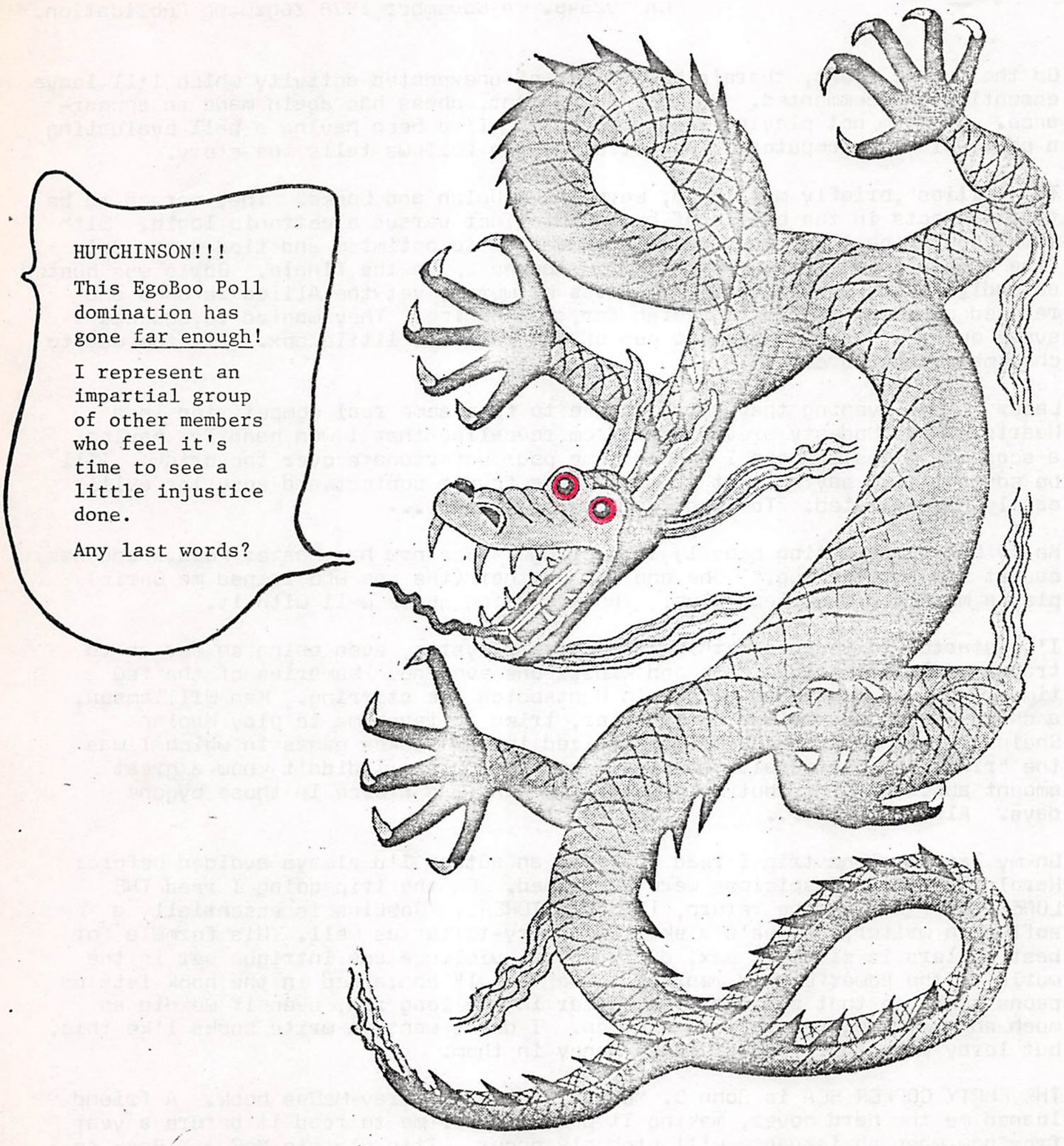

HUTCHINSON!!!
This EgoBoo Poll domination has gone far enough!
I represent an impartial group of other members who feel it's time to see a little injustice done.
Any last words?

MEL #67

+++Melikaphkhaz #67 is published for SFPA by Lon Atkins of 9942 Voyager Circle, Huntington Beach, CA 92646. A November 1978 Zugzwang Publication.

On the mundac front, there's been a lot of unexpected activity which I'll leave essentially uncommented. On the hobby front, chess has again made an appearance. No, I'm not playing in tournaments. I've been having a ball evaluating a chess-playing computer. The article which follows tells the story.

