ISSCC: JAPAN AND CMOS RULE

To forecast the future, the world's semiconductor engineers do not consult crystal balls, pigeon entrails, public opinion polls, astrological signs or macroeconomic models. Instead, they consult one another. For the last 30 years, these consultations have reached a special pitch of formal prophecy at the International Solid State Circuits Conference (ISSCC). Here each year nervously proud engineers, often in unintelligible accents, present their new marvels in scholarly papers illustrated with slides which evoke a clicking applause from Japanese cameras.

This thirtieth anniversary session, held in New York's Sheraton Centre at a time when the balance of innovation seems to be shifting toward Asia, was unusually loud with clicks and unusually pregnant with hindsight and forecast. (But as usual many of the most significant developments occurred offstage.) A quick take showed the past embodied in the venerable American names of the industry -- from patriarchal Gordon Moore and program chairman Lewis Terman to Lew Winner, for a quarter-century the editor of the conference Digest. The future was deceptively signaled in the geography of authorship: 1983 was the first year that a majority of the papers came from outside the U.S. The U.S.'s 47 papers exceeded Japan's 41 -- but nine from Europe tipped the balance overseas. Nonetheless, 1982 was hardly a disastrous year for U.S. semiconductor makers. The U.S. industry, merchant and captive, retained a 70 percent share of world IC production, down only 2 points since 1978. During this period, Japan's share rose only from 19 to 23 percent.

The source of the massive shift from last year when 68 percent of the papers were American was easy to identify. Some 345 Japanese offerings came from the large computer firms -- Fujitsu, Hitachi, et al. -- that participated in the $400 million VLSI R&D cooperative begun by MITI in 1977. There were also early signs of the "fifth generation" project: five papers devoted to the promise of superfast gallium arsenide circuits. Fujitsu predicted that they would play a major role in mainframes within "two or three years." After an outpouring of government paper, the Japanese are now issuing a wave of scholarly paper.

Weighting the papers for commercial prospects yields a still larger edge to the foreigners, particularly the Japanese. Judging from the surge of demand which brought 64K DRAM shipments up to 108 million units in 1982 (two thirds above
earlier predictions), the largest market in the industry awaits the 256K DRAM. Five of the six 256K DRAMs introduced at the conference were Japanese; these included the three smallest and thus, other things equal, the cheapest to produce and fastest to operate. Smallest of all was a 49,312-square mil "test vehicle" in CMOS from the laboratories of NTT. But Fujitsu and NEC both offered only slightly larger (54,000-square mil) devices headed toward a booming market of hungry sockets in spruce black plastic packages. This happy fate of cheap plastic is unlikely for Motorola's 71,621-square mil die without a trip to the fat farm for scaling down. The fat farm doesn't always work, as evidenced by the company's last DRAM, the 64K, which was withdrawn and re-released 20 percent fatter. Nonetheless, Motorola deserves credit for getting its 256K act together faster than any other U.S. firm, and its 2-micron design rules offer some small leeway for shrinkage. Its single (or maybe double) polysilicon technology, moreover, should be simpler to produce than triple-poly (Fujitsu) or double-metal (NEC) devices.

And CMOS

Beyond the Japanese DRAMs, the dominant force at the conference was CMOS. Introduced 26 years ago in a Fairchild paper at the 1963 ISSCC, CMOS finally took over the show in 1983, pervading everything from memories and analog devices to programmable logic arrays. CMOS too is a Japanese specialty, honed at Hitachi and Toshiba for low-power, battery-operated consumer products. Because of its complementary N- and P-channel transistor pairs (never both active at once -- hence the low power), CMOS used to be slow and complex, and took up 50 percent more space than NMOS. Static RAM cells, though fast, took up four times the space of dynamic RAM. Yet Mitsubishi and NEC both offered 64K high-speed (50 nanosecond) CMOS static RAMs, following similar offerings last year from Toshiba and Hitachi.

