Donald R. Herriott to receive IEEE's Cledo Brunetti Award

Donald R. Herriott, head of the Lithographic Systems Development Department at Bell Laboratories in Murray Hill, N.J., is the recipient of the IEEE's 1981 Cledo Brunetti Award for outstanding contributions in the field of miniaturization in electronics. The award, to be presented at the International Solid State Circuits Conference held in New York City February 18-20, carries a $1000 prize.

The IEEE cited Herriott's key contributions to the development of a practical electron beam exposure system for the fabrication of integrated circuit patterns and other areas of microlithography as the basis for his selection. EBES, developed at Bell Labs by Herriott and groups under the leadership of Robert J. Collier, David S. Alles, John W. Stafford, Carl Rose, and John Bruning, uses a beam of electrons to define circuit elements on the patterns, or masks, from which integrated circuits are made. EBES simplifies the mask-making process and reduces development time and cost by cutting the three-step mask exposure process to a single step. Elimination of two steps is possible because EBES draws the pattern in final size directly onto the coated substrate.

Herriott joined Bell Laboratories in 1956 as a consultant in optics research. His earlier research at Bell includes work on photoelectric lens measurements, optical communications, and lasers.

International Test and Evaluation Association formed

Charter members are being sought for the newly incorporated International Test and Evaluation Association. ITEA's members seek to foster communication, advance the art, and secure recognition for the challenging and vital role of test and evaluation as a full partner in the work of industry, academia, and government. ITEA's president, Allen R. Matthews, reports that chapters are already forming at centers of test and evaluation across the nation.

For membership information and a copy of the first ITEA newsletter, call David A. Herrelko at (301) 981-3266 or write to ITEA, Membership Committee, PO Box 603, Lexington Park, MD 20603.

Call for nominees

The Nominations Committee of the IEEE Computer Society invites suggestions for Computer Society officers and Governing Board nominees to serve commencing January 1, 1982. One-year terms for president, first vice-president and second vice-president, and two-year terms for the 10 Governing Board seats must be filled by membership elections.

Suggestions for nominees must be received by March 15, 1981, and should be accompanied by biographical information, including any past or present participation in the society's activities. Members are requested to send suggestions to the junior past president, T. Feng, Dept. of Computer and Information Science, The Ohio State University, Columbus, OH 43210.

The following is this year's nominations and elections timetable:

March 15