

The
Twelvth
ACM's
North American
Computer Chess Championship

Los Angeles, California

November 8-10, 1981

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WELCOME AND OVERVIEW

In 1970, the ACM hosted the first major chess tournament for computers. Six programs competed, the audience laughed and the newsmedia filmed. But the tournament was a great success, first and foremost, as a scientific experiment. All the participants learned a tremendous amount during the few days of tournament. Even so, some criticized the organizers because it was not more of an experiment. Through the years we have tried our best to emphasize the importance of the experimental aspect of these tournaments. Every year, participants discuss their ideas and return the following year having incorporated some of what they learned into new programs. Panel discussions have always been an important part of our activities. The programs have improved and ideas continue to be exchanged. Papers by the programmers have appeared in many leading technical publications including the Proceeding of this conference. The programs are now playing at levels not thought possible just a few years ago by leading authorities in the world of artificial intelligence.

Recently, such tournaments have become commonplace around the world and a number of the entrants are commercially available products. We welcome them here - but with reservations. We hope they are coming to contribute rather than only to go away with a result that will help to promote their products. One of the big issues that must be faced at the ACM's Computer Chess Committee's meeting on Monday November 9th is how to handle commercial entries. In the recent Second World Microcomputer Chess Championship in Germany, the organizers separated commercial and non-commercial entries. We don't believe that this approach is appropriate for the ACM. We might take our cues here from the world of auto racing, where commercial products never compete in the Indianapolis 800 - only experimental models participate. You certainly can't get the tires used by Bobby Unser at the corner gas station. They cost too much to be sold commercially. Most of the companies marketing chess machines do have experimental models, and these should be the ones that participate here.

Sixteen teams were accepted into the draw this year because of the difficulty in deciding upon the twelve best. The programs that seem to be the weaker ones this year are all respectable performers, and it is very difficult to argue that one is better than the others. With sixteen teams in a four round tournament, the likelihood of ties for the first few positions increases. We hope that this doesn't become a problem - that we, in particular, wind up with a unique leader.

This year's tournament is the strongest ever held among computers. BELLE, current world champion among computers, is favored to retain the title, but will find stiff opposition from CRAY BLITZ, NUCHESS, CHAOS, and DUCHESS. BELLE and CRAY BLITZ have established master level ratings playing in human tournaments in the last year. The other four programs are all playing close to or at the Expert level. NUCHESS is the newest product of Northwestern University and is a rewrite (in FORTRAN) of the former world champion program CHESS 4.9.

This year's tournament will feature three special purpose computing machines. BELLE has special purpose hardware that functions alongside an LSI/11, BEBE is designed explicitly to play chess, and OSTRICH will run on a multiprocessing network of five NOVAS.

This year's tournament will also be the most international in flavor of all the ACM tournaments: ten programs are from the US, four are from Canada, one is from England and one is from Germany. Twelve of the systems participated in the Third World Computer Chess Championship in Linz, Austria, last year. The first five finishers in that event are here and improved!

The Second ACM speed chess championship will be held this year. Games will be worked in around the regular tournament games. CRAY BLITZ won the event last year, and BELLE was runner-up. Moves in these games will be made at an average rate one every five seconds. Robert Hyatt will serve as director of that event.

On Monday November 9th, from 4 p.m. to 6 p.m. two talks will be presented followed by a panel discussion hosted by the ACM Computer Chess Committee. Ken Thompson will discuss measuring program performance and some new ideas on alpha-beta search. Tony Marsland will survey modifications to the basic alpha-beta algorithm. Ben Mittman will serve as moderator.

Mike Valvo will serve as tournament director, taking over for David Levy, who served in that capacity for ten years but this year comes instead as a participant. Valvo is an International Master. Isaac Kashdan, Chess Editor of the Los Angeles Times, will be a special guest of the ACM Computer Chess Committee.

Through the years this tournament has been supported in part by grants from IBM. This year Amdahl Corporation also provide a generous grant to partially support this event. We wish to extend a special thanks to these two companies.

We want to express our thanks in advance to all the participants for their contribution to this event. We hope you have an enjoyable and rewarding few days.

Monroe Newborn
Ben Mittman

ACM Computer Chess Committee
October 27, 1981

IMPORTANT TIMES, PLACES, AND NAMES

Schedule:

Round 1: 1.00p.m. Sunday, November 8th
 Round 2: 7.30p.m. Sunday, November 8th
 Round 3: 7.30p.m. Monday, November 9th
 Round 4: 7.30p.m. Tuesday, November 10th

Location: The tournament will take place in the San Diego Room of the Bonaventure Hotel.

Admission: Free to all.

Special Event: The Second ACM Computer Chess Speed Championship. Games will be played around the regularly scheduled rounds of the main tournament. Robert Hyatt is the Director of the event.

Panel Discussion and Presentation of Papers: Monday November 9th, 4.00 - 6.00p.m.
 Ben Mittman will serve as moderator of a panel discussion on the current state of chess programs. Papers will also be presented by Tony Marsland (A survey of enhancements to the alpha-beta algorithm) and Ken Thompson (Performance measures of chess programs).

Awards Ceremony Luncheon: 12.00 noon Wednesday November 11th.

Tournament Director: Mike Valvo, International Master.

Tournament Organizing Committee:

Cary Duncan, Xerox Computer Services
 Robert Hyatt, University of Southern Mississippi
 Ben Mittman, Northwestern University
 Monroe Newborn, McGill University

Selection Committee: Ben Mittman, Monroe Newborn, Ken Thompson

SCORECARD

TWELVTH ACM NORTH AMERICAN
COMPUTER CHESS CHAMPIONSHIP

Team	Round 1	Round 2	Round 3	Round 4	Total Points	Final Place
1 AWIT						
2 BEBE						
3 BELLE						
4 BORIS EXPERIMENTAL						
5 CHAOS						
6 CHALLENGER EXPERIMENTAL						
7 CRAY BLITZ						
8 CUBE 2.1						
9 DUCHESS						
10 L'EXCENTRIQUE						
11 MYCHESS						
12 NUCHESS						
13 OSTRICH						
14 PRODIGY						
15 PHILIDOR						
16 SCHACH 2.5						

Team	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	pts	F
1																				
2																				
3																				
4																				
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SCORECARD Second ACM North American Computer Speed Chess Championship

