THE NEW CHAMPION

BY HAROLD BOGNER

The Sheraton Centre was jumping. Runners and revellers from the New York Marathon filled the huge second-floor ballroom, and the din carried into the chess tournament hall. Inside, play continued undisturbed, and international master Michael Valvo openly discussed the 11 games in progress with the throng of spectators, not worried about the players overhearing his advice.

Why? The "players" lacked the ability to hear — they were all computers.

Gathered from eight countries, they were vying for the fourth World Computer Championship. Some, such as the microprocessor-based program by IM David Levy, had been physically transported to the hotel, while others were represented only by a telephone line and a small terminal, linked to some of the world's most advanced machines.

Computer chess has come a long way since March 9, 1949, when Claude Shannon presented a paper entitled "Programming a Digital Computer for Playing Chess." More than three decades later, the defending champion had just established itself as the first certifiable master-level program. In the previous few months, Belle, of Bell Laboratories in New Jersey, had tied for top expert in the U.S. Open and shared first place in the New Jersey Open Championship, scoring well against frequent master competition (as described in the U.S. Open articles in October's Chess Life) and finally clearing the magic 2200 barrier.

Two other programs also appeared to be near the master level: Cray Blitz, of the University of Southern Mississippi, which had taken first in its state championship in 1982; and Northwestern University's Nuchess, a descendant of the second world computer champion, Chess 4.6. At speed chess, these programs are monsters, holding up well against 2400-players, and winning some games from 1Ms.

The giant mainframe computer programs do not represent the only area of progress. A micro program by Novag's David Kittinger won a game from a master at last summer's U.S. Open, and the programs of Fidelity Electronics' Dan and Kathe Spracklen are charting the 2000 mark. Fully one-third of this year's entries were running on tiny microprocessors.

Work on these and other experimental chess programs is expected to continue making great progress, and the attendees at this event included two honored guests whose mere presence, let alone participation, should be sufficient evidence of the field's potential. Former world champion Dr. Mikhail Botvinnik came to the United States for the first time in his life at the invitation of the organizers, both to watch and to discuss. He had also attended the second championship in Toronto in 1977, and vowed to return next time "as a competitor." While he is no longer guaranteeing that his former throne will soon be occupied by a machine (as he did 15 years ago), he is currently working to develop an "artificial grandmaster."

On the other hand, Dr. Hans Berliner, who has held the world correspondence championship, came to play. Although his Palms 2.0 (for "plays a terrible sort of chess") managed only 1½-3½, a backgammon program that he wrote defeated the world (human) champion in Monte Carlo in 1981. He gives himself until 1990 to produce the same result at chess.

The tournament was set up as a five-round swiss-system, one more round than in previous events, to make possible a clear winner from among the 22 programs. The games were played in the evenings and on Sunday afternoon, times when computers would be available more readily than during business hours. Some of the programs had as much computer time as they needed; others labored under four- or six-hour "curfews" that left the result up to the judgment of commentator and chief official Mike Valvo. Occasionally, a machine would "crash" or a phone line would get disconnected, so each team (computer and its programmers) was allowed 30 minutes each game when the clock could be stopped for such equipment problems. These brief "time-outs" featured frantic consultation, phone calling, and reprogramming by the operators, while the opposing team would wait, wondering if it might win on time. Fortunately, this never happened, though there were a few close calls.

ROUND ONE

The programs were seeded according to past results, to avoid early meetings by any of the favorites. The main contenders were considered to be Belle, Cray Blitz, and Nuchess, with Chaos (University of Michigan) and Bebe, a specially built chess engine, expected to be close. The first three all won rather easily. Belle trapped a piece on move six against the Canadian program Phoenix, while Cray Blitz lasted through British BCP's opening gambit (the latter "woke up" after playing a book variation to find itself a pawn down, but had no idea how to carry out its attack). And Nuchess won in 34 moves from Levy's Philidor.