The only American company in the field, Intel, lagged behind with a 64K CMOS dynamic RAM. A small die (33,464 mils) with fast (70-nanosecond) access, it would be a nice addition to Intel's repertory if it were now in the market. But the announcement merely showed off the company's CHMOS III process technology. Intel's process skills are assuredly good to have, but not as good as a salable chip (nor as impressive as NTT's experimental 256K CMOS DRAM). Since the Japanese CMOS experts at Hitachi and Toshiba have not chosen this mode for their commercial DRAMs, Intel either knows something they don't and can produce CMOS more cheaply (in which case we can expect a mainline market 256K Intel DRAM in CMOS), or else this Intel exhibit was merely an interesting technical exercise, betraying the CMOS envy rampant in American companies.

Microprocessors Disperse Keynote Gloom

Deepening the gloom on the American side was a keynote address by G.E. Pake of Xerox which recited all the familiar indices of declining American R&D, engineering education, and test scores (only one in six U.S. high school students even sits through more than one year of math or science). Although he failed to note American dominance in computer-aided design and engineering, Pake manfully conceded that we lead the world by far in the production of dynamic lawyers (many of whom have been distracting Hitachi -- and National -- in recent months).

Nonetheless, the prospects for the U.S. semiconductor industry, even in DRAMs, do not depend on lawyers, or even on the companies at the ISSCC. Nor are DRAMs, contrary to much propaganda, the most important semiconductor product. That honor (text continues on page 4)
THE OWNER HAS SOLD! LONG LIVE THE OWNER!

With this issue, we announce the pending transfer of ownership of Rosen Research Inc., which publishes the Rosen Electronics Letter and co-hosts the Rosen Research Forums, from Ben Rosen to Esther Dyson. Although formalities remain to be completed, the Letter in fact is already and has been since November 29 an independent publication. (See our editorial in the issue of that date.)

Since the Letter is no longer Rosen nor strictly Electronics, we have renamed it RELease 1.0, retaining some elements of the name to affirm continuity. (The capital R-E-L, of course, stands for Rosen Electronics Letter.) Although Ben Rosen is no longer involved with the Letter, this transition has been gradual, occurring over the months since last August. As for "electronics," the focus of the Letter has gradually come to include the personal computer business as well as the semiconductor industry, the Letter's principal concern in earlier days.

RELease 1.0, of course, is the initial release of a software product. It is soon followed by, say, RELease 1.3, wherein a few of the bugs are fixed and a couple of typed pages are added to the documentation to cover omissions and mistakes. ("Press Control F, not Control S, in order to...") Eventually there comes RELease 2.0, a substantial rewrite with a higher price and typeset documentation. Only the most sturdy products ever get beyond RELease 2.0.

So why call a newsletter RELease 1.0 (read "one-oh")? Simply to express our frustration that we never get it quite right -- but also our satisfaction that we do get it early. It's the first, best look at what's going on. In this industry, by the time you take a second look, the situation has usually changed, so there are no second looks, no release 2.0s, but simply a stream of release 1.0s.

Now about the frustration.... Most of the time, when we write the Letter, we grow caught up in the subject at hand, whether it's the intricacies of local area networks or the earthly ploys of software distributors. As the deadline approaches (although we publish irregularly we do have deadlines, mostly determined by our travel schedule) it's hard to let go, to collect the bits and pieces into a coherent framework. With three months to explore and ruminate, we could produce a far better treatment. We could include all the relevant facts, interview all the significant figures, follow all the current issues. But the truth is, it wouldn't be any better even after six months. New facts would have arisen, new figures emerged, and new issues unfolded. What we get after six months is another first look at a new situation. And that's the pleasure of this business: It never gets stale; it's always release 1.0.

WELCOME GEORGE GILDER!

