Computer Chess Reports Quarterly

1989 Review

by Larry Kaufman

The biggest news of the year is the takeover of Fidelity by Hegener and Glaser, manufacturers of Mephisto. The two companies will retain their present independent identities and product lines, but with some Fidelity programs to be sold in Europe by Mephisto, such as the Phantom and some of the novice level units. It is also likely that modules for the Mephisto boards with the Fidelity programs will be sold next year. The takeover undoubtedly will mean the end of the bitter rivalry between the only two companies to market 16 and 32 bit chess computers. This may mean slightly higher prices next year, but it may also mean stronger machines if Mephisto and Fidelity co-operate. I hope that another company soon markets a 32 bit model, to keep up the pressure for continued progress at the top.

There has been a flood of results for commercial chess computers in human tournaments from many nations, mostly in Europe (see article). It is very difficult to interpret them all, because there are many variables, such as different rating levels in different countries, varying time limits, and varying policies on the treatment of operator error and operator time. Unfortunately there have been no more C.R.A. tests since mid '88 due to the high cost. Two commercial models have obtained established U.S.C.F. master ratings this year, but under pseudonyms since the C.R.A. fees were not payed and many of the games were played at faster time limits than the C.R.A. allows. The 16 bit Mephisto Almeria is now rated about 2325 after some 30 games (most of which were action chess), while the Leonardo Maestro D 8 MHz is around 2220 after 40 games. However since computers normally perform better vs. humans at shorter time limits, these two ratings are probably somewhat inflated. The major computer event of the year so far was the World Computer Chess Champ. in Edmonton, won 5-0 by DeepNovag Thought, with Bebe 2nd, then Cray Blitz, Hi-Tech and Mephisto x, the top scoring micro. For details see the CCR summer '89 addendum. Deep Thought has not been too active in human events this year, sitting on its 2551 rating, but it did defeat GM Robert Byrne in an exhibition game at 40/2 (Byrne won the second game). In the World Micro in Portoroz Yugoslavia, Richard Lang won for Mephisto rather easily, for the sixth straight year (see article).

Another highlight was the two game mini-match (game/90) between Deep Thought and World Champion Kasparov, won easily by the Soviet star. A third game was later played at Harvard with the same result. It is clear that computers have a long way to go to surpass Kasparov, but with IBM now funding the Deep Thought project I still expect it to happen by 1995.

An unusual event of interest was an action chess match in which four American grandmasters faced four top chess computers, with each GM playing one game with each computer (head to head, not simul). The final score of 14 1/2 to 1 1/2 for the GMs was a great disappointment to computer fans. ChipTest (predecessor to Deep Thought) and HiTech were surprisingly each shut out 0-4, while Deep Thought only managed one win (over Maxim Dlugy) and 3 losses. The only commercial entrant, the Mephisto Portorose 32 bit, drew with former U.S. Champ Lev Alburt, threw away a dead drawn ending against our top rated GM Boris Gulko, lost to Dlugy, and forfeited on time with good chances against GM Rhode because the operator did not know that he must set the operator time. If only the 68030 model (4 times faster) had been available it might well have upstaged Deep Thought with its 2551 rating.

In the field of commercial dedicated chess machines, progress has continued at a good clip. Mephisto has achieved significant gains (at tournament levels) with both its 16/32 bit Portorose program and its 8 bit Polgar module without doing anything radical. The chess seems each year to be more like a strong human master playing rather than a computer.

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THIS ISSUE:

Fidelity is about to become the first company to offer a commercial dual processor machine. If the speedup exceeds 80% as Fidelity predicts, this may allow them to remain competitive with Mephisto at the top. The new Elites now have the ability to "learn" from mistakes, but this is of only slight value as the learning is specific to the position. Novag has made the most significant transformation this year, going all-out selective in contrast to its former approach of selectivity only on the last ply. This appears to have made the new program much stronger at action chess level, but only moderately so at both blitz and tournament chess, a puzzling phenomenon. This same selectivity has also caused an increase in the strength of the hand-held Super V.I.P. over the old V.I.P.

Saitek, after several years of near stagnation, has finally made significant progress with the new Maestro D program. It has scored well at 8-10 MHz against computers in Europe and against humans in the U.S., but has fared poorly in European human competition. It seems to do well enough against strong players, but cannot win consistently against the weaker ones. With a little more progress or faster hardware Saitek will become the fourth company to offer a master strength program. Finally, in the area of PC software, several new programs have come out, some of which are reviewed herein. If you have access to a fast 286 or a 386 machine, some of these can offer comparable strength to the strong dedicated models.

World Microcomputer Chess Championship 1989

by Larry Kaufman

Once again Richard Lang has won the World Micro for Mephisto. It was held in Portoroz, Yugoslavia. The only contested section was the "software" section, since no one chose to challenge Mephisto in the manufacturer's section this year. Perhaps Fidelity chose not to challenge because of the takeoever by the owners of Mephisto, while Novag and Saitek could not hope to compete with their 8 bit models against Mephisto's 32 bit, 36 MHz monster. The "software" section includes programs found in dedicated machines as well as true personal computer software.

Lang won with 6 1/2 out of 7 with the new Mephisto Portorose program on a 68030 at around 40 MHz, while Schroder's "Rebel", an 18 MHz bit-slice version of the new Mephisto "Polgar" module, was second with 5 1/2 . Tied for third at 4 1/2 were Pandix and A.I. Chess, both IBM PC programs running on fast 386 machines. A.I. Chess

is an American program by Martin Hirsch, and Pandix is Hungarian. Fifth place with 4 points went to "Why not 89", a 19 MHz bit-slice version of the latest Conchess Plymate program by Ulf Rathsman of Sweden. Next with 2 points was "Paul" on a 12 MHz 286 AT clone, then Kempelen Atari with 1, and finally "Nightmare", a 12 Mhz 286 program whose name perhaps anticipated its 0 score.

Mach III, which seems to confirm that it is around 2200 level and the strongest 8 bit program, but I cannot believe that it is as strong as the Swedish results imply (USCF 2295!!). One British tester, considered objective, reports that at 2 and 3 minute levels it defeated the Mach III and Super Expert B each by 10-1 (!!). Although it plays very well such results make no sense to me. I hope the mystery will be solved by the next issue of CCR. In any case, I can recommend the Polgar highly for serious chess (1 min/move or slower), but at fast levels (10" and blitz) both my tests and others show it to be much weaker than such competing models as Novag Super Expert B, Elite 2265, and Mondial xl. Its sel

With the Mephisto victory by default in the Manufacturer's section, the future of the World Micro is in jeopardy. With Fidelity no longer an independent company, there is no likelihood of a contested manufacturers event until Novag or Saitek (or a newcomer?) develops a 32 bit or RISC program.

European Results Vs. Humans

by Larry Kaufman

Computers have been active in European tournaments lately, more so than in the U.S. As always the performance ratings must be raised by varying amounts to correspond to USCF levels. Based on estimates in the Swedish "Ply" rating service, I will add the following numbers to European ratings: Britain and Austria 120, France 180, Holland 205, Sweden 220, West Germany 310. These numbers will be revised as more data becomes available. All results believed to be 40/2 or close unless otherwise stated. Less than 10 games omitted.

In Holland the Almeria 32 bit 12 MHz has played 65 games and performed at (U.S.) 2325. A 20 MHz version has played 20 games and performed at 2385. The Mega IV Turbo (18 MHz) is at 2343 after 20 games, far above its 2209 CRA rating. The Mach IV is at 2313 after 12 and the Mach III at 2257 after 18, both about 10 below CRA. The Academy turbo (18 MHz) is at 2231 after 29 games, rather disappointing, while the Galileo Analyst Turbo (18 MHz) is at a poor 2097.

In Sweden the picture is quite different. The Mach IV stands at 2397 after 19 games, the Almeria 32 bit at 2250 after 26, the standard 5 MHz Academy at an amazingly high 2340 after 10, the Mach III at 2181 after 11, and the 10 MHz Saitek "Maestro D" is at an embarrassing 1942 after 18. Mega IV (5 MHz) is at 2093 after 23, Meph Dallas 68000 at just 2086 after 15, and Forte B at 2081 after 28.

In France the Mephisto Portorose 32 bit (12 MHz) is at 2394 after 46 games, the Fidelity Elite 68030 is at 2295 from 11 games, the Almeria 32 bit at 2165 after 11, and the Maestro D at 1996 after about 20. The Mach III earned 2216 in 52 games. The Super Expert B is at 2070 after 18 games.

In Britain the 5 MHz Academy played 33 games in the British Open and earned a rating estimated at 2176, slightly above the 2160 earned last year by the Mach III in the same number of games in a private rating test at 40/80. On the other hand, the Fidelity Elite 68030 played 11 games in the British Speed Championships, an action chess event, and earned rating of an incredible U.S. 2664, beating 1 GM (Flear) and 3 IMs! Even allowing for the fact that action chess ratings appear to be about 150 points above 40/2 ratings, that result is over a hundred points above the estimated 2400 rating (2325 CRA + 75 for double speed over Mach IV) for that model. It should be noted that this model plays action chess at nearly the level of the Mach III (5 times slower) playing 40/2. Since the Mach III is a weak master, this suggests that a weak human master plays 40/2 chess as well as average GMs play action chess! Frankly I doubt this, and not too much should be made of 11 games.

