long time, since the TDs were loathe to adjudicate any games; Socrates-MChess lasted until 5 A.M.!

The two tournament directors, Mike Valvo and Danny Kopec, both International Masters, each played many Blitz games with the programs. No one kept accurate records, but I believe the strong programs scored about 75% against the IMs, which would give them Blitz ratings close to 2700 if the games had been WBCA rated. Even tailender Innovation performed in the mid 2300s in Blitz games with masters. In my opinion, 7 or 8 of the 12 entrants were of Senior Master strength at 40/2, and were of Grandmaster strength at Blitz. Deep Blue (IBM's successor to Deep Thought) was absent due to a conflict with its planned matches with Grandmaster Bent Larsen and another unnamed GM or IM. Richard Lang ("Chess Genius") reportedly was unwilling to invest the time and money to travel from England.

One interesting aspect of the event was that in several games the programs were willing to sacrifice a pawn or the equivalent for positional compensation and/or attacking chances, without seeing any forced recapture of the material. While I cannot say that the gambiteers were particularly successful (both MChess and ChessMachine played reasonable looking pawn sacs against Socrates in the middle game which had us worried, but in both cases Socrates defended well and eventually won a second pawn and the game), it is encouraging to see computers play such bold chess. Just how much compensation is needed for a pawn is a matter that programs, programmers, and human players do not agree upon, which adds much interest to chess. Some programs, including Deep Thought and Cray Blitz, will never sacrifice a pawn on positional grounds, while others are a bit too willing to do so. One reason that some people believe that Kasparov will be able to defeat computers for years to come is that he can judge compensation for material so much better than any machine. While this is true, I don't know how often he will be able to bring about positions where this is the deciding factor. The program can stick to openings that do not lend themselves to sacrificial play. Also, if a program can search deeply

enough, it should be able to see the recapture of the gambit pawn more often than not if the sac is sound. Anyway, it is nice to see that programmers are trying to tackle this difficult question of compensation.

Excalibur Review

This new company, run by ex-Fidelity people, has to date been solely an importer of the "Sphinx" line of chess computers, which are known for modest prices. The "Legend" is the cheapest table-top Expert level game on the market, with an estimated rating slightly over 2000 and a price tag around a hundred dollars. The same program has now been put in the "Accolade", a hand held model which will be the cheapest such Expert level model at under $90. A C.R.A. Action test for the two models is under consideration. Excalibur hopes to surpass the 2062 Action rating of the now defunct Travel Master (Saitek incorrectly claims that C.R.A. rating for the Travel Champion, but TC runs at only 7 MHz vs. TM's 10 MHz). The Legend and Accolade use the h-8 chip too and feature a highly selective program.

Excalibur hopes to enter the market with a Master level unit sometime this year. If so, it will surely be priced below competing models, since Excalibur's motto is low overhead.

Mephisto/Fidelity Review

It is my sad duty to report the demise of Fidelity Electronics as an independent company based in Florida. The company and the product line will continue, but there will no longer be a Fidelity office. Instead sales and service will be handled by a new company based in New Jersey called "Quantum America". Warranty and non-warranty repairs will be handled by another company. Here is the story in brief:

Hegener & Glaser, the German parent company of Mephisto, purchased Fidelity about four years ago from founder Sid Samole, who stayed on for a couple years as president. Mounting losses led to his replacement by a Mephisto man, Dr. Alfred Prommer, but the losses grew alarmingly. His successors failed to turn things around enough to satisfy Mephisto management, and so the decision was made to turn everything over to a company with sales reps all over the country. Whether these reps will have the ability and motivation to sell chess computers remains to be seen. The losses seem to stem from a policy of emphasizing sales without any regard to the bottom line. Money was spent far too freely, and prices were allowed to drop too low. In addition, the price paid for Fidelity was unrealistically high, so the interest on the debt added greatly to the losses. The huge losses nearly triggered the demise of the parent company, and nearly all work on new models (both Mephisto and Fidelity) came to a halt. At one point it was rumoured that Saitek would buy out Hegener and Glaser, but instead a Swiss investment firm by the name of Curam is negotiating to buy or has bought (stories vary) a majority interest in H&G, providing the capital needed to resume development of new products. Curam even stated its intention to make an offer for Saitek, though there is no reason to assume that Saitek's owner (Eric Winkler) will accept such an offer. So the situation now is that there are no new Fidelity or Mephisto models of note since our last review, but a new line is planned by autumn. There may be new Fidelity models in the future, but they will probably not be made by Fidelity.

It is particularly regretable that "Mephisto Madrid", the Mephisto Risc in an affordable housing like Mephisto Berlin, has been cancelled. This means that Mephisto has no unit to compete with the Saitek Risc 2500, which is now by far the least expensive Senior Master level model on the market. Still, Mephisto Risc, now under $1600 in the Exclusive board, will appeal to those who want both super strength and a quality wood autosensory board. It is currently rated at USCF 2444 on our rating list. It is not clear when or if there will be upgrades as programmer Schroeder and Mephisto have not come to terms. As for the Mephisto Vancouver, upgrades are possible as author Richard Lang remains on good terms with Mephisto, but I suspect that new hardware may be necessary to achieve any further significant gains. One possibility would be an Intel 80486 based model instead of the Motorola 68020/68030 line, since Lang has already marketed his program for the Intel based PC's under the name "Chess Genius". This is just speculation at this point. It does seem that the Intel chips now offer better performance for a given price than the Motorola family, so I think further work on the 68000 family of processors is unpromising. Perhaps Lang will write a Risc program himself in the near future for Mephisto.

Among the Fidelity models, Elite Premiere and the ageing but still unsurpassed (under $200) Mach III remain good buys. Premiere is still the strongest wood autosensory model under $1000 with the Mephisto Vancouver program at 16 MHz and a C.R.A. Action rating of 2424, while Mach III is the only cheap master level model on the market. The now discontinued Designer 2100 and 2000 models have been somewhat upstaged by the Saitek GK 2000, which is somewhat stronger on balance, and can retain a position in memory when unplugged.

As for Mephisto models, the Risc remains the unit of choice for those with plenty of money to spend, while the Berlin remains of interest as long as it is at least $100 below the Saitek Risc, though most strength oriented purchasers will probably spend that much for the added strength of the Risc unit. Mephisto Modena is about the same strength overall as GK 2000 and plays a much better endgame, but most people will prefer the GK for its nice display and appearance and somewhat lower price. One Mephisto model that may now appeal to some is Mobil MM5, clearly the strongest hand-held on the market (in the upper 2100's) and now priced below $300. It is a very fine unit for a hand-held, but it does suffer from rather short battery life and lack of back-up memory and availability in the U.S. is questionable at this time. It plays about a hundred points better than its nearest rival (Travel Champion) and is vastly superior in the endgame. The much cheaper (under $100) Marco Polo remains of some interest but is no match for the Travel Champion.

In summary, many of the Mephisto & Fidelity models have been upstaged by Saitek products and others, but Hegener & Glaser are determined to remedy this situation by the end of '93. Unly time will tell.

Novag Review

Novag has been hard at work on a new line of chess computers, but at this time none are available for testing so all we have to go by is the Novag literature. At the top end, Novag has no new models, just the old Scorpio and Diablo. These models are rated as borderline masters by most lists (the CCR average rating is 2201), but at game/30 they did earn a C.R.A. Action rating of 2309 with the aid of some time forfeits in lost positions. Apparently Novag is not content to claim this high figure as the rating of the models, since their literature gives an "estimated rating" of 2400! Scorpio is pretty much obsolete since Mephisto Berlin and Saitek RISC 2500 are significantly stronger and only slightly more expensive, but Diablo has not yet been matched in price by any competing Master level wood autosensory board. Both Fidelity Premiere and Saitek Galileo + Brute Force module are clearly stronger but somewhat more expensive.

As for the new models, there are two groups. One group features an unspecified single chip with 4K ROM and 1/4K RAM with "estimated" ratings (by Novag) of 1500-1575 (which probably means 1300-1400 based on the 200 point overclaim of the Diablo). These models include the "Topaz" and "Onyx" keyboard entry travel sets, the "Opal" sensor board travel set. and the "Coral" and "Pearl" table top pressure sensory boards. Of much greater interest to CCR readers is the second group, which feature the h-8 processor (as used by Saitek and Excalibur in several models) running at 10MHz (Novag claims 20 but this should be divided by 2 for technical reasons), with 32K ROM, 1K RAM, and about 12,600 half-moves in the opening book. These models are the "Jade" (a sensor board travel set), the "Ruby" (a keyboard entry travel set seemingly just like the old Super VIP), the "Zircon" and the "Emerald" (both table top sensory boards). Based on the specs, these models all appear to have the same program except perhaps for the opening book, which has very little effect on the rating of the machine. Yet Novag claims 2050 for some of them and 2210(!) for others, for no apparent reason. Since the processor is about four times the speed of the one used in the Super VIP, which we rate at 1889, I would expect a rating of 2039 (based on 75 points per doubling of speed) if the Super VIP were imported to the h-8. Since the RAM is reduced from the Super VIP this may not have been possible, but a rating of 2050 is at least credible. The 2210 figure is apparently an advertising ploy to claim master status for a low expert level pogram.

Of the new models the "Ruby" may be interesting because it at least runs faster (10 vs. 7MHz) than its Saitek rival "Travel Champion", although initial indications favor the Travel Champion. It should appeal to those who prefer a pocket size model or keypad move entry, and it does have a larger opening book than the Travel Champion, but has only half its warranty. As for the table models, since the competing Saitek model (GK 2000) runs at the same 10MHz speed, the Novag model would have to offer either a stronger program or a lower price (as long as features are fairly similar) to compete, and I doubt that either is the case. We shall see.

Saitek Review

After years of having no models which were truly competitive with the high-end Mephisto/Fidelity games, Saitek has come out with several new models worthy of serious consideration by serious chess players. There are still big gaps in their product line (no inexpensive master level models), but some of their new models are well worth the money and are highly recommended.

Most interesting is the "RISC 2500", a plastic, pressure sensitive board with a very powerful "brain" inside. The processor is the "ARM2" at 14 MHz, just like in the Mephisto RISC except for RAM size (1 Meg in Mephisto, 128k in the Saitek model with future expansion to 2 Meg provided for an unknown cost). Rom is also 128k, indicating a large program and book. While Mephisto RISC uses Schroeder's program, Saitek's uses "The King" by Johan de Koning. These are each upgrades of the two programs originally offered for the "ChessMachine". Since the latest "Ply" list shows Schroeder's ChessMachine program to be 12 points better, and since the RAM difference should be worth about 24 points, the Saitek RISC would rate about 36 points below Mephisto RISC if both programmers had made equal progress between versions. Results to date suggest that the Saitek RISC is stronger than that, very close to Mephisto RISC. The latest "Ply" rating is 10 points above the Mephisto model, at (USCF equiv.) 2446, while the CCNS lists it 22 below at 2432. Our CCR average puts it at 2439, 5 below the Mephisto model. This is probably because de Koning had more time to improve his program as the Saitek model is about 8 months newer. My comparison of the RISC 2500 with the original King ChessMachine program confirms that the Saitek program is indeed substantially more advanced in its tactical abilities. Since the Saitek unit is priced under $600 at discount, well below half the Mephisto Exclusive RISC, it should sell very well and can be recommended to all strength-oriented purchasers who

do not require either a wood or an autosensory board. The strength comes especially from the program's tactical power, but it is by no means weak positionally, and it rates at 2480 on my new problem test which includes both tactical and positional problems, well above the Mephisto RISC. Expanding the RAM to 2 Meg should boost the rating by 30-40 points, well above Mephisto RISC. The RISC 2500 is operated by a menu system rather like Mephisto Vancouver, using very few keys.