The "Allies",briefly mentioned, were Daves Hulan and Locke. They agreed to be test subjects in the battle of human intellect versus electronic logic. With some opening caution, they rapidly converted to optimism and tied poor Boris (the machine) in knots. Human sadism showed up in the finale. Boris was busted so badly he had nothing but poor moves or worse, yet the Allies refused and refused again my offers to resign for the machine. They wanted to squeeze every ounce of cruel enjoyment out of the pathetic little box. All the way to checkmate they forced it.

Later in the evening they got a chance to face some real competition in a Hearts game. Modesty prevents me from revealing that I won handily, having a score of minus 18 when I pushed some poor unfortunate over the brink. I'll be content with saying that it was a hard fought contest and superior skill easily predominated. Too bad Hank wasn't there.....

Kathy has been getting heavily into bridge. She now has Master Points and has caught the "bridge bug." She and her partner (the one who loaned me Boris) play a modified Blue Team Club. They're doing quite well with it.

I've started to learn something about their system, even going so far as to travel up to the bridge club and kibitz one evening. Memories of the few times I played duplicate bridge in Huntspatch are stirring. Ken Williamson, a chess Expert and bridge Life Master, tried to teach me to play Kaplan Sheinwold with him. We also specialized in low stakes games in which I was the "ringer". Low penalty doubles were our forte. I didn't know a great amount about bidding, but my play of the hand was fierce in those bygone days. Alas, no more...

On my latest plane trip I read books by an author I'd always avoided before: Harold Robbins. Suspicions were confirmed. On the trip going I read THE LONELY LADY and on the return, THE ADVENTURERS. Robbins is essentially a soft-porn writer, but he's a skillful story-teller as well. His formula for best sellers is simple: sex, dirty words, violence and intrigue set in the world of the powerful and wealthy. The "moral" contained in the book lets us peons conclude that our world is Better in the long run, even if we did so much enjoy taking a trip thru exotica. I don't want to write books like this, but lordy does there appear to be money in them.

THE EMPTY COPPER SEA is John D. McDonald's latest Trav McGee book. A friend loaned me the hard cover, making it possible for me to read it before a year from now when pb issuance will probably occur. It's classic McGee. Back to the simple days of the late-sixties and early seventies. A book that telegraphs as it goes, moralizes in short segments (as opposed to entire chapters in some recent McGees), and gives Travis the Right Girl for a concluding cruise on The Busted Flush. Lots of fun. If you're a fan of mindless classic McGee, don't miss this one.

Mailing comments: no time; perhaps next mlg. I'll make an effort.

Computers Must Register

Chess-playing computer programs which are proposed to play in USCF-rated tournaments must be evaluated by the USCF Ratings Committee. Programs which are accepted for rated play by the Committee will be issued a certificate. Any program change or computer change will require reregistration.

Any programmer who wishes to register his program should request the "Procedures for Computer Chess Program Registration" from the USCF National Office.

Programs may not be sold memberships at the site of the tournament.

CHESS LIFE & REVIEW/JUNE 1978

BORIS

My opponent is showing his thoughts. He examines castling but discards this solid move. Boris has little regard for king-safety. There's no room for such a notion in his programming, as he has less than 8K bytes of memory. That's squeezing it, for a chess playing program.

Boris is a little wooden box built by Applied Concepts of Garland, Texas. Inside him are a compartment for chess pieces and a closed metal-faced area containing a microprocessor and its adjuncts. Boris is on loan to me from a friend of Kathy's. My mission is to evaluate the playing strength of the beastie in terms of USCF rating scale. As a side benefit, I also get to investigate the programming aspects and the product design.

Evaluating Boris' playing strength is a bit more difficult than it first sounds. He knows no theory. Whereas humans taking up the game soon learn to develop pieces first, castle early if the flank looks safe, avoid doubled isolated pawns, etc., Boris appears to judge things on a strictly materialistic basis. He chooses randomly from among "equal" moves. Of course, he is infallible within his range of vision.

It is this range of vision, the number of moves which Boris can exactly calculate, that determines the tactical ability of the machine. Let's call this limit of calculation the "horizon" -- what is within Boris' horizon he executes perfectly; what is beyond his horizon is unknown and unthought.

Siegbert Tarrasch said, "Tactics is the most important element in the middle-game." It goes further than that. Tactics are the crowbars with which one gains an opening advantage. They are the spark of endgame lines. Tactics predominate. While strategy gives shape to the game, it is insufficient without tactics. Checkmate is not administered strategically.