In West Germany the Saitek Simultano is at just 1866 after 16 games, well below the 2094 earned by the old Turbostar 440 in over a hundred games some years ago. Since the Simultano is at least not weaker than the Turbostar this suggests that people are indeed learning how to play against chess computers.

The only result so far for the new Mephisto Polgar is a 7 game performance in Holland of U.S. 2350 for a 16 MHz Turbo unit.

Mephisto review

by Larry Kaufman

Both the new Lang and Schroder models are creating quite a sensation. The new Mephisto Portorose, winner of the 1989 World Micro (see story) is an upgrade of the Almeria by Richard Lang. The testing in Sweden (at 40/2 vs. other computers) on both the 16 and 32 bit 12 Mhz models shows a (weighted average) increase in rating of 64 points for each over the corresponding version of last year's Mephisto Almeria, after a total of 80 games. Against humans the gain may be even greater, since the 32 bit Portorose earned a formal French rating of 2225 (or 2405 USCF if the estimated 180 point differential holds at these levels) in a C.R.A. style test in Paris at 40/2, scoring 37-9. This is 110 points above the French

rating earned by the much more expensive Fidelity 68030 model in 11 games, and about 190 above the French rating for the Mach III. All this was achieved by software improvement--the hardware is identical to Almeria. The 32 bit (68020) version of the Portorose is again about 1.8 times as fast as the 16 bit, worth 74 points judging by "Ply" ratings for the two Almeria versions. My own testing has confirmed a large gain over the Almerias at 60/2 level (and also at 10" level), but at the intermediate levels of action chess and 60/1 my results so far are below the Almerias, probably because Lang has optimized the Portorose for tournament chess by strengthening the even plies (which also benefits speed chess up to perhaps 15" or so). Since the CCR ratings include many intermediate level games, they understate the strength of the Portorose at tournament level, which is probably high 2300s for the 32 bit, and around 2300 for the 16 bit. Both of these Portorose models are available as EPROM only upgrades of the Almeria, as no new hardware is involved. In addition, Mephisto will also make a 68030 model at 36 Mhz with two Megabytes of RAM. It should be 4 times as fast as the 68020 model and therefore over 120 points stronger by theory. This suggests a rating near 2500, close to Deep Thought and far above HiTech. A C.R.A. rating test for this $10,000 model is planned for the American Open. I predict that the rating will fall somewhere in the 2400s, because I believe the Portorose was optimized for 40/2 on the 12 Mhz hardware, and therefore the extra speed will not bring as much gain as one might expect. I hope that in the future Lang will find a way to make his program perform optimally at all levels. In any case, even if the intermediate levels are no improvement over the Almeria, they are very strong indeed by normal standards--the 16 bit Almeria has performed near 2400 in about 30 USCF rated action chess games in Alabama tournaments and matches (its actual USCF rating is 2354 including some slower games). Moreover, the 32 bit Portorose recently drew a formal action chess game with former U.S. Champion Lev Alburt, should have drawn America's highest rated GM, Boris Gulko, and had good chances against GM Michael Rohde before forfeiting on time due to the operator's failure to set the computer to allow for operator time. It also had performances in the 2550-2580 FIDE (add a hundred for USCF) range in two European Action chess events, surpassing even the fine British action chess result for the Fidelity 68030 model.

Another factor in the increased strength of the Portorose is a more aggressive style of play. This should be particularly helpful against human opponents, as the French rating test showed. The Portorose offers three different playing styles-- "active" (the default style, considered strongest); "solid" (similar to the Almeria); and "risky". I have confirmed that the active mode will make pawn breaks that the solid mode rejects as too loosening. Of course sometimes this will backfire, but both Lang and I believe that it is beneficial most of the time. The opening book has been enlarged from the Almeria and now includes (in active mode) more double-edged openings like the King's Indian and Benko gambit.

A new large wooden board, the "Bavaria", which senses what pieces are on what squares, is available for the Portorose program. This is a great time saver for problems and analysis, but is of no value for practical play.

In the medium price range, a new 8 bit module called the "Polgar" is available for the three autosensory boards, with an upgraded (from the 48k Academy) 64k program by Schroder. This program (with bit-slice) won the chess section of the London Computer Games Olympiad this summer, ahead of both Lang and Fidelity, and took second to Lang in the World Micro. After 63 games in the Swedish testing it rates an incredible 184 points above the Academy and even rates near the 20 Mhz Fidelity Mach IV with its 512k RAM, although Polgar only runs at 5 Mhz and has a mere 8k RAM! Head to head, Sweden reports that the Mach IV beat the Polgar by just 9-7. As compared to the Academy it has some new search extensions, better evaluation, and a deeper, better book, but I don't feel that the improvements should add more than 50 points at most. In my opinion the Swedish rating for the Academy was too low, while the Polgar is too high. In my tests at 60/1 and 60/2 the Polgar split 5-5 with the Mondial xl and lost by just 5 1/2 to 4 1/2 to the Mach III, which seems to confirm that it is around 2200 level and the strongest 8 bit program, but I cannot believe that it is as strong as the Swedish results imply (USCF 2295!!). One British tester, considered objective, reports that at 2 and 3 minute levels it defeated the Mach III and Super Expert B each by 10-1 (!!). Although it plays very well such results make no sense to me. I hope the mystery will be solved by the next issue of CCR. In any case, I can recommend the Polgar highly for serious chess (1 min/move or slower), but at fast levels (10" and blitz) both my tests and others show it to be much weaker than such competing models as Novag Super Expert B, Elite 2265, and Mondial xl. Its selective search is not effective at short time limits. A special 10 Mhz version is likely next year in new "Modular" housing only for an extra $200, but it will accept no other modules.

The Academy, an autosensory wood model of around 2200 level, is a fine unit for under $500. It seems to be a bit weaker than the Fidelity Elite 2265 at 40/2 (using 4 ply selective) and nearly equal at 30" level. I rated it as best value under $500 last fall, but now I would give the nod to Novag Super Expert B or to Mephisto Modular Polgar. Both the Polgar and the Academy have a well balanced, reasonably active style and few weak spots.

The Mondial 68000 xl, now two years old, is still the strongest model under $300 and good value. The College (or Supermondial II), although only 4 Mhz, rates quite highly on both my list and Eric Hallsworth's, due mostly to its strength at intermediate levels, but it is clearly weaker than the Mondial xl at both blitz and 40/2 levels and so cannot be recommended unless the price drops below $250. A similar program is available in a wood board like the Academy under the name Monte Carlo 4. It could only be recommended below $400. The Europa, or Marco Polo in hand-held version, remains the strongest true single chip computer at 1863 on my list. The Novag Super V.I.P., which uses the same 6301 processor (at about 20% faster speed) beat it 5-1 and is stronger, but the Novag uses extra RAM and so is not truly "single chip" and therefore costs more.

Fidelity Review

by Larry Kaufman

The most interesting new Fidelity product this year is the line of Elite 68000s, 68020 and 68030s, known as versions 1 to 10. Actually there are only 8, as #1 will not be made and #10 is not expected for some time. All have the Mach III program with slight improvements, and the new learning feature, which causes the machine to vary its play to avoid repeat losses. If the fatal error occurred many moves before the loss of material the play may be varied too late to matter. The versions with extra RAM (versions 3,4,and 7) are clearly not worth the sizable price difference since each doubling of RAM speeds up the program by 8% (according to Fidelity), worth 8 rating points (according to me). Fidelity expects the dual processor versions to run 80-90% faster than the corresponding single processor models, but this is only a forecast at this writing. If it proves true the duals will be the best value in the Elite line, but that remains to be seen. That leaves versions 2, 6, and 9 to consider.

Version 2, the Elite 2265, uses the same processor (16 MHz 68000) and program (slightly refined) as the Mach III, but with double the RAM (adding 8 rating points) and the learning feature. Although subsequent events have shown the Mach III to be overrated at 2265 it does deserve a master rating, and so the Elite version must be considered the strongest autosensory model under $1000 at this writing, along with Mephisto Polgar. Whether it is worth the extra $300 or so over the Novag Super Expert B is dubious--they are of similar strength at fast to intermediate levels, while the Elite begins to show superior strength at perhaps 2 min/move or slower. Both models have fine wooden boards and many good features.

Version 6, the Elite 2325, has the same program (again slightly upgraded), processor (68020 at 20 MHz) and RAM as the Mach IV. Its 2325 rating has proven to be more justified than the 2265 rating of its slower cousin, and a host of tests against both human and computer opponents have shown it to be virtually equal in strength to the Mephisto Almeria 32 bit (which runs at only 12 MHz). However, it does not appear to be competitive with the comparably priced Mephisto Exclusive Portorose 32 bit, at least at 40/2, and may not even be stronger than the cheaper Portorose 16 bit. The Elite 2325 is about 2.2 times as fast as the junior Elite and about 80-90 points stronger. Otherwise they are the same. Both have an aggressive style and good endgame.

