

People have been playing chess on microcomputers almost since the first micro was launched in 1975. The standard of these programs has steadily improved since 1977, as word of old and new techniques began to filter through to machine code programmers.

The advantages of programming chess for a micro are a fairly large computer memory (the early dedicated chess computers mostly used only 4K programs, the 4K chip having just come down in price), and the ability to provide a graphic display of the board and pieces. Unfortunately, chess requires the movement of black and white pieces on black and white squares and this requires some ingenuity in drawing the pieces, particularly on machines such as the Tandy TRS80 with their low resolution graphics.

The hardest part of defeating the early programs was trying to understand which piece was which. I have not forgotten the shock I once had when a "pawn" shot out across the board to capture my queen. The advent of colour computers considerably eases the problem — for example red and blue pieces can be placed on yellow and green squares.

One of the earliest chess programs, released for use on microcomputers in 1978, was Jennings's *Microchess*. Originally found on the Pet computer in 6502 code and on the Tandy TRS80 in Z80 code, the "1.5" version occupied some 4K of Ram and was written entirely in machine code. Before long, the "2.0" version, an improved 8K program, was released offering some additional book openings. In its various versions, *Microchess* has now sold well over 20,000 programs worldwide and can still be found for the Pet, TRS80, Apple and Atari 400/800 computers.

Microchess uses a limited look-ahead with up to eight levels of difficulty. Its standard of play is rather weak, but suitable for beginners.

In 1978, Dan and Kathe Spracklen invented an 8K program in Z80 code which they called *Sargon*. Within a few months it had come top of one of the early all-computer chess tournaments. The program was published in book form as *Sargon — a Chess Program* containing the full macro-assembly code. Various versions of *Sargon I* are now available in the UK.

The first version was for the ubiquitous TRS80, at about £15. It made sophisticated — and largely incomprehensible — use of the machine's limited graphics ability. *Sargon I* is also available for the Nascom II computer, complete with a special graphics Rom and the book for about £45. Yet another version can be obtained free of charge to members of the Yeovil Sharp Users' Group for the Sharp MZ-80K. This uses only upper and lower case letters to represent the pieces, which are lost in the large surrounding squares. My copy has a slight bug in the queen's pawn opening move.

Sargon I was also translated into 6502 code for the Apple computer, whose high-

res graphics provided one of the first easily understood chess boards on a screen.

Sargon I has six levels of play, each level representing one half move (one play) of search ahead. Level one takes 5-10 seconds per move, level two around a minute and level three up to five minutes. Level six is reputed to take up to 48 hours per move, and may be useful for postal chess.

There are only two book openings, P-K4 or P-Q4. The standard of play is good, even at the lowest level. In 1979 this was the strongest program commercially available.

The Spracklens followed up *Sargon I* with *Sargon II*. This has not been published in book form, but is licenced by Hayden to several software distributors. *Sargon II* embodies new methods of searching to deep levels and is much faster than *Sargon I*. There are seven levels, ranging from a few seconds to several hours for postal chess. Most of the levels operate well within the tournament limits of three minutes per move.

Sargon II was originally written in Z80 code, but was soon translated into 6502 code in which form it has done very well in numerous all-computer chess tournaments. *Sargon II* was the immediate predecessor to the famous *Sargon 2.5* chess computer and is thus a grandfather of the present series of immensely powerful commercial chess computers such as the *Champion Challenger* and *Morphy*.

Sargon II occupies less than 16K Ram and provides several standard book openings. Not only is it very fast, but its standard of play far exceeds that of the majority of other microcomputer programs. Another feature is the excellence of its endgame play, an area where the Spracklens seem to excel — and which is much poorer or missing altogether in many competitive programs.

Sargon II can be purchased on cassette or disc for the TRS80 Video Genie machines where, curiously, the graphics



Chequered n

John White looks at chess programs old

are even worse than for the *Sargon I*, and for the Apple where the graphics are excellent. A Rom version, with good colour graphics, is also available for the unexpanded Vic20. You should expect to pay between £20 and £30 for *Sargon II*.

Philidor Software, designers of the present commercial world chess computer champion, *Chess Champion Mk V*, wrote the *Pet Chess* program for the Pet computer, distributed by ACT Microsoft. The graphics are excellent and very clear, showing what can be done with a limited graphics set. The standard of play is also very good, particularly in the way the pieces are moved into attack positions and pawns are advanced.

Pet Chess plays remarkably like a human opponent. Against this must be set the fact that the program's playing strength is a little weaker than *Sargon II*, and it exchanges pieces at every opportunity.



CP Software's SuperChess for the ZX Spectrum.



nature of micro chess

...orms old and new for the Vic20, Pet, ZX81, TRS80 and Spectrum.

The king is a little static in the endgame where the program relies on the excellence of its pawn moves.

Pet Chess has a colossal book opening library of 3570 moves, including some unusual lines, and requires a 32K Pet to run in. *Pet Chess* is one of my favourite programs. Its strategic abilities enable it to mimic human play, compensating for its slight tactical inferiority to other strong programs. Expect to pay around £25 for a cassette or disc version for the Pet 3000, 4000 and 8000 series machines.