Participants and Standbys in the ACM's Twelfth

North American Computer Chess Championship

- 1 AWIT, Tony Marsland, Dept. Computing Science, University of Alberta, Edmonton, Alberta T6G 2H1
- 2 BEBE, Tony Scherzer, 2117 Stonington, Hoffman Estates, Illinois 60195.
- 3 BELLE, Ken Thompson, Joe Condon (c/o K.T., BTL, Room 2C423, Murray Hill, New Jersey 07974).
- 4 BORIS EXPERIMENTAL, John Aker, Alan Mead, Terry Fredrick, John Jacobs, David Slate, Larry Atkin (c/o AM, Applied Concepts, Inc. 207 N. Kirby, Garland, Texas 75042).
- 5 CHESS CHALLENGER EXPERIMENTAL, Dan Spracklen, Kathe Spracklen, Ron Nelson, (c/o RN, Fidelity Electronics, 8800 N.W. 36th St., Miami, Florida 33178).
- 6 CHAOS, Fred Swartz, Mike Alexander, Jack O'Keefe, Mark Hersey, Victor Berman (c/o F.S. Univ. of Michigan Computing Center, 1075 Beal Ave., Ann Arbor, Mich., 48109).
- 7 CRAY BLITZ, Robert Hyatt, Albert Gower, Dave Darling, Derek Robb (c/o RH, Southern Station Box 5106, Hattiesburg, Miss. 39401).
- 8 CUBE 2.1, Lloyd L. Lank, James A. Lank, (c/o LL, 8500 Eby Overland Park, KS 66212).
- 9 DUCHESS, Tom Truscott, Bruce Wright, Eric Jensen, (c/o TT, Duke University Computer Center, Duke University, Durham, North Carolina, 27706).
- 10 L'EXCENTRIQUE Claude Jarry, 12385 Jeanne Mance, Montreal, Canada H3L 3C8.
- 11 MYCHESS, David Kittinger, 15144 Kittridge St., Van Nuys, California 91411.
- 12 NUCHESS, David Slate, William Blanchard, (c/o WB, Vobelback Computer Center, Northwestern University, Evanston, Illinois 60201).
- 13 OSTRICH, Monroe Newborn, School of Computer Science, McGill University, Montreal, Quebec, Canada H3A 2K6
- 14 PRODIGY, Jonathan Schaeffer, Howard Johnson, Dept. of Computer Science, University of Waterloo, Waterloo, Ontario, Canada N2L 3G1
- 15 PHILIDOR, David Broughton, Mark Taylor, David Levy, Kevin O'Connell (DL, 104 Hamilton Terrace, London NW8, England)
- 16 SCHACH 2.5, Matthias Engelbach, Zeppelinstr. 7, 7475 Meßstetten, Bindeswehrhochschule, Neubiburg, West Germany.

On Standby

- 1 MASTER CHESS TRIO, John Aker, Alan Mead, Terry Fredrick, John Jacobs, David Slate,
Larry Atkin (c/o AM, Applied Concepts, Inc., 207 N. Kirby, Garland,
Texas 75042)
- 2 CHESS CHAMPION MARK V, Mark Taylor, David Broughton, David Levy, Kevin O'Connell,
Mike Johnson, (c/o Sci Sys Computers Inc., One World Trade Center
Suite 7967, Newark, NY.. 10043)
- 3 CHATURANGA John Poduska, Jr., 5 Partridge Lane, Winchester, Mass. 01890)

PROGRAM INFORMATION

<u>Program</u>	<u>Authors</u>	<u>Computing System(Location)</u>	<u>Language</u>	<u>Program Size (Program, Data)</u>	<u>Book Size</u>	<u>Nodes/Sec.</u>
AWIT	Marsland	Amdahl 4/70 V7 (University of Alberta)	Algol W	300 Kb	10,000 pos.	177
BEBE	Scherzer	CHESS ENGINE (at site)	Assembly	16 K , 24 K	1,000 moves	25,000
BELLE	Thompson Condon	DEC LSI-11 with special purpose hardware (Bell Labs., Murray Hill)	C	90 Kb, 5 Kb	350,000 pos.	130,000
BORIS EXPERIMENTAL	Aker Mead Frederick Jacobs Slate Atkin	Great Game Machine (at site)	Assembly	36 K, 2 K	5,000 pos.	50 - 600
CHESS CHALLENGER EXPERIMENTAL	Spracklen Spracklen Nelson	6502-based system (at site)	Assembly	16 K, 8 K	5,000 pos.	1,000
CHAOS	Swartz Alexander O'Keefe Hersey Berman	Amdahl 4/70 (Sunnyside, California)	FORTRAN	800 K, 3 Megb.	10,000 pos.	20 - 100
CRAY BLITZ	Hyatt Gower Darling Robb	CRAY-I (Cray Research, Mendota Heights, MN)	FORTRAN IV	24 K, 512 K	30,000 pos.	3,000 - 8,000
CUBE 2.1	Lloyd Lank	CRAY-I (United Computing, Kansas City, MO)	FORTRAN	50 K, altogether	3,000 moves	1,000 - 4,000

<u>Program</u>	<u>Authors</u>	<u>Computing System (Location)</u>	<u>Language</u>	<u>Program Size (Program, Data)</u>	<u>Book Size</u>	<u>Nodes/Sec.</u>
DUCHESS	Truscott Wright Jensen	IBM 370 Series Computer (exact computer undecided)	Assembly	150 Kb, 1.5 Megb.	3,000 pos.	2,500
L'EXCENTRIQUE	Jarry	Amdahl 470 V7 (McGill University, Montreal)	Assembly	13 Kb, 10 Kb	3,000 pos.	20,000
MYCHESS	Kittinger	Cromemco Z-2D (at site)	Z-80 Assembly	224 Kb	9,000 pos.	70
NUCHESS	Slate Blanchard	CDC Cyber 176 (CDC Headquarters, Arden Hills, Minnesota)	FORTRAN	100 K, 400 K	5,700 pos.	1,200 - 2,200
OSTRICH	Newborn	5-Nova Multiprocessing System (McGill University, Montreal)	Assembly	10 K, 12 K/ machine	1,000 pos.	500
PRODIGY	Schaeffer Johnson	VAX or Honeywell 6 600 (undecided)	C	100 Kb, 10 Kb	1,500 moves	50
PHILIDOR	Broughton Taylor Levy Johnson O'Connell	Z-80 based microcomputer (at site)	Assembly	28 Kb, 16 Kb	4,000 moves	400
SCHACH 2.5	Engelbach	Burroughs B 7800 (Burroughs Corp., Detroit)	Algol	60 Kb, 1.8 Megb.	6,000 pos.	700 - 1,300

