Introducing a new section...

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A fundamental change is coming about in the nature of the computing industry. The real motivations for the change are the LSI microcomputer and inexpensive memory; the effects are far reaching and occasionally mind boggling. In response to this change, Computer is inaugurating a new section — Microsystems.

Starting out with the notion of a section devoted to personal and hobby computing, we rapidly extended our horizons to include all microprocessor applications areas. Then we decided to include small business systems. And so on and on. We toyed with the notion of calling the section "small-scale systems." But these systems are often not really small-scale in their conception, the job they do, or their importance. Unquestionably they are small in size; above all they are different.

Perhaps the real difference is that they are computers which are consumer products. Either the computer is itself a product being marketed to a user, or it is part of a packaged product sold to perform some function. For the most part, products in this area are not supporting the traditional EDP function.

Look at it another way. In the kind of small-scale systems we plan to treat, the system is brought to the user, as opposed to the more traditional large-scale systems approach where the problem is brought to the computer.

With the sudden change in the magnitude and breadth of the computer marketplace has arisen a whole new user community. Part of this community consists of engineers trying to apply the new technology to their own particular
A primary problem, of course, is software: how to make it so it works, how to make it at reasonable cost, how to make it fit the problem to be solved. Tools are important here, as are the fundamentals of good software design, techniques of testing and verification, and even approaches to costing. All this, of course, needs to be tailored to the peculiarities of the microcomputer environment.

There is a difference between the kind of software that can be used by a computer expert (self-proclaimed or otherwise) and the layman. Ordinary folk have little interest in programming in machine language for the XYZ 1234 microcomputer, or in assembler or Basic or Cobol. Yet the layman may need to communicate with the computer in a meaningful and non-trivial way. How is he to do it, given today's woefully inadequate human interface technology? And while the large-scale EDP-oriented systems can muddle through with fixed formats and complicated control cards, the consumer-based system which requires such nonsense will never sell.

Distributed computation where parallelism is exploited at the processor level rather than at some smaller subdivision appears to have significant advantages. How are such systems to be organized, how are they to be programmed; what are their particular advantages with regard to cost and speed; what problems are best suited to this design approach? Paul Russo's article in this issue discusses one small aspect of the distributed computer problem: the interprocessor communication interface. It is a detailed technical presentation complete with a description of a working implementation on the RCA COSMAC processor.

One other area of particular interest is that of peripheral devices which are both effective and low-cost. This ranges from on-chip A/D and D/A converters to line printers and disk memories. It is in the area of electromechanical devices that computer technology is identifiably deficient.

There it is, an admittedly incomplete description of where this new section of *Computer* is trying to go. Its real purpose is to track what is happening in this new and exciting area of computer technology — the microcomputer-based consumer-oriented system. A whole new user base needs to be educated, and some old EDP-oriented users need to be converted (a bit of evangelism just might be necessary) and then brought up to speed on these new ideas. Ideas need to be exchanged, new and innovative solutions for new and old problems found, and appropriate ruminations and pontification on the state of computing performed. Finally, computer technology must be demystified.

We are not out to compete with the flurry of new technical magazines which have appeared to serve the personal/hobby computing market. We are not interested in "how to build it" articles of the sort found in *Byte*, nor will we publish the lengthy annotated source listings found in *Dr. Dobb's Journal*. Our role will be to place the microcomputer and its associated systems into perspective, both for the computer professional and the user. In short, we haven't the slightest intention of diluting our traditional emphasis on serving the hardware and software professional. But don't be surprised if you find *Computer* on the shelf of your local computer store.

For this section to succeed, we must have a continuing flow of high-quality articles. Some of these will be solicited by the editor, but if you have something to contribute, don't wait to be asked. If you would like to receive a copy of our style guide, circle number 6 on the Bingo card on page 91.

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Dennis R. Allison is an independent consultant and lecturer at Stanford University's Digital Systems Laboratory. He is a founding member of the Board of Trustees of the non-profit People's Computer Company and currently serves as president. He is an occasional contributor to the *PCC Newspaper* and to *Dr. Dobb's Journal*. His interests include programming language design and implementation, computer architecture and microprogramming, microcomputers and microprocessors, distributed computing, software engineering, and personal computing. He holds an AB degree in physics from UC Berkeley and is a member of ACM, BCS, IEEE, and the IEEE Computer Society.