For those who do demand or own a quality wood autosensory board, Saitek can now supply a master level module for under $300, the "Brute Force", to go with their "Galileo" or the luxury "Renaissance" board. The Brute Force is an h-8 based module by Franz Morsch, like the Expert level Saitek models "GK 2000" and "Travel Champion", but because it has enough RAM (256k) for hash tables and other refinements it plays much stronger than those inexpensive models. ROM is only 32k, still double the h-8 models, so the program is a bit unsophisticated (but very fast and tactically powerful). Saitek claims USCF 2250, and in this case early results suggest that this is a bit understated. It scores very well on my tactical problems but fails to solve any of the five knowledge-testing problems, so its rating on my test comes out to 2220. The Renaissance Brute Force is the strongest Wood Autosensory model on the market under $1000 except for the Fidelity Elite Premiere, which although somewhat stronger does not offer quite the luxury of the Renaissance unit. For those who demand top (i.e. Senior Master) playing strength in a luxury board, Saitek plans to offer a module with the Spracklen Sparc program running at 12 MHz for an estimated $600 this Spring. Although a 12 MHz Sparc is faster than a 14 MHz ARM2, Saitek's literature indicates an expected rating below the RISC 2500 (they claim 2466 for RISC, 2400 for Sparc) though this is still subject to change. It makes me wonder why they don't just put the Koning ARM2 program into a module, since it would be cheaper and (according to Saitek's estimate) stronger. Technical difficulties, perhaps?

As for modestly priced models, Saitek now has two that I can recommend. The "GK 2000" features a debugged and improved version of the program in Fidelity's "Travel Master", running at the same 10 MHz speed, in a nice table top board with display. It should rate around 2100 at 40/2 (Saitek gives it 2097, right on target), more at faster levels. The program is a tactical whiz but with a limited opening book and is rather deficient in endgame knowledge. It is the strongest model on the market in its price range (mid $100s). The same program running at 7 MHz (about a 40 point reduction: Saitek rates this at 2058) appears in the hand-held "Travel Champion", the first inexpensive ($100 ballpark) Expert level travel game to work reliably (Fidelity's "Travel Master" was discontinued due to unreliability). The TC is advertised as having a 2062 C.R.A. Action rating, which is false, since that rating was earned by Travel Master at 10 MHz, not at 7, but since that rating was rather unlucky I believe TC might expect to get about that rating in a fair test.

In conclusion, I wish to congratulate Saitek for its new line and for its new policy of reasonable rating estimates.

Chess Genius

by Richard Lang, Chess Genius Programmer

I started writing "Chess Genius" in early 1992. The program is a translation of the Mephisto Vancouver program with improvements, mainly its tactical ability.

Both Chess Genius and the Vancouver are entirely written in assembly language. Since the Vancouver runs on Motorola 68000 family processors and Chess Genius on the Intel 80386 and 80486, the entire program had to be translated. In total Chess Genius is 42,700 bytes of code, which is almost 20,000 assembly language instructions.

Chess Genius is not a line by line translation of assembly language code, as this would be inefficient, but rather a completely new program, highly optimized to run fast on the Intel Processor chip. It is vitally important to plan a new program so that all the time critical parts work efficiently. The routines to 'make' and 'unmake' chess moves and some parts of the evaluation routine are the most time critical parts of Chess Genius, and these were written first, then rewritten and rewritten until I was satisfied. The next few months were a period of intense hard work as all other code was slowly written. The tree searching routines were the final ones written so it was only at the end that the program started to play real chess.

Finding bugs is always a major part of programming. Bugs which cause the program to crash are obvious, however most bugs simply make the program play slightly weaker chess and these are hard to find. This is especially true of programs with lots of positional knowledge. To find these sort of bugs I continually compared the new program with a modified Vancouver running on a 68000 processor, and made sure that both programs performed in an identical way. For the final testing I set up both programs to automatically play through a large number of test positions. For each position I checked that the programs not only chose the same move with the same evaluation but also searched an identical number of nodes. Gradually the bugs were eliminated and in fact a number of bugs in the Vancouver program were discovered. By the end of August the chess playing part of the program was finished.

It had been intended that the graphics and user interface would be written by somebody else, however these plans did not work out so I started on the graphics. Everything was finished in November and the program was made available in December.

Some results include 5 out of 6 at the Kings Head Quickplay in London (game in 30, playing on a 486/50) for an estimated grading of 2593 USCF and 7 out of 8 at the Aubervilliers Open in France (game in 30, playing on a 486/66) for an estimated grading of 2630 USCF. (See results below).

Chess Genius has now been on the market for almost 3 months, but in the U.S. only a few weeks. It has received excellent reviews from all over the world and is currently the top PC program on the Swedish Rating List.

Results from Aubersville 1993 Game in 30 Tournament

12 Rounds, 884 Players

Name	Rating	Points	Performance
GM Krum Georgiev	2610	11	2806
GM Anatoly Vaisser	2688	11	2772
GM Josif Dorfman	2710	11	2776
IM Jean Degraeve	2478	11	2672
GM Petar Yelikov	2545	11	2672
Saitek RISC 2500	**UNR**	**11**	**2635**
Chess Genius 486/66	**UNR**	**11**	**2630**
IM Gilles Miralles	2516	10.5	2523
IM Milan Mroja	2668	10.5	2572
FM Chely Abravanel	2456	10.5	2504

Ratings are USCF equivalent (Elo + 100).

PC Program Ratings

PC programs are rated here on 486/33 MHz computers (except ChessMachine and Chesscard, which have their own processors and so run the same on any PC regardless of its speed). Those programs tested only on 386/25-33 MHz machines are given with 80 points added to estimate performance on a 486/33. Autotest results are mostly by Max Harrell at 30" to 1' per move, with rating differences contracted by 15% to compensate for the edge this rate of play gives to the faster programs. As with the dedicated models, CCNS (Computer Chess News Sheet, from England) ratings are increased by 100 (but I subtract 17 from the PC programs on the 486 since CCNS includes some games played at 50 MHz, claiming the average speed to be 40 MHz), and Ply (Sweden) ratings are increased by 200 to match the levels in the USCF on average, based on C.R.A. tests at 40/2.

Program	Mean	Autotest	CCNS	Ply
ChessMachine Madrid 30 MHz King 2.0 Ag.	2558		(2514)	2602
ChessMachine Madrid 30 MHz Schroder 3.0	2498		2510	2486
Chess Genius	2494		(2492)	2496
MChess Pro	2460		2436	2483
ChessMachine Schroder 512k ARM2 15-16 MHz	2420		2418	2422
ChessMachine King 512k ARM2 15-16 MHz	2399		2388	2410
Socrates	2392	2392		
Fritz 2.0	2360			2360
Zarkov 3.0	2350	2350		
Psion 2	2318		2318	
Zarkov 2.5 & 2.6	2312	2314	2323	2298
Grandmaster	2297	(2299)	(2308)	(2283)
Rexchess 2.3	2283		2255	2310
Sargon 5	2278		2278	
Alpha	2274	2274		
Fritz 1 = KnightStalker	2237	2221	2265	2225
Chessmaster 3000	2201		2221	2181
Chess Champion	2175	2191	2191	
Psion 1	2121		2121	
Colossus x	2070		2070	
ChessMaster 2100	2057		2057	
The Final Chesscard	1894			1894

Rating the Commercial Chess Computers

As before, I list four different ratings for the chess computers, together with their average ("mean"). CCR30' and 10' ratings are based on computer vs. computer games run mostly by myself (with some by Max Harrell) at those levels, with rating differences contracted by 20% and 25% respectively to offset the tendency of faster time limits to favor the faster machine. The level of the lists are set so that on average units with both CCR and C.R.A. 40/2 ratings come out the same. Therefore, even when the test games are run at fast levels, the ratings are estimates of what the computers would earn at 40/2 in a human tournament. "CCNS" stands for Computer Chess News Sheet, Eric Hallsworth's publication from England formerly titled "Selective Search". His ratings are based on games at 1 minute per move or longer, including both human tournaments and computer-computer games. The "Ply" list, from Sweden, is based solely on computer-computer games at 40/2. British ratings are adjusted upward by 100 points and Swedish by 200 points to approximately match the levels in the U.S. as shown by the C.R.A. tests at 40/2. The Swedes require at least 40 games for a rating, while Hallsworth and CCR make do with 30 when necessary. Parenthesis around a rating indicate that it was calculated by adjustment from a slower or faster model, using the 75 points per doubling rule.

Credits:
Send us letters, comments, ideas, writing and stuff at: CCR Bits & Pieces co/ICD, 21 Walt Whitman Rd., Huntington Station, NY 11746.
Senior Editor: IM Larry Kaufman
Staff Editors: Ricardo Alcos, Paul DeStefano, Justin Hinkel, Francesca "Chess" Levy, Robert Marzano
Contributing Editor: Richard Lang
Game Proofing: Philip Klett, Robert Sostack
Layout Design: Creative Inking
Subscriptions: Geri Elman
Printing: George Dunlop Printing
Publisher Computer Chess Digest Incorporated
The staff of Computer Chess Digest would like to thank ICD for their help in producing this issue.

CCR Ratings List

Dedicated Models

Computer	MHz	Mean	CCR30'	CCR10'	CCNS	Ply
TASCR30"King"	30	2558	****	****	(2514)	2602
Meph Lyon 68030	36	2468	(2493)	(2459)	2460	2459
Meph Vanc 68030	36	2463	(2489)	(2459)	2453	2449
Mephisto RISC 1MB	14	2444	2453	2433	2454	2436
Kasp RISC 2500	14	2439	****	****	2432	2446
Meph Port 68030	36	2432	2410	****	2443	2444
Fid Elite1068040	25	2377	2425	(2352)	2352	(2380)
Meph Vanc 32 bit	12	2361	2377	2343	2366	2357
Meph Lyon 32 bit	12	2358	2373	2343	2358	2356
Fid Premiere Vanc	16	2342	2300	2396	(2342)	(2331)
Meph Berlin	12	2342	****	2328	2356	2341
Fid Elite 9 68030	32	2331	2372	(2299)	2327	2327
Meph Vanc 16 bit	12	2316	2304	****	2328	2317
Meph Port 32 bit	12	2315	2293	****	2323	2329
Meph Lyon 16 bit	12	2314	2317	2317	2315	2308
Meph Almeria 32 bit	12	2293	2295	****	2297	2288
Sait Gal BruteForce	10	2284	2233	****	2334	****
Fid Mach4/Des.2325	20	2276	2312	2239	2269	2282
Meph Port 16 bit	12	2252	2239	****	2271	2247
Fid Elite v5 dual	16	2234	****	****	2233	2235
Meph Polgar 10	10	2234	2253	2225	2216	2241
Meph Roma 32 bit	14	2220	2212	****	2218	2231
Meph Dallas 32 bit	14	2217	2233	****	2200	2219
Meph Almeria 16 bit	12	2214	2220	****	2203	2219
Nov Diablo/Scorpio	16	2201	2220	2175	2207	2202
Fid Mach3/Elite 2	16	2189	2203	2188	2169	2197
Nov SuperExp/Forte C	6	2184	2182	(2248)	2154	2152
Meph Mondial 68000	12	2175	2194	****	2141	(2191)
Meph Polgar	5	2170	2191	2159	2158	2172
Meph MM5	5	2160	2146	2148	2166	2181
Meph Roma 16 bit	12	2153	2158	****	2136	2166
Meph Milano	5	2152	2122	2179	2146	2159
Meph Dallas 16 bit	12	2152	2129	****	2155	2171
Novag SuperExp/For B	6	2138	2201	****	2110	2104
Meph Academy	5	2137	2142	****	2129	2140
Fid Mach II L.A.	12	2124	2155	****	2101	2115
Meph Amsterdam	12	2119	****	****	2114	2124
Fid Travel Master	10	2117	2103	2165	2090	2108
Meph MonteCarlo 4	4	2116	2145	****	2086	****
Sait GK 2000	10	2111	****	(2165)	2081	2088
Meph Modena	4	2110	****	2134	2102	2095
Sait Gal Maes D	10	2107	2108	****	2100	2114
Meph MM4	5	2104	2128	****	2082	2101
Meph Mega 4	5	2103	2113	2074	2108	2116
CXG Sphinx Domin	4	2096	2139	2119	2049	2075
Sait Travel Champ	7	2093	****	2126	2103	(2049)
Novag SuperExp/Forte	6	2087	2140	****	2070	(2051)
Novag SuperExp/Forte	5	2048	2092	****	2020	2031
Fid Des 2100 Display	6	2048	****	2048	****	****
Fid 68000 xl B	12	2040	2047	****	2018	2054
Sait Cor2/TurboKing2	5	2037	1995	****	2047	2070