Version 9, the Elite 68030 (at 32 MHz) is just like version 6 but about twice as fast. This should add about 70

points, giving it a fighting shot at a 2400 rating in a future CRA test. Its spectacular performance in a top level British Action chess event (see article on European events) lends some credibility to this claim, although Action chess is very difficult for humans vs. computers--even the Mephisto Almeria 16 bit has performed near 2400 in USCF rated action chess. But with the Mephisto Portorose 32 bit at about the same level and half the price the Elite 68030 will not be of much interest. A dual processor version is likely next year at some enormous price.

The Designer 2100 Display and the Designer Mach III are each the strongest models in their price categories, at least at slow levels. Super Forte B is a strong challenger to the Mach III, but the 2100 Display has no rival as of yet under $200.

Novag Review

by Larry Kaufman

The most radical revision of 1989 is the program in the new Novag Super Expert B and Super Forte B, both 6 MHz. There is no change in the boards or features from the older Super Expert and Super Forte, both C.R.A. rated 2164. But while the older models were selective only on the last ply, the "B" models are selective on whatever number the user selects, with 3 being the default. In order for the program to play well with more than 1 ply of selectivity, a great deal of tactical knowledge had to be given to it. The "selective search" mode of the older model lacked this knowledge and hence performed poorly both in a C.R.A. test and on various problem sets. In contrast, the "B", using 3 ply selectivity, clearly outperforms its predecessor on problems and in computer vs. computer testing, especially around the action chess level. My own testing on an 8 MHz unit playing action chess vs. other comps gave a rating of 2275, implying about 2245 for the commercial 6 MHz version, equal to the Mephisto Almeria 16 bit and over 50 points above the Mach III and the Mondial XL. However, at 40/2 my results and Eric Hallsworth's list both place it near the Mondial XL at 2180, some 45 below the Mach III and nearly 80 below the Almeria 16 bit. The opening book has been substantially updated (by me), and the endgame somewhat improved, although it is still below the level of the hash table models. Results in human tournaments have mostly been in the U.S. expert range so far, although the sample is not large yet. I conclude that the B is a great improvement over the A in the intermediate time levels but only a modest one at 40/2. In any case, the Super Expert B is now the best wood autosensory buy under $500 considering strength, features, and board, while the Super Forte B is a good alternative to the Designer Mach III in the plastic under $400 range. Since the price differential between the wooden and plastic boards is much less with Novag than with other companies, the Super Expert B is especially attractive.

The Super V.I.P. uses the same selectivity as the Super B models and has a similar, large opening book. The 6301 processor used is about one third the effective speed of the 6 MHz 6502 in the Super B, but runs about 20% faster than the original V.I.P. Based on the selectivity, the speedup, and the enlarged book Novag's autotest result of a hundred point improvement sounds reasonable, but based on the 23 games played to date in CCR testing the gain is 60 points at the 30"-1 min. levels. It is clearly the strongest hand-held unit except for $300 + Mephisto models. It uses keyboard entry only, not pressure.

The Suprimo is a full size plastic model but lacks the selectivity of the Super V.I.P. It is therefore not as strong as the comparably priced (in U.S.) Fidelity Designer 2100, which runs about twice as fast, and therefore not recommended in the U.S.

The Mentor 16 appears to be weaker than the 1800 target I set for it, but I have not conducted tests on it yet.

Novag has apparently decided to stick with 8 bit for now, perhaps because the 16 bit 68000 is not sufficiently superior to justify the cost of writing a brand new program. Perhaps a RISC chip may induce Novag to compete for the top end in a year or so.

Saitek And Others - Review

by Larry Kaufman

While Saitek programs have been improving year by year, they have not kept pace with the rapid progress of Mephisto, Fidelity, and Novag and so are not of much interest to those who emphasize strength above all else. However, they do excel in features and in appearance, and are certainly strong enough for most players.

One Saitek model of some interest is the Corona. It is the least expensive autosensory wood model of expert strength on the market, along with the Mephisto Monte Carlo. Its board was especially designed for fast response, suitable for speed chess, but unfortunately the program is rather weak at blitz. CCR rates it at mid expert level, about a hundred points below the Novag Super Expert B and the Mephisto Academy, but also a hundred dollars cheaper than those two.

At the top end, a new 8 MHz "Maestro D" module is available for the Leonardo, Galileo, and Renaissance boards, and a 10 MHz version is planned. The program is clearly Saitek's best to date and at 10 MHz may be near to master status. In fact the 8 MHz D has performed a bit over 2200 in USCF play, but that includes some games at fast time limits like action chess. Results in European human tournaments have been poor. Unfortunately, the total price for the board and module is about the same as the Elite 2265 and the Mephisto Exclusive Polgar, both of which are stronger. Saitek has not yet kept its promise of 16 bit modules, and until they do they will remain #4 in strength, I believe.

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There are now several companies marketing chess computers in Europe but not in the U.S., including CXG, Conchess, and newcomer Yeno. These models are not reviewed by CCR, but the CXG Sphinx Galaxy and Sphinx Dominator deserve mention as good values in Europe in view of their reasonable prices and mid-expert (U.S.) strength. The Sphinx programs, by Franz Morsch, utilize the same type of selective search (forward pruning) as do the Mephisto 8 bit programs (by Ed Schroder) and the new Novag programs.

Chess Playing Software For Personal Computers

by Larry Kaufman

In conjunction with my work on the "Rex" chess program for the IBM PC and compatibles, I have recently done a good deal of testing of most of the programs now on the market. Therefore a full review is now appropriate for CCR. As I do not have any non

IBM compatible machines, my comments on Apple, Macintosh and other chess playing software is necessarily limited and based on information from various sources which I believe to be reliable.

Chess playing software can be divided into two groups: mass market programs sold in software stores nationwide, and mail order only programs. The first group generally emphasizes features and graphics, while the second group may concentrate on playing strength, since mail order sales are mostly thru chess magazine ads and hence target tournament players rather than the general public. Because the playing strength of the average buyer of mass-market chess software is very low by tournament standards, there is little commercial incentive for mass market companies to spend money on improving their programs' play. Nearly any decent program will trounce most unrated players regularly. But for tournament players, playing strength is a major factor, especially since most personal computers are still quite slow compared to top dedicated chess models.

Among the mass market programs, the choice is between Psion and ChessMaster 2100. Psion is probably stronger by a good margin according to my tests on an AT clone against dedicated models, although in a head to head match at 15" on 10 Mhz xt clones CM2100 won by 4 1/2 to 3 1/2. Perhaps Psion needs at least 15" on an AT or 30" on a fast xt to perform well. However, Psion has disappeared from the U.S. market and has not had a new IBM pc version since 1984 or any version since '86. Furthermore, since CM has excellent graphics and features, probably the best of all programs, it must be considered the best buy of the mass market programs. Of the others, only Sargon IV claims to be stronger, but this claim is pure fantasy.

Just how strong is CM2100? Although the ads tie it in to Fidelity and the 2325 rated Mach IV, the Fidelity program is only used in the soon to be released versions for 68000 based machines such as Macintosh, Amiga, and Atari ST. Since the 2325 rating was earned with a 20 MHz 68020 processor, it is reasonable to expect performance close to 2300 if run on the top MacIntosh model which uses a 16 MHz 68030 processor, assuming the graphics and features don't slow it down excessively. On a standard Mac or Atari ST it should run 4-5 times slower, which implies a rating around 2100, as the name suggests. On the other hand, when Software Toolworks attempted to translate the Fidelity 68000 program to IBM PC code, they found that it played even weaker than CM2000 IBM (by Novag's Dave Kittinger and others). So they opted for an upgrade by Kittinger for the IBM version. To test the strength of CM2100 IBM, I ran 16 games at 15" on my superfast 25 MHz 286 based AT clone against two dedicated models. I played 8 games each against the Mephisto Mondial xl (C.R.A. 2154) and the Fidelity Mach III (C.R.A. 2265). In each case CM2100 lost by 6 1/2 to 1 1/2. Allowing for the tendency of computer vs. computer results to overstate rating differences by around a 4 to 3 ratio, this plus other results imply a rating for CM2100 of around 2010 on my machine or a 20 Mhz 386, or around 1900 on a standard 8 MHz AT, around 1825 on a 10 MHz XT, and around 1750 on a standard PC or XT. To reach 2100 level would probably require at least a 33 MHz 386 machine with Cache RAM. These numbers seem rather low to me and suggest an improvement of only 25 points or so over CM2000; Software Toolworks claims about 75. Some 40/2 tests in Spain (18 games vs. 3 dedicated models) on a 12 MHz AT yield a USCF rating of 1973, about thirty points above the level my tests imply. CM runs about the same speed on an 8 MHz AT as the rather similar "Super Constellation" (CRA rating 2018) but has a much smaller program so it can hardly be expected to be much stronger than perhaps mid 1900s on that hardware. It plays a rather human-like game. One flaw is that it sometimes allows a repetition draw in a winning position -- once it did this with K + Q vs K! As for Apple versions, I would expect them to play in the 1700s on a standard Apple or perhaps 1900 on an Apple IIgs. Note that the Apple IIgs version is much weaker than the regular Apple version because all the new features slow it down excessively, so those who want strong play on a gs should use the Apple II version.