With this issue we herald the addition to our staff of George Gilder as Contributing Editor. George will be writing for us on the semiconductor industry, a business he's come to know intimately through years of work on his forthcoming book The Spirit of Enterprise. He brings an unusual and exciting perspective to this work: His earlier books include Wealth and Poverty, a rousing offense (as opposed to defense) for capitalism, Sexual Suicide, and Visible Man. He also contributes to the Wall Street Journal and serves as a director of the Manhattan Institute for Policy Research. Rather than praise him, let us refer you back to the front cover, where he proves himself praiseworthy indeed.
goes to microprocessors, with their array of supporting chips and developmentsystems. All the microprocessors exhibited at the convention were American. The most novel was Seeq Technology's microcomputer with an on-chip E² (Electrically Erasable) Programmable Read Only Memory, built in collaboration with TI (see The Letter of Feb. 22).

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Subtotal, Top 20 Sources 75.5
Remaining Sources 23.0
Total 98.5

*Full credit for nonshared papers, half credit for shared papers

Overall, the most conspicuous U.S. exhibitor at the conference was Intel, whose world market share in microprocessors continues to grow. Intel offered six papers, including ones touting a new fast 16-bit microprocessor and three nonvolatile memories. But things are not always as they seem at these affairs. The proudest and happiest auditors for the Intel papers in nonvolatile memory were the men from Xicor, who had split off from Intel five years before. Xicor had no papers to give but it is already producing -- in better form -- two of the chips that Intel described. For example, Intel offered a paper on a 5-volt-only 4K nonvolatile static RAM. A conventional static RAM with a backup E² into which the data are dumped when the power goes off, the device approaches what Intel calls "the perfect memory," a fast nonvolatile RAM. Xicor calls it a NOVRAM -- and invented it on a kitchen table in Los Altos five years ago. Xicor has since sold some 300,000 units of the 1K version and introduced the 4K earlier this year. Intel also announced a 16K 5-volt-only E², with latches to render it more RAM-like to the user, who thus is saved the bother of waiting until the memory is ready. Xicor's product has been on the market for several months and boasts not only latches but also on-chip timing features. Intel at the same time announced a 64K E². Xicor has a product nearly ready for release.

Likewise, Seeq felt especially vindicated by Intel's heavy emphasis on E²'s, microprocessors, and CMOS. In fact, Seeq is producing a 16K E² and has in the works a CMOS 64K E². Others in the valley wonder why people keep writing about Seeq, a company still far from profitability and somewhat short on production skills. One reason is a flow of product announcements as intriguing as any in the industry: the first 5-volt-only E², the first silicon-compiled controller chip
(an Ethernet control circuit), as well as the first $E^2$ microcomputer. Another reason is fund-raising skills and building plans commensurate with the huge market which the company expects in $E$'s. If it comes, as Intel and others predict, Seeq will grow very large very fast.

**ISSCC PAPERS: SHIFT IN GEOGRAPHICAL ORIGIN**

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Nonetheless, Xicor's $E^2$ technology could be superior, because it avoids the exquisitely thin tunnel oxides through which the Intel and Seeq devices are written and erased. When Intel and Seeq move beyond the 64K, where their tunneling thickness will sink toward molecular dimensions, these companies may discover levels of leakage from their floating gate cells which give them an inadvertent dynamic memory. On the other hand, Xicor's tunneling depends on enhanced field emissions from asperities in textured polysilicon, and this texturing may not scale down so well either.

In any case, the American companies — chiefly Intel and its spinoffs — continue to dominate the realm of nonvolatile memories which comprise one of the most inviting markets for the 1980's. With Motorola, Intel continues to prevail in the microprocessors which are the driving force in the industry's growth. Moreover, the view in DRAMs may be more favorable to the U.S. than the current pattern of sales and announcements indicates.