Standby entries:

MASTERCHESS	Aker	Great Game Machine	Assembly	28 K, 2 K	5,000 pos.	50 - 600
TRIO	Mead Fredrick Jacobs Slate Atkin					

<u>Program</u>	<u>Authors</u>	<u>Computing System (Location)</u>	<u>Language</u>	<u>Program Size (Program, Data)</u>	<u>Book Size</u>	<u>Nodes/Sec.</u>
CHES CHAMPION MARK V	Taylor Broughton Levy O'Connell Johnson	6502-based system (at site)	Assembly	28 Kb, 16 Kb	4,000 moves	300 - 350
CHATURANGA	Poduska	Apollo Computers	PASCAL	17 K, 2 K	200 pos.	1,000

HISTORY OF THE ACM TOURNAMENTS

<u>Year</u>	<u>City</u>	<u>Winning Program</u>	<u>Runner-up</u>
1970	New York	CHESS 3.0; Slate, Atkin, Gorlen, CDC 6400	The Daly Chess Program; Daly, King
1971	Chicago	CHESS 3.5; Slate, Atkin, Gorlen, CDC 6400	TECH; Gillogly, PDP 10
1972	Boston	CHESS 3.6; Slate, Atkin, Gorlen, CDC 6400	OSTRICH; Arnold, Newborn, D.G. Supernova
1973	Atlanta	CHESS 4.0; Slate, Atkin, Gorlen, CDC 6400	TECH II; Baisley, PDP 10
1974	San Diego	RIBBIT; Hansen, Crook Parry, Honeywell 6050	CHESS 4.0; Slate, Atkin, CDC 6400
1975	Minneapolis	CHESS 4.4; Slate, Atkin, CDC CYBER 175	TREEFROG; Hansen, Calnek, Crook, Honeywell 6080
1976	Houston	CHESS 4.5; Slate, Atkin, CDC CYBER 176	CHAOS; Swartz, Ruben, Winograd, Berman, Toikka, Alexander, Amdahl 470
1977	Seattle	CHESS 4.6; Slate, Atkin, CDC CYBER 176	DUCHES; Truscott, Wright, Jensen, IBM 370/168
1978	Washington	BELLE; Thompson, Condon, PDP 11/70 with special purpose hardware	CHESS 4.7; Slate, Atkin, CDC CYBER 176
1979	Detroit	CHESS 4.9; Slate, Atkin, Cahlander, CDC CYBER 176	BELLE; Thompson, Condon, PDP 11/70 with special purpose hardware
1980	Nashville	BELLE; Thompson, Condon, PDP 11/70 with special purpose hardware	CHAOS; Alexander, O'Keefe, Swartz, Berman, Amdahl 470

SPEED CHESS TOURNAMENTS

For the first time in 1980, a speed chess tournament was held along with the regular championship. CRAY BLITZ (Hyatt, Darling, Gower, Robb) was the winning program and BELLE (Thompson, Condon) was second.

**ACM's Eleventh
North American
Computer Chess Championship
Nashville, Tennessee**

October 26-28, 1980

	rate	perf	1	2	3	4	total
1 Belle	2150	2294	6+□	5+■	2+□	3+■	4
2 Chaos	1800	1952	7+■	9+□	1-■	5+□	3
3 Challenger X	0	1807	4=□	7+■	9+■	1-□	2½
4 BeBe	0	1762	3=■	6+■	5-□	9+□	2½
5 Cray Blitz	1850	1791	8+□	1-□	4+■	2-■	2
6 Mychess	0	1545	1-■	4-□	8+■	10+■	2
7 Ostrich 81	1450	1372	2-□	3-□	10+■	8=□	1½
8 Cube 2.0	0	1334	5-■	10+□	6-□	7=■	1½
9 Awit	1400	1337	10+□	2-■	3-□	4-■	1
10 Clash	1000	875	9-■	8-■	7-□	6-□	0

Swiss Tournament

	rate	perf	1	2	3	4	5	6	7	8	9	total
1 Cray Blitz	2000	2219	7+■	4+□	10+■	5+■	9+□	8+■	6+□	3+■	2+□	9
2 Belle	0	1922	9+□	8+■	6+□	3+■	5+□	7+□	4+■	10+□	1-■	8
3 BeBe	0	1722	8+□	6+■	5+□	2-□	7+■	4+□	10+■	1-□	9+■	7
4 Challenger X	0	1411	10=□	1-■	9+□	8+■	6+□	3-■	2-□	7+■	5=□	5
5 Ostrich 80	0	1294	6-■	10+□	3-■	1-□	2-■	9+□	7+■	8=□	4=■	4
6 Awit	0	1186	5+□	3-□	2-■	7-□	4-■	10+□	1-■	9+□	8-■	3
7 Chaos	0	1186	1-□	9+■	8=□	6+■	3-□	2-■	5-□	4-□	10=■	3
8 Mychess	0	1186	3-■	2-□	7=■	4-□	10+■	1-□	9-■	5=■	6+□	3
9 Cube 2.0	0	1074	2-■	7-□	4-■	10+□	1-■	5-■	8+□	6-■	3-□	2
10 Clash	1000	938	4=■	5-■	1-□	9-■	8-□	6-■	3-□	2-■	7=□	1

Speed Tournament

Speed Game

October 28

Cray Blitz — Belle 1 e4 e5 2 Nf3 Nc6 3 Bc4 Bc5 4 c3 Nf6 5 d4 exd4 6 cxd4 Bb4+ 7 Bd2 Bxd2+ 8 Nbxd2 d5 9 exd5 Nxd5 10 Qb3 Nce7 11 O-O O-O 12 Rfe1 c6 13 Rac1 b6 14 Ne5 Be6 15 Qg3 c5 16 dxc5 bxc5 17 Ne4 Qb8 18 Bxd5 Nxd5 19 b3 Nb4 20 Nxc5 Nxa2 21 Nxe6 fxe6 22 Rc6 Re8 23 Qh3 Qb4 24 Rd1 Qe7 25 Rd7 Qf6 26 Qg3 Re7 27 Rxe7 Qxe7 28 Qg4 Re8 29 Qc4 Qf6 30 f4 Qd8 31 Rxe6 Qd1+ 32 Kf2 Qd2+ 33 Kg3 Qe1+ 34 Kh3 Qc3+ 35 Qxc3 Rf8 36 Qd2 Nc1 37 Qxc1 Kh8 38 Qe3 Kg8 39 Nd7 g5 40 Nxf8 a5 41 fxe5 a4 42 Re8 a3 43 Qe6+ Kh8 44 Nxe7+ Kg7 45 Qg8# 1-0