In contrast to CM2100, Sargon IV (IBM version) is a disgrace. The box claims "SARGON beats CHESSMASTER over 85% of the time". I ran 40 games between them on identical 10 MHz XT clones. At 1 min level CM won 8-2, at 30" CM won 6 1/2 - 3 1/2, at 15" CM won 6-4, and at 5" CM won 7-3, for a total margin of 2 1/2 - 12 1/2. I am told that as a result of my testing Sargon will remove the claim from their box. Even on my superfast 25 MHz AT clone it lost 7 1/2 to 1/2 against the Mondial xl. I rate it at 1868 on my machine (or on a 2 MHz 386), at 1750 on an 8 MHz AT, at 1675 on a 10 MHz XT, and at 1600 on a standard PC or XT. The program supposed to be an IBM adaptation of the Fidelity Mach

program, but it appears to have been bungled badly. It occasionally makes illegal moves, sometimes goes into an infinite search and refuses to move, and plays many silly moves. It is supposed to have hash tables but does not show any evidence of this (i.e. by quick search in simple endings). The opening book is pathetic, some openings are misnamed, the features and graphics are much inferior to CM2100, the evaluations appear to be in multiples of 256 per pawn rather than 100, the clock is inaccurate, and the fixed time per game levels do not work. An upgrade (version 1.01) is now available which corrects some of these flaws, in particular the clock and fixed time bugs. It is about 7% faster on average but otherwise plays the same moves at the same depth except in the endgame. Sargon IV seems weaker than its predecessor Sargon III, and should never have been released. The Mac version is apt to be much better since the Mac uses the same processor as the Fidelity machines so no translation was needed. I would still expect the CM version to be better as it was based on the Mach III, a later and better model than the Mach II.

As for mail-order only IBM PC programs, I will review three. "Zarkov" is a strong program with good color graphics. It beat CM2100 by 4 1/2 to 3 1/2 at 15" in my test, and on my 25 MHz AT it went 3-5 against the Fidelity Mach III but only 1 1/2 - 6 1/2 versus Mondial xl. Based on these games I rate it about 70 points above CM2100, but my sample is too small to be very accurate. The features cannot compare to CM, but in view of its strength and low price I can recommend it.

"A.I. Chess" is clearly the strongest pc program on the market at this writing. It trounced CM2100 by 10-2 at 15 and 30", and on my 25 MHz AT it beat the Mach III by 6 1/2 to 1 1/2 and the Mondial xl by 6-2 at 15". On a standard 8 MHz AT it performed at 2057 in 20 games at this level, some 300 points worse than on my 25 MHz model! Probably it was unlucky in the 8m test and lucky in the 25m. It has also done well in its last two computer tournament outings (on a fast 386). Unfortunately the graphics are horrendous and the price outrageous, so I can only recommend it to those who want the strongest play regardless of price and features.

I cannot review "Rex" in the usual way, for two reasons: I am co-author with Don Dailey and hence not objective, and the program is incomplete at this writing. It is unique in that it was designed to accept instruction from a chess master who is not an expert programmer, namely me. Therefore it will be easy to continue to improve it, and so even if the first version is not the world's strongest pc program, we can hope to achieve that status with future inexpensive upgrades. An early version of Rex tied for top pc in the 1987 U.S. Computer Chess

Championship, and a recent version won 6-2 in my own testing against CM2100 at 15 and 30". One version also scored even in a dozen 10" and 15" games on my 25 MHz AT against the Mach III. Another version was trouncing the Mephisto Mondial xl handily. We expect the final version, due for release in November, to be stronger still, as we are autotesting daily to improve it. Rex has decent graphics, but no color yet, and the usual features of PC programs. It also displays an actual clock face instead of merely displaying times, to better simulate tournament play. It uses a selective search rather like the Novag Super Expert B, since Novag's Kittinger and Don Dailey and I jointly developed the techniques for pruning bad moves. I can't yet say how strong it will be, but I can predict that it will beat any PC program you are apt to find in your local software store. Because of the large knowledge base, the play should also be rather human-like.

As for other programs, "EGA Chess" has competed in several U.S. Computer Chess Championships, but has consistently finished last with a zero score, and so it will not be reviewed here. Other programs such as "Battle Chess" have not even bothered to enter any competitions and so presumably are not aimed at tournament players. Only the programs reviewed above (except Sargon IV) have achieved any credible results in formal competition, except for some programs sold only in Europe.

Selective Search In The Novag Super B And Mephisto Academy

by Larry Kaufman

In the past year, two models have reached market that permit the user to select the number of plies of selective search. They are the Novag Super Expert (and Forte) B and the Mephisto Academy. To make use of this feature one must understand what is going on.

Both of these programs, as well as predecessors of the Academy and various programs of Franz Morsch (CXG) (and the pc program Rex), employ a technique known as "forward pruning". The idea is that within the last n plies of the search, where n is the specified number of selective plies, unpromising lines are cut off without further analysis. When n is set to 0 a full width search is performed, as is still done by Fidelity machines. To illustrate, after 1 e4 e5 2 Nf3 Nc6, the computer, if playing without its book, must analyze the consequences of 3 Ne5? Ne5 4 a3? (or any other quiet move). Let us assume that the time limit is such that a 6 ply search can be completed, typical for today's machines at 40/2. A full width program will analyze such lines as 4... Be7 5 Be2 Nf6. With a selective depth of 1 the line will be cut off after 5 Be2, as black is obviously winning. With a selective depth of 3 it will be cut off after 4 a3 for the same reason, saving much time. The greater the selective depth, the

earlier the cutoff and the more time saved, but at the risk of missing an unexpected line that might justify the sacrifice. It is clear that if one can accurately define an unpromising line, the time saved will allow greater depth of search and hence better play. In general, experience with these models shows that 3 ply of selectivity (the default value in all of the above mentioned models) will generally add 1 ply of total depth to the search, at some cost in terms of occasional blind spots. One ply doesn't sound like much, but to get 1 more ply by brute force alone generally requires multiplying the processor speed by 5, and is probably worth close to 200 points. If half of this is returned by the blind spots, 3 ply selective would be worth about 100 points. Actual experience suggests that the true value in these programs is at least this much in action chess, but somewhat less at 40/2 and blitz. Testing in Sweden on the Mega IV at 40/2 shows it to perform 72 points better on selective mode (fixed at 3 plies in that model) than on full width mode. If three ply selective is good, wouldn't four or five be better? Not necessarily, because with too much selective depth the risk of throwing out a good move becomes too great. There are some theoretical reasons why an odd number of selective plies may work better than an even number, though this is far from certain. As experience suggests that the optimum number is in the range of 2 to 4, three is the obvious choice. But it may be that the optimum number depends not only on the details of the program but also on the level tested. This is an issue that is being tested by many people around the world. At 40/2 I have had excellent results for both Super B and Academy with 4 ply selective, but the superiority over 3 ply results is not great enough to say with confidence that 4 ply is better. In their own private autotesting, Novag claims better results with 4 select at 40/2, while Mephisto says 3 select has done better in their tests, and have retained that as the default in the new Polgar program. At intermediate levels such as action chess (30'), the default value of 3 seems to work very well for both Novag and the Schroder programs, as they are very strong relative to other programs at such levels. At blitz the selective search does not have so much opportunity to reject bad moves, and so its effect is not so noticeable. Nevertheless the selectivity is still beneficial, as I demonstrated by conducting a 10x round robin of the five selective levels 0 thru four at level one on the Novag Super Expert B. I used the "autoplay" feature, which permits one to play different levels and/or selective depths against each other without having to monitor the game. The results were: full width 15 1/2 out of 40, 1 select. 19 1/2, 2 sel. 20 1/2, 3 sel 21 and 4 sel 23 1/2. This perfect ordering demonstrates well the value of selectivity, but frankly I did not expect 4 sel to win out at blitz. Perhaps it was lucky.

I then repeated the same test (with a fixed set of openings to minimize the chance factor) at action chess, with these results: full width 11 1/2 out of 40, 1 sel 17 1/2, 2 sel 21, 3 sel 27 1/2, and 4 sel 22 1/2. One could not ask for a clearer demonstration of the value of selective search, and it is clear that 3 ply is best at action chess.

The rating difference between full width and selective 3 ply in this test works out to 242 points, or 182 if we scale down by 25% as I recommend. Perhaps the difference in strength is magnified when two versions of the same program are tested against each other. Still, if this great improvement could be attained at 40/2, the result would be rather remarkable. At 40/2 I autotested 3 select vs. full width and 3 select won by 13 1/2 - 6 1/2, worth 127 points (95 if down scaled). This figure agrees fairly well with the roughly 100 point estimated improvement at 40/2 for the Super Expert B over the last full width Novag model, the 6 MHz Expert.

I also tested three ply versus four selective at various levels, and found that at levels of game or 40 moves in one hour or less 3 ply sel had a tiny edge, but at slower, "serious" levels 4 sel won by 33-27. To summarize, leave your Super B as is for 1 hour or less games, but set sel to 4 for slower ones. I suspect this is also good advice for the Academy, but as it lacks the ability to autotest different selectivities I can't be sure.

There is one bit of evidence that forward pruning may work very well even at long time limits. The Mephisto MM4, a forward pruning program, has been tested thoroughly in Sweden against other computers at 40/2 at both standard speed (5 MHz) and Turbo (bit slice) speed (16 MHz). The rating difference is over 200 points, considerably more than the 121 points predicted by the chart in the 87/88 CCR. To me, this convincingly refutes the claim that selective search is unsuitable for long time limits or fast hardware. Perhaps the opposite is the case, as full width becomes less and less sensible with more search, I believe.