Computer	MHz	Mean	CCR30'	CCR10'	CCNS	Ply
Saitek Stratos	5.6	2034	2091	****	1995	2015
Sait Corona/Simult	5	2021	2073	****	1984	2006
Excal Legend/Accol	10	2020	****	2020	****	****
Fid ParEx/Chesster	5	2014	****	****	1998	2029
Meph MM3	5	2010	****	****	2001	2018
Novag Expert	5	2008	****	****	2008	(2008)
Novag Forte B	5	2008	****	****	2002	2013
Novag Forte	5	1999	****	****	1993	2005
Saitek TurboKing	5	1984	1988	****	1980	****
Fid Excel 4	4	1983	****	****	1967	1998
Novag Expert	4	1976	****	****	1968	1984
Saitek TurboKasp	4	1958	****	****	1955	1960
Meph MM2	3.7	1952	****	****	1936	1967
Fid Excel/Des 2000	3	1952	****	(1973)	1930	1952
Sait Prisma/Blitz	10	1951	1906	2045	1919	1935
RadioShack 2150L	8	1927	(1882)	(2021)	(1895)	(1911)
Novag SuperNova	16	1918	****	****	1905	1931
Novag SuperConstel	4	1917	****	****	1907	1926
Meph Blitz	3.7	1893	****	****	1893	****
Novag Super VIP	10	1889	1912	****	1871	1883
USCF Academy/Meph Marco Polo/Europa	8	1864	****	****	1845	1883
Novag Primo/VIP	8	1835	1850	****	1824	1832
Novag Constel 3.6	3.6	1834	****	****	1826	1842
Novag Quattro	4	1826	****	****	1826	****
Novag Const	2	1777	****	****	1764	1790
Advanced StarChess	8	1755	****	****	1751	1758
Fid Sensory 9	1.5	1699	****	****	1699	****
Saitek Astral/ Conquistador/Cavalier	?	1678	****	****	1695	1660

PC Software

A flood of new PC programs has recently reached market or been announced. Already out are "Chess Genius", MChess Pro, and Fritz 2, which are upgrades or replacements for Psion, MChess, and Fritz (Knight-Stalker) respectively. Announced but not yet available are Electronic Arts' "Kasparov's Gambit", and two not so serious programs, "Terminator 2 CyberChess" and "National Lampoon's Chessmeister 5 billion and 1". It was remarked that chess programs must really have arrived to be the object of parody!

Chess Genius, by chess programming genius Richard Lang, is probably the strongest of them all, though this remains to be confirmed. It is supposed to be a PC version, in 386 assembly code, of the Mephisto Vancouver program, but since it takes an extra ply to solve several problems it may be a bit more selective. On my new problem set (running on my 486/50 dx) it took only 77" for the best 20 for an indicated rating of 2542!! (If not for the extra ply on some problems the figure would be higher still!). This figure seems a bit high, but "Modul" magazine reports that CG on a similar machine to mine scored 30 out of 40 in 10" games against the Chess Machine (half with the Gideon 3.0 program, half with King 1.0). Since both the ChessMachine programs are generally rated over 2400 at 40/2, this result implies an even higher rating for CG if it could score the same against CM at 40/2 as it reportedly did at 10". This is unlikely because the Lang program is especially good at fast chess, so probably the real rating will be somewhere in the lower 2500s on 486/50. Another way to look at it is to consider that on that hardware the program is nearly twice as fast as the Mephisto Vancouver 68030 36 MHz model, which was rated 2465 in the last CCR. If the programs were identical, CG would then rate around 2530. "Ply" magazine now has enough games (49) to rate it on a 486/33 at USCF 2496, which implies about 2530 at 50 MHz. Chess Genius does not use extended memory as to do so would have slowed the program more than the benefits would have justified. The features of Chess Genius are essentially the same as those of Mephisto Vancouver, which is to say more than adequate. In view of its super strength, the current price of about $150 is not unreasonable. In fact, since this program on a fast 486 should outperform the Mephisto Vancouver 68030 machine for a total cost including the computer of less than half the Mephisto model, I would expect that the Vancouver 68030 will be discontinued or drastically reduced in price.

MChess Pro differs from MChess in that it makes use

of extended memory for larger hash tables. The features and graphics have also been revised somewhat. There are several feature bugs; a fix is promised by March. My problem set showed a time for MChess Pro 3.10 of 350" on my 486/50 for an indicated rating of 2419. The tactical portion of the set showed a 48 point gain over MChess 1.53, some of which may have taken place between MChess 1.53 and 1.71, the final pre-pro version. Although Pro is said to be able to use up to 10 MB of RAM for large hash tables, the benefit of using more than four MB is miniscule. So MChess Pro does seem to be a real upgrade, but not enough to equal "Chess Genius" in strength. The latest "Ply" list puts it at 2483 on 486/33, just 13 below Genius and up 84 from the average of all previous MChess versions, while "CCNS" puts Pro at 2453, 56 below Genius but up 64 from MChess.

One interesting MChess result from a CCR reader was a hundred game match at game/1 hr between MChess v. 1.63 on a 386/33 and a human opponent rated at 1964. The score was MChess 87, human 13. Although this works out to a performance rating for MChess of 2294, a bit below its "Ply" rating on that hardware of 2330, it's a pretty good result for MChess because human players learn from experience how to exploit the computer's weaknesses, and also because the human was not strict about the time limit for himself, claiming that operator time and interruptions entitled him to a few extra minutes. He was impressed by the program's middlegame play, but not by its endgame. Curiously, Marty Hirsch, M-Chess programmer, has always been especially proud of its endgame.

Fritz2 is a substantial upgrade from the original Fritz (or KnightStalker in the U.S.). The biggest difference is the addition of hash tables, which helps in all phases but especially in the endgame. The program has been made more selective, and it now looks for checks in the quiescence search. One weakness of the original Fritz, blindness to many draws by repetition, has been cured. On the other hand, its extreme ignorance of simple endgame principles, such as square of the pawn, has not been fully remedied. The program is a tactical monster, but a bit crude positionally and still poor in the endgame compared to other top PC programs. My new problem set shows the time on a 486/50 dropping from 855" (2343) in Fritz to 354" (2418) in Fritz2. Fritz actually played about 2300 level on my machine at 40/2, while Fritz2 should rate around USCF 2400, which puts it above all other PC programs but Chess Genius, MChess, and Socrates. "Ply" puts it at 2360 on 486/33 which agrees well with 2400 at 50 MHz. The original Fritz is rated only 2225 by "Ply" on 486/33, but since they give it 2210 on 386/33 that figure is too low (CCNS gives 2282 and 2186 for Fritz on 486 and 386), and so the real gain from Fritz to Fritz2 does seem to be around 100 points. The basic features and look of Fritz2 are similar to the original Fritz. The play of Fritz2 is somewhat similar to that of the Saitek Brute Force Modul, given comparable hardware (a 386sx for Fritz).

Electronics Arts recently announced "Kasparov's Gambit". It is being promoted by emphasizing the Kasparov name and implying that he was involved with the project, but actually it is the "Alpha" program by Don Dailey and myself with features and graphics by Heuristic Software (Julio Kaplan's company). It is loaded with features and may well supplant Chessmaster 3000 as the top selling program. It is intended that a 386 and above version utilizing the Titan program will also be offered, though whether this will be simultaneous or later I don't know. KG should be out sometime this spring at a list price of $59.95. With the Alpha program it should outrate CM3000 but not the top few programs; with Titan it should surpass all but CG and MChess Pro. Socrates should be offered directly by mail order thru I.C.D. soon without the fancy 3d graphics and exotic features but with the extra playing strength that their absence facilitates. It will require at least a 386 (with 486 and external Cache recommended for peak strength) and at least 2 Meg RAM, preferably 4. At the present time Titan and Socrates are too close in strength to call. Since Titan is in "C" it may eventually appear on Mac or other machines, while Socrates is limited to PC as it is written in 386 code. Socrates's claims to fame include top prize for computers in the Harvard Cup (a 3-2 score against Grandmasters, including a win over the current U.S. Champion Patrick Wolff) and a victory (by the narrowest possible margin) in a 100 game automated match conducted by an independent tester against MChess at 45" per move level on 486/50 MHz machines.

Finally, the ChessMachine, which inserts into a PC and takes over the processing, is dropping in price to a level at which it is the way to go for maximum strength for those who own 386 or lower based machines. A double speed version is also available, for under $1200, called the "Madrid" which should play above the USCF 2500 level or about the same as Chess Genius on the fastest PC's. In fact the early "Ply" rating for this 30 (or 32?) MHz version with the newest "King" program is actually over 2600 USCF, but it must fall as it is way too far above its slower "brother", the Saitek RISC 2500 model. Extrapolating from that model's rating predicts about 2525 for the "Madrid", which may eventually be available in a wooden board for about $500 more, under the name "TASC R30"

If you are wondering about whether a 486 66 MHz dx2 will give even better performance than a 50 MHz dx, the answer is that for most programs the difference is trivial. Fritz2 and Titan may play perhaps ten points better on the 66 MHz machines. When Pentium (the

successor to the 486) based machines become available this year, we should see another big jump in strength, with Grandmaster level play at last becoming a reality for a home computer. I would project that the best PC program on such a machine would be able to defeat any human player, including Kasparov, in a blitz match, as long as operator time does not count against the computer. Who will sponsor such a match?

How Our PC Chess Programs Are Developed

Don Dailey (professional programmer and 1800 ballpark chess amateur) and myself (amateur programmer but expert on computer chess algorithms, rating 2486) have worked together now for several years developing four distinct chess programs (Rex, Alpha, Socrates, and Titan), each clearly better than its predecessor when allowance is made for the fact that Alpha and Titan are written in "C" while Rex and Socrates are in Assembly language, which is faster. I thought it might be interesting to readers to get an idea of how we go about improving our programs.

First of all, to determine if a change is an improvement, we need some method for judging this. If the change is simply a small scoring change to correct some poor move we have observed, it must be left to my judgement, as such changes are apt to be worth only a fraction of a rating point, which could never be measured. But let's assume we are talking about some fairly major change to the program. The first thing we do after such a change is to run it on a problem set, such as the one published in this and the preceding issue of CCR. This gives us some idea of the effects of the change, but we must be very careful. The problem is that some changes may speed up the solution of most or even all problems, yet have a subtle degrading effect on the positional play. Or, it may slow down most of the problems a bit while subtly improving the positional play. So the next step is automated testing, of which there are two types.