Round 1

October 26

Awit — Clash 1 b3 e5 2 Bb2 Nc6 3 e3 Bc5 4 Nf3 d6 5 Bc4 Nf6 6 d4 exd4 7 exd4 Bb4+ 8 c3 Qe7+ 9 Be2 Ba5 10 O-O Nd5 11 Bc4 Nf4 12 Re1 Be6 13 d5 Kd7 14 dxc6+ Kxc6 15 Nd4+ Kc5 16 b4+ Kxc4 17 Nd2+ Kd5 18 c4# 1-0

Belle — Mychess 1 e4 e5 2 Nf3 Nf6 3 d4 exd4 4 e5 Ne4 5 Qxd4 d5 6 exd6 Nxd6 7 Nc3 Nc6 8 Qf4 Bf5 9 Bb5 Qe7+ 10 Be3 Bxc2 11 Bxc6+ bxc6 12 Nd4 Be4 13 O-O c5 14 Ndb5 Nxb5 15 Nxb5 g5 16 Qg3 Rc8 17 f3 c6 18 Bxg5 f6 19 Nxa7 Ra8 20 Rael Qxa7 21 Bxf6 c4+ 22 Kh1 Bg7 23 Bxg7 Rg8 24 Rxe4+ Kf7 25 Rfe1 Rxe7 26 Qf4+ Kg8 27 Re8+ Rxe8 28 Rxe8# 1-0

Ostrich 81 — Chaos 1 e4 c5 2 Nf3 Nc6 3 d4 cxd4 4 Nxd4 Nf6 5 Nxc6 bxc6 6 Nc3 e6 7 Be2 Bb4 8 Bd2 d5 9 f3 dxe4 10 Nxe4 Nxe4 11 fxe4 Qh4+ 12 Kf1 Qf6+ 13 Bf3 Ba6+ 14 Kf2 Bc5+ 15 Be3 Bxe3+ 16 Kxe3 Rd8 17 Qc1 Qg5+ 18 Kf2 Rd2+ 19 Qxd2 Qxd2+ 20 Kg3 Qxc2 21 b3 Qd2 22 Rhe1 Qg5+ 23 Kf2 Ke7 0-1

Cray Blitz — Cube 2.0 1 e4 e5 2 Nf3 Nc6 3 Bc4 d6 4 Nc3 Nf6 5 Ng5 d5 6 exd5 Nd4 7 d6 Be6 8 Bxe6 fxe6 9 dxc7 Qxc7 10 O-O 1-0

Challenger X — BeBe 1 e4 c5 2 Nf3 d6 3 d4 cxd4 4 Nxd4 Nf6 5 Nc3 g6 6 f4 Nbd7 7 Be2 Bg7 8 O-O O-O 9 Be3 a6 10 Rc1 e6 11 Nf3 Ng4 12 Qd2 Nxe3 13 Qxe3 Qc7 14 Rcd1 b5 15 Qd2 b4 16 Na4 Rb8 17 b3 d5 18 exd5 exd5 19 Qxd5 Qxf4 20 Bc4 Nb6 21 Nxb6 Qe3+ 22 Kh1 Qxb6 23 Ng5 Bb7 24 Qd7 Bc8 25 Bxf7+ Kh8 26 Qd6 Bf5 27 Bc4 Qxd6 28 Rxd6 Bc3 29 Bxa6 Bxc2 30 Rd7 Rxf1+ 31 Bxf1 Bg7 32 Bc4 h6 33 Nf7+ Kh7 34 Nd8 Bf5 35 Ne6 Bxe6 36 Bxe6 Ra8 37 Rd2 Ra6 38 Bc4 Ra7 39 Kg1 h5 40 Re2 Bd4+ 41 Kf1 Kg7 42 Re4 Bb2 43 Bd3 Bc3 44 Re2 Rf7+ 45 Rf2 Rd7 46 Bb5 Rd5 47 Bc4 Ra5 48 g3 Bd4 49 Rd2 Bc3 50 Re2 g5 51 Rf2 h4 52 g4 h3 53 Rf5 Rxf5+ 54 gxf5 Kf6 1/2-1/2

Round 2

October 26

Mychess — BeBe 1 e4 c5 2 Nf3 d6 3 d4 cxd4 4 Nxd4 Nf6 5 Nc3 g6 6 Be3 Bg7 7 Be2 O-O 8 Qd2 Nc6 9 O-O Bd7 10 Kb1 Re8 11 h4 Rc8 12 h5 Nxe5 13 Bxe5 gxe5 14 Nxc6 bxc6 15 Bxa7 Ra8 16 Bd4 Bxd4 17 Qxd4 Ra5 18 a4 Rg5 19 f4 Rxe2 20 Rdg1 Rxe1+ 21 Qxg1+ Kh8 22 Qd4+ f6 23 Rxe5 Rg8 24 b3 Rg3 25 b4 e5 26 fxe5 dxe5 27 Qc5 Bh3 28 Rh4 Qb8 29 Ne2 Rf3 30 a5 Bf1 31 Ng1 Rg3 32 Qe7 Rg7 33 Qc5 Rxe1 34 Qxg1 Qxb4+ 35 Ka2