The Rexchess Story

by Larry Kaufman

The first Rex chess program was written in 1985 in Pascal just for fun by programmer (and class A player) Don Dailey of Roanoke, Virginia. Although it was quite weak (perhaps class C) he entered it in the World Computer Championships in 1986 in Cologne, Germany and it finished near the bottom. Soon after that I met Don and we decided to try to make a strong program together. First I contributed a small but deep opening book which enabled Rex to reach decent positions in the 1986 ACM tourney, but as Rex was running on an ordinary PC it was totally outclassed and scored just a half point. Don then took the first big step by deciding to rewrite the program in assembly language, which roughly tripled the speed. Also, he created a special language for me to use to "teach" Rex how to evaluate a position. Using this language, I gave Rex hundreds of rules to follow which allowed it to assign a value to each piece on each of the 64 squares, based on the conditions present each time the opponent moved. For example, if the enemy king is on g8, we might give a bonus of 4 points (pawn = 64 points) to a queen on h6. With this "rulebase" and competitive hardware (a 386 machine) we tied with Fidelity for the top

score in the PC category of the 1987 U.S. Computer Chess Championships. Still, we did not feel that the program was superior to others then on the market, and we did little work on it for the next year. The next step forward came when Novag's Dave Kittinger, Don and I jointly worked out how to do an effective selective search program. Dave put these ideas into the Super Expert B and Super V.I.P., while Don and I put them into Rex. So we decided to enter the 1989 World Computer Championship in Edmonton, although the program was very incomplete and not fully debugged. We scored 2 out of 5, around the middle of the PC programs, although our 20 Mhz 386 was one of the slower machines present. Soon thereafter, Don quit his job to devote 2 months full-time to completing Rex and adding the features necessary for a commercial program. We completely rewrote the rulebase, and are continuously "autotesting" different program parameters to improve the strength.

This autotesting is quite interesting. Currently, it centers around the selective search. Every night we each run games between the full width version of Rex and the selective, or between two selective versions, varying one parameter at a time. For example, we might vary the number of plies of selectivity, or the "safety margin", or the depth at which check extension begins, or a number of other factors. In this way we gradually tune the program to score better and better. We have also tried some rather exotic ideas, some of which seem promising, but we decided not to implement any of them for the first release since they require considerably more research. In general, we find that the selective version scores between 60 and 70% against its full-width counterpart, which suggests that the selectivity is worth somewhere in the neighborhood of a hundred points. The program is still in its infancy, but I am confident that it is the strongest program under $100 now being sold for IBM pc/AT compatible computers. It should reach master level on a fast 386 or mid-Expert level on a standard AT or low Expert on an xt Turbo, although more testing is needed to be precise. The opening book is small to allow everything to fit on one disc and because most of my effort has gone into the evaluation function. We plan to add hash tables for a future version, as well as much more chess knowledge. In order to induce people to order now rather than wait for an upgrade, we are committed to offering the first substantial upgrade for a nominal $9.95 to those who buy now. For those who have the time and ability to write their own "rulebase" using our special language, that option will also be made available soon for the same nominal price. Perhaps you can make a stronger "Rex" than I have done.

Rating the Commercial Chess Computers

by Larry Kaufman

It is becoming increasingly clear that the most reliable way to rate chess computers is by playing them against each other. A flood of results from human events around the globe has produced ratings that vary by huge amounts for the same model, even after correcting for differing rating levels in different nations. It seems that details of each test make a great difference--time limits, prizes, rules governing operator time, and how familiar the players in a certain area are with computer play. Despite this, the overall average results correlate very well with computer vs. computer tests. Even the one exception in past years, Novag, now seems to be no weaker against computers than against humans. Since the number of games needed for an accurate rating is much larger than even a C.R.A. test can generate, only computer vs. computer testing can offer reliable ratings. While I still feel that it tends to overstate rating differences a bit, this is only clear in the case of games played at shorter time limits than 40/2. The Swedish computer ratings published in "Ply" have consistently overrated new, stronger models, but they maintain that this is due to the growing familiarity with computer play. As evidence, they cite a recent retest of Super Constellation in an open tourney in Sweden where it performed at only 1555 in 9 games, far below the 1794 Swedish rating it earned in various human events several years ago. It would be very interesting to see Super Connie or another older machine rerated today in a long test against humans.

One point that has become clear to me is that the choice of time limit makes a significant difference in the relative ratings. It is not just that some machines play better at fast chess (esp. Novag) and some at slower time limits (all those with hash tables), but due to differing benefits of odd vs. even plies various models "jump" in strength at different levels. For example the Novag Super Expert B seems to be somewhat stronger than the Fidelity Mach III at Action chess level, while the reverse is the case at 40/2. As my own testing is primarily at Action chess to 60/2 levels, I am taking two steps to avoid letting the fast games dominate the ratings. First of all, I now use the variable K rule, similar to USCF, which counts games at 1 min (or game/1 hr) level as half games and action chess as quarter games. I then contract rating differences by 20% to avoid overrating the top models. Finally, I average my ratings with those published in the Swedish magazine "Ply" after first rating those games played in Sweden but not yet rated, and adding 220 to their ratings to adjust to USCF level. Since "Ply" games are at 40/2 I feel this averaging gives a fair picture of the relative strength of the machines over the full range of time limits ratable by USCF. I then adjusted the overall level of the ratings to match the average of the five models C.R.A.

rated in the past two years to their average C.R.A. rating.

I also include Eric Hallsworth's British list, for variety and because it includes many more games. His list covers the 1 to 3 minute per move levels, thus minimizing any odd/even ply effects. Since owners use a variety of levels, I feel that rating only 40/2 games, while more statistically correct than mixing levels, provides less useful information to the public. I am applying a contraction factor of 20% of the difference from 2000 to Eric's list as I did to my own. His own data shows all of the top 12 models to be overrated (vs. results against humans) without this adjustment. I then adding 120 to adjust for the rating difference between U.S. and Britain.   In cases where I, Eric, or Ply tested a model at different Mhz than is generally available, I adjust by the table in 87/88 CCR (p.51) and enclose in parens. Only results by CCR testers (myself, Mike Fay, and Max Harrell) and the "Ply" data, are included in the CCR ratings. Speed ratings are based on 15" per move or faster games, and are also tied to the level of CRA ratings, with a hundred points added across the board to conservatively approximate the superior performance of computers vs. humans at fast levels. SC means single chip model (no external ROM). "ss" means small sample.

The correlation between CCR ratings and Hallsworth's is surprisingly good, even considering that we both include "Ply" data. On the other hand, some surprisingly large differences between my own data and Sweden's need to be mentioned. In particular, my rating for the Academy was 123 points above Ply's adjusted rating of only 2111, while the adjusted Ply rating of 2295 for the Polgar is 150 above mine. Since the Polgar is just a mildly improved version of the Academy, this is very strange. The current Ply ratings have the Polgar 184 points above the Academy, which is ridiculous, while my own results have the Academy 89 points higher, which is also absurd. In my case the problem is just that my sample size is still too small on the new Polgar, but Sweden's sample of 63 games is too large for chance to explain the huge spread. As there has never been any reason to question the honesty of their testers I can only hope that the explanation will become clear in the near future. Perhaps the better opening book in the Polgar means much more than anyone imagines. If so, the use of narrow tournament books for testing may have to be outlawed, or "reversal" testing adopted. In any case, averaging the two ratings (mine and Ply's) gives a realistic value of 47 points for the improvement from Academy to Polgar, and gives me some confidence in the accuracy of the below CCR ratings. It should also be noted that the current spread between the ratings of the 16 and 32 bit Portorose is larger than the 60-70 one might expect from the speed ratio, and so will probably shrink a bit with more data. Another point to note is that the inclusion of Ply ratings has lowered the ratings of nearly all Novag models by 20 points or more since they invariably perform better at action chess or 60/1 levels than at 40/2. Finally, while I chose to omit models over $2500 from the list, I would expect the Portorose 68030 36 Mhz model to rate 120 points above the standard 32 bit model, while the Fidelity 68030 should rate about 60 points above the Mach IV.