The first method we call "self-testing", in which the program with the change plays against the same program without it, all on one computer. We use a fixed set of 100 openings that stop after five moves per side. Each version gets white once and black once in each opening, so if time permits a two hundred game match may be played. Since the computer is fully dedicated to whichever side is on move, no thinking on the opponent's time is possible. Presumably this should affect both sides equally, but this may not always be true. If the nature of the change is such as to affect the speed of the program, we must test it on an equal time basis; if it does not affect speed, we often test it on fixed depth searches to minimize the luck factor. Since we have five 486 computers between us, if we set them at different levels we can play a thousand games to evaluate a change without ever having to touch anything once the test has begun. Ideally, it would be nice to test at tournament time controls, but since we always have so many ideas to test we find it necessary to do most testing at levels ranging from 5" to 30" per move. The luck factor is so great that we must normally run several hundred games to have any confidence in the result, though some changes are dramatic enough to prove themselves quickly. Some people have argued that self-testing is not very reliable because the program may not know how to punish its own positional errors, and because a change that speeds up the program (at some price) may score better against its "brother" than it should. We have not generally found these factors to be much of a problem, but we do have an alternative method of testing.

We call this second method "auto-testing". We cable two identical computers together, and use a "referee" program that Don wrote to allow our program to play a totally different one. Since he must write a separate referee program for each opponent we wish to test against, we only use a few opponents. At this time we can test against MChess, Zarkov, Fritz (1), and against our own earlier programs (i.e. Titan vs. Socrates). This has the advantage of allowing both programs to think on opponent's time, and is not subject to the criticisms mentioned above against self -testing. The disadvantage is that to judge whether a change is beneficial requires twice as many games since each version must be auto-tested against the same opponent. I don't know which way is really better overall; we use both methods.

Now let's talk about how we actually try to improve the program. One way is by "rule-base" changes. Don created a chess programming language that allowed me to write hundreds of rules that the program processes before beginning its search. Based on these rules it decides where it would like to try to place its pieces, other things being equal. For example, if there are a lot of pieces on the board, the program is heavily penalized for allowing its king to be brought out to the center of the board, but if it is an endgame, it is rewarded for centralizing its king. There are bonuses for centralizing knights, for putting bishops on long diagonals, for occupying holes, for bringing the queen near to the enemy king, for centralizing pawns (i.e. capture towards the center), and countless other bonuses and penalties. If I observe bad play that can be easily corrected by this rulebase, I do so. However, other parts of the evaluation, such as pawn structure and mobility, must be calculated at the end of each variation searched, and so can only be changed by Don since they are not part of the "rule-base". There are also many parameters of the search itself which I can adjust and test at will. For example, the number of selective plies may be varied, the degree of selectivity on each selective ply may be set, checks in the quiescence search may be turned on or off, certain short-cuts we take may be turned on or off, and so on. We expect to leave in enough of these options so that those who purchase Socrates may have the fun of self-testing various possibilities themselves. Perhaps someone will prove that our default settings are in fact not the best! We always have the fear that some choice we make based on relatively fast games will prove to be the wrong choice at 40/2, so if anyone who gets Socrates wants to self-test any parameters at 2 or 3 minute level on a 486 we would like to hear the result of the 200 games! Testing can be stopped after any game and re-started when the machine is free at the game number corresponding to the number of games already played.

We occasionally try radical changes to the program if we can see some rationale. Often this means some sort of extension for some certain class of moves, such as certain recaptures or replies to certain threats. Usually the extension does not prove to be a benefit due to the general slowing down of the program it entails, but a few extensions have proven their worth and are retained. We keep hoping to hit on the one quick change that will add a hundred points to the program, but the reality is that our progress has mostly been achieved in tiny increments of 2-5 points at a time, which are really too small to be measured with any certainty. But they do add up!

Rate Your Own Computer – Part II

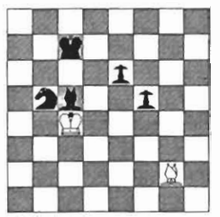
In the last issue I presented a set of twenty tactical problems that did a good job of estimating the ratings of those chess programs which have good dynamic evaluation. However it substantially overrated programs with crude evaluation functions. Since this is a subjective judgement, the set cannot really be said to be a complete rating test. In order to remedy this defect, I have decided to add five "knowledge-testing" problems to the set, so as to differentiate the "smart" from the "dumb" programs. These five problems are my own, and they are rather elementary for an experienced human player. Nevertheless many programs have trouble solving some of these simple problems, which shows how in general programs are much better in tactics than in strategy. The five concepts tested for are: bishops of opposite color tend towards a draw; a lone minor piece cannot mate a bare king; it is desirable to trade a "bad" or immobile bishop for a "good" active one; doubled isolated pawns are very bad; and the player with a material lead should be willing to make small concessions to trade pieces. All but the bishop mobility problem are likely to be game-critical; in other words the right move should secure the win (or draw), while any other move puts the win (or draw) in grave jeopardy. Also it is unlikely that any program will solve any of these problems by luck, since they all involve making some concession (such as trading an active bishop for a knight) or foregoing a seemingly more attractive move.

The same procedure is to be used on these problems as on the tactical ones, except that once the right move is found and the iteration time noted it should be run on the next three higher iterations (you needn't start a new iteration if the last one exceeded five minutes) to confirm that the program keeps the right move, since on positional problems programs are apt to change from move to move if the underlying principle is not understood or adequately weighted. Normally these problems will be solved in a second or two or else not at all, but there are some exceptions to this rule.

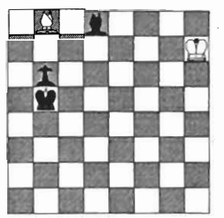
After running all 25 problems (including these five), discard the five worst times and sum the remaining times (in seconds). Remember to time the complete iteration of solution, not just the time to display the move. Any problem may be abandonned once it becomes obvious that its solution time will be among the worst five. The time for the set is thus the sum of the best 20 times. To estimate a rating, first add 10" to the total to compensate for the fact that times are normally reported with fractions of a second dropped, and so each time is on average underreported by a half second. Then, take the base 10 log, multiply by 200, and subtract from 2930 for U.S. rating, or 2830 for England, or 2730 for Sweden or France. The reason I now use 200 for the multiplier (corresponding to 60.2 points per doubling of processor speed) is that I did a new study of the "Ply" ratings which suggested that at the stratospheric levels of many new programs a doubling is now worth 64 points (compared to 75 the last time I did such a study), and since computer-computer testing may slightly exaggerate rating differences 60 points per doubling seems about right for the master to Senior Master level programs now of most interest.

Here are the problems:

21. White to move. Solution Kxb5! and white should draw due to bishops of opposite color. Taking the bishop should lose.

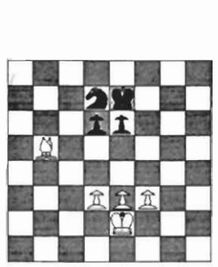


22. White to move. Solution Ba7! to secure a draw by Bxb6 next. If white fails to do this he should lose.



23. Black to move. Solution ...Ba6!. Black should not miss this chance to trade bad bishop for good bishop.

24. White to move. Solution Bxc6!, which not only gives black a doubled isolani but also cripples his majority and gives white a won pawn ending. Other moves merely leave white with a modest advantage. This problem is so easy that every computer should solve it on every level, yet surprisingly Fritz2 cannot solve it even after 11 plies!



25. White to move. Solution Bxd7! (simplify when ahead), which leads to a won pawn ending, whereas keeping the pieces on the board keeps the pawn lead but should not win the game. While obvious to most human players, the solution is found by very few chess computers, because they are "hung up" on the superiority of an active bishop over a knight, and because many computers give the principle of simplifying when ahead little or no weight.

Here are my (or in one case Max Harrell's) times and "ratings" for the revised 25 problem set. First, here are some PC programs running on my 486dx 50 MHz with 256k Cache: Chess Genius 77" = 2542, Socrates II = 96" = 2525, ChessMachine King v. 0.5 1 Mb 294" = 2433, MChess Pro 3.1 350" = 2419, Fritz2 354" = 2418, Rex 2.30 577" = 2377, Socrates 610" = 2372, Zarkov 2.6 618" = 2370, ChessMachine Schroder v. 2.1 1 Mb 682" = 2362, Alpha 844" = 2344, Fritz(KnightStalker) 855" = 2343. I also have the result for Cray Blitz, running on a $35 million C-90 super computer using 12 Cray processors. It took 21" = 2632.

Now for some dedicated models: Saitek "RISC 2500" 168" = 2480, Mephisto RISC 1 MB 476" = 2393, Mephisto Vancouver 32 bit 530" = 2384, Fid Premiere (Vanc. mode) 745" = 2354, Mephisto Berlin 859" = 2342, Mephisto Vancouver 16 bit 879" = 2340, Fid Mach IV (or Designer 2325) 1973" = 2271, Saitek Galileo + Brute Force module 3539" = 2220, Fid Mach III 4764" = 2194, Saitek "GK2000" 13,322" = 2105, Fid Mach II L.A. 13,960" = 2101, Saitek Travel Champion 19,032 = 2074.

Looking over these "ratings", I must say that the correlation to "real" ratings (like the "Ply" numbers) is surprisingly good. If you compare the above PC program ratings to the CCR rating list, remember to subtract 35 from the above PC ratings (except for the ChessMachine numbers) since these were run on a 486/50 while the CCR list is based on 486/33.

A number of readers (including some who read a German translation of last issue's problem test published in "Modul" Magazine) sent in their results on various machines, so here is a summary. Bear in mind that these are necessarily only results of the tactical set, since these five new problems have never before been published. So please compare these figures only with last issue's times and ratings, not those above. Also the method of calculating the rating has been changed; these tactical-only results use the old way for comparability with last CCR. As always, the worst five times are discarded.