So let's explore Boris' tactical vision by discovering more about his horizon. Calculating combinations of moves requires time. It takes longer to look two moves deep than it does one. Boris' designers have programmed him to look four moves deep, but they are aware that this requires lots of time. To address the problem of human impatience, Boris is provided with a settable timer. One may specify that Boris will consume from 1 second to 100 hours for each move he makes. The choice of time has a lot to do with the quality of his play.

The manufacturer tells us relatively little about Boris' horizon. I believe this is because the microprocessor in Boris is quite slow, and it therefore takes a long period to compute to a meaningful horizon. At 30 seconds, says the info booklet, "Boris will almost always find any mate in one."

I approached the problem via two-move chess problems. It's possible to construct a position and have Boris move. I went to my old friend THE FIRESIDE BOOK OF CHESS by Chernev and Reinfeld (Simon & Schuster). Two-movers were chosen and Boris was set to the task of solving them.

My first problem was to develop a scale to measure position complexity. The more moves there are in a position, the more difficult it is to analyze. I took a simple approach, counting the legal moves for white and the legal moves for black and declaring their product to be the complexity factor (CF).

For example, problem A has 31 legal moves for white and 3 for black. CF = 93.

My CF is an approximation, of course, but I assume that it's close enough for the rough quantitative study I was interested in. The possibilities change with each move, but my simple technique should calibrate Boris fairly well with only a few sample points.

The results of this study are depicted graphically in Figure I. The reader may be interested in solving the problems also, so I've given them as well. Try solving problem A in 4 minutes -- Boris' speed. It may give you some idea of how rapidly Boris computes relative to the human mind. When I called him "slow" earlier, I was speaking in computer technology terms.

Now that we have a calibration of Boris' time needs for an horizon of two moves, we can extrapolate to draw other conclusions. Take an actual game: what kind of complexity factor should one expect there?

In the opening setup, each side has 20 legal moves. The game thus begins with CF = 400. Boris would need about 10 minutes to see a full two moves deep at the onset. As the middle game develops, chances increase for action. Sampling the diagrams in a recent issue of Chess Life & Review, one finds that middle game positions typically have a CF ranging from 1800 to 2000. Boris would need about 60 minutes to cope in this area.

Nor is two moves a sufficient horizon for that huge class of "cheapo" combinations that run three moves deep. To take Boris three moves deep in the typical middle game you'd have to give him a full day to think. More about the ramifications of this later, when we talk briefly about programming techniques. For now, let's just say that Boris can practically be examined in short time frames of a few minutes per move at the best. As expected, he's error prone under those conditions.

Let's take a quick look at Boris set to 30 seconds and discover a few of his proclivities and quirks. As he is programmed to do unless directed otherwise, Boris very accomodatingly takes the Black pieces in this game.

1. e4	d5	*	Boris threatens to capture e4, but....
2. exd	e6	*	I take him first. He doesn't recapture with the Queen because he sees only as far as the "threat" Nc3. The high value of the Q makes Boris back off material parity.
3. dxe	Bxe	*	The right recapture.
4. Nf3	Nc6	*	Boris should develop his kingside instead, but he counters the influence of my N. No king-safety programming.
5. Bb5	a5 (?)	*	This pawn move is poor. It accomplishes nothing and leaves the pinning B comfortable.
6. oo	g5	*	Now that I've castled, Boris wants to attack. He sees g5 as a threat against the Nf3, but his king is terribly insecure.
7. d4	g4	*	So here's the expected follow-up. Boris doesn't know that he's merely driving my N to a super square.
8. Ne5	Qxd (?)	*	Now we see the effect of Boris' short horizon. He grabs the pawn, thinking that after QxQ he will recapture NxQ, winning a pawn. He "forgets" that the N is pinned.

9. QxQ Bc4 (??) * Only now does Boris notice the pin. Flustered, like a human, he allows mate in one. I know not why a machine would make this gross of a blunder unless he doesn't recognize mate until it's administered. A puzzle...

10. Qd7 mate.....

Boris flashes the message "congratulations" when he's mated. He has other messages which are displayed during the game. "Want a draw?" "Are you rated?" "I need help." "May I cheat?" "Very interesting." "I expected that." Etc.

This clever feature gives him personality. Boris is a well-crafted product. He's easy to use -- the data entry buttons are clearly marked and depress easily, the instruction booklet is clearly written, and the LED display is a good one. Packaging him in a wooden box (dark stain) gives him class that the other products don't have. One of the best features, as far as I'm concerned, is his display of moves as he examines them. Boris always lets you know what his number one choice of the moment is.