**Micron Technology**

Last year (March 26), we reported that Micron Technology, a spinoff from Mostek in Boise, Idaho, had produced a 64K DRAM with "the most efficient layout" in the industry. Its 33,000-square mil chip boasted larger cells with larger tolerances than most rival DRAMs which were between 15 percent (TI) and 40 percent (Motorola) larger. Micron has now reached a 4-million annual ship rate, selling to Apple, Commodore, distributor Anthem, et al., and is probably America's fourth largest producer. The company reports yields exceeding 30 percent in volume manufacture of the 33,000 version, and by the end of the year it expects to have shifted all its production to a newer, still smaller version. At 22,000 square mils, the new chip is by far the smallest 64K DRAM being produced (Fujitsu has just proudly announced a 26,000-square mil device and Hitachi is following with a similar shrink) and smaller than any 64K chip of any kind announced at the ISSCC. Micron is exploiting its location in Idaho, the state with the nation's largest concentration of millionaires, to bring its total invested capital toward $25 million. This seems a paltry sum in the industry, but it's apparently enough if you spend it on designs by Ward Parkinson, Micron's chairman, and Douglas Pitman, who laid out the industry standard 16K DRAM at Mostek. Micron is currently tripling its capacity to a level approaching 2 million units a month on five-inch wafers. Although the company's 256K plans remain shrouded, it can be reported that Micron designers were not abashed in the slightest by any of the DRAM exhibits at the Sheraton Centre.
The Grounded Substrate Mystery Resolved?

Ever since a Texas Instruments spokesman at an ISSCC conference five years ago resonantly pounded the podium and declared that TI planned to "ground the substrate" of its new DRAM, engineers in other companies (and at TI) have wondered why. Even with the company's epitaxial process (which adds 5 percent to the cost, plus the yield losses resulting from the additional step), the grounded substrate seemed a risky and unreliable idea. Without a bias on the substrate, it is argued, even the extraordinarily pure epitaxial layer will be vulnerable to "ringing" and "body effects" which distort the memory's signals. When TI ran into reliability problems at the end of 1982, with recalls estimated as high as 20 percent, the company's numerous critics nodded knowingly and pointed to the grounded substrate as the culprit (though TI said the problem lay in the plastic packaging and was readily solved). At least, it was said, the company would have to admit its error and return to more conventional DRAM designs. "The grounded substrate was the kind of idea," as a rival designer put it, "that sounds good at first, or in a speech, but that you then go home and think about and set aside." Now it appears the critics are confirmed. At least, TI indicates it may well use a different method in its 256K design.

Nonetheless, TI claims that its 64K has been a splendid success, one of the smallest, fastest chips in the industry and for a while in mid-1982 the best seller as well. Moreover, TI's choice of the epitaxial process and grounded substrate was always intended to position the company to move rapidly into the crucial realm of CMOS, long neglected in Texas. Evidence from the ISSCC tends to confirm TI's contention, as many of the large CMOS memories, including Mitsubishi's impressive 64K static RAM, were made on epitaxy with grounded substrates. Because CMOS already requires two power sources to feed the N- and P-channel transistors, the chip becomes crowded with pumping equipment if the substrate is biased as well. If TI now begins producing impressive CMOS memories, we may grant that they knew what they were doing all along. One way or another, the lesson of the ISSCC was the inevitability of CMOS.

Integrated Device Technology: More to Come

The CMOS movement did not take everyone by surprise. National Semiconductor made a successful early move into CMOS static RAMs, one of the company's best recent decisions. Then Hewlett-Packard assigned a young engineer named George Hwang to survey the future of VLSI. Impressed by Hitachi's success with a 4K static RAM in CMOS and by Hewlett-Packard's indifference, Hwang decided that the future was in a new company specializing in CMOS. He started IDT in 1979 to exploit this future and began designing fast CMOS static RAMs. Since then, he has shipped more than 100,000 16K devices, largely to eager military customers. He is now looking toward a year of $16 million in sales and is preparing a 64K device.

IDT is another of the semiconductor startups in mainline memories which arose in the face of nearly unanimous expert opinion that the age of such startups is over. Now these companies are a prime asset of the U.S. semiconductor industry as it faces the challenge from Japan. Their increasing success in overcoming the dearth of capital and engineers and in moving aggressively into key areas of U.S. weakness in DRAMs and CMOS may turn out to be as important to the future of the industry as any of the brilliant papers presented at the thirtieth ISSCC.
'TIS THE SEASON TO GO PUBLIC, FA LA LA LA ....