However, Chaos was held to a quiet draw on the Black side of a Queen's Indian Defense by German Schach 2.7, and Bebe was felled by Austrian program Merlin, which magically won a pawn in an ending of Rook and double Knights. Advance 3.0 of England sprung 10. a4 against Floridian William Fink's Sfinx program's Marshall Gambit, so confusing the latter that it quickly gave up all its compensation and lost.

Fidelity's latest experimental version ground out a win against Dutch entry Pion, while Mephisto's latest micro notched a win on time on move 40 against its opposite number from Conchess, in a slightly better position. Conchess's team took the time forfeit very matter-of-factly — quite unlike a typical human opponent.

In the game between Avit (University of Alberta) and Ostrich (McGill University), the following amusing position was reached:

Avit's Bishop spent several moves on its precarious perch at a6, protected by the unusual influence of the Queen. Avit eventually realized its advantage. The two other games were quiet draws between Novag X (for "experimental") and West Germany entry Bobby, and Shy (Finland), and Palms 2.0.

ROUND TWO

As thousands of runners filtered into the hotel from the Marathon, Belle won a c3 Sicilian from Mephisto. Cray Blitz outsat Fidelity X (showing an excellent sense of humor. Fidelity Electronics President Sid Samole offered to sit in as operator in a hopeless endgame position, saying, "Here, I'll pull this out!"), and Merlin reached the following position as White against Nuchess:

Here, Merlin played 38. g4, and the programmers offered Nuchess a draw. Before Nuchess programmer David Slate could decide, TD Valvo said, "Wait a moment —
only the program can offer a draw. Otherwise, I have to approve the offer."

Ken Thompson, Belle's programmer and one of the senior computer chess players, ran over, crying out, "No GM draws!" Soon, it was discovered that although a pawn up, Merlín had its Rock on a5 trapped. Play continued, and Merlín, probably wishing it were Houdini instead, lost quickly.

Advance 3.0 defeated Awit on the Black side of an English to round out the perfect scores. Moving up to 1½-½ were Chaos, which outlasted Shy's Budapest Defense, Schach 2.7, which won an even Queen-and-opposite-Bishop endgame against Novag when the latter lost its Bishop, and Patso 2.0. Patso was winning easily when Bobby overstepped on move 37, but Berliner seemed very relieved, revealing that his computer was having problems, and that he feared he would lose through a program failure.

One amusing situation occurred after Bebe had won its game against Philidor. Tony Scherzer, Bebe's designer, and his crew usually sit through "her" games with a bottle of wine, taking Bebe's word for what's happening in the game. Scherzer explained to Levy that he never gets to go over the games his machine plays with "anyone who knows much about chess." He wanted Levy to tell him how Levy's program could have played better!

ROUND THREE

The leaders met, with Nuchess handing Belle her first loss in a computer chess competition since Ken Thompson and Joe Condon designed the special hardware version over five years ago. Cray Blitz easily outplayed Advance 3.0 on the White side of a Najdorf Sicilian. The Nuchess-Belle game has been annotated by Grandmaster Larry Christiansen, who gives us a sharp, objective criticism of the plusses and minuses of the machines' play.

RUy LOPEZ

W: Nuchess
B: Belle

Annotated by Larry Christiansen

1. e4 e5 2. Nf3 Nc6 3. Bb5 a6 4. Ba4
N6f 5. d4 exd4 6. 0-0 Be7 7. e5 Ne4 8.
Nxd4 0-0

Also possible is 8. ... Nxd4 9. Qxd4 Nc5 10.
Qg4 Kf8, with roughly even chances. The premature development of White's Queen is balanced by the disturbed situation of Black's King.

9. Nf5 d5?

This equalizes easily.

10. exd6 Bxf5 11. dxe7 Nxe7 12. Be3
Nxd5 13. Qf3 Nxc3 14. fxe3?

Anti-positional; 14. Qxe3 is correct, with White's pawn structure is blanched and his development lags.