Richard Steinmann tested Mephisto Lyon 16 bit with a time (my math, his timings) of 817" = 2347, Mephisto Portorose 16 bit at 1387" = 2289, and Mephisto Almeria 16 bit 6992" = 2114. Mr. Steinmann reports that Elite Avantgard Version 5 took 2,421" = 2229 with both processors on, but took 4,701" = 2157 with one processor only. He also tested Mephisto Academy (not to be confused with the much cheaper and weaker USCF Academy) at various selective settings, with these results: full width 32,399" = 1948, 1 ply selective 16,327" = 2022, 3 ply selective (the default) 6146" = 2128, 5 ply selective (recommended by many as best) 3408" = 2192, and 8 ply selective 4620" = 2159. So this test suggests that around 5 ply selective is best; interestingly Schroeder later increased his maximum selectivity on default to 5 ply in his RISC programs. Another "Modul" reader, whose name is missing, did a similar test for Mephisto Polgar 10 MHz with these results: 3 ply sel (default) 3197" = 2199, 4 ply sel 2667" = 2218, 5 ply sel 1894" = 2256, 6 ply sel 1530" = 2279, 7 ply sel 1794" = 2262, and 8 ply sel 2291" = 2235, so 6 ply sel did best on the Polgar. He also reports that Mephisto Vancouver 32 bit took 530" = 2394, that Mephisto Roma 32 bit accelerated to 20 MHz took 1945" = 2253, that Mephisto MM5 at 10 MHz took 2597" = 2221, that Elite Version 7 accelerated to 25 MHz took 1155" = 2309, and that Mach II c+ with 512k RAM accelerated to 16 MHz took 5086" = 2148. Klaus Kreuzberg reports that ChessMachine 16 MHz 512k with Gideon (Schroder) 2.1 took 553" = 2389 (on aggressive mode it took 528" = 2394), with Gideon 3.0 it took 324" = 2447, and with King 0.5 it took 290" = 2459. He also reports the following results on a 386 40 MHz PC with 64k Cache and 5 Mb RAM: Zarkov 2.6 1140" = 2311, Grandmaster 1292" = 2297 (this 14 point reduction from "brother" Zarkov is in line with my estimates), MChess 1.40 727" = 2360, MChess 1.70 743" = 2357, and Rexchess 2.3 836" = 2344. Gregg Bogosian reports that Novag Super Expert C 6 MHz took 3964" = 2175. Ben Sloss says that MChess Pro on his 486/33 with 64k Cache at 16 MB RAM took 493" (2402); I believe that a 256k Cache would have added about 15 points to the rating. Mark Rawlings reports that Chessmaster 3000 version 1.03 running on his 386 at 25 MHz (no Cache, 2 Mb RAM) took 1393" = 2289 and comments that this is nearly a class above its CCR estimated rating adjusted down to his hardware. My response is that the tactical test seems to estimate ratings very well for programs with refined evaluation and no serious bugs, but if the evaluation is poor or if there are major bugs the program will not play as well as its "problem rating". Chessmaster 3000 and Fritz (1 & 2) both perform nearly a class better on my tactical problem set than they do in actual play. Fritz has an obviously primitive evaluation, but I'm not sure what the problem is with Chessmaster 3000. Most likely it's endgame related.

Some readers have asked me to publish the individual times on various models for the twenty tactical problems. This will enable readers to check their own models against mine. I do this here only for dedicated models, because nearly every PC is different and so PC times vary greatly, even with the same CPU. Remember, I list completion of solution iteration times, not times to solution. Times are listed in the same order as the problems appeared in the last CCR. Timings are my own, except for Super Expert C by Gregg Bogosian. I also include the five new problems from this article. "x" for time means that the problem was abandonned because the time was clearly one of the worst five and hence to be discarded. "?" means that I have not yet had the opportunity to run that problem on that machine. Note also that for all Richard Lang programs it is necessary to turn off thinking on opponent's time to get accurate and repeatable times on problems.

#	Meph RISC 1 Mb	Kasp RISC 2500	Fidelity Premiere Vancouver	Meph Berlin	Meph Milano	Super Expert C 6MHz	Kasp Travel Champ	Fid. Mach IV
1	6p72"	4p 3"	3p108"	3p115"	6p593"	8p1863"	8p2705"	7p1746
2	4p 3"	5p 6"	3p27"	3p35"	5p18"	6p85"	7p178"	7p489
3	5p25"	5p28"	3p78"	3p101"	5p65"	7p433"	7p1634"	6p277
4	9p1579"	7p125"	4p172"	4p214"	7p1224"	8p1423"	7p500"	6p133
5	4p11"	5p11"	4p241"	4p287"	6p514"	5p17"	7p648"	5p51"
6	7p114"	4p 4"	0p 1"	0p 0"	7p591"	7p117"	6p86"	7p338
7	6p53"	6p23"	3p46"	3p79"	7p961"	8p2024"	8p2068"	8p2087
8	7p140"	6p45"	3p23"	3p28"	8p5820"	6p122"	7p750"	6p80"
9	6p12"	6p17"	3p24"	3p30"	6p50"	5p 5"	6p70"	6p44"
10	4p 6"	3p 0"	3p47"	3p53"	6p161"	5p 9"	7p360"	6p121
11	3p 2"	5p 7"	1p11"	1p14"	3p 7"	5p27"	5p39"	3p 2"
12	5p 7"	6p15"	2p 9"	2p12"	5p36"	x"	x"	6p161
13	5p 7"	5p 5"	1p 1"	1p 2"	7p269"	9p1362"	7p446"	6p87"
14	5p21"	5p17"	4p167"	4p187"	6p308"	6p62"	7p296"	6p160
15	4p10"	5p14"	6p2421"	6p2904"	6p304"	6p390"	7p269"	6p206
16	9p 4"	9p13"	7p64"	7p86"	10p149"	9p13"	13p8400"	8p 6"
17	6p51"	6p43"	3p55"	3p69"	6p235"	6p89"	6p58"	6p128
18	9p526"	8p312"	4p84"	4p90"	7p501"	8p1028"	7p340"	6p90"
19	10p78"	8p21"	7p139"	7p145"	10p1122"	9p205"	9p92"	9p62"
20	9p x"	5p10"	4p192"	4p207"	9p16620"	9p3787"	6p93"	6p101
21	x"	1p	0"	0"	0"	?	?	x"
22	0"	2p 0"	0"	0"	?	?	x"	2p 0"
23	0"	4p 2"	0"	0"	?	?	x"	4p 6"
24	0"	1p 0"	0"	0"	?	?	3p 0"	1p 0"
25	0"	1p 0"	0"	0"	?	?	x"	x"

Bits & Pieces

(letters from readers)

John Larsen, Tokyo, Japan

I'm writing to report my findings on the Sargon 5 program that you reviewed in the Late 1991 CCR. On my 486/66 it defeated Mach III, scoring 15 1/2 - 4 1/2 at game/30. CM3000 scored 11 1/2 - 8 1/2 against Mach III. I was very impressed by Sargon 5's endgame play, so I tested its solution time on problems from Irving Chernev's "Practical Chess Endings". In 17 of the 23 problems tested, Sarrgon found the solution faster than MChess 1.71, in many cases much faster. Sargon solved the first problem on page 14 of the CCR Early Review in 15", compared to MChess's 45". And it solved endgame problem #5 from CCR Fall/Winter 88-89 in 10", while MChess took 1'30". CM3000 times were 33" on the first problem, and it couldn't solve the second problem in 20', which is indicative of its poor endgame play.

My point is that Sargon 5 is measureably stronger than CM3000 in overall play, and vastly superior in the endgame, while your reviews on these two products gave readers the opposite impression. What could be the reson? Perhaps there are different versions of one or both of these programs. I was very disappointed with the play of CM3000, and I wouldn't recommend it to anyone whose main concern is strength of play. Sargon 5 is stronger, has all the standard features, and may be the best tool for endgame practice....

There is one obvious weak point in Sargon 5 which you overlooked in your review, and that is the wide but very shallow opening book. For people who put a high value on opening books, Sargon is definitely not suitable.

I suggest that you take a closer look at Sargon 5 and see if perhaps it deserved better treatment...

Reply: Eric Hallsworth's list now puts Sargon 5 57points above CM3000, but 45 below Zarkov and 94 below MChess. Both Sargon 5 (which is essentially the old Fidelity Mach II program) and CM3000 scored respectibly on problem tests, but early results for Sargon 5 against other computers were awful. I presume that the first version was flawed in some way that has been corrected. CM3000 is not among the top few PC programs in strength, as you say. Perhaps endgame weakness explains why its practical strength is well below its problem-solving ability, as is also the case with Fritz (KnightStalker). Fidelity programs generally play the endgame fairly well, so Sargon 5 should also. Yes, Sargon 5 deserves better treatment vis-a-vis CM3000, but neither is in the league with today's best programs.

Herbert Kanner, Palo Alto, Ca

I originally bought a Travel Master, took advantage of the trade-in for a Mach III, and just this week received a Travel Champion. I am really delighted with the user interface for the Champion; it is the first machine I've seen for which you can read the manual once and then put it away for good. This is because the operational meaning of levels and options is spelled out in a reasonable manner in the display.

I do have a few questions regarding the "book" options, about which the manual is not clear. First, can the meaning of "book?" be enlarged upon? My interpretation of "book?" and "bookT" is that the former has questionable lines and the latter has only the strongest lines. Second, although the four choices: ?, T, active, and passive are mutually exclusive, it is possible to have "book" turned on and yet choose none of them. Does that put the behavior somewhere between "?" and "T"?

Reply: I believe you are correct on both points. In most machines the normal book has reasonable variety without resorting to bizarre lines, while the tournament book plays only openings deemed ideal for the computer. Usually the tournament book lines are analyzed much more thoroughly than the wider book's lines.

Robert Basham, Marlton, NJ

...I think the "Travel Champion" is a fantastic little computer! However, are there any other complaints about the evaluation sign (+ or -) for black being backwards? When black resigns it reads +9.99 instead of -9.99. I love the silent mode, and nice large clear read-out. *[He encloses a famous queen sac position which TC finds in 1'18" versus 15 1/2' for Mach III and 4'20" for Novag Scorpio.]* It is a Master! You have a real "winner" here.

Reply: Most Saitek models (excepting RISC 2500) follow the convention of showing the evaluation from white's point of view, while other companies' models show the evaluation from the computer's point of view. I think the latter way is more natural, but it's a matter of opinion. As for the strength of TC, all the recent Morsch programs (Travel Master, Travel Champion, GK2000, Brute Force Module, Fritz & Fritz2) are superb tacticians, but this is achieved partly at the expense of positional sophistication and endgame knowledge. TC is indeed not far from master level tactically, but its crude evaluation brings its strength down to a bit below 2100, which is still very good indeed for a hundred dollar hand-held game.

Thomas Lightfoot, Beaumont, Texas

...I ran a ten game match between Zarkov 2.61 (on a 386/33) and Fidelity Mach III Master at a minute a move. The Mach III took a 7 1/2 to 2 1/2 trouncing. I know that ten games is a small sample to determine a rating [Forty is generally considered a bare minimum, with hundreds required for any real precision - ed.], but I believe that these results may suggest a rating somewhere between 2350 and 2400 USCF. I have also done some playing around with Zarkov's Aegon Book which plays totally different from the regular book. With the Aegon book and the program set on aggressive playing style, Zarkov seems to be a real monster. In the near future I will run a match between the two programs using the Aegon Book. It seems that this version of Zarkov may have gained some ground on MChess version 1.7...

Reply: Others also report that Zarkov 2.61 is stronger than 2.60, but the difference cannot be very much as the changes were not great. Probably Zarkov 2.61 on your computer should rate in the mid 2200s, and scored about a point and a half more than expected with the benefit of luck. A rating based on 10 games has a 5% statistical chance of being in error by a class or more!

Mark Rawlings, Gaithersburg, Maryland

Several questions came to mind as I was running the problem set *[in the last CCR]*:

1. What is the purpose of letting the program complete the ply in which the problem is solved? Is it just for the convenience of the person running the problem set?

2. Does the "double speed = 75 points" apply equally to small programs with little memory (Marco Polo, Travel Master) as to larger programs with a lot of chess knowledge?

3. Could you please comment on the correlation between 40/2 ratings and Action Chess (game/30) ratings? Do you have any estimate of the Action Chess rating for Chessmaster 3000 or Socrates on a 386/25?

Reply: 1) Completing the iteration reduces the luck factor in the test. If a program happens to try the right move early in the list for reasons unrelated to seeing the point of the move, why reward the program? Also, some programs may display the right move briefly, then reject it -- they shouldn't get credit.