If you've had trouble getting through to your broker lately, it's not just the record trading volume, but also the record new-issue volume. Customers are complaining that their brokers don't call them, while companies going public find their bankers' efforts less full-service than they'd hoped. Osborne and MicroPro, both of whom have deferred earlier plans to go public, can rest contented in the knowledge that when they do come to market they're likely to get more attention -- though not necessarily a higher multiple -- some other time.

Three companies nonetheless command attention even in this hullaballoo: Fortune is essentially the creation of the venture capital community, TeleVideo is a hardy blossom carefully cultivated by Korean Phil Hwang, and Victor is a hybrid: one man's dream joined to a large corporation's unwieldy strengths and deficiencies. As shown in the chart, which plots market value against 1982 revenues, the market at least expects great things from all three. Profits are not included, as only TeleVideo had any for the full year. (We assume offering prices of $18 per share for both TeleVideo and Victor, due out now and in a couple of weeks, respectively.)

### VITAL STATISTICS

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<th>Company</th>
<th>Est. Market Value</th>
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<td>TeleVideo</td>
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<tr>
<td>Victor</td>
<td>$220</td>
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Fortune Systems

Fortune Systems (see the Letter of August 27, 1982) generated its first revenues less than a year ago, but managed to hit a profitable $18.7 million in revenues in the 1982 fourth quarter. It's on the strength of this quarter, in short, that the company just went public at $22 per share. It was a nice quarter, with operating income of $2,722,000, or 14.6% of revenues. Net was $2.9 million. If the company makes just that much over each of the next two quarters -- and it should make more -- it will neatly wipe out the accumulated deficit of $5.8 million.

The company's strength is its product conception: Fortune probably has spent more time than anyone else listening to what customers really want, a result of its leaders' cheerful acknowledgement that they're somewhat new to the micro business -- although not to data processing or to a Fortune 1000 clientele. President and chairman Gary Friedman was born as a businessman at IBM; he went on to co-found Itel (now in bankruptcy) in 1967. Chief strategist Homer Dunn also worked at Itel, IBM, National Advanced Systems and various other computer-related companies. Dave Van Den Berg, vp marketing, comes from Itel, Honeywell and Datapoint.

Fortune has done fairly well so far at fulfilling its promises despite the usual run of software and production problems. The company still hasn't managed to put a single-user version of UNIX on a floppy disk, which will enable it to lower the base price from $8,000 to $5,000, and even the multi-user system is a bit slow and doesn't quite support the five users advertised. As for manufacturing, note in the prospectus the hire date of Lewis Cantwell, vice president of manufacturing.
operations: January 1983. Cantwell gets good marks from those who knew him at HP, where he was manufacturing manager of the Corvallis division (personal computers and hand-held calculators).

The big question now is: Will life get easier for Fortune as it gets bigger, or tougher as its competitors get bigger? Clearly the firm has done a superb job of product design, and has come out with the first serious contender in the commercial UNIX micro market. (Others are Tandy's Model 16, Apple's Lisa (somewhat) and new entries from Altos, Victor and, as soon as Microsoft gets its new release of Xenix out, TeleVideo.) But we suspect that more people are buying the machine for its Wang-like word-processing capability than for UNIX, with its dearth of applications. The company has sold 1,450 copies of Fortune:Word (renamed from the much prettier For:Word because of name conflict with Four-Phase), compared with a total of 3,350 systems shipped. That makes the efforts of a company like Softword (see page 12) -- which is putting Wang-like wp on the IBM and compatibles, and Victor -- especially significant.

The company is already negotiating to sell Fortune:Word standalone to certain other manufacturers and large end-users. This is only the first in what it hopes will be a series of software licensing agreements for its full line of planned office automation software -- not the usual spreadsheet/etc., for the company is using Microsoft's Multiplan, but voice management, facsimile, graphics and video conferencing. While the market for these isn't yet proven, it's also far less crowded -- just like UNIX a year ago. All in all, software should account for two-thirds or more of a $9-million R&D budget this year (about a 50% increase). From about 10% of sales currently, software could easily grow to 20% -- and a higher proportion of profits -- within a few years.