Bc4+ 36 Ka1 Qa3+ 37 Kb1 Ba2+ 38 Ka1 Bb3+ 39 Kb1 Qa2+ 40 Kc1 Qxc2# 0-1

Cray Blitz — Belle 1 e4 e5 2 Nf3 Nc6 3 Bc4 Nf6 4 Ng5 d5 5 exd5 Na5 6 Bb5+ c6 7 dxc6 bxc6 8 Be2 h6 9 Nf3 e4 10 Ne5 Bd6 11 f4 exf3 12 Nxf3 O-O 13 O-O Qc7 14 d4 c5 15 Nc3 a6 16 dxc5 Bxc5+ 17 Kh1 Bb7 18 Qe1 Rae8 19 Qh4 Ne4 20 Bf4 Qc6 21 Nxe4 Qxe4 22 Bd3 Qe6 23 Qh5 Qb6 24 Qf5 g6 25 Qh3 h5 26 Bh6 Qxb2 27 Bxf8 Bxf8 28 Qd7 Re7 29 Qa4 Qc3 30 Qf4 Bd5 31 Bxa6 Qxc2 32 Rfc1 Qb2 33 Qd2 Qxd2 34 Nxd2 Bg7 35 Rab1 Bxa2 36 Rb6 Re6 37 Rb8+ Kh7 38 Bf1 Bh6 39 Rb2 Bxd2 40 Rxd2 Nb3 41 Rxa2 Nxc1 42 Rd2 Kg7 43 g3 Nb3 44 Rd5 Rc6 45 Kg2 Rc2+ 46 Kh3 Kf6 47 Rd6+ Ke5 48 Rd8 Nd4 49 Bd3 Rf2 50 Rc8 g5 51 Rh8 Nf3 52 Rxe5 f5 53 Bxf5 Kxf5 54 g4+ Kf4 55 Rh6 Rxe2# 0-1

Chaos — Awit 1 d4 Nf6 2 c4 g6 3 Nc3 d5 4 cxd5 Nxd5 5 e4 Nxc3 6 bxc3 Bg7 7 Bc4 c5 8 Ne2 O-O 9 O-O Nc6 10 Be3 cxd4 11 cxd4 Bd7 12 Rc1 Rc8 13 f3 Na5 14 Bd3 Qb6 15 Qd2 Rxc1 16 Rxc1 Rb8 17 d5 Qd8 18 Bxa7 Rc8 19 Rxc8 Bxc8 20 Bc5 b6 21 Be3 Be5 22 Qb4 Bc7 23 Qb2 Qd6 24 Bf4 Qc5+ 25 Kh1 Nc4 26 Qc3 Bxf4 27 Nxf4 b5 28 Be2 Qa3 29 Qxa3 Nxa3 30 Kg1 g5 31 Nd3 Kg7 32 Kf2 h6 33 Nb4 h5 34 Ke3 f5 35 Kd4 g4 36 Bd3 gxf3 37 gxf3 Kf6 38 e5+ Kg6 39 Nc6 Kf7 40 Na7 Bb7 41 Bxf5 Ba6 42 f4 Nc4 43 Bd3 h4 44 Nxb5 Bxb5 45 Bxc4 Bxc4 46 Kxc4 Ke8 47 d6 h3 48 Kd5 exd6 49 Kxd6 Kf7 50 e6+ Kg6 1-0

Ostrich 81 — Challenger X 1 e4 e5 2 Nf3 Nc6 3 Bb5 a6 4 Bxc6 dxc6 5 d4 exd4 6 Qxd4 Qxd4 7 Nxd4 Bd7 8 O-O Bd6 9 Be3 Nf6 10 Nc3 Ng4 11 Nf3 Nxe3 12 fxe3 Be6 13 Rfd1 O-O-O 14 Nd4 Be5 15 Nxe6 fxe6 16 Rxd8+ Kxd8 17 Nd1 Kc8 18 h3 Rd8 19 Kf1 Rd2 20 c3 Kd7 21 a4 Kd6 22 Rb1 Bg3 23 c4 Kc5 24 b3 Kb4 25 a5 c5 26 e5 h5 27 e4 Kxa5 28 Ra1+ Kb4 29 Rb1 Bxe5 30 Ne3 Kc3 31 Ke1 Kd3 32 Nd1 Bd4 33 b4 Rxe2 34 Rb3+ Kxc4 35 Ne3+ Bxe3 36 Rxe3 0-1

Cube 2.0 — Clash 1 e4 e5 2 Nf3 Nc6 3 Bb5 Bc5 4 c3 Qf6 5 b4 Bb6 6 d3 Nge7 7 Na3 d5 8 Bg5 Qd6 9 exd5 Nxd5 10 Nc4 Qe6 11 Bd2 e4 12 Ng5 Qf6 13 Nxe4 Qf5 14 Ned6+ cxd6 15 Nxd6+ Ke7 16 Nxf5+ Bxf5 17 Qf3 Ke6 18 Bxc6 bxc6 19 c4 Ne7 20 c5 Bc7 21 Qe3+ Kd7 22 Qd4+ Nd5 23 Qxg7 Kc8 24 O-O-O Bg6 25 Qf6 Kb7 26 b5 Bxh2 27 bxc6+ Kb8 28 Rxe2 Nc7 29 Qxg6 hxe6 30 Rxe8+ Ne8 31 Bf4+ Kc8 32 Rxe8# 1-0

Round 3

October 27

Clash — Ostrich 81 1 e4 d5 2 Nc3 Nf6 3 Nxd5 Nxe4 4 Nc3 Nxc3 5 dxc3 Qxd1+ 6 Kxd1 Bf5 7 Bd3 e6 8 Bf4 Bc5 9 Ke2 Bxd3+ 10 cxd3 Na6 11 Be5 O-O 12 b4 f6 13 bxc5 fxe5 14 d4 exd4 15 cxd4 e5 16 dxe5 Nxc5 17 Rd1 Ne4 18 Nf3 Nc3+ 19 Ke3 Nxd1+ 20 Rxd1 c5 21 Rd7 b6 22 e6 Rae8 23 e7 Rf7 24 Rxa7 Rxe7+ 25 Rxe7 Rxe7+ 26 Kd3 Ra7 27 h3 Rxa2 28 Ke3 c4 29 g4 b5 30 Ne5 Ra3+ 31 Ke4 Rxe3 32 f3 c3 33 Kd4 c2 34 Nd3 Rxf3 35 Ne1 Rf4+ 36 Ke5 c1(Q) 37 Nd3 Qe3+ 38 Kd6 Qxd3+ 39 Kc6 Rxe4 40 Kc7 Rg6 41 Kb8 Qd8+ 42 Kb7 Rb6+ 43 Ka7 Qb8# 0-1