Rating List

Computer	Mhz	CCR	Hallsworth	Speed
MephPortorose32bit	12	2362	****	2430
Meph Almeria 32 bit	12	2317	2310	2366
Fid Mach 4 68020	20	2314	229	2429
Meph Mega 4 Turbo	18	2288	****	2402
Meph Portorose 16bit	12	2271	****	2367
Meph Almeria 16 bit	12	2249	2245	2288
Meph Roma 32 bit	14	2242	2245	2366
Meph Polgar	5	2228	****	2180
Fid Elite 68000	16	(2223)	(2228)	(2328)
Fid Mach III	16	2215	2220	2320
Meph Mondial xl	12	2192	2184	2287
Novag Super Exp. B	6	2188	2186	(2243)
Meph Roma 16 bit	12	2185	2182	2281
Meph Academy	5	2181	2178	2285
Meph Mega IV	5	(2162)	2158	****
Meph Supermondial2	4	2139	2175	2211
Fid Mach II L.A.	12	2127	2161	2218
Saitek Maestro D	8	2114	2175	****
Meph MM4	5	2113	2134	2180
Novag Super Exp. A	6	2108	2131	2230
Fid Mach II B	12	2107	2139	2232
CXG Sphinx Galaxy	4	2089	2085	****
Fid Excel 68000 B	12	2080	2078	2131
Saitek Stratos + Corona	6	2050	2063	(2083)
Novag Expert	6	2049	2079	2156
Novag Expert	5	2037	2074	2141
Fid Designer 2100	5	2036	2062	2133
Saitek Simultano	5	2030	2019	****
Novag Forte B	5	2028	2063	2119
Fid Des. 2100 Disp.	6	2023	****	2128
Novag Forte (A)	5	2007	2053	2156
Saitek Turbostar 540	5	2006	(2046)	(2065)
Saitek TurboKing	5	1994	2031	2068
Fid Des. 2000	3	(1981)	(2007)	(2078)
RadioShack 2150	3	1977	(1989)	1890
Novag SuperConstel.	4	1966	1981	(2086)
Fid Excel Display	3	1954	1978	1998
Novag Super V.I.P.	sc	1950ss	****	****
Fid Des. 2000 Disp.	3	(1948)	****	(2053)
Mephisto Europa	sc	1863	1942	****
Novag V.I.P.	sc	1858	1915	1966
Saitek Cavalier	sc	1612ss	****	****

Making CCR

by Paul DeStefano

First, thank you for waiting for our Quarterly. Those of you who have dealt with Computer Chess Reports in the past undoubtedly recall that it is usually delayed beyond the intended release date. The assembling of this magazine is not a simple task, and we like to do it right.

All of us who work on the Quarterly obviously do not do it for a living, since we make no money on it, and therefore time to work on this magazine must be squeezed in while we are trying to make a living at our real jobs. For example, I work at ICD during the day when I'm not attending the local college, leaving precious little time for the Reports. I don't mean to make it sound like the Reports is not a real job. Let me explain what goes into it.

First and foremost there is our fearless leader Larry Kaufman. When ICD receives a new machine or even a bit of new information, it goes right to Larry. Larry then analyzes into the wee hours and calls the next morning with something ambiguous like "Well, it seems to be running slower than predicted in reversal, but problems are up. Of course, the hash tables may be causing the 75 point drop below a minute. The Megahertz increase is balancing out the opening book changes, so I'd say it's looking pretty good right now." It isn't for about another week that Larry's results start to make sense as he tests each machine in various tests which few but Larry can fathom.

Weeks pass. Larry has many new machines in his possession, a few major tournaments have passed, and he's starting the writing of the Reports. It's about this time that we already have a few dozen orders for the upcoming issue.

A few new machines are released, and we know we can't publish without them being mentioned - the release date is pushed back about two weeks.

When Larry has finally written up a good chunk of the Reports, he sends us the articles via modem (computer telephone connection), since Larry is way down in Florida, and we're way out on Long Island.

I then take all of the articles and put them in the computer (the one I'm typing on right now, as a matter of fact), be they articles by Larry (as most are) or by one of you or one of our other testers and reviewers. I check each one for spelling and grammar and punctuation, adding a word here, taking one out there. After appropriate corrections are made (and corrections ALWAYS have to be made), I print out the articles, re-proofread them, and give them to Steve Schwartz who proofreads my proofreading. All of the proofreading takes 3-5 days. During that time, Larry is still modeming more articles up to us, and it has become apparent that Larry has no need for sleep as he tests computers 24 hours a day.

Final corrections are made in the articles, and I ask Larry if any articles have to be in any order. If there is no special order, I lay out the articles (all on computer), and plan the way the magazine will physically look. If needed, Larry tells me of any position illustrations have to be done, and I do them, hoping all of the pawns are in the right place. If there's some extra space and I have the time, I'll draw a few doodles, illustrations and silly cartoons to flesh out the pages. The layout takes a few days, maybe a week, maybe more.

The magazine is then printed out on our laser printer, I cut and paste a few illustrations, Larry calls with a few minor, last second changes and additions, and it's off to the printer.

The printer has it for about two weeks. Larry, amazing analyst that he is, has by that time already completed more testing which will have to wait, and so he starts on the next Quarterly.

By this time, hundreds and hundreds of orders have been taken, and we've had to push back the release date about one month. Customers are calling, wondering where their issue is. Those who know us will sit back knowingly and wait - they know we'll come through. Soon, there are angry mobs in the streets all across the land, waiting for Computer Chess Reports, one month overdue (well, maybe not mobs).

The printer walks through the door with several thousand copies of the Chess Reports. There is much cheering and rejoicing. But it is not over yet. Geri Elman, ICD's computer record keeper, prints out a heaping stack of labels with all of your names and addresses on it. The next few days are spent furiously slapping labels onto envelopes, stuffing in Reports, stamping them and sprinting to the post office at 4:59 each day for 5:00 delivery.

The minute that the last Report is mailed out (which really never happens, orders come in constantly), and we think all the work is over, Larry calls and says that he's got the articles ready for the next issue, and he's going to send them up to us. It all starts over again with barely seconds to breathe. Who said it wasn't a full time job?

Games Section

Deep Thought vs. Kasparov match annotated by Mephisto Portorose 32 bit and Larry Kaufman

This two game mini-match at game/90 is significant because it was the first time a human World Champion played serious one on one games with a computer. Until now no computer was deemed strong enough to play the champ except in simuls, but since Deep Thought has won quite a few tournament games from IMs and even GMs Kasparov took it seriously and prepared for the games by playing over some 50 of Deep Thought's games. The match demonstrated that there is a huge gap between Kasparov and IMs, a fact that he also demonstrates often by mowing down IM level players in clock simuls. In my opinion, Deep Thought lacks the chess knowledge necessary to challenge the champ. If a program like Mephisto Portorose could run on special purpose hardware like Deep Thought, plus an opening book

suitable for championship play, Kasparov would face a serious challenge. There is no present prospect of this, but surely it will happen in a few years. Together with multi-processing, a computer should then be nearly unbeatable, even by the highest rated player in history.

Game 1, New York, October 22, 1989

White: Deep Thought   **Black: Gary Kasparov**

1	e4	c5
2	c3	This Alapin line is very popular for computers, because the normal open lines are too difficult for computers to handle well. Thus I chose it for the original Rex book which I gave to Deep Thought. It is apparently still being used.
2	...e6	
3	d4	d5
4	exd5	exd5
5	Nf3	Bd6
6	Be3	c4	ECO prefers 6 dxc5
7	b3	cxb3
8	axb3	Ne7
9	Na3		9 c4 was played in Short-Kasparov, while MP(Meph. Portorose) prefers 9 Bd3.
9	...Nbc6	
10	Nb5	Bb8
11	Bd3	Bf5	MP prefers 11 c4
12	c4	o-o
13	Ra4?	Qd7	Of course 13 o-o is better (MP&LK)
14	Nc3	Bc7	MP prefers 14 o-o
15	Bxf5	Qxf5	MP prefers 15 o-o
16	Nh4?	Qd7	Again, 16 o-o is better (MP & LK)
17	o-o	Rad8
18	Re1	Re8
19	c5	Ba5	19 Nf3 is better (MP & LK).
20	Qd3	a6	Now black stands better.
21	h3	Bc3	MP would avoid the pin by 21 Bd2
22	Qxc3	Nf5
23	Nxf5	Qxf5
24	Ra2	Re6
25	Rae2	Rde8	MP would play 25 Raa1
26	Qd2	f6
27	Qc3	h5	MP prefers 27 Rd1
28	b4	R8e7	MP plays 28 Qd2
29	Kh1	g5	MP plays 29 Qb2
30	Kg1	g4	MP likes 30 f3
31	h4	Re4	MP chooses 31 hxg4, but that seems
32	Qb2	Na7
33	Qd2	R4e6
34	Qc1	Nb5
35	Qd2	Na3
36	Qd1	Kf7
37	Qb3	Nc4	MP prefers 37 Bc1 or Bd2

38	Kh2	Re4
39	g3	Qf3	MP would avoid further weaknesses by 39 Kg1
40	b5	a5
41	c6	f5
42	cxb7	Rxb7	Black is now winning (MP)
43	Kg1	f4
44	gxf4	g3
45	Qd1	Rbe7
46	b6	gxf2
47	Rxf2	Qxd1
48	Rxd1	Rxe3
49	Rg2	Nxb6	and Black soon won. DT never had a chance to show off its awesome tactical prowess.

Game 2, New York, October 22, 198⁹

White: Gary Kasparov Black: Deep Thought

1	d4	d5
2	c4	dxc4
3	e4	Nc6	Again, straight out of the original Rex book. I selected this line instead of the usual 3 ... e5 or 3 ...Nf6 to surprise opponents, but 3 ... Nc6 is now 4 Nf3 Bg4 becoming common too.
5	d5	Ne5
6	Nc3	c6	ECO gives 6 Bf4 Ng6 7 Bg3 e5 unclea
7	Bf4	Ng6	MP would interpolate 7 ... Bxf3 first.
8	Be3	cd5
9	exd5	Ne5	MP likes Nh4, which may transpose.
10	Qd4	Nxf3
11	gxf3	Bxf3	White's compensation for the pawn is obvious enough, but computers prefe black because they tend to weigh pawn structure more heavily than piece activity.
12	Bxc4	Qd6?	MP plays 12 ... a6, which is obviously necessary to avoid loss of castling

DT seems not to value castling
This should be corrected.