As for profits in the near term, they could be held down some this year by advertising costs, which were negligible in 1982. It wasn't worth advertising a product on allocation, but this year Fortune intends to fulfill its promises to dealers of support through advertising, to the tune of an expected $3.5 million. That's not exorbitant when you're starting the year at an annual run rate close to $20 million.

All in all, the prospects for Fortune look promising. Gary Friedman must be sorry he had to give up all but 6% of his shares to get this far!

TeleVideo

The equity portion of TeleVideo's balance sheet is the exact opposite of Fortune's; it shows $19.2 million of retained earnings and a negligible amount of paid-in capital. Similar is the disparity in ownership of shares: Phil Hwang held 80% of the shares just before the offering, and should still own 69% at its conclusion -- or about a cool $500 million at market.

TeleVideo made its name as the Tandon of the terminal business: Make quality, price low, sell in volume -- 200,000 since production began in 1979. But TeleVideo's terminals are merely the laurels on which it is wisely not resting. What makes the stock worth 50 times earnings and 7.6 times revenues is TeleVideo's newer line of microcomputers (plus its margins and growth rate, discussed below).

Up to now, the company has carefully avoided the personal computer market, concentrating instead on a line of Z80-based multi-user systems supporting intelligent terminals, linked together with MmmOST, proprietary networking software that
enables the systems to run CP/M software with no modifications or special effort. These systems are sold, through about 20 distributors, to a somewhat more support-intensive group of systems houses, dealers and OEMs than handle the terminals.

Now the company is about to attack a new market: the more trendy one for personal computers, mostly sold at retail rather than through high-end dealers. Built around an Intel 8088 integrated circuit, they support the approved standards: MS-DOS, CP/M-86 operating systems. Like the terminals, these products are not revolutionary; they represent a quality implementation of the current fashions. They're well-made and attractively priced, but nothing to excite the connoisseur.

Perhaps the worst thing that can be said about TeleVideo's products is that they're overdistributed. That is, customers love them, but dealers can't make much money on them. Contrast TeleVideo's army of 5,000 terminal dealers and 5,000 computer dealers (with some overlap, to be sure) with Fortune's more modest 400, or Victor's 700.

Odd too that Fortune is considered the marketing company, despite its $6 million in R&D (in 1982) and a dearth of advertising. TeleVideo spent $3.1 million on R&D last year plus $1 million on licenses for resale of software, while its advertising budget totaled a cool $4 million.

Despite its aggressive pricing, TeleVideo achieves a gross margin many in the industry envy: 49%. While competitors spend R&D money to build innovative products, TeleVideo spends its smaller percentage to make existing products more efficiently. With one exception, terminals and computers all fit inside the same cabinet, use the same monitors, power supplies, disk drives (where used) and keyboards. As Detroit has J-cars and X-cars with common components, so does TeleVideo have J- and X-desktops. Moreover, these common components are assembled and tested in the Republic of Korea, printed circuit boards are stuffed by subcontractors in California, and final assembly is concluded in Puerto Rico (another cost haven) and California. This careful shepherding of assets enabled the company to earn $12.75 million in 1982 on an equity base that stood at only $6.5 million at the start of the year. It's not that the company is undercapitalized: Total assets were only $25.4 million, doubling to $49.4 by the end of the year. Meanwhile, revenues tripled to almost $100 million.

Victor Technologies Inc.

Victor Technologies is a far less tidy situation. Victor began life as Sirius Systems in late 1980. Founded by Chuck Peddle, a refugee from Commodore, the company borrowed a European orientation and aggressive pricing strategies from Commodore, but little else. Its flagship system, the Victor 9000 (called the Sirius overseasas) uses a standard microprocessor (Intel's 8088), standard operating software (MS-DOS and CP/M-86), and is aimed at the support-intensive high end of the market.