Belle — Chaos 1 e4 c5 2 c3 Nf6 3 e5 Nd5 4 d4 cxd4 5 cxd4 d6 6 Nf3 Nc6 7 Bc4 Nb6 8 Bb5 e6 9 O-O Be7 10 exd6 Qxd6 11 Nc3 O-O 12 Re1 Bd7 13 Be3 Nd5 14 Ba4 Nxe3 15 fxe3 Rfc8 16 e4 a6 17 Bxc6 Rxc6 18 Ne5 Rc7 19 Re2 Be8 20 Nf3 Rac8 21 e5 Qb4 22 d5 Qc5+ 23 Kh1 exd5 24 Nxd5 Rd8 25 Rd2 Rcd7 26 b4 Qxd5 27 Rxd5 Rxd5 28 Qe1 Ba4 29 Qc3 Bc6 30 a3 Bg5 31 Qc2 Bf4 32 Re1 Rd3 33 Qc4 Bh6 34 e6 Rxa3 35 exf7+ Kf8 36 Qc5+ Kxf7 37 Qe7+ Kg8 38 Qxd8+ 1-0

Awit — Challenger X 1 b3 d5 2 Bb2 Nf6 3 e3 e6 4 Nf3 Bd6 5 Be2 O-O 6 O-O Bd7 7 Na3 Ng4 8 h3 Qe7 9 Nb5 Bxb5 10 Bxb5 Nf6 11 Ne5 c6 12 Be2 Nbd7 13 f4 Ne4 14 Nxd7 Qxd7 15 Qe1 Qd8 16 d3 Nf6 17 Bf3 Rc8 18 a4 Re8 19 Qg3 Bc5 20 Rfe1 Bb4 21 Re2 Be7 22 Rae1 Rf8 23 Kh2 Bb4 24 c3 Bd6 25 e4 dxe4 26 dxe4 Bc5 27 b4 Be7 28 Qf2 c5 29 Rd2 Qc7 30 e5 cxb4 31 exf6 Bxf6 32 cxb4 Qxf4+ 33 g3 Qxb4 34 Bxf6 gxf6 35 Rb2 Qxa4 36 Bxb7 Rc4 37 Ra2 Qb4 38 Rxa7 f5 39 Qe3 Rc2+ 40 Kg1 Rb8 41 Bf3 f4 42 gxf4 Rc3 43 Qe5 Rxf3 44 Kg2 Qxf4 45 Qxf4 Rxf4 46 Kg3 Rc4 47 Re7 Rb3+ 48 Kh2 Rc2+ 49 Kg1 Rg3+ 50 Kf1 Rf3+ 51 Kg1 Rxb3 52 Rf1 Rg3+ 53 Kh1 Rh3+ 54 Kg1 h5 55 Rxf7 Rg3+ 56 Kh1 h4 57 R1f4 e5 58 Rf8+ Kg7 59 R8f7+ Kg6 60 R4f6+ Kh5 61 Rh7+ Kg5 62 Rhh6 e4 63 Rhg6+ Kh5 64 Rh6+ Kg4 65 Rc6 Rxc6 66 Rxc6 0-1

BeBe — Cray Blitz 1 e4 c5 2 Nf3 e6 3 Be2 Nc6 4 O-O Nf6 5 Nc3 Be7 6 d4 cxd4 7 Nxd4 O-O 8 Bf4 Nxd4 9 Qxd4 d6 10 e5 dxe5 11 Qxe5 Qb6 12 Rab1 Bd7 13 Rfd1 Bc5 14 Bg3 Rac8 15 a3 Rfd8 16 b4 Be7 17 Bf4 Be8 18 Rxd8 Bxd8 19 Rb3 Bc7 20 Qg5 Bxf4 21 Qxf4 Rd8 22 Bf3 Bc6 23 Bxc6 Qxc6 24 Kf1 b6 25 a4 Qe8 26 a5 e5 27 Qc4 Rd2 28 axb6 axb6 29 Rb2 e4 30 Ra2 h6 31 Qc7 Qe6 32 b5 Ng4 33 Ke1 Rxf2 34 h3 Rxb2 35 hxg4 Rg1+ 36 Kf2 Rxb2 37 Ra8+ Kh7 38 Ke3 f5 39 Rb8 f4+ 40 Kd4 e3 41 Qc8 f3+ 42 Kd3 0-1

Cube 2.0 — Mychess 1 d4 Nf6 2 c4 g6 3 Nf3 e6 4 Qa4 Nc6 5 a3 a5 6 Nc3 Bg7 7 e4 Ng4 8 h3 Nh6 9 d5 Ne7 10 dxe6 fxe6 11 Bg5 Nf7 12 Bh4 O-O 13 Rd1 Ne5 14 Nxe5 Bxe5 15 Bd3 d6 16 Bc2 c5 17 Qb3 Qc7 18 Nb5 Qd7 19 Qd3 Ra6 20 b3 Kg7 21 Bg3 Bxg3 22 fxg3 d5 23 exd5 exd5 24 cxd5 Nxd5 25 Nc3 Re6+ 26 Ne4 Re5 27 Rf1 Qe7 28 Rxf8 Qxf8 29 Kd2 Bf5 30 Qf3 Qe7 31 Kc1 Rxe4 32 g4 Bxg4 33 hxg4 Qg5+ 34 Kb1 Rd4 35 Rxd4 cxd4 36 Bd3 h6 37 Bc4 Nc3+ 0-1

Round 4

October 28

Clash — Mychess 1 e4 e5 2 Bc4 Nf6 3 Nc3 Nc6 4 d3 Bc5 5 Qf3 d6 6 Be3 Bg4 7 Qg3 Bxe3 8 Qxe3 Nd4 9 Rc1 O-O 10 Nce2 b5 11 Bb3 Nxb3 12 cxb3 c5 13 Nf3 Qa5+ 14 Nc3 b4 15 Nd5 Nxd5 16 exd5 Qxa2 17 Rc4 f5 18 h3 Bxf3 19 Qxf3 a5 20 O-O Qxb2 21 Qd1 a4 22 bxa4 Qa2 23 Qf3 Qxa4 24 g4

fxg4 25 Qxg4 Rf6 26 Qe4 Rf4 27 Qe3 Rxc4 28 dxc4 Qa3 29 Re1 Qxe3 30 Rxe3 Ra3 31 Kg2 Rxe3 32 fxe3 b3 33 Kf3 b2 34 h4 b1(Q) 35 e4 Qd3+ 36 Kf2 Qxe4 37 h5 Qxc4 38 Kg3 g6 39 hxg6 hxg6 40 Kg2 e4 41 Kg3 Qxd5 42 Kh4 e3 43 Kg3 Qf5 44 Kh2 e2 45 Kg3 c4 46 Kg2 c3 47 Kg3 c2 48 Kg2 d5 49 Kg3 d4 50 Kg2 d3 51 Kh2 d2 52 Kg3 c1(R) 53 Kg2 d1(R) 54 Kg3 Rg1+ 55 Kh4 Qg4# 0-1