2) Programs with minimal knowledge do seem to benefit less from a speed doubling than "smart" programs. For example the "Ply" list shows an absurdly small difference between "Fritz" (a fast but crude program closely related to the Travel Master/ Travel Champion program) on a 386 and on a 486. The 75 point figure is an average; probably it should be about 60 for small memory machines or for any machine that is already in the Senior Master range. 3) On average, Action ratings seem to run about 50 points higher than 40/2 ratings for computers. Since computers play about 200 points worse at Action level than at 40/2, this implies that human players on average play about 250 points worse at game in 30' than at 40/2. This sounds about right. Since the latest "Ply" list (based solely on 40/2) puts Chessmaster 3000 at USCF 2101 on similar hardware to yours, it should rate around 2150 in an Action test. MChess (or Socrates, which is about equal in strength) on 386 25 & 33 MHz machines got USCF 2330 on the "Ply" list, so should play about 2380 in Action chess.

Steven J. Brann, Dayton, Ohio

First, I'll say that my sense is that MChess Pro is VERY strong. I'll leave it to your testing procedures to find out just how strong.

I think there's a bug in the program though, that has to do with time controls *[on "autoplay"]*. Just at the time control, white made a stupid move...in fact, it chose the 19th move out of 19 possible, putting a knight en prise with NO compensation whatever. Time control was 40/2, then 20/1.

Another obvious bug you've probably discovered by now *[yes I have - ed.]* is that in the SETUP screen, it invites you to enter "#' to change the color with the move. "#" does not work for this, but "$" does. Also in the setup program to edit positions, the cursor bracketing the square sometimes goes away. I've also had my mouse cursor disappear for unexplained resons. I'm running on a 486/33 with 32 Mb RAM.

Reply: A corrected version is promised by March. Playing strength on your computer should be in the upper middle 2400s based on early "Ply" and "CCNS" testing and on my problem test. It should reach 2500 on 486 50MHz dx or 66 MHz dx2.

Nathan Stocker, Monmouth, Maine

[Nathan sent a letter almost as long as "War & Peace". He ran a great many games between programs at levels around game/30, running the PC programs on a slow Tandy 1000sl, with only an 8 MHz 8086 processor. He then calculated ratings using the methods (contraction factor included) advocated in CCR. Here are his ratings: for the PC programs, MChess 1.62 2067, Psion 1.01 1960, and Chessmaster 2100 1.15 1859; for the dedicated models (all Fidelity), Travel Master 2112, Designer Dis-

play "2100" 2061, Excellence (3 MHz) 1947. He notes that Psion and CM2100 came out quite a bit above what he calculated from CCR ratings on a 486/33 adjusted down by the double speed = 75 rule.]

Reply: CM2100 did seem to have multiple versions of varying strength. Also, it is the type of program that should gain less than the normal 75 per doubling. It is interesting to see that MChess rates nearly 400 points lower on your machine (which is still 2 1/3 times the speed of the original PC, you report) than it would on today's fastest 486 machines. So we can say that the net gain from the acceleration of Intel's processors from the 8088 at 4.77 MHz to the 486 dx2 66 MHz is worth about 500 points.

Games

Match game for computer Schach & Spiele -- late 1992 -- 40/2

White: Kasparov RISC 2500
Black: Mephisto Risc 1 MB

1 e4 c6 2 d4 d5 3 Nc3 dxe4 4 Nxe4 Bf5 5 Nc5 (I saw Bobby Fischer play this unusual move on many boards in a 70 board simul in Washington D.C. around 1963) e5 (ECO considers 5...Qc7 to be best) 6 Nxb7 Qe7 7 Na5 exd4 + 8 Be2 Qb4 + 9 Bd2 Qxb2 10 Bd3 (White hopes to prove that his development compensates for the pawn) Bb4 11 Nf3 Nxd3 12 cxd3 (ECO stops here claiming a slight plus for white) Bxd2 + 13 Nxd2 Ne7 14 Nac4 Qc3 15 o-o Qxd3 (This seems too greedy since now black will never castle.) 16 Re1 Kf8 17 Ne5 Qa3 18 Rb1! f6 19 Ndc4! Qxa2 20 Qh5!! fxe5 (20...g6 21 Nxg6 + Nxg6 22 Qh6 + mates in 4) 21 Qxe5 Nd7 22 Qxe7 + and black resigned. This game is a fine example of attacking play by RISC 2500.

Action Chess Training Match -- late 1992

White: Deep Thought

Black: Grandmaster David Bronstein (FIDE 2415 now, but tied a match for the World Championship 42 years ago)

1 e4 e5 2 f4 d5 (Falkbeer Counter Gambit) 3 exd5 c6 4 Nc3 exf4 5 Nf3 Bd6 6 d4 Ne7 7 dxc6 bxc6?! (ECO gives 7...Nbxc6 as favoring black) 8 Bc4 (8 Bd3 was book) o-o 9 Ne4! Bc7 10 o-o Nf5?! 11 Qd3 Nd7 12 Nfg5! Nf6? 13 Nxf7! Rxf7 14 Ng5 Nd5 15 Nxf7 Kxf7 16 Bxf4 Kg8 17 Bxc7 Qxc7 18 Rxf5 Bxf5 19 Qxf5 Rd8 20 Rf1 (so now white has two extra pawns and the better position) Qe7 21 c3 g6 22 Qf6 and black resigned. Trying to beat Deep Thought in a tactical fight is like trying to beat up a Tyrannosaurus Rex!

World Computer Chess Championship -- Madrid, Spain -- 40/2

White: MChess Pro (on a 486/66 MHz with 16 Mb RAM)

Black: RISC 2500 (reportedly running at 28 MHz, twice the speed of the Saitek model but about the same speed as the TASC R30.)

1 e4 e5 2 Nf3 Nc6 3 Bc4 Bc5 (Giuoco Piano) 4 c3 Nf6 5 d4 exd4 6 cxd4 Bb4 + 7 Bd2 Bxd2 + 8 Nbxd2 d5 9 exd5 Nxd5 10 Qb3 (10 o-o is considered the best winning try) Nce7 (10...Na5 should lead to a draw by repetition after 11 Qa4 + Nc6 12 Qb3 Na5 as in Miles- Korchnoi, 1979) 11 o-o o-o 12 Rfe1 c6 (White's better piece activity compensates for black's better pawn structure.) 13 Rac1 (ECO gives 13 a4 and 13 Ne4 as best and equal) a5 14 Ne5 a4 15 Qd3 f6 16 Nef3 Re8 17 Qa3 Bg4 18 h3 Bd7 (strange; why not ..Bh5) 19 Qd6 Kh8 20 Nh4!? (to deter Nf5, but it's unreasonable) Nc8 21 Qg3 Ncb6 22 Bd3 a3 23 b3 Qb8 (exchanges favor the side with the better pawn structure) 24 Rxe8 + Bxe8 25 Qxb8 Rxb8 26 Ne4 Nf4 27 Bf1 Ne6 28 Rd1 Rd8 29 Re1 Nxd4 30 Nc5 g5 31 Nxb7 Rb8 32 Nd6 Bd7 33 Nf3 Nxf3 + 34 gxf3 (So it's still a case of better piece play for white, better pawn structure for black. I prefer black's chances.) Nd5 35 Kh2 Kg7 36 Bc4 Kg6 37 Bd3 + f5 38 Nc4 Kf6 39 Kg3 h5 40 Bb1 Ra8 41 Ne5 Ra7 42 h4 (black could have inserted ..h4 + on one of his last two moves to avoid this) f4 + 43 Kg2 gxh4 44 Nxd7 + Rxd7 45 Rc1 Ne7 46 Rc4 (this allows black an advanced passed pawn and so loses, but I doubt that passive play would have saved the game) Rd1! 47 Rxf4 + Ke5 48 Re4 + Kd6 49 Bc2 h3 + 50 Kxh3 Rh1 + 51 Kg3 Ra1 52 Rd4 + (this merely helps black) Nd5 53 Ra4 Rxa2 54 Bf5 Nc3 55 Ra6 Ra1 56 Be4 a2! 57 Rxc6 + Kd7 58 Ra6 Rh1 59 Rxa2 Nxa2 60 f4 h4 + 61 Kg2 Re1 62 Bf5 + Ke7 63 Kh3 Kf6 64 Bg4 Rh1 + 65 Kg2 Rb1 66 Kh3 Rxb3 + 67 Kxh4 Nc3 68 Bd7 Ne4 69 f3 Rxf3 70 Kg4 Rg3 + and white resigned. This game was a good example of the exploitation of pawn weaknesses.

World Computer Chess Championship -- Madrid, Spain -- 40/2

White: Kasparov Sparc (the Spracklen program, running at about four times the planned 12 MHz commercial speed)

Black: Chessmachine Schroder (a newer version of the Mephisto RISC program, running a bit over twice its 14 MHz speed)

1 e4 e5 2 Nf3 Nf6 (Petroff defense) 3 d4 Nxe4 4 Bd3 d5 5 Nxe5 Bd6 6 o-o o-o 7 c4 Bxe5 8 dxe5 Nc6 9 cxd5 Qxd5 10 Qc2 Nb4 11 Bxe4 Nxc2 12 Bxd5 Bf5 13 g4 Bxg4 14 Bf4 Nxa1 (This wild line is actually well-known opening theory. White is supposed to maintain an edge with 15 Be4 as in the recent Timman-Yusupov Candidate's match. White won the a1 knight in exchange for the e5 pawn, so white had B + N for R + 2 pawns. This

nominally favors the R + 2 pawns ever so slightly (perhaps by a quarter pawn or so) but white's bishop pair plus the fact that black had little hope of getting a passed pawn or penetrating with a rook left white in the lead, and he won the game and the match.) 15 Rc1 (Is this a new move here?) c6 16 Be4 f6 17 Nc3 fxe5 18 Bxe5 Rad8 19 Rxa1 Rd2 20 b3 Rfxf2 21 Bg3 Rf7 (So it's like the Timman game, but here black has penetrated with one rook and so he has slightly the better chances, I feel.) 22 Rf1?! (In principle, the side with the minor pieces should avoid exchanges.) g6 23 Rxf7 Kxf7 24 Bf4 Rd7 25 Kf2 Bf5 26 Bxf5? (Although this isolates two black pawns, it is wrong for 3 reasons: exchanges favor the side with the rook, white loses the bishop pair, and black gets a passed pawn. 26 Bf3 would keep black's edge to a minimum.) gxf5 27 Na4 b6 28 Nb2 c5 29 Kf3 Kf6 30 Nc4 Ke6 31 Na3 a6 32 Nc4 Rd3 + 33 Ke2 Rd4 34 Ke3 b5 35 Nb2 Kd5 36 Nd3 a5 37 Bg3 Re4 + 38 Kd2 Re8 39 Bc7 a4 40 Kc3 b4 + 41 Kd2 axb3 42 axb3 c4 43 Nxb4 + Kc5 44 Kc3 Re3 + 45 Kd2 Rf3 46 Nc2 cxb3 47 Na3 Kd5 48 Bb6 f4 49 Ba7 Ke4 50 Kc1 Rh3 51 Nb1 Kd3 52 Kb2 Rxh2 + 53 Kxb3 f3 54 Na3 f2 55 Bxf2 Rxf2 and white resigned. A well-played game by black.