14. ... Bg6 15. Qf4 b5

Stronger is 15. ... Qe7. Why not leave the Bishop on a4 on its bad square?

16. Bb3 c5 17. c4

Not 17. c3, when 17. ... c4 18. Bc2 Nxc3!, wins.

17. ... Qf6

Black's large advantage in development would be retained by 17. ... b4 or 17. ... Qe7.


21. Re1 Rad8 22. Nf1 Bd3?!

The positional 22. ... Nd7-e5 is the correct plan, followed by ... f6, and Bf7. With a firmly entrenched Knight on e5, Black would have a strategically won game.

23. Rad1 Ng4 24. Bx4!

The only move. Now White will activate his Knight on f1.

24. ... Rf8 25. Nd2 Ne5 26. Bb3 Rd6?!

Black retains an advantage with 26. ... f6, in order to meet 27. Nf3 with ... Bxc4. Now Black is lost!

27. Nf3 Nx f3 + 28. gxf3 f5

Else White would entomb the Bishop with e3-c4. And White wins on 28. ... Rg6 + 29. Kf2 Bf5 30. Rd5.

29. Rd2 Re8? 30. Kf2 f4

Black succeeds in rescuing the poor Bishop. Now 31. e4 Rd4 is quite tenable. But the ensuing King-and-pawn ending is hopeless.

31. exf4 Rxe1 32. Kxe1 Rd4 33. Kf2
Kf7 34. Ke3 Bxc4 35. Rxd4 cxd4 36. Kxd4 Bxb3 37. axb3 Kf6

White wins the race easily if he continues with either [I] 38. Kc4 Kf5 39. Kxb4 Kxf4 40.
Kc5 Kxf3 41. Kxa6 g5 42. b4 g4 43. b5 Kg2 44.
b6 Kxh2 45. b7 g3 46. b8 = Q or (II) 38.
Kc4 a5 39. Kfb5 Kf5 40. Kxa5 Kxh4, with a similar conclusion.

38. Ke4? g6 39. h4?!

White should play 39. Kd4 Kf5 40. Kc4
Kxf4 41. Kxb4 Kx f3 42. Ka5 g5 43. Kxa6 g4 44.
h4 h5 45. b5 h4 46. b6 g3 47. hxg3 hxg3 48.
Bxg2 Bxh2 = Q + Q, with a problematical Queen ending.

39. ... Ke6

Safer is 39. ... h6, to meet 40. f5 with ... 40.
g5, with prospects for a draw.

40. f5 + gxf5 41. Kd4 Kd6 42. f4 Ke6?!

A simple draw would be 42. ... a5. No progress is possible after 43. h5 h6 44. Kc4
Ke6.

43. Kc5 a5 44. h5 Kf7 45. Kd5! Kf6
Or 45. ... Kg7 46. Kf6 Kg6 47. Kxf5 Kxf5 48.
Ke6, and White Queens first.

46. Rd6 Kf7 47. Ke5 Ke8 48. Kxf5
Black resigns

In the meantime, Chaos moved up to 2½-½ and sole possession of third with a win over Patso 2.0. Playing Black against Novag, Awit's computer failed repeatedly in a piece-up endgame. Losing about an hour before finally coming back on line to finish the game.

ROUND 4

Nuchess and Cray Blitz slugged it out for the lead in a wild game, White giving up a piece for two pawns with 26. Nxc6. Nuchess picked up the d-pawn a while later, but didn't advance its pawns in a very useful manner. Both sides probably could have won at various points:

BIRD'S OPENING

W: Nuchess
B: Cray Blitz

1. f4 d5 2. Nf3 Nf6 3. c3 Bg4 4. b3
Qxf3 e5 9. Be2 0-0 10. 0-0 exf4 11. exf4
15. Nh1 Re4 16. g3 Qb6 17. Qf2 Na4 18.
Nc4 Qd8 22. Rfe1 Nfe4 23. Qg2 d2 24.