The strongest chess program for the ZX81 is Artic's *ZX Chess II*. Although this provides a screen display using letters for pieces, a special graphics version is available from QuickSilva for some £45, including the price of their special graphics Rom. These graphics are fairly simple but reasonably clear.

ZX Chess II is a 9K program which features a few shallow book openings and has extra endgame routines added to improve the play in this important area. There are seven levels of which five play within normal tournament speeds, looking up to eight ply ahead. Provisionally graded at BCF 110, this is one of the best of the non-professional programs. *ZX Chess II* can be purchased for £10.

Artic has also produced a version of *ZX Chess II* for the Sinclair Spectrum — £14 — requiring 48K Ram. The graphics are similar to those shown in the Sinclair Spectrum advertisement. A talking version is also being developed.

Spectrum-ZX Chess II made an appearance in the recent London all-computer championship where it was heavily beaten by dedicated units without being disgraced. All-computer matches measure little more than the depth of computer search, and a dedicated unit is bound to be faster than a domestic micro.

MikroGen's *Chess* — also sold under the Psion label — was one of the first for

the ZX81. At £6.50, this 10K program offers five levels with "look-ahead". There are no book openings, but the program will select randomly between moves of roughly equal merits. The playing strength is a little weaker than *ZX Chess II*. There is also a chess clock provided which can be used to determine the time taken by two humans over a game of chess.

The 48K Spectrum version of MikroGen's *Chess* is known as *Chess* when distributed by Psion, and *MasterChess* if distributed by MikroGen. Both programs are similar, but *MasterChess* has a slightly superior program and a wide range of colour options which can be selected for the board and pieces. There is no colour option for the Psion version. The following program description applies equally to the Psion and MikroGen versions.

The high-res graphics are excellent. It is extremely easy to set up positions, uncompleted games can be saved onto tape, the moves can be output onto the Sinclair printer and the program will recommend a move if requested, or allow you to change levels or colour at any time. There are 10 levels ranging from almost instant response to hours. Levels 4 and 5 approximate to tournament speeds of 2-3 minutes per move, although the program plays much faster in the endgame.

There is a limited range of shallow openings, some being a little eccentric. The midgame play is very sound and quite fast; *MasterChess* is a significant improvement on the ZX81 version. The endgame play is also pretty good, the king becoming very active. *MasterChess* is a strong program for the Sinclair Spectrum and can confidently be recommended. It costs £7.

David Horne's 2K chess program — £3.95 from Artic — is designed to fit into the unexpanded Timex-Sinclair 1000 for the US market. It can also be used in a ZX81 with 16K Ram. A 1K version is available at £2.95 for the ZX81.

To pack a complete chess program into 1K or 2K is an amazing feat, but when you have finished marvelling, what are you left with? The program packing means that the screen display is tucked into a small area of the screen and the pieces can be seen flashing from square to square as they test each move.

Move entry is a little weird. To enter the move E2-E4, you type in 2E4E which is shown on the screen as E4 E2. The board is also shown upside down for some undefined reason.

Facilities include three book opening strings of eight moves each and the ability to play as white or black, or letting the computer play against itself. In the latter case, the movement of pieces as the machine decides its moves makes the game impossible to follow.

The program does not look ahead and its play is correspondingly weak. I beat it in four successive games in 12, 11, 15 and 9 moves. There seems to be quite an emphasis on pawn moves at the cost of development. But the program will not accept illegal moves, and it is quite useful for beginners learning to play chess.

The *Boss* program has been released for the Vic20 with at least 8K Ram. Produced in West Germany by Kavan Software, and distributed in the UK by Audiogenic for £15, it is claimed to be stronger than *Sargon II*.

The board display uses excellent high-res graphics and is extremely clear. When playing black, the board is inverted and so is the notation, a useful addition. One feature I particularly liked — compared with *Sargon II* — is that moves were made and accepted or rejected with no fuss. *Sargon II* sees fit to make a pointless to-and-fro with each piece before moving it, *Boss* just moves the piece.

Facilities offered include 10 levels of which seven play within tournament limits. There are two clocks to record the time taken by each side and a good range of opening moves.

Boss uses a similar method of move assessment to *Sargon II*, as is now found in the best commercial chess computers. It has undoubtedly been written by professional chess programmers.

There is one important omission from this program — it is not possible to set up your own position. So, if you inadvertently type in a legal move such as h7-h5 instead of the intended a7-a5, you have no way of correcting the error. It is also impossible to set up endgame positions.

Conclusions

I can't imagine anyone buying a personal computer just to run a particular chess program — much better to buy a dedicated chess computer. Recommendations are of little value, since you are limited to the programs available for your computer. Instead, I shall just indulge myself with a list of personal preferences. I like (in alphabetical order): *Boss*, *PetChess*, *Sargon II* and *ZX Chess II*. ■