Challenger X — Belle 1 e4 e5 2 Nf3 Nc6 3 Bb5 a6 4 Ba4 Nf6 5 O-O Nxe4 6 d4 b5 7 Bb3 d5 8 dxe5 Be6 9 c3 Bc5 10 Be3 Bxe3 11 fxe3 Rb8 12 Nbd2 Nc5 13 Qe1 Nd3 14 Qg3 O-O 15 Rab1 Qe7 16 Bc2 Qc5 17 Ng5 Nxe5 18 Nxh7 Rfd8 19 Nf6+ Kf8 20 Bxd3 Nxd3 21 Nh5 g6 22 Nf6 Bf5 23 Qg5 b4 24 Nh7+ Ke8 25 Nf6+ Kf8 26 Nb3 Qc4 27 Nh7+ Ke8 28 cxb4 Rxb4 29 Nf6+ Kf8 30 Ng4 Rd6 31 Nh6 Qe4 32 Rxf5 gxf5 33 Qg8+ Ke7 34 Qxf7+ Kd8 35 Nxf5 Rc6 36 h4 Rc2 37 Qf8+ Kd7 38 Qf7+ Kc8 39 Qg6 Kb7 40 Na5+ Ka8 41 Qxa6+ Kb8 42 Qg6 Ne5 43 Qg8+ Ka7 44 Rf1 Rxb2 45 Kh1 Rxb2 46 Nc6+ Nxc6 47 Qa8+ Kxa8 48 a4 Kb8 49 a5 Ka8 50 a6 Ka7 51 h5 Kb6 52 a7 Rg1+ 53 Kxg1 Qg2# 0-1

Chaos — Cray Blitz 1 d4 d5 2 c4 e6 3 Nc3 Nf6 4 Bg5 Be7 5 e3 O-O 6 Nf3 h6 7 Bh4 Ne4 8 Bxe7 Qxe7 9 cxd5 Nxc3 10 bxc3 exd5 11 Qb3 Rd8 12 c4 dxc4 13 Bxc4 Nc6 14 Be2 Rd6 15 O-O Be6 16 Qc3 Rad8 17 Rab1 Bxa2 18 Rxb7 a5 19 Bd3 Bd5 20 Rfb1 a4 21 Qa1 Ra8 22 Nd2 Rdd8 23 Nc4 Qe6 24 Rxc7 Qg4 25 Bf1 Na5 26 Nb6 Nb3 27 Qa2 Be4 28 Nxa8 Bxb1 29 Qxb1 Rxa8 30 Bc4 Nxd4 31 exd4 Qxd4 32 Bxf7+ Kh8 33 g3 Rf8 34 Qf5 Qa1+ 35 Kg2 Qb2 36 Bg6 Qb8 37 Qd7 Qa8+ 38 Kg1 Rg8 39 Ra7 Qf3 40 Rxa4 Qc3 41 Qd5 Rf8 42 Kg2 Qb2 43 Bf5 Qb8 44 Bd3 Qb2 45 Rf4 Rg8 46 Qe4 1-0

BeBe — Awit 1 e4 c5 2 Nf3 d6 3 d4 cxd4 4 Nxd4 Nf6 5 Nc3 a6 6 Be2 e5 7 Nf3 Nc6 8 O-O Be7 9 Be3 Bd7 10 Nd5 O-O 11 Bb6 Qc8 12 Nxf6+ gxf6 13 c3 f5 14 Bd3 Bd8 15 Bxd8 Qxd8 16 exf5 d5 17 Bc2 Qb6 18 f6 Qb5 19 Qd2 Rfc8 20 Qh6 1-0

Ostrich 81 — Cube 2.0 1 e4 c5 2 Nf3 Nf6 3 Nc3 Nc6 4 Be2 d6 5 O-O Bg4 6 h3 Bxf3 7 Bxf3 g6 8 Re1 Bh6 9 e5 Nxe5 10 Bxb7 Rb8 11 Ba6 Qa5 12 Be2 O-O 13 d3 Bxc1 14 Qxc1 Nc6 15 Rb1 Nd4 16 a4 Qb4 17 Kh1 a5 18 Qd1 Qb7 19 b3 Qb4 20 Ne4 Nxe4 21 dxe4 Nxe2 22 Rxe2 c4 23 Re3 Rfc8 24 Qf3 Rb6 25 Qg4 Rcb8 26 Qh4 Qd2 27 Rbe1 Qxc2 28 R1e2 Qd1+ 29 Re1 Qd4 30 bxc4 e5 31 Rc1 Rb4 32 Ra3 Rxc4 33 Rxc4 Qxc4 34 Ra1 f5 35 f3 fxe4 36 fxe4 d5 37 Qe1 Qxe4 38 Qxa5 Rb1+ 39 Rxb1 Qxb1+ 40 Kh2 Qb7 41 Qd8+ Kg7 42 a5 Qf7 43 a6 Qf4+ 44 Kh1 Qf1+ 45 Kh2 Qxa6 46 Qe7+ Kh6 47 Qxe5 Qd3 48 Qf4+ Kg7 49 Qe5+ Kg8 50 Qe8+ Kg7 51 Qe7+ Kh6 52 Qh4+ Kg7 1/2-1/2