Peddle built the company up without much funding. A big proponent of direct sales to corporations and of dealers rather than retailers, he went to his distribution partner, rather than a venture capitalist, when the need for funds became pressing. That partner was Kidde, Inc.'s Victor United, which Sirius had been using as a U.S. distributor. Although Victor's 200-branch network has so far been devoted to selling calculators and much of its personnel is currently being turned over, it does provide a good foundation from which to build a more-solid, more up-to-date selling organization. In the meantime, the calculators provide cash flow.
Victor's greatest success has been in Europe, where in the absence of IBM's PC it is by far the biggest supplier of 16-bit machines. (In the U.S. it is second, but by a wide margin.) Almost three-quarters of the company's 1982 micro sales were made overseas, although that proportion should drop as U.S. sales climb this year and as overall revenues (based on $123 million pro forma in 1982) about double.

Victor is gradually assembling an impressive machine. Aimed squarely at the business market, the system is powerful and cost-effective, although IBM's recent actions will force everyone in the business to re-evaluate pricing. (See below.) While Peddle himself favors single-user systems (linked with networks), he's bowing to the current fashion and putting UNIX on the machine for sometime this year. Also fashionable, but practical too, will be the availability of network capabilities based on Corvus' well-proved Omninet and, later on, Ethernet. More interesting, but less visible, are the firm's efforts in the dbms area. And then there's MultiMate, the Wang-like word processor (see page 12).

Although success overseas is no reliable indicator of success in the U.S., Victor's excellent record in Europe, where it leads in market share in its class, certainly provides encouragement. The main issue is the company's still-maturing U.S. distribution organization.

1983 SEMICONDUCTOR FORUM

We have shifted the dates of the 1983 Semiconductor Forum, co-sponsored by Rosen Research Inc. and L.F. Rothschild, Unterberg, Towbin, to the last week in June subject to the availability of hotel space. Details will be listed in the next issue.

RELEASE 0.5: HALF-BAKED NEWS

IBM Raises Guns, Lowers Prices... Although we haven't yet had time to assess IBM's PC XT (for extended), announced today, it's clear that the system betokens a new price-aggressiveness on IBM's part. Indeed, IBM's own original PC line is seeing price cuts of 15%, indicating the kind of action other competitors might well take. Clearly the Victor's, COMPAQs, Lisas, Osborne's and TeleVideos are starting to attract attention in Boca Raton.

E.T. Go Home!... We hear that $40-50 million worth of Atari E.T. video game cartridges are gathering dust in distributors' warehouses. So much for the value of "names" (or brand names). Atari is trying to reverse previous policy and won't take them back.

TI's Compensation... Although it's expensive ($50 million), annoying, embarrassing and so forth for TI to have to send a power transformer adapter to all its 99/4A customers, TI does get one benefit out of the whole affair. As the ads it's running now say, "Send us your name and address." What a way to get a mailing list for a company that makes its money in the aftermarket!
ANOTHER STANDARD OS?

Nature abhors a vacuum, and artifice abets her by inventing standards. Thus is a 300-installation, 80-design-win operating system kernel, with only 3% of its potential market, able to call itself a standard: There's nothing else.

Hunter & Ready, founded in 1981, offers precisely such an operating system in its VRTX (for Versatile Real-Time Executive). While Pick, MS-DOS, CP/M-86 and the UCSD p-System (along with Pick and UNIX from the mini world) fight for dominance in the rapidly growing 16-bit commercial world, another entire market, two times larger at 2 million units yearly and also growing, is going begging. That is the market for operating systems for 16-bit embedded computers -- microprocessors used in non-office applications like communications, process control, instrumentation, military gear, robotics and automatic test equipment. At the moment, besides Hunter & Ready, this market is served by Intel, which offers an OS for its own chips only, a couple of software houses who offer a little bit of source code, and, most typically, by in-house efforts.