There's a capability to display the position, rank by rank. If one looks at a rank while Boris is thinking, one sees the pieces dance as Boris tries out the various legal moves. It's possible to deduce some things about his search pattern from this, the foremost being that he seems start a search pass with the Queen and get to other pieces on a geometric basis. If his time runs out, Boris hasn't had a chance to examine the moves of a group of pieces. This produces lopsided development. It also leaves him surprisingly vulnerable to tactical threats. In the short game which follows, Boris was given the white pieces and set to 100 seconds per move.

1. d4 Nf6
2. Na3 e6 * The only time Boris essayed this N development.
3. c3 b6 * I'm looking for pressure along the long diagonal.
4. h3 Bb7
5. f3 Bd6 * Boris reacts without awareness of king-safety. Notice how weak the dark squares on his K-side are.
6. Bg5 Bg3+ * Boris sets himself up by pinning with the Bishop. Watch the consequences of putting all those pawns on the same color. It's attack on the dark squares!
7. Kd2 Ne5+ * The pin means nothing when the N moves with check.
8. fxN QxB+ * The N dies for a cause.
9. Kd3 Bf2 * Threatens both Qe3+ and Bxe+.
10. Nf3 Bxe+ * If Boris takes the B, either Qe3 or Qf5 mates.
11. Kc4 Qd5+ * Cornering the King.
12. Kb4 Nc6+
13. Ka4 a6 * Threatening b5+ with mate on the next move.
14. c4 (?) Qa5+ * Boris can't avoid mate, but why make it easy? Nc2 was the try, hoping Black would miss Qa5+ followed by b5!
15. Kb3 Qb4 mate

It's not fair to Boris to show only his blitz losses. He's weak tactically, yes, but there's another dimension to chess -- strategy. I played a few games in which the object was to let Boris call the opening tune. Let's follow a showcase game for a while and see Boris play positionally..... In this one he had White at 30 seconds per move.

1. e3 Nf6 * Boris trys a random first move.
2. d4 g6 * Transition into an acceptable opening.
3. Nc3 Bg7 * Boris departs from Principles by blocking the c-pawn. If we are to completely believe Principles, the e-pawn's hesitancy was for the benefit of the d-pawn so that the

		* c-pawn could advance and challenge the center with a fortified d-pawn beside it. We'll see, however, that Boris is reacting to black's opening moves and has a new plan in mind.
4. e4 (!?)	d6	* Boris seizes the center! At the expense of a tempo, of course, but a move like this is startling.
5. Be2	Nbd2	* A quiet developing move; correct after giving up the tempo. Loss of a tempo for white, by the way, isn't so important when black plays a "waiting game."
6. a4	c5	* Black's reaction is perhaps not the best, however the moves white is choosing are aimed at keeping open chances on both wings. If black castles now, white can start a rapid pawn drive on the kingside because he's not yet placed his king knight. On the queenside, white's a-pawn is well placed to increase positional pressure if black reacts there. So... hit the center. At this point, Boris is playing the opening like a strong competitor.
7. Nf3	oo	* Black now feels quite safe in castling. Boris may have been better off with d5.
8. Bf1 (?)	...	* This blows it. True, the bishop has the same scope on either square, but development is interfered with. Boris now lost the tactical struggle which ensued.

Now we're ready to talk about rating. The games we've seen are a few of some 30 odd played with Boris on various time settings. I also matched Boris (at 213 seconds per move) against two friends who I'd guess play in the 1250 to 1350 rating range. They won eventually, although the issue was never in much doubt.

Boris plays on a sliding scale. As pieces come off the board, he improves. (There being less to analyze.) With this in mind, I rate him approximately as follows:

Seconds per Move	Rating Range
20	900-950
40	950-1050
60	1000-1100
300	1100-1200
600	1150-1250

Boris' rating tails over as time increases primarily because his tactics improve but his strategical concepts don't. In some senses, he actually becomes more vulnerable to traps -- he'll see just far enough to snare a little material at great cost to king-safety or positional structure. He's also oblivious to end-game considerations. It's possible to saddle him with untenable pawn weakness and then simply liquidate material. Boris will cooperate -- he likes capturing. When the material is gone, easy technique does the job. These are weaknesses in his programming, and with the limited resources within Boris I doubt if much can be done to improve the situation.

What Boris needs is a faster processor and more memory for special routines. Both of these are perfectly affordable with today's technology and I'm sure we'll soon be seeing more sophisticated machines. Boris, however, holds his own quite well against his contemporaries. Attached is an article on the Micro-processor Chess Tourney, in which Boris tied for second. Not bad....