27. ... Nxb7 28. Qd5 + Rf7 29. Qf3 Kh8
30. Bd4 Rfd7 31. Kg2 R8b 32. b4 f5 33.
Be6 Re7 34. Re5 Ne7 35. Re3 Nfd6 36.
Bd5 Ne4 37. Rxd3 Rd7 38. c4 Nf6 39.
Re1 Nxf5 40. Rxd5 Rxd5 41. Qxd5
Qxd5 + 42. cxd5 Nde6 43. Re6 Ne4 44.
Re7 Ra8 45. d3 Nc4 46. d6 N5 47. Re5
Nf6 48. Rxf5 Rd8 49. Ra5 Rd7 50. d4
Ne4 51. Kf3 Nxd6 52. g4 Kg8 53. Rd5
Kf8 54. a4 Kf8 55. Rh6 h5 56. Rc5 Re7
57. d5 Ne4 58. Rcd8 Kg8 59. d6 Nd2 + 60.
Rh7 Ne4 + 64. Kf3 Nxd6 65. Rxb6 Ke7
66. Rh7 + Kf6 67. f5 + Rd5 68. h4 Nc4
69. Rd7 + Ke6 70. Kg7 Ne3 + 71. Kg3 a5
72. h5 Kd6 73. h6 Ra3 + 74. Kg2 Ra2 +
75. Kg3 Ra3 +, draw

Belle raised its score to 3-1, playing sharply, as Black, a computer version of an old opening favorite:

QUEEN'S GAMBIT DECLINED

D55

Exchange Variation

W: Chaos
B: Belle

1. d4 d5 2. c4 e6 3. Nc3 c6 4. cxd5 exd5

With Bebe defeating Fidelity, Advance 3.0 winning over Mephisto, and Awit downing Patsoc 2.0, the final round would be:
Belle [3] — Cray Blitz [3½]

ROUND 5
Belle and Cray Blitz played this long and involved game.

SICILIAN DEFENSE
2. c3 variation
W: Belle
B: Cray Blitz

Annotated by Larry Christiansen
1. e4 c5 2. c3 d5 3. exd5 Qxd5 4. Nf3 e6

5. d4 Nf6 6. Bd3 Also popular is 6... Be7, to discourage a future ... Qh5.

6. ... Nc6 7... 0-0 Be7 8. Be3 0-0?! Correct is 8... cxd4 9. cxd4 Bd7 10. Ne3 Qe6, with a very solid position.

9. dxc5 Rb8 Of course, 9... Bxc5 10. Bxh7+ leads to the loss of a pawn.


10. ... Bxc5 I would prefer something like 10. ... Ne5 11. Be2 Nc4 12. Bxc4 Qxc4 Nbd2 Qd5, with active play for the pawn.


14. ... Ne4! 15. Bb6! Rd7 16. Ba5? A time-waster that misplaces the Bishop to boot. Right is 16. Na3, when 16... Nd2 17. Rfd1 is harmless, and 16... Rb8 17. Rad1 reboounds to White's favor.

16. ... Bb7 17. Nc3 Ne5 Probably better is 17... Nxc3 18. Bxc3 c5 19. Rad1 Qc6 20. f3 Rxd1 21. Qxd1 Qc5, with only a minute edge for White.


19. ... Nd3 20. Qa4 The Queenside is not a happy hunting ground.

20. ... Qg4 Here 20... c5! seems very strong as well, activating the Bishop. Also, 20... e5? to support the advanced Knight with ... e5-e4, is ok.

21. ... Keeping the Bishop at b7 locked up, but exposing another weakness.

21. ... Qf5 22. b4? The losing move. White must play 22. Qc4, giving up a pawn to stop Black's threats. Then 22... Qc5 23. Rxd3 Rxd3 24. Qxd3 Qxc5 25. Qd7 gives White just enough play for the pawn.

22. ... Nh2 23. Rxd7 Nxa4 24. Nxa4 Qc2 25. Rb7 Qxa4 The unfortunate position of White's Bishop makes the game hopeless.