1. The tournament is a four round Swiss style tournament with trophies to be awarded to the winner and runner-up.
2. The first and second rounds will be played Sunday, November 8th, at 1 p.m. and 7:30 p.m. The third round is scheduled for Monday, November 9th, at 7:30 p.m., and the fourth round on Tuesday, November 10th, at 7:30 p.m.
3. Unless otherwise specified, rules of play are identical to those of regular "human" tournament play. If a point is in question, the tournament director has the authority to make the final decision.
4. Games are played at a speed of 40 moves per player in the first two hours and then 10 moves every 30 minutes thereafter.
5. The tournament director has the right to adjudicate a game after four and one half hours of total elapsed time. The adjudication will be made on premise that perfect chess will be played by both sides from the final position.
6. The order of finish of the participants will be determined by the total number of points earned. If two teams have an equal number of points, the sum of opponents' points will be used as a second factor. If a tie still remains, the opponents' opponents' points will be used as a third factor.
7. If a team encounters technical difficulties (machine failure, communications failure or error, or program failure) during the course of a game, the tournament director may allow them to stop their clock as long as necessary, but not to exceed 20 minutes, in order to restore their system. At the end of at most 20 minutes their clock will be started again. The tournament director may grant a team permission to stop their clock at most two times during the course of a game. These two time outs can be taken consecutively. In addition a 10 minute delay at the beginning of each round is allowed.
8. There is no manual adjustment of program parameters during the course of a game. In the case of failures, the program parameters must be reset to their original settings if it is at all possible. Information regarding castling status, en passant status, etc., may be typed in after a failure. If at any time during the course of a game the computer asks for the time remaining on either his or his opponent's clock, this information may be provided. However, the computer must initiate the request for information.
9. At the end of each game, each team is required to turn in a game listing to the tournament director.
10. Participants are required to attend a meeting at 12 noon on Sunday, November 8th, for the purpose of making any last minute rule changes that may be necessary.
11. The programs that participate must be the work of the individual submitting the entry. No individual can submit two programs.
12. Each entry is a program. A listing of the program should be available on demand to the tournament director. The program can be run on any computing system.
13. Each game is officially played on a chess board provided by the Tournament Organizing Committee. A electronic chess board used by one side can be substituted if the other side is agreeable. The official clock is provided by the TOC. If both sides are agreeable, another clock can be used.

1981 SPEED TOURNAMENT RULES

1. The tournament is a round-robin with each entry playing one game with each of the other entries.
2. In order to complete the tournament on time, each entry should complete one-third of the games on each day of the tournament. The tournament director may disqualify an entry for failing to meet this quota unless specific arrangements are made to catch up.
3. Games are played at a rate of 60 moves in 5 minutes of CPU time. After 60 moves, each player will receive an additional 5 minutes of time.
4. There will be no adjudications. All games must be played to mate unless both players agree to a draw after move 60.
5. Thinking on the opponent's time will not be allowed. If a program cannot meet this requirement, it may not be entered in the speed tournament.
6. Each program must display the time used for each move, and must be able to display the time used for the game. If this cannot be done, the program may not be entered in the speed tournament. Note that this display must be hardware. Verbal or other types of time calculation are not acceptable.
7. Inability to play standard chess will result in the program being dropped from the tournament. Examples of this include not allowing under-promotion of pawns, not allowing more than one queen and not allowing en passant pawn captures.
8. Games may be suspended and finished later if they conflict with the regular tournament, or if hardware problems force a delay. Generally, games should be finished when possible, rather than forfeiting due to technical problems.
9. There may be no manual adjustment of program parameters during the course of a game. In the case of failures, the program parameters must be reset to their original settings if it is at all possible. Information regarding castling status, en passant status, etc. may be typed in after a failure.
10. At the end of each game, each team is required to turn in a game listing to the tournament director.
11. The programs that participate must be the work of the individual submitting the entry. No individual may submit two entries.
12. Each entry is a program. A listing of the program should be available on demand to the tournament director. The program can be run on any computer system.
13. Each game is officially played on a chess board provided by the Tournament Organizing Committee. An electronic chess board may be substituted if desired. If both players have electronic chess boards, the tournament director will decide which board will be the official board. Since the use of an electronic board reduces errors, and does not give either side an advantage because of rule five (5), electronic chess boards will not be disallowed if one side protests.

COMPUTER CHESS LITERATURE

Books:

- Bell, A., (1978) The Machine Plays Chess?, Pergamon Press, Oxford.
- Botvinnik, M.M., (1970) Computers, Chess, and Long Range Planning, Springer Verlag, New York.
- Clarke, M.R.B., (ed.) (1977) Advances in Computer Chess I, Edinburgh University Press, Edinburgh, Scotland.
- Clarke, M.R.B., (ed.) (1980) Advances in Computer Chess II, Edinburgh University Press, Edinburgh, Scotland.
- Frey, P. (ed.) (1977) Chess Skill in Man and Machine, Springer Verlag, New York.
- Hayes, J. and Levy, D., (1976) The World Computer Chess Championship, University of Edinburgh Press.
- Levy, D., (1976) 1975 U.S. Computer Chess Championship, Computer Science Press, Potomac, Maryland.
- Levy, D., (1976) Chess and Computers, Computer Science Press, Potomac, Maryland.
- Levy, D., (1976) 1976 Computer Chess Championship, Computer Science Press, Potomac, Maryland.
- Levy, D., and Newborn, M., (1980) More Chess and Computers, Computer Science Press, Potomac, Maryland.
- Newborn, M., (1975) Computer Chess, Academic Press, New York.
- Newborn, M., (1979) "Recent Progress in Computer Chess", Advances in Computers, Vol. 19, Academic Press, New York, pp. 58-119.

Magazines:

In the last few years, articles on computer chess have appeared in Sports Illustrated, Scientific American, Science Magazine, Nature, The Mathematical Intelligence, Chess Life, Personal Computing, the ACM's SIGART Newsletter and many others.

The ACM Computer Chess Committee:

In 1979, the ACM established the Computer Chess Committee, as a standing Committee on the Management Board responsible for organizing computer chess events within the ACM. It's primary responsibility is to put together a successful North American Championship every year at the ACM's Annual Conference. Committee Members are M. Newborn (chair), B. Mittman (vice-chair), K. Thompson, K. Spracklen, and T. Marsland.

The ICCA:

Established at the Second World Computer Chess Championship in Toronto in 1977, the International Computer Chess Association currently has over 450 members.

Ben Mittman serves as President and as Editor of the ICCA Newsletter which is published three or four times a year. Monroe Newborn and Ken Thompson serve as Vice President and Secretary/Treasurer, respectively. Dues are \$10.00 (U.S.) for a one year membership. Interested individuals should write to Ken Thompson, Bell Telephone Laboratories, Room 2C, 423 Murray Hill, New Jersey, 07974.