In the area of programming there are a number of things which could be done to sharpen Boris. Recall that first game when Boris "forgot" that his knight was pinned and it cost the queen? He didn't really forget, of course; he was simple evaluating the sequence starting with the queen move. But, he had

already looked at the knight and seen that it could not move because it was pinned to the king. This fact could have been flagged, so that Boris knew enough to reverify the pin before selecting a sequence which counted on the knight moving.

That's a simple example of using information discovered during the cumulative evaluation to strengthen analysis of any given sequence. Perhaps of more use would be a "weighting" system to encourage proper development. A small bonus could be attached to moving pieces off the back rank. Not enough to skew his tactical response, but enough to prevent gaffs such as the one we saw in the last game presented (8. Bf1..). With that incentive, Boris might have developed his queen bishop.

Putting a premium on "hiding the king" would also help things. Boris madly dashes into battle with his king. This is fine in the endgame, but sheer suicide earlier. Such programming is highly tricky and I have no specific suggestions except the general ones of "castle early" and "don't move the pawns in front of your king unless forced to."

One other technique that could be applied to Boris if sufficient memory was available is the "specialized routine." Today, Boris evaluates every move at a given level before proceeding to the next (or so it would appear). For instance, if he is looking two moves deep into the possibilities for his quuen, he will have examined every legal move on the board two moves deep before he looks at queen moves three moves deep. Alas, many opportunities are missed this way.

The human brain is more selective. It rapidly selects two or three promising alternatives and spends time in exploring this limited set in some depth. If a line looks promising as the examination unfolds, the human player will follow the complications are deeply as feasible.

Boris could do this too. For example, here is a very simple version of a King Hunt routine. (A King Hunt is a mating attack, where all energies are directed into threats leading to checkmate.)

1. Examine all checks and mate threats.
2. Within this set of moves, examine all which lead to another check or mate threat.
3. If checkmate, exit to Gloat.
4. Repeat steps 2 and 3 until there are no more checks or mate threats, then return to the main program.

Notice how this routine narrows the focus of examination by placing a qualification on the type of moves which will be considered. Following such a plan, Boris could rapidly go 10 or 15 moves deep into a startling combination. Equipped with such a feature, he could be a terrible opponent for the average player. Notice that Boris fell prey to such a king chase in the second game presented.

I'd like to wrap up the article with some comments on the use of Boris. Despite the wide rating disparity (I'm rated 2132 currently), I enjoyed Boris a great deal. The evaluations were fun, true, but I liked playing chess with the wee beastie. Boris is capable of putting strong moves together, particularly in non-tactical situations. This is partly random, I know, but during that short section of the game I can think deeply into the position and get my "kicks" just as in an across-the-board game with a human opponent. Boris can serve as a practice vehicle with threats. Simply analysing a position is nowhere near

as much fun -- there's not even token resistance. Boris fulfills the human need to compete against resistance. (Our feral instincts are still lurking...)

A second way I found to use Boris is to remove both queens before the game begins. This is quickly done via the control panel. Two purposes are served: (1) Boris can see farther because the most powerful pieces are gone, and (2) the positions tend to be less tactical because queens figure prominently in many combinative possibilities. I recommend this method.

A third technique (which I never tried) would be to move once a day, giving Boris the rest of the time to think. He should be quite acceptable at this time rate.

Well, that's it. My thanks to Dr. R. Tewles for the loan of Boris.

1st Microcomputer Chess Tournament

The Convention Center in San Jose, California, in the heart of "Silicon Valley," was the site of the First Microcomputer Chess Tournament, held March 3–5, 1978. To be eligible to compete, the computer had to be small enough to attend (no phone hookups), have less than 32K bytes of memory, and be based on 8-bit microprocessor chips. The eleven entrants were divided into three classes: A, microcomputers with 8K or greater memory; B, those with less than 8K memory; and C, programs running in BASIC.

Some special rules were needed. The Tournament Director and his assistants had the power to adjudicate crashes, software lockups, games which would not terminate, or other special problems. In addition, some manual assistance and adjustments were allowed Class A entrants for en passant captures, castling, and the like.

And there were some unexpected problems. Two of the programs running in BASIC could not keep up with the 50/2 time limit, so they were scheduled to play each other in a single 9-hour match while other competitors were playing two 4-hour matches. Several matches had to be restarted when someone mistakenly pulled the plug, or notation was misunderstood, or for undetected move-entry errors.

The machines had a tendency to make repeated moves or perpetual checks even when they were significantly ahead in material. To prevent a draw in these instances, the programmers were allowed to adjust the machines by increasing or decreasing the look-ahead level or response time to try to get out of these lockup situations.