26. Ra1 e5! 27. f3 Qc2 28. Re7 Qd3 29. Rf1 Qd5 30. a3 g5 Black's technique is rather bizarre; 30... a6, followed by ... f6, ... Re8, ... e5-e4, should win very easily.

31. Re7 f6 32. Re7 h5 33. h3 Kh8 34. Kh2 a6 35. Re1 Re8 36. Re4 Better chances are offered by 36. a4, in order to play b4-b5 at some point.

36. ... f5 37. Re2 g4 38. hxg4 fxg4 39. fxg4 hxg4 40. Rf2 e4 41. Rf7 Qe5+! 42. g3 e3 43. Rh7 + Kg8 44. b5 cxb5 45. Be3 1 Qb2 + 46. Kg1 Qa1 47. Kg2 Qf6! 48. Kh2

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WORLD COMPUTER
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Rd8 49. Rhd7 Rf8
Black can win quickly with 49... Rxd7! 50.
Rxd7 Qf1, but "he" [?] prefers mate.
50. Rd6 Qb2 + 51. Kg1 Qb1 52. Kh2
Qc2 + 53. Kg1 Qf5!, White resigns

However, before that game was very far
along, it became clear that Bebe was going to
upset Nuchess. After a very drawish open-
ing, Nuchess blundered with 16... Kh6?,
whereas 16... f6 maintains equality. The
game was soon hopelessly lost.

PETROFF'S DEFENSE
W: Bebe
B: Nuchess

d5 5. Nxe5 Bf6 6. 0-0 0-0 7. Bxe4 dxe4 8.
Nc3 Qe7 9. Qh5 g6 10. Qe2 Bxe5 11.
dx5 Qxe5 12. Qxe4 Qxe4 13. Nxe4 Bf5

16... Kh6 17. Re2 Rae8 18. Nf6 Re6
19. g4 Bxc2 20. g5+ Kg7 21. Nd7 + Rxe5
22. Nxe5 Bf5 23. Rae1 Nb4 24. a3 Nd5
Nxb7 Bg4 29. b3 h5 30. Na5 Bd7 31. Nc4
Bc8 32. b4 Bb7 33. Na5 Ba8 34. Re2 Rf3
35. Re8 Nb6 36. Nc4 Rf8 37. Rxf8 Kxf8
Rc7 + Kh6 42. bxa5 Na4 43. Nd7 Bf3 44.
a6 g4 45. a7 Kg5 46. Rc8 Kh6 47. Ne5
Bd8 48. Rd8 Bd7 49. Nf7 + Kg5 50. N6
Bf3 51. Rd7 + Kg8 52. Nc4 Bc6 53. Ne5
Be4 54. Rd4 Nb6 55. Rxe4 Na8 56. Re4
Kg7 57. Rc8 Nb8 58. Rbb8 Na8 59. Rxa8
Kf6 60. Re8 Kg5 61. a8 = Q Kf5 62. Qa6
Kg5 63. Qxg6 + Kh4 64. Nxa4 hxg4 65.
Rh8 mate

With that result obvious, Cray Blitz's pro-
gramming team of Robert Hyatt, Bert Gower
[both from the University of Southern Missis-
pippi], and Harry Nelson [of Lawrence Livermore Laboratories] found themselves
presiding over another portion of this year's
breakup of AT&T — Cray Blitz was winning!
Being humans, they became exceedingly
nervous as they got closer to clinching the
world championship. They even went off to
call Cray Research in Minnesota, the site of
their computer, to have a backup computer
available in case of any machine failure.
Finally, after much worry, it was over.