In general, anyone designing an industrial micro these days builds the software virtually from scratch -- just as all those hobbyists did before the advent of CP/M. Industrial system builders naturally resist any standard system which implies that their needs are not unique. There's some reason for this, of course. While most office workstations have a printer, a disk, and a screen, an industrial/lab micro may connect with anything from a missile guidance system to a frog's breath detector. So a standard operating system must be fairly flexible to handle all these unique needs.

VRTX is a portable operating system, designed to run on the Intel iAPX (8086) family, the Motorola 68000, or the Zilog 8002. A version for the NS 16000 is in the works. The system comes on two 2116 PROMs; that is, it's silicon software. This gives it a sizeable speed advantage over competing soft-software approaches, an important factor in real-time systems. Also vital for real-time applications is the system's ability to handle all manner of unscheduled external events; it offers substantial multi-tasking ability, along with 256 priority levels to allocate its resources. (That's how you can tell it's an industrial product: A commercial offering of the same ilk would have had 250 priority levels.)

For the moment, VRTX is only a kernel; one reason it's so flexible is that it leaves all the I/O configuration up to the designer. But H&R says it's working on an I/O add-on that's both useful and flexible.

Who's Hunter? Who's Ready?

Colin Hunter and Jim Ready left Rolm two years ago to found Hunter & Ready, which now has 20 people. They were working as technical writers/programmers in Rolm's unsung military spec computer division, an excellent place from which to perceive the need for standard software for embedded micros. The firm has $1.25 million in funding from Asset Management Associates, E.M. Warburg, Pincus & Co., and Xerox. It should turn profitable sometime this year on revenues of $1.5 million; next year's goal is $5 million -- and a lot more profit.

Selling into a marketplace that's not defined, to customers who would rather do it themselves, is a daunting prospect. The good news is that so far no one else is even trying.

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A WAY WITH WORDS: A CASE STUDY

One of the bitterest experiences with a new product is to spend weeks finding and warming up to a suitable name, only to discover too late that someone else got it first. Such was Victor's experience with Sirius, and Softword's with WordMate. Its new word processor is now called MultiMate.

Early last year Connecticut Mutual asked a pair of consultants to put up a Wang-like word processor on the insurance company's IBM PCs. They did a feasibility study and agreed to do so, with the proviso that they could resell the product elsewhere. Thus was MultiMate -- and Softword -- born.

The product is written for the IBM PC under PC-DOS, which means it needs a little (but only a little) tweaking to run on such MS-DOS machines as the Victor. To the user, it's close to the Wang word-processing system, but not a faithful imitation like Fortune's Fortune:Word (see page 7). For one, the key layout is somewhat different, although that can be compensated for with an assortment of stickers and a few hours' retraining. Commands, responses, syntax, are all the same.

Softword distinguishes itself from the crowd by its understanding of the Fortune 10X market and the excellence of its documentation. (Werner Frank, one of the better thinkers on office automation, sits on the board.) The product itself, however, still has a few bugs (especially when you try to print the text that MultiMate so easily creates). But in concept it is as rich as the dedicated word-processing system it imitates. Softword is facing the familiar need to trade off timeliness for perfection.

Fortunately, the company has shipped only 1,100 copies, 400 of them to Connecticut Mutual, so that the replacement job it's facing this week with Release 3.10 (replacing Release 3.06) is not too severe. The potential is exciting enough that the firm has won a contract from Victor with a substantial sum upfront, and is talking with several other significant pc vendors.

As for Softword itself, the company aims to keep on doing custom work for large corporate clients, mostly insurance companies, and convert the results into mass-market products. Currently under development is a file-transfer system allowing the movement of files between Wang and IBM mainframes and PCs.

Softword intends to grow reasonably slowly, eschewing grandstand advertising blitzes and getting most of its funding from customers (although it's talking to a couple of venture capitalists who might well provide guidance as well as cash). For the moment, at least, the OEM contracts and the Wang identification, plus distribution through Softsel, seem the best way of getting products out into the marketplace without straining the company's meager resources or forcing it to give up equity. As Smith Barney would say, it wants to gain prominence the old-fashioned way: "Earn it!"