But the tournament has a significance which transcends all these problems. This was the first computer chess tournament without terminals and telephone hookups to remote, multi-million dollar machines. The most expensive computer entered cost around $6,000; the cheapest was a home-made metal box with $85 worth of parts. When it was all over, SARGON, a program for a Z-80 developed by a husband and wife programming team of Kathe and Dan Spracklen, finished in first place with a convincing 5–0 score. Interestingly, three Class B machines tied for 2nd overall with 3 points each, ahead of two Class A entrants.

A table of the standings appears below.

Entrant	Pts.	Class
1. SARGON	5	A
2. Commodore Chessmate	3	B
3. Boris	3	B
4. Chess Challenger	3	B
5. Processor Technology	2½	A
6. SD Chess	2	C
7. Tenberg Basic	2	C
8. Steve Stuart	1½	B
9. Compu-Chess	1½	B
10. Compucolor	1	A
11. Mark Watson	0	C

Of these, Boris, Chess Challenger, and Compu-Chess are off-the-shelf consumer products. Commodore Chessmate is a prototype of a consumer product that is expected to be available later this year. Steve Stuart is the $85 home-made metal box.

At the end of the competition, Alan Benson played a simultaneous exhibition against some of the computers and several real people as well. He scored 7–0 against the microcomputers. A selection of games appears below with a few notes by Mr. Benson. Report based on material submitted by Larry Wagner, Tournament Director, and Alan Benson.

SARGON–Steve Stuart, Queen's Pawn: 1 d4 d5 2 Nc3 Nc6 3 Bf4 Bf5 4 Nf3 Nf6 5 a4 (These Rook moves appeared often in SARGON'S programming. 5 e3 is normal.) 5 ... e5 6 dxe5 Ng4 7 h3 Ngxe5 8 Bxe5 Nxe5 9 Nxe5 d4 10 g4 Be6 11 Nb5 Bb4+ 12 c3 Bc5 13 cxd4 Bb4+ 14 Nc3 0-0 15 Bg2 c6 16 Qd3 Bxc3+ 17 Qxc3 Qd6 18 0-0 f6 19 Nc4 Qf4 20 e3 Qc7 21 Rfd1 Rad8 22 f4 Kh8 23 Kf2 a6 24 f5 Bg8 25 e4 Qf4+ 26 Ke2 Rfe8 27 Na5 Re7 28 Qc5 Rd6 29 Nc4 Rdd7 30 Nb6 Qg3 31 Rg1 Rd6 32 Nc8 Rd8 33 Nxe7 Bb3 34 Ra3 g5 35 Qb6 (very nice—attacks both Rook and Bishop) 35 ... Rd7 36 Rxb3 Qh2 37 Ng6+ hxg6 38 Kf2 Qf4+ 39 Ke2 Qh2 40 Kf2 Qf4+ 41 Ke2 Qh2 42 d5 (Sargon was allowed a three-move look-ahead here to avoid the repetition of moves) 42 ... gxf5 43 dxc6 Re7 44 Qd8+ Re8 45 Qxe8+ Kg7 46 Rxb7 + Kh6 47 Qh5 mate.

Processor Technology–Sargon, Center Game: 1 e4 e5 2 d4 Nc6 3 dxe5 Bb4+ 4 c3 Bc5 5 Nf3 Qe7 6 Bf4 Nh6 7 Bxh6 gxh6 8 Bb5 Rg8 (Why not simply 8 ... Nxe5?) 9 Bxc6 dxc6 10 0-0 Bh3 11 Nfd2 Rxg2+ 12 Kh1 Rg6 13 Re1 Bxf2 (Sargon misses 18 ... Bg2+ 14 Kg1 Bf3+ 15 Kf1 Rg1+! 16 Kxg1 Qg5+ 17 Kf1 Qg2 mate) 14 Rg1 Bxg1 15 Nc4 Rd8 16 Ncd2 b5 17 Na3 Qxe5 18 Qe2 Rg2 (overlooking 18 ... Rxd2!, for if 19 Qxd2 Qxe4+ 20 Qg2 Qxg2 mate) 19 Nf3 (An amazing defense: it protects the mating square h2 and also attacks SARGON's Queen) 19 ... Qe6 20 Qe1 Bc5 21 b4 Rxa2 22 bxc5 Bg2+ 23 Kg1 Bxf3 24 Rxa2 Qxa2 25 Qf2 Rd1+, White resigns.