At the awards luncheon, a fourth world
computer champion was crowned. Interna-
tional Computer Chess Association Presi-
dent Monroe Newborn presented the pro-
gramming team with a beautiful piece of
Steuben glass, and Dr. Botvinnik presented a
gift to the victors — two Soviet Georgian
drinking horns. (He explained that in
Georgia, drinks are consumed in their enti-
tirety before they are put back down —
thus the use of the horn instead of a glass.)
Although he did not retain Belle's title,
Ken Thompson was presented the 1983 Tur-
key Award and Software System Award for
his outstanding accomplishments in the field
of computer science, including the develop-
ment of the UNIX Operating System and the
programming language C.

The championship was sponsored by the
Association for Computing Machinery,
which holds the North American Computer
Chess Championship at its conference each
year. Assistance was provided by Texas In-
struments; Control Data Corporation,
SciSys; Hayden Software; Fidelity Elec-
tronics; Ralph Wagner, Myron Szold, and
the Baruch College Chess Club. Mike Valvo
did his usual outstanding job as commen-
tator [spelled occasionally by Boris Baczy-
skiy and Danny Kop] and as tournament
director (with assistance from Harold
Bogner). Outgoing ICCA President Ben Mitt-
man led the organization.

IMPROVE YOUR CHESS
CONTINUED FROM 40

Belle programmer Ken Thompson

gerous initiative as compensation. Joe
returned the piece, bringing about a Rook-
and-pawn ending that the computer
misplayed badly and lost.
Before the next game, Joe thought about
the computer's strengths and weaknesses
and cooked up the following opening experi-
ment.

HYPER HEDGEHOG
W: Sensory Challenger 9
Level 5, 2 minutes per move
B: Joseph Donath
20 years out of practice

1. d4 b6 2. c4 c6

Joe wants to see what the computer will do
when given a free hand in the center.
3. Bf4
All things being equal, most computer
chess programs will choose the most mobile
move. Here the Bishop attacks 11 squares
(not including the one it is on), while 3. Bc4
would attack 10.
3. ... d6 4. Nc3 e5 5. Nf3
Taken out of its opening library early, the
Challenger 9 continues to play classically.
For beginners, this is instructive. The com-
puter develops Knights to c3 and f3 and
brings its Bishops out to c4 and f4 or b5 and
g5. If it continues this classical development,
it will castle early, link up its Rooks,
and then look to develop some plan based on ex-
panding its space in the center or the wings.

This general plan of opening playing will
serve beginners well. But, of course, there's
more. Good development is fine, but good
development with a plan in mind is essential.
The computer lacks the ability to formulate
long-range plans and, that's what leads to its
downfall — to the downfall of many
beginners as well.
5. ... Be7
Joe finally develops a piece, and he even
has a "Bastman" attacking idea with ...
g7-g5. [Michael Basman, an international
master from England, regularly plays 1... g5
in international competition, but Joe didn't
know this.]
Joe would like to see how Challenger 9
will respond to this "naive" aggression. A
human 1770 player, recognizing that these
unrestrained Kingside pawn advances have
weakened Black's position, would play 10.
exf5 exf5 11. Ne2, with the plan of
blocking the position and infiltrating via
the dark squares.
10. exf5 exh5 11. 0-0! Bd6!
Moving his only developed piece again, but
a good move for its "psychological effect" —
that is, Black will learn more about his
opponent.
12. f3??
This highly weakening move on the Kings-
side allows Black to get away with his open-
ning experiment. Instead, 12. Ne2 is still
indicated.
12. ... Qh4
After 12 ... f4??, the computer is unlikely
to consider the piece sacrifice 13. fxg4?. Also
worth considering is 12. ... Bxh2 +.

For the purpose of this article, our opening
experiment ends here. Black went on to win
the game.

Of course, you should never play this way
against a human opponent. Black got away
with his experiment because he understood
the peculiarities of his machine. The point to
be learned here is that routinely following
the rules of good opening play won't auto-
matically win any games for you, although
they are a good foundation to build upon.

There are differences between quantita-
tive and qualitative development. That is,
it's not important how many pieces you
have developed, but how you have
developed them.

PHOTOGRAPH BY JUHA NURIA