ACM Int'l Computer Chess Championship -Feb '93

40 moves in 2 hours, then 20 moves per hour

White: Socrates II on 486/50 MHz
Black: Chess Machine Schroeder on 32 MHz ARM RISC processor

1 d4 d5 2 c4 c6 3 Nc3 Nf6 4 e3 e6 5 Nf3 Nbd7 6b3 Bb4 7 Bd2 o-o 8 Bd3 dxc4 (book is 8...Bd6 aiming for ..dxc4 and ..e5) 9 bxc4 Nc5 10 Be2 (if 10 Bc2, ...Qa5 is annoying) Bxc3 11 Bxc3 Nce4 12 Bb4?! (White wants to retain the bishop pair, but in view of the coming pawn sac by black it would have been safer to play 12 Qc2 with a small edge) c5! 13 dxc5 Qc7 14 Qd4 a5 15 Ba3 Rd8 16 Qe5 Qb8 17 Qxb8 Rxb8 18 Ne5 Bd7 19 f3 Nc3 20 Bb2 Na4 21 Bd4 Rbc8 22 Nd3 Bc6 23 o-o Nd7 24 Rac1 f6 25 e4 e5 26 Be3 Nf8 (Now that this knight is heading for d4 it seems that black should have enough compensation for the pawn. Whether white had any better moves since the pawn sac is unclear to me, but from move 30 on white outplays black and wins another pawn.) 27 Rfd1 Ne6 28 Rc2 Nd4 29 Bxd4 Rxd4 30 Rb1 Rcd8 31 Rb3 h5 32 Kf2 Kf8 33 Ra3 Kf7 34 Ke3 g5 35 Rc1 Ke6 36 Bd1 Ke7 37 Bxa4! Bxa4 38 Rcc3 Bc6 39 Rxa5 (White is now two pawns up and clearly winning. How could black have avoided this fate?) Kf7 40 Ra7 Kg6 41 a4 g4 42 a5 h4 43 Nb4 Rd2 44 Rd3 R8xd3 + 45 Nxd3 gxf3 46 gxf3 Ra2 47 f4 exf4 + 48 Nxf4 + Kf7 49 Nd5 Ra3 + 50 Kd4 Ra4 51 h3 Kf8 (Zugzwang) 52 Nxf6 Ra3 53 Nd5 Rxh3 54 a6 bxa6 55 Rxa6 Be8 56 c6 Rh1 57 Ra8 Kf7 58 Ra7 + Kf8 59 c7 Bd7 60 Ke5 Rg1 61 Kd8 Bg4 62 Ra8 + and Black resigned. This game shows that even a sickly doubled isolated pawn is better than no pawn at all. This was a rather well played game by both computers.

ACM Int'l Computer Chess Championship -Feb '93

40 moves in 2 hours, then 20 moves per hour

White: Socrates II on 486/50 MHz
Black: M Chess Pro on 486/66 MHz

1 d4 Nf6 2 c4 e6 3 Nc3 Bb4 4 Qc2 c5 5 dxc5 o-o 6 a3 Bxc5 7 Nf3 d5 (more usual are 7...Nc6 and 7...b6) 8 cxd5 exd5 9 Bg5 Be6 10 e3 h6 11 Bh4 Nc6 12 Rd1 Be7 13 Be2 Rc8 14 o-o (ECO stops here, claiming a small edge for white. Socrates' book also stopped here, but MChess was still in book for a couple more moves.) Ne4 15 Nxe4 Bxh4 16 Nxh4 Qxh4 17 Nd6 Nd4 18 Qd3 Nxe2 + 19 Qxe2 Rb8 20 Nb5! a6 21 Nd4 Rbc8 22 h3? (22 Rc1 favors white. The move played gives black time to double on the c-file and thus keep control of it, compensating for the isolated pawn on d5.) Qg5 23 Qf3 Rc7 24 Rc1 Rfc8 25 Rxc7 Rxc7 26 Rb1 Bd7 27 Re1 Qe5 28 Rd1 Rc8 (Because of white's error on move 22, the game is even and neither side has a clear plan.)29 b3 (It seems that white wants to gain space on the queenside, but I feel this move does more harm than good. White should either settle for a draw by "passing" or seek a queen exchange.) Rc3 30 a4 Qg5 31 Kh1 Bc8 32 a5?! (This is too bold, since white will surely soon have to play b4, where the pawn is no longer guarded by the outpost knight. Oddly enough, planless tacking about was better.) Bd7 33 Qe2 Qd8 34 Qd2 Qc7 35Kg1 Rc5 36 b4 Rc4 37 Rb1 Qd6 38 Qa2 Qg6 (Black holds the initiative due to white's risky 32nd move) 39 Kh1 Bf5 40 Rg1 Qh5 41 Re1 Be4 42 f3 Bg6 43 Qd2 Qe5 44 Rd1 Qc7 45 Ne2 Bc2 46 Ra1 Qd7? 47 Rc1 Bf5? 48 g4? (48 Rxc4 dxc4 49 Qxd7 Bxd7 50 Nc3 followed by a king march to d4 would give white a won or nearly won game. Neither computer understands that the knight versus bad bishop endgame is the salient point, even though black's isolani has become a passed pawn. Also, back's pawn is still very weak, even though the computers no longer consider it "isolated".) Be6 49 Nd4? (Trading rooks and queens was still very good for white.) Qc7 50 Rb1 Bc8 51 b5 h5 52 Kg2 hxg4 53 hxg4 Bd7 54 b6?! (54 bxa6 seems better to give the rook more scope.) Qc5 55 Ra1 Rc3 56 Ra2 Qc8 57 Ne2 Rc4 58 Nf4 d4?! (This pawn sac had the Socrates team worried, but it didn't work out. Play is too complex here for me to analyse.) 59 exd4 Qc6 60 g5 Qd6 61 Ne2 Qd5 62 Kg3 Bf5 63 Kf2 Kf8? (Black seems t have good compensation for the pawn with his safer king and better piece placement, but he can't find constructive move. This move is clearly harmful to black; he should have chosen some neutral move.) 64 Qf4 Rc6 65 Ra3! kg8 66 Qe5 Qd7 67 Re3 (Now black has no compensation for the pawn.) Kf8 68 Ng3 Bg6 69 Ne4! Rc2 + ? (This costs black another pawn, since when white recaptures on e4 he will have two threats. Only a very deep search would see this clearly.) 70 Kg3 Bxe4 71 Qxe4 Rc6 72 Qh7 Re6 73 Rc3! Rc6 74 Qh8 + Ke7 75 Rxc6 Qxc6 76

Qxg7 Qc1 (So white is two clear pawns up, but perpetual check remains a possibility.) 77 Qe5 + Kd7 78 Qd5 + Ke8 79 Kg4 Qg1 + 80 Kf5 Qh1 81 Qe5 + Kf8 82 Qb8 + Kg7 83 Qxb7 Qh3 + 84 Ke4 Qe6 + 85 Kf4 Qd6 + 86 Ke3 Qa3 + 87 Ke4 Qxa5 88 Qc7 Qe1 + 89 Kd5 Qf1 90 b7 Qxf3 + 91 Kd6 Qf4 + 92 Kc6 Qe4 + 93 d5 Qc4 + 94 Kb6 Qxd5 and black resigned at about 5 a.m.. Until the game opened up the play was a bit sloppy on both sides, but once the fighting started white's play was excellent. Despite its great length, it was a rather exciting game!

Aubersville Open, 1993. Game in 30 Tournament.

12 Rounds, 884 Players.

White: GM Bachar Kouatly -2605 USCF Equivalent
Black: Chess Genius on 486/66 MHz

1e2-e3 e7-e5 2 d2-d3 d7-d5 3 g2-g3 Ng8-f6 4 Bf1-g2 c7-c6 5 Ng1-e2 Bc8-g4 6 h2-h3 Bf8-b4 + 7 c2-c3 Bg4xe2 8 Qd1xe2 Bb4-e7 9 e3-e4 Nb8-d7 10 o-o o-o 11 Nb1-d2 Qd8-c7 12 Nd2-f3 d5xe4 13 d3xe4 Be7-c5 14 Nf3-h4 Rf8-e8 15 Nh4-f5 Ra8-d8 16 Kg1-h1 Re8-e6 17 Bc1-g5 h7-h6 18 Bg5-d2 Nd7-f8 19 Ra1-d1 Nf8-d7 20 Qe2-f3 a7-a5 21 Bd2-c1 a5-a4 22 Rd1-d3 Nd7-f8 23 Rd3xd8 Qc7xd8 24 h3-h4 Qd8-b6 25 Bg2-h3 Nf8-h7 26 g3-g4 Nf6-e8 27 g4-g5 h6xg5 28 h4xg5 Nh7-f8 29 Nf5-h6 + g7xh6 30 Bh3xe6 Nf8xe6 31 g5xh6 Qb6-c7 32 Rf1-g1 + Kg8-h8 33 Qf3-f5 Ne6-f8 34 Rg1-d1 Qc7-e7 35 Bc1-g5 f7-f6 36 Bg5-h4 Bc5-b6 37 Rd1-g1 Qe7-e6 38 Qf5-f3 Kh8-h7 39 Kh1-h2 Nf8-g6 40 Qf3-h5 Ng6-f4 41 Qh5-g4 Qe6xg4 42 Rg1xg4 Nf4-d3 43 Kh2-g2 Nd3xb2 44 Kg2-f3 Nb2-d1 45 c3-c4 Nd1-b2 46 Rg4-g1 Nd2xc4 47 Rg1-b1 Nc4-d2 + 0-1

Kings Head Quickplay, 1993. Game in 30 Tournament.

198 players.

White: Chess Genius on 486/50 MHz
Black: S. Visochin - 2420 USCF Equivalent

1 d2-d4 Ng8-f6 2 c2-c4 c7-c6 3 Ng1-f3 d7-d5 4 Nb1-c3 d5xc4 5 a2-a4 Bc8-f5 6 e2-e3 e7-e6 7 Bf1xc4 Bf8-b4 8 o-o Nb8-d7 9 Nf3-h4 Bf5-g4 10 f2-f3 Bg4-h5 11 g2-g4 Bh5-g6 12 e3-e4 Qd8-a5 13 Qd1-b3 Nd7-b6 14 Bc4-d3 o-o 15 Bc1-f4 Ra8-d8 16 Nh4xg6 h7xg6 17 Nc3-e2 Rd8-d7 18 Qb3-c2 Rf8-d8 19 Ne2-c1 Bb4-f8 20 Bf4-d2 Bf8-b4 21 Nc1-b3 Bb4xd2 22 Nb3xa5 Bd2xa5 23 b2-b4 Ba5xb4 24 a4-a5 Nb6-c8 25 a5-a6 b7-b6 26 Qc2xc6 Rd7xd4 27 Bd3-e2 Nc8-e7 28 Qc6-c7 Bb4-c5 29 Kg1-h1 Rd4-d7 30 Qc7-f4 Bc5-d4 31 Ra1-c1 e6-e5 32 Qf4-g5 Nf6-h7 33 Qg5-d2 Bd4-c5 34 Qd2-c3 Rd7-d4 35 Rc1-d1 Nh7-g5 36 Rd1xd4 e5xd4 37 Qc3-b3 Ne7-c6 38 Be2-b5 Nc6-b4 39 h2-h4 Ng5-e6 40 Bb5-c4 Rd8-d6 41 e4-e5 Rd6-c6 42 f3-f4 Ne6-d8 43 Rf1-d1 Nd8-e6 44 Kh1-h2 Ne6xf4 45 Bc4xf7 + Kg8-h7 46 Qb3-f3 g6-g5 47 h4xg5 Nf4-g6 48 Qf3-h3 + 1-0

So You Want Some Action, Eh?

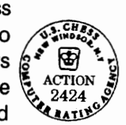
by Steven Schwartz

OK, I admit it; action chess is probably the wave of the future, not, mind you, because I like the pressure of rushing my chess moves (because I have enough pressure in my life already), but rather because most (not all) spectators like the more compressed version of the game. Speeding up the game is probably the only way that chess will be able to enlarge its audience here in the United States (forgive me traditionalists, for I have sinned!)

For those of you who are SO traditional that you do not even know what action chess is, it's simple - finish your entire game in 30 minutes or surrender.