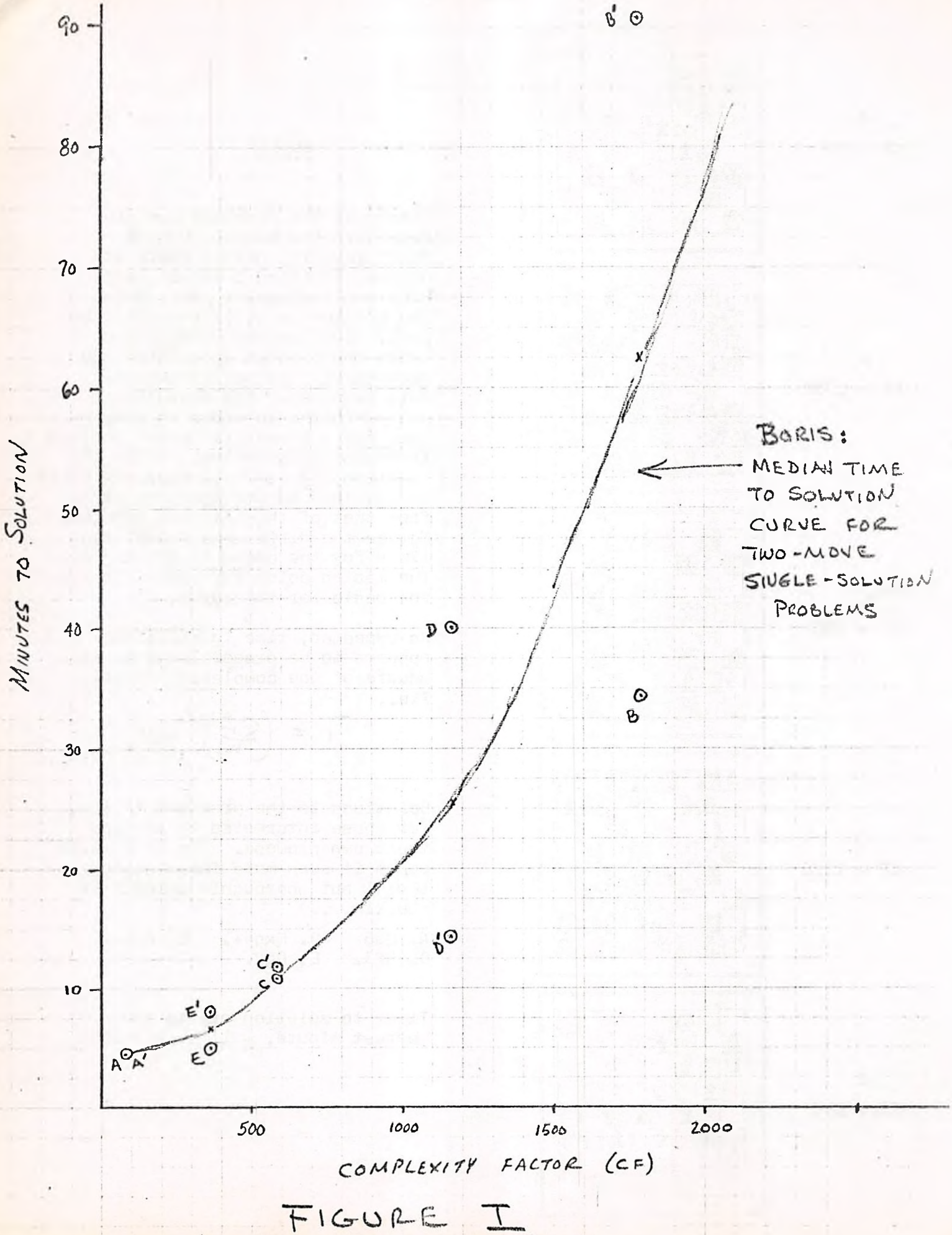
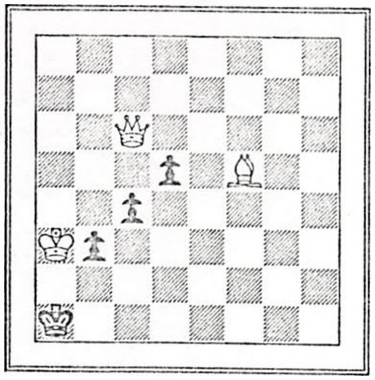