13	Nb5	Qf6	MP prefers 13 ... Qd7.
14	Qc5	Qb6	MP likes 14 Bh1.
15	Qa3	e6	MP chooses Qd8.
16	Nc7	Qxc7
17	Bb5	Qc6	MP feels that black has almost enoug compensation for the queen. But it i not so.
18	Bxc6	bxc6
19	Bc5	Bxc5
20	Qxf3	Bb4
21	Ke2	cxd5
22	Qg4	Be7
23	Rhc1	Kf8
24	Rc7	Bd6	White's advantage is decisive, but M still thinks Black is not yet lost.

25 Rb7	Nf6
26 Qa4	a5
27 Rc1	h6
28 Rc6	Ne8
29 b4!	Bxh2
30 bxa5	Kg8

MP thinks Black is still alive if he plays 30 ... Bd6, but I don't agree.

31 Qb4	Bd6
32 Rxd6	Nxd6
33 Rb8	

and White soon won. Again, DT never had a chance. Unbooked gambits like Kasparov played are often effective against comps.

Microcomputer game

White: Mephisto Portorose 32 bit 12 Mhz Black: Fidelity Mach III   Time limit: 60/2 hours

1 e4 e5 2 Bc4 Nf6 3 d3 c6 4 Nf3 d5 5 Bb3 Bd6 6 Nc3 de4 7 de4 Na6 8 Be3 Qe7 9 Nd2 Bc5 10 Qe2 Be3 11 Qe3 Be6 12 Be6 Qe6 13 o-o-o Ng4? 14 Qg3 o-o 15 h3 Nh6 16 Nb3 Rfd8 17 f3 b5 18 Kb1 Rab8 19 Qf2 Qe7 20 g4 +- b4? 21 Na4 Kh8 22 h4 f6 23 g5 fg5 24 hg5 Rd1 25 Rd1 Ng8 26 Na5 Rd8 27 Rh1 Qg5 28 Qh2! Nf6 29 Nc6 Rd2 30 Qh3 Nc7 31 Nc5 Rg2 32 Rf1 a5 33 Nd3 Qd2 34 Qc8 Nfe8 35 Rc1 a4 36 Ncb4 Qh6 37 Ne5 Qe6 38 Qe6 Ne6 39 b3 cb3 40 ab3 h5 41 Rc8 Nc7 42 Nd5 Rg1 43 Kc2 Rg2 44 Kd3 Nd5 45 ed5 and White won easily.

Microcomputer Game

White:Mephisto Portorose 16-bit Black:Fidelity Mach III Time Limit:5 Second per move Average

(This game was annotated in computer-algebraic, just as it appeared on the screen of the Portorose, rather than standard notation)

1E2-E4 E7-E5 2 F1-C4 G8-F6 3 B1-C3 F6xE4 4 D1-H5 E4-D6 5 H5xE5+ D8-E7 6 E5xE7+ F8xE7 7 C4-B3 D6-F5 8 G1-F3 C7-C6 9 E1-G1 D7-D5 10 D2-D4 E8-G8 11 C1-F4 C8-E6 12 F1-E1 B8-D7 13 E1-E2 A8-E8 14 H2-H3 A7-A6 15 A1-E1 E7-F6 16 E1-D1 E8-E7 17 C3-A4 F8-E8 18 C2-C3 B7-B5 19 A4-C5 D7xC5 20 D4xC5 E6-D7 21 E2xE7 E8xE7 22 B3-C2 E7-E2 23 D1-D2 E2-E8 24 D2-D1 F5-H4 25 F3-D4 H7-H6 26 B2-B4 G8-H8 27 A2-A4 B5xA4 28 C2xA4 F6xD4 29 C3xD4 F7-F6 30 G1-F1 E8-E4 31 F4-C1 H4-F5 32 C1-B2 E4-E8 33 B2-C3 G7-G6 34 G2-G4 F5-H4 35 D1-A1 H6-H5 36 A4-D1 H5xG4 37 H3xG4 D7-C8 38 A1-A3 F6-F5 39 G4xF5 C8xF5 40 C3-D2 E8-E4 41 F2-F3 E4-E7 42 D2-G5 E7-H7 43 D1-E2 F5-C8 44 E2xA6 H7-A7 45 A6xC8 A7xA3 46 G5xH4 A3xF3+ 47 F1-G2 F3-F7 48 H4-G5 F7-C7 49 C8-A6 C7-A7 50 B4-B5 H8-G7 51 G2-G3 G7-H8 52 G3-G4 C6xB5 53 A6xB5 A7-A1 54 G4-F4 H8-G8 55 F4-E5 A1-G1 56 G5-D8 G6-G5 57 C5-C6 G5-G4 58 C6-C7 G1-C1 59 B5-D7 G4-G3 60 D7-H3 G8-F8 61 E5xD5 G3-G2 62 H3xG2 C1-C3 63 D5-D6 C3-C4 64 G2-C6 C4xD4+ 65 C6-D5 F8-G7 66 C7-C8(Q)

D4-F4 67 C8-C3+ 68 C3-D3+ H7-G7 69 D3-G3+ G7-H7 70 G3xF4 H7-G7 71 D8-G5 G7-G6 72 F4-F6+ G6-H7 73 F6-H6 MATE

The following games were played at the Harvard Chess Cup on October 29, 1989, organized by Christopher Chabris and Danny Edelman. Several mainframe computers were present, including Deep Thought, Hitech and Chip Test. Funding for the event was provided primarily by IBM. The following games were played against a Mephisto 32-bit Portorose, courtesy of ICD.

Microcomputer/Human Game

White:Mephisto Portorose 32-bit   Black:GM Michael Rohde   Time:Game in 30

Round 1

1 d4 Nf6 2 c4 e6 3 Nf3 Bb4+ 4 Bd2 a5 5 Nc3 0-0 6 e3 d6 7 Bd3 Qe7 8 a3 Bxc3 9 Bxc3 Nd7 10 0-0 e5 11 Bf5 Re8 12 d5 a4 13 Qc2 Nc5 14 Bxc8 Rexc8 15 Bb4 b6 16 Qf5 g6 17 Qc2 Re8 18 h3 Nfd7 19 e4 Nb3 20 Rad1 Ndc5 21 Rfe1 Qf6 22 Qe2 Re7 23 Qe3 Rae8 24 Bc3 Ra8 25 Qh6 Qg7 26 Qh4 Rae8 27 Re2 h6 28 Qg4 Rf8 29 Nh4 Nd4 30 Ree1 Kh7 31 f3 N(c)b3 32 Bxd4 exd4 33 Qg3 Ne5 34 Qf2 d3 35 Rd2 b5 36 cb Rb8 37 Qg3 Rxb5 38 Rb1 Qd4+ 39 Qf2 Qc4 40 Rbd1 Re8 41 Qg3 Qd4+ 42 Qf2 Qxf2+ 43 Rxf2 reb8 44 Rdd2 Rb3 45 g4 Nd7 46 Ng2 Ne5 47 Ne3 Kg7 48 Kg2 g5 49 Kg3 Ng6 50 Nf5+ Kf6 51 Nd4 Nf4 52 Nxb3 Rxb3 53 Rh2 Ke5 54 h4 Kd4 55 Kf2 Ng6 56 hg hg 57 Kg3 Ke3 58 Rd1 Nf4 59 Rhd2 Ne2+ 60 Kh2 Nd4 61 Kg3 Nxf3 62 Rf2 Nd4 63 Rfd2 Ne2+ 64 Kg2 Nf4+ 65 Kf1 Rb8 66 Rh2 Kxe4 67 Rc1 Rb7 68 Rc4+ Kxd5 69 Rxa4 c5 70 Rd2 c4 71 Kf2 Kd4 72 Ra6 d5 73 Rf6 Ke4 74 Rf5 d4   0-1 TIME. Michael Rohde had one minute remaining.