However, I really am not here (wherever that is) to discuss the attributes of action chess vis-a-vis tournament (traditional 40 moves in 2 hours) chess as it pertains to humans, rather to write about the confusion caused when chess computers are allowed to participate in the United States Chess Federation Ratings Agency in order to get either a tournament rating OR an action chess rating.

Allowing a manufacturer to select between the two ratings is analogous to offering a child a chocolate bar or a diptheria shot (with a REALLY long needle). Since a chess computer is likely to receive an action rating between 100 to 200 points higher than a tournament rating, the value of entering the action ratings system is much greater in the public perception. And to further add to the benefit of being action rated is the USCF's official ratings stickers which are so small and so similar that if you do not have 20/20 vision, you will miss the difference between the stated rating that is "certified" and the stated "action". Needless to say, there is no room to explain on these tiny stickers the difference between the rating that is "certified" and the one that is "action".



What's a customer to do?

To make matters worse, the only claims that can be made about ratings in Chess Life are the "official" ratings claims; so if you gaze through that magazine, you are likely to find the claims, "the Novag Diablo and Scorpio - the lowest priced computers rated over 2300!" or "Train and travel with the USCF 2325 computer Mach IV Master" or "Mephisto Berlin - the power of an upgraded version of Richard Lang's Vancouver program for half the price" or "Premier lets you choose Fidelity's 2265 or Mephisto Vancouver program, USCF Action rated at 2424, the highest official rating ever." or "Travel Champion officially rated 2064 by USCF's Computer Ratings Agency!" or "Travel Champion - rated Expert", etc., etc., etc.

All of the above claims came from just a few months of Chess Life's and all are quotes from the Federation's own ads. On the surface they look quite innocuous, but if you analyze the claims, they are vastly more inaccurate (misleading?) than correct. The claim that the Diablo and Scor-

pio are the least expensive computers rated over 2300 is dubious at best. The term "action" shows up in the text but not in the glaring 2300 headline. The term action is not defined and no mention is made that action ratings are likely to be higher than 40/2 ratings. The fact that the Mach III costs 2 1/2 times less and is within about 10 ratings points is not mentioned!

The rating for the Berlin is not permitted although the ad indicates that it is an "upgrade" of the Vancouver program for which they allow an action rating of 2424. And would anyone really buy a Scorpio if he could get about 120 more points for less than $50 in the Berlin?

My favorite example is the Travel Champion - a computer that was NEVER officially rated but the USCF allowed claims of 2062. If you read Larry's article (page 6, column 1) in this issue, the reasoning is explained, but the answer, especially considering the fact that ICD was not permitted to make the 2424 Action rating claim for the Berlin, is totally incorrect. If the Berlin cannot leach off the Vancouver rating, then why did the USCF see fit to use the Travel Master rating for the Champion? To make matters worse, why call the Travel Champion "Expert" without any reference to it being action chess?

For those of you who have been reading the Reports for years know, the original intent of the USCF Ratings Agency was to put an end to the outrageous ratings claims made by manufacturers and dealers alike, and ideally it was the perfect solution, but the high costs involved for the manufacturers, as well as the addition of official action chess ratings suffices to confuse the shopper more than ever.

We need to allow the prospective customer for whom ratings are of paramount importance, to have an apples to apples comparison. Blaring claims of ratings without obvious references to how they were achieved and what they mean is counterproductive at best and misleading at worst. Although it is a ludicrous suggestion in light of the current political climate, let me be the first to recommend that a copy of Computer Chess Reports be sent along with each Chess Life magazine so that the reader can get accurate information from which to make an intelligent decision. And lastly, please, please, please renew your subscription ($12) to the 1993 Reports now before you forget, and I am not so proud that I cannot ask you to consider any further donation that will go toward the continuation and betterment of the publication.

The True Value of Chess Software

by Marty Hirsch, M-Pro programmer

The latest trend in computer chess is a proliferation of programs for personal computers, mostly for the IBM PC or compatible computers. The various programs offer a surprising variety of options, such as animated duels, elaborate sound-effects, post-mortem analysis, and user-edited opening books. The wide assortment is intriguing to almost anyone who has ever played chess, but not every program is suitable for every player. In particular, the available programs present a considerable range of chess-playing ability

The most recognized authority on the playing strength of chess software is the Swedish Rating List. The reliability of this list is due to the large number of games, which are all played at forty moves in two hours by members of the Swedish Rating List ratings as of 2-28-1993, the PC software running on 80486/33 MHz:

Chess Machine 30 MHz "The King" 2.0 aggressive	2343
Chess Machine 30 MHz Schroeder 3.0	2281
M-Chess Professional	2281
Chess Genius	2276
M-Chess	2198
Fritz 2.0	2160
Rex Chess 2.3	2100*
Zarkov 2.5	2088*
Zarkov 2.6	2030*
Fritz 1.0 (KnightStalker)	2021
Chessmaster 3000	1971*

These ratings are all about 200 points lower than the equivalent USCF ratings. Ratings marked with * were extrapolated from 80386 ratings by adding 70 points.

Note the 300-point spread between a highly regarded commercial chess program (Chessmaster 3000) and a state-of-the-art chess engine -- Chess Genius or M-Chess Professional. There is also a spread in price, and some of the lower-prices software (such as Battle Chess) has "bells and whistles" (mainly extravagant graphics and sound effects) that you don't get with the chess engine products. But the top-ranked programs give a deafening "bang for the buck" in terms of chess acuity. This is because they contain something no software house can commission, unlike fancy graphics. They contain secret, original, extraordinary chess software.

Indeed, the value of any product is not based on its price, its cost to produce, or the number of bells and whistles it has. The true value of a product is determined by what it can do for you, the user. If you enjoy cute graphics and animation, then a commercial "video game" chess program may have value for you. But if you have a genuine interest in chess, then you should focus on the high-end programs, and learn what tools are available to help you develop your game.

When you play to win you want to play from positions you like, positions where there are plans and ideas that you believe in. There is a feature in M-Chess Professional, called "multiple user-edited opening books", that is specifically designed to help you maintain and organize your opening systems.

You build an opening book simply by making the moves. Without a mouse this requires typing in the moves but there is no need for punctuation, and the visible chessboard prevents errors.

First you create a blank book, giving it a name (like "Dragon"). Then you tell the program you want to work with that book by selecting it as the "work book". The "Add variation" command lets you add a new opening variation to the work book. If you change your mind, select "Undo".

You can create and edit any number of user-books. Each book is unlimited in size. You can print each book showing the tree structure of your various opening systems. Select up to nine (9) books at a time for practice!

One of the amazing things about the user-edited opening books is that in each position, the opening moves for the built-in book, as well as the moves in that position in all nine of your user- selected books, are all displayed at once!

M-Chess Professional lets you assign a grade to each move governing how often that move is played by the program. The grades are included in a user-book printout. "Delete move" is also supported.

Another valuable feature is "automated post-mortem analysis". Input a game you have played, specify your output file (or the printer), and select "Analyze game" to produce a post-mortem! It will take a few hours to run, but when you examine the output you will quickly see how you (or your opponent) could have improved!

M-Chess Professional is easy to use and systematic in its operation. While playing you can read the last twenty moves played, or see twenty (or more!) half-moves of analysis. You can also recall games from an alphabetized list with a click of the mouse. There are many additional features such as easy-to-set time controls and integrated mouse/keyboard operation. But these are not "bells and whistles". These are real tools, expertly designed to help you, the user, get the most value and of course, challenge, from truly first-rate chess software.

Late News

STOP THE PRESSES!

The latest Swedish Ratings List is here!

Schroeder 3.1	30 MHz	2588
King 3.1	30 MHz	2543
Chess Genius	486/50	2501
Schroeder 3.0		2481
Chess Genius	486/33	2476
M Professional	486/33	2481 *
M Professional	486/50	2433 *
Mephisto RISC	14	2432
Saitek RISC	14	2416
Fritz 2	486/33	2397
Brute Force	10	2244

* Yes, yes, we know that this is an impossible result. It is not a typo or mistake. Just further proof that chess ratings are merely estimates of strength and can vary greatly from tournament to tournament.

THIS JUST IN...

Bent Larson has just completed a four game match with experimental giant Deep Blue, the "son" of Deep Thought. Larsen scored 2 1/2, Deep Blue scored 1 1/2.

Premiere Hints

by Rogelio Sotela

The following is an excerpt from a letter received by ICD, detailing a problem which has plagued us since the release of the Premiere: How do you replay a game after it has been played?

Mr. Sotela supplied the answer on the next page.

1) First "Save" the game with OPTION SAVE and REV key 2) Activate the square you will "Save" the game as. For instance, A2. Ranks 7 and 8 cannot be used. 3) Press Clear. 4) "Load" the game using OPTION LOAD as detailed in the manual. A light will appear on the square of the game you have saved. Press Clear, activate the square and press clear. The light will be off. 5) Put the pieces at the starting position. Press TB. 6) Press DM and the game will appear. 7) Note: if you have played black from the bottom for the game, first activate Option Game D1.

We thank Mr. Sotela for this solution.

Pawn Shop

Computers for sale! If you would like to place an ad here in the next issue of CCR, sned a check for $5.00 and an ad of up to 40 words to: Pawn Shop c/o ICD, 21 Walt Whitman Rd., Huntington Station, NY 11746. CCR takes no responsibility in any of these sales, nor the claims made in them.

Fidelity Designer 2100 Display with A/C adapter. Virtually new - perfect condition. Used less that 20 times. Good price! Contact: Francis Rector (303) 973-1058.

Mephisto 68030 Vancouver. Large, beautiful wood autosensory board rated 2468! Originally $10,000. Perfect condition. Asking $6500. Call (516) 424-3998 10-5 EST.

Mephisto Polgar Module in Amsterdam board like new (best offer) also Mach III Designer with beautiful wood pieces and adaptor $95. Call John: (415) 563-1555 or evening (415) 759-9840 P.S.T.

Mephisto Portorose 16-bit modular in excellent condtition. Will sacrifice. $300. John Zilliox, 97 Westgate Rd., Kenmore, NY 14217. (716) 873-3943.

Novag Diablo 68000 Autosensory wood board. Novag's top of the line. Excellent condition, AC adapter included. $450 or best offer. Day (817) 468-6669. Evening and weekend (817) 294-1499. Ask for Tom.

ICD ORDER FORM

For fastest service, order Toll-Free

1-800-645-4710

Or please fill out the form below (or photocopy/reasonable facsimile) and mail to:

ICD, 21 Walt Whitman Rd., Huntington Station, NY 11746

You may also fax this form to (516)424-3405

Mail to:

Name _____

c/o _____

Address _____

City _____ State ____ Zip _____

Daytime Phone _____

Quant	Item	Price	Total
1	Subscription to 1993 Computer Chess Reports. (2 issues) And FREE Preferred Buyers Club Membership for 1993.	$12.00 (incl. S+H)	$12.00 (incl. S+H)
	Special Offer: RISC 2500 AND Chess Genius for just $699. ALSO: $18 AC FREE w/RISC.		

S+H and Insurance PLEASE CALL	
C.O.D. (add $6.00)	
NY Residents add local sales tax	
TOTAL COST	

Method of payment (Please check one):

__ American Express __ Master Card __ Visa

__ Discover __ Diners Club __ Carte Blanche

__ Certified Check __ Bank Check

__ Personal Check (Allow two weeks to clear)

__ Money Order __ C.O.D. (add $6.00)

Please call to verify latest pricing and shipping costs

Card Number _____ Expiration _____

Signature _____