premounted, fully debugged microcomputer that needed few special features.

Intel entered the market in February 1976 with its low-priced ($295) 80/10 Single Board Computer. It offered programmable parallel and serial I/O to permit users to shift easily from one application to another. Based on the 8080, it included one kilobyte of static RAM, four kilobytes of ROM or EPROM, and 48 I/O lines. Later that year, Intel brought out a more powerful version, the 80/20, and introduced the Multibus system architecture. Up to 16 80/20s could be linked by this new-approach. The 80/20 also offered eight-level programmable interrupt control, additional peripheral controllers to offload the CPU, and twice as much RAM as the 80/10. The Multibus has been extended to 16-bit processors and is currently undergoing standardization as the IEEE 796 bus.

Rising demand

Component shortages began occurring in early 1974 as the number of products designed with microprocessors started escalating rapidly. The 1974-75 recession slowed demand, but this downturn proved to be merely a minor interruption in the growth curve.

The microprocessor was becoming ubiquitous. It had taken minicomputers seven years to exceed the main-frame population; it took only three years for microprocessors to exceed the population of both mainframes and minicomputers. The market grew from a standing start to $37.7 million in 1974. Meanwhile, performance was escalating rapidly and prices were being driven down by the expanding market and learning-curve process. In his 1977 *Microcomputer Handbook,* Charles J. Sippl mentioned that one OEM was asking when price/performance would settle down. From our 1981 perspective, we can provide only an interim answer: "Not yet."

The 16-bit era

In 1975 the industry's R&D labs were at work on the next generation of microprocessors. These high-performance, 16-bit machines (and the eight-bit machines discussed already) would offer significant improvements on the second-generation eight-bit processors introduced in 1974, just as that generation had made major strides over the first microprocessors.

The first 16-bit, single-chip microprocessor was introduced as early as 1974, when National Semiconductor offered its Pace unit, a one-chip version of the IMP-16, a bit slice processor dating to 1973. Pace was a P-channel machine with a 10-μs instruction time, packaged in a 40-pin DIP. National followed with Super-Pace, a 16-bit