Microcomputer/Human Game

White:GM Maxim Dlugy Black:Mephisto Portorose 32-bit   Time:Game in 30

Round 3

1 d4 d5 2 Nf3 Nf6 3 Bf4 Bf5 4 e3 e6 5 Bd3 Ne4 6 0-0 Be7 7 c4 Nc6 8 Nc3 Nb4 9 Bxe4 dxe4 10 Nd2 Nd3 11 N2xe4 Nxf4 12 exf4 0-0 13 Ng3 Bg6 14 Qd2 Qd6 15 Rad1 Rad8 16 Qe3 c6 17 Rfe1 Bh4 18 d5 Bxg3 19 hxg3 ed 20 cd a5 21 a3 Bh5 22 f3 f5 23 Qb6 cd 24 Qxd6 Rxd6 25 Nxd5 Kh8 26 Ne7 Rdf6 27 Rd5 b6 28 g4 Bf3 29 Rxf5 Bb3 30 Rxf6 Rxf6 31 f5 Rc6 32 Re2 Rd6 33 g5 Kg8 34 g4 Kf7 35 Kf2 Rd7 36 Nf1 Rd3 37 Rd2 Bc4 38 Rxd3 Bxd3 39 Nd2 a4 40 Ke3 Bb5 41 Kd4 Be2 42 Kd5 b5 43 kd4 Ke7 44 Ke3 Bd1 45 Ne4 Bb3 46 Nc3 Bc4 47 Kd4 Kf7 48 Kc5 Bf1 49 Nxb5 Be2 50 Ne4

Bd1 51 Kd6 h6 52 gh gh 53 Ke5 Ke7 54 f6+ Kf8 55 Ke6 Ke8 56 f7+ Kf8 57 Kf6 Bb3 58 Nxb3 axb3 & Black Resigns

Microcomputer/Human Game

White:Mephisto Portorose 32-bit Black:GM Boris Gulko
Time:Game in 30

Round 4

1 e4 e6 2 Nc3 d5 3 d4 Bb4 4 e5 b6 5 Qg4 Bf8 6 Bg5 c6 7 Bb5 c6 8 Ba4 a5 9 a3 Ba6 10 Nge2 h6 11 Bh4 Ne7 12 0-0 Nf5 13 Rfd1 h5 14 Qf4 b5 15 Bb3 b4 16 ab ab 17 Nb1 Bxe2 18 Rxa8 Qb7 19 Rxb8+ Qxb8 20 Rd1 Bb5 21 Bg5 Qa7 22 c3 c5 23 Bc2 g6 24 Bxf5 gxf5 25 h3 Kd7 26 Rc1 bc 27 bc Bd3 28 Qd2 c4 29 Qb2 Kc6 30 Nd2 Qa3 31 Qa1 Rg8 32 h4 Kb7 33 Re1 Qxa1 34 Rxa1 Bg7 35 Nf1 Bxf1 36 Kxf1 Ra8 37 Rxa8 Rxa8 38 Be7 Kb7 39 Ke2 Bh6 40 Bf6 Kc6 41 Bg5 Bf8 42 Ke3 Kb5 43 Kd2 Ka3 44 Kc2 Ka3 45 g3 Ka2 46 Bc1 Be7 47 f3 f6 48 ef Bxf6 49 Bg5 Bg7 50 Bf4 Ka3 51 Be5 Bxe5 52 dxe5 Ka4 53 Kb2 Kb5 54 Kc1 Kc5 55 Kd1 d4 56 Kd2 Kd5 57 cd Kxd4 58 Kc2 Kxe5 59 Kc3 Kd5 60 Kc2 Ke5 61 Kc3 f4 62 gf Kxf4 63 Operator error forces Mephisto to resign, although the situation is hopeless anyway.

Microcomputer/Human Game

White:GM Lev Alburt   Black:Mephisto Portorose
32-bit   Time:Game in 30

Round 2

1	d4	e6
2	g3	Nf6
3	Bg2		Better not to block c pawn
	...Nc6	
4	Nf3	d5
5	0-0	Be7
6	c4	0-0
7	Nc3	dc
8	e3	Na5
9	Qe2	c5
10	dc	Qc7
11	e4	Bxc5
12	Bg5	Ng4	Risky - I prefer 12 Be7. White has enough compensation for the pawns.
13	e5	f6
14	ef	gf
15	Bd2	Bd7
16	h3	Ne5
17	Nxe5	Qxe5
18	Qxe5	fxe5
19	Ne4	Bb6
20	R(a)d1	Ba4

21	Rc1	Bc6
22	Bc3	Rad8
23	Rc2	Rf5
24	Re2	h6	Black has no way to keep the pawn. White's advantage is clear.
25	g4	Rf7
26	Bxe5	Rd3
27	Bc3	Kf8
28	Bxa5	Bxa5
29	Nc5	Bxg2
30	Kxg2	Rd5
31	Nxe6+		White should win, but it's not easy
	...Kg8	
32	f4	b5
33	Re4		Dubious, 33 f5 looks better
	...Bb6	
34	Rfe1	Rd2+
35	R1e2	Rfd7
36	Kf1	Rd1+
37	Re1	Ba5!	Regains the pawn
38	Rxd1	Rxd1+
39	Kf2	Bb6+
40	Kg3	Rd2
41	a4	a6
42	Kh4	Rxb2	Game now unclear
43	Kh5	c3
44	Kg6	Rb4!!	A fine deflection sac. White threatened knight to g5 with Mate to follow.
45	Nd4	Kf8
46	Ne6+	Kg8	e8 ...Ke7 47 Re1 unclear
47	Re5		Playing for the win
	...c2	
48	Rd5	C1=Q
49	Rd7	Qc3	Perpetual Check
50	Re7	Qc2+
51	f5	Rxg4+	Merely postpones the draw 1 move
52	hxg4	Qc6	Black must allow perpetual check to avoid getting mated.
53	Rg7+	Kh8
54	Rh7+	Kg8
55	Rg7+	Kh8
56	Rh7+	Kg8	An amazing finish with Black's extra Queen being insufficient to avoid the
	1/2	1/2	draw.

The Pawn Shop

The Pawn Shop was designed to be a trading post for all of you with extra computers that are no longer used, and those of you who would rather purchased a used computer than a full priced new one. If you would like an ad to appear in a future issue of CCRQ, these are the rules:

Up to and including the first 25 words costs $5.00. Include fifteen cents for each additional word. Type or neatly print the ad as you would like it to appear. Don't forget to include a way to be contacted. Telephone numbers are one word, PO boxes are two, and zip codes are free. CCRQ reserves the right to restrict ads from publication, as well as the right to use abbreviations. A check for the cost of the ad should be made out to CCD and sent to CCR Pawn Shop, c/o I.C.D. Corp., 21 Walt Whitman Road, Huntington Station, NY, 11746. CCRQ will not be responsible for typographical errors. Dealers excluded. No phone placements accepted.

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1989 ACM Tournament

by Larry Kaufman

Although only ten computers participated in this year's North American Computer Chess Championship in Reno, it was a very strong event. The five leading mainframe and special purpose chess computers were all present, plus three top micros and two pc programs. For the first time ever, Deep Thought lost a tournament game to another computer, namely the Mephisto Portorose 68030, running just slightly faster than the commercial 36 Mhz version now on sale for $10,000. This historic game is presented below. Despite this, Deep Thought shared first at 4-1 with HiTech, which lost only to Deep Thought. HiTech defeated Novag, Cray Blitz, Bebe, and Rebell (bit-slice Meph. Polgar), while DT defeated Sun Phoenix, BP, HiTech, and Rebell. Tie breaks have not been announced as of press time. Mephisto Portorose shared third place with perennial runner-up Bebe at 3-2. Amazingly, Mephisto beat both Deep Thought and Cray Blitz, which ran on an 8 processor $25,000,000 Cray YMP supercomputer, but lost to an 18 Mhz bit slice version of the 8 bit Mephisto Polgar. Mephisto also drew with Sun Phoenix, which uses a network of Sun computers and is often a title contender, and with Zarkov, a pc program but probably running here on a powerful Hewlett Packard computer. Bebe lost to HiTech and to BP, but beat Novag, Sun, and Zarkov. The bit-slice Mephisto Polgar was next at 2 1/2, having beaten BP and the Portorose and drawing with mighty Cray Blitz, losing only to the winners Deep Thought and HiTech. Cray Blitz will join the Polgar at 2 1/2 if it won a late finishing game with Sun, which would have 1 1/2, along with Novag (bit slice experimental program), BP, and Zarkov. None finished below 1 1/2, so presumably all entrants were of master strength. HiTech and the two Mephisto machines can all rejoice, while for the other 7 the results were not up to expectations.

White:Mephisto Portorose 68030 Black:Deep Thought

1 d4 d5 2 c4 dc 3 Nf3 Nf6 4 e3 Bg4 5 Bc4 e6 6 h3 Bh5 7 Nc3 Nbd7 8 g4 Bg6 9 Nh4 Be4 10 Ne4 Ne4 11 Nf3 Nd6 12 Bb3 Qe7?! 13 Bd2 h5 14 Rg1 hg 15 hg 0-0-0 16 Ba5?! b6 17 Bb4 a5 18 Bd6 Qd6 19 Qc2 Be7 20 0-0-0 Rh3 21 Nd2 c6 22 Rh1 Rdh8 23 Rh3 Rh3 24 Ne4 Qc7 25 Kb1 g5? 26 Rc1 Kb7 27 Ba4 Nb8 28 Nd2 Qd7 29 Bb3 Na6 30 Qe4 Nb4 31 g3 Nd5 32 Qg2 Rh8 33 Ne4 f6 34 Qg3 Rg8 35 Rh1 f5 36 gf ef 37 Qh3 Rf8 38 Nd2 Bf6 39 Qh7 Rf7 40 Qh6 Qe6 41 Qg6 Rg7 42 Rh7 Rh7 43 Qh7 Be7 44 Kc1 Kc7 45 Nf3 Kd8 46 Ne5 g4 47 Qh8 Kc7 48 Kd2 Kb7 49 Nc6! Qc6 50 Qe5 Nc7 51 Qe7 Qg2 52 Qh4 f4 53 ef Qe4 54 Qg4 Qd4 55 Kc1 Qf2 56 Qf5 Qf3 57 Kc2 Kc6 58 Qe5 Nd5? 59 Qe6 Kc5 60 Bd5 Qd5 61 Qd5 Kd5 62 Kd3 a4 63 Kc3 Kc5 64 f5
1-0