design of an ultra-fast move generator that produces all pseudo-legal moves for a given position in one clock cycle (250 nanoseconds). He furthermore shows results of the B* tree-search algorithm, and describes another one of his programs: Patsoc. A new trend in computer chess cognition seems to be the notion of 'chunks' : Groups of pieces that can be identified as one entity. Berliner describes this for pawns in the endgame, and Bratko et al. devote their entire paper to this subject. Chunking is thought to be important, because humans identify them as such which enables strong players to correctly reproduce a given position after only a short moment of examination. A strongly represented subject is the generation and induction of patterns and plans. Michie presents his 'Michie Road' in which rules are to be generated from examples provided by an expert. In some cases (special endgames) this expert can be a computer. Reidel's contribution describes the deduction of patterns in the King+Rook versus King endgame. Owsnicki and von Luck, both with a thesis on computer chess, discuss a method of plan construction with results from its application in a program called N.N. They illustrate three catagories of possible errors, each with its own cause and each with a different level of solvability. Shapiro and Michie describe a self-commenting facility whereby expert supplied text fragments attached to individual attributes are recognised to form run-time explanations of decisions made by rules previously induced. A theoretical paper is given by Schrueter. He analyses the apparent paradox that experience shows that a deeper tree-search yields better play, whereas mathematical investigation of the problem predicts less reliable results for deeper searches.

The majority of the articles is very original, and of high quality. The amount of background knowledge needed to comprehend the papers ranges from non-expert level (Levy, Kopec, Hartson, and Lindner) to expert level (Schrueter). It is a superb book for its contents as well as for its outline. Like the four predecessors, it is a very good profile of the state of the art in Computer Chess research. The conclusion can only be that Advances in Computer Chess 4 is a real must for anyone with interest in computer chess. In April 1987 the fifth conference in this series will be held in Noordwijk, the Netherlands. It is hoped that this will result in another splendid book.

Lisp Lore:
A Guide to Programming the Lisp Machine

by: Hank Bromley
Kluwer Academic Publishers

Reviewed by: Keith Price

Having recently (over the past two years) become a user of a Lisp machine I had faced the task of becoming proficient on the machine without much outside help. The massive set of hard copy documentation has most of the answers, somewhere, but finding them without knowing the answer can be difficult. Worse, not knowing that easy methods exist for many operations, you never even look for them. The introductory material gets you started, byt the advanced techniques remain hidden in the manuals. This book started as a set of notes for an informal course given by the author at AT&T Bell Labs and grew into an interesting introduction to the Lisp Machine for someone who already knows Lisp fairly well.

Lisp Lore ... has chapters on:
* Getting started -- The first chapter provides an introduction to the basic operation of the Lisp Machine, how to log in and run programs.
* Flavors -- This chapter describes the basic usage, and standard methods for combining them. Since flavors are used throughout the system and in the exapmles in the book, they are introduced early in the book.
* Flow of control -- This introduces some of the less common control structures of Lisp.
* Streams and Files -- This chapter provides a basic introduction to some features of the file system.
* Resources and Systems -- These two features are needed to build large systems efficiently.
* Error conditions -- This chapter describes handling error conditions.
* Advanced use of the Editor -- Keyboard macros and writing new commands are presented.
* The Network -- This gives an overview of the operation of the various network programs.

There are additional chapters with programming examples for graphs, trees, and moving icons. A form in the book can be used for ordering a tape that includes the program examples given in the book. This saves the effort of typing all the functions and checking that they are typed correctly.

Ten of the twelve chapters include problem sets with solutions (some solutions are only partial, since the problems are open ended). Many of the problems include a set of hints for people who need some pointers to start the solutions, but also want to work on the problems. These problems take the reader/student more deeply into the topics introduced in the text. As with all computer systems, there is no substitute for practice.

The book is well written (with some formatting problems -- Kluwer uses camera ready copy supplied by the authors for their books, and some of the standards usually followed by publishers are not followed, such as one line of text on the last page of the chapter) and provides a much better introduction to the use of the Lisp machine than the standard documentation. Since I have had the book, it has been borrowed by students in our research group to aid them in programming, and it seems to help them when exploring techniques our other students have not yet tried. Over the years, local groups of computer users have built up knowledge about the best use of their system and usually only shared this information with others in the local group (learning how to use a system has always been easier when a knowledgeable user is around). This book represents this local knowledge about effective use of the Lisp machine. I do not necessarily agree with all the choices of what is important to cover, but then I do not expect everyone to have the save opinion of what is important. This book provides a good coverage of the basics that new users require and some pointers into the use of some advanced techniques so that it fills a useful role in helping teach how to effectively use the often mysterious Lisp machine.