FIGURE I

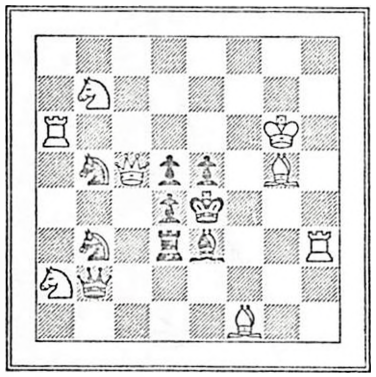
A

CF = 93



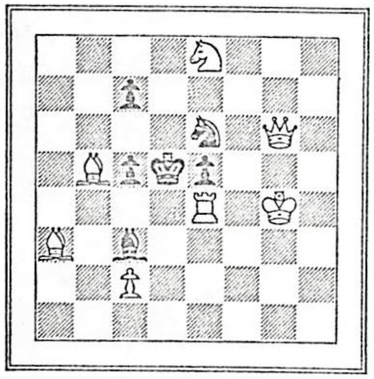
B

CF = 1798



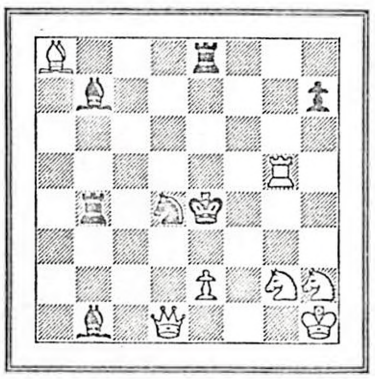
C

CF = 570



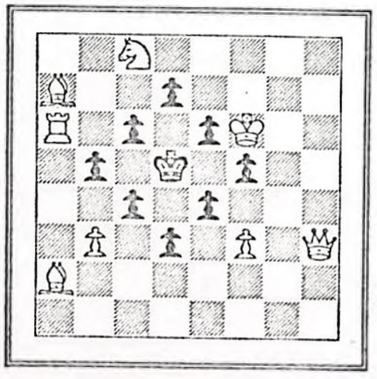
D

CF = 1156



E

CF = 370



NOTES

These are the problems used to establish the curve. On the graph you will notice pairs of points, labelled C and C', etc. Each unprimed point represents the problem as it is shown to the left. Each primed point represents the problem as rotated 180 degrees with colors exchanged. This axial symmetry operation was performed in order to compensate for a geometric search pattern in Boris' programming. After the rotation, Boris would approach piece evaluations in the opposite order from that of the original problem. Notice the difference in solution times for the pairs (excepting A). The median point for each pair was the basis for the curve.

As expected, time to solution appears to be proportional to the square of the complexity factor. I.e.,

$$T = \left(\frac{CF}{K_1}\right)^2 + K_2 .$$

Solutions to the problems follow, for those interested in testing their own prowess. Use of a clock makes it even more interesting. (Evial but thoroughly scientific chuckle....)

A. Qa8. B. Qxd4+. C. Rd4+.
D. Nf3. E. Qg2.

Times to solution are to the nearest minute, $\pm$ 1 for CF> 1000.

OPERATING MANUAL: PCC TELEPHONES

Purpose: To instruct employees in efficient use of the PCC telephone system.

Operational Definitions: This section contains operational definitions necessary to rapid comprehension of the Procedures section.

- Telephone - an electronic instrument capable of spanning great distances before emitting busy signals.
- Tie-Line - a dedicated line connecting DSOD telephones to the Bell System Customer Service desk.
- Transferred Call - most often represented as a background hum by the disconnected line.
- Ring - inexpensive replacement for Muzak.
- Dial Tone - an indication that the instrument is either (a) functioning or (b) malfunctioning.

Procedures: This section contains instructions to accomplish the most frequently exercised telephone operations.

Placing an Outside Call

1. Lift the receiver and wait for a dial tone.
2. Keep waiting; patience is a virtue.
3. Dial 9 for an outside line.
4. Dial the number.

Using the Tie-Line

1. Lift the receiver and lean back to wait for a dial tone.
2. Dial 65 to get the tie-line.
3. One of the following will occur:
   a. A busy signal; exit to wait-loop.
   b. A dial tone; hang up and try again.
4. In the event you get past Step 3, dial the extension you wish after the tie-line dial tone sounds.
5. Branch to Step 3.

Reaching the Operator

1. Lift the receiver and pray for a dial tone.
2. Dial O.
3. Count the rings. It may comfort you to know that a single operator is handling the switchboard for this facility. What agile fingers it must take to keep up with all the calls!
4. When the operator answers tell her: "The tie-line isn't working".

Motivating the Telephone

1. If the above procedures are not effective, it may be necessary to motivate the telephone properly. Remember, the telephone is a delicate instrument and requires proper treatment to make it responsive.
2. Hurl the telephone until it hits the wall or reaches the end of its cord.
3. While it lies stunned on the floor, kick it three or four times in the busy signal.
4. In a calm voice repeat several times "Naughty telephone!"
5. Return it to your desk and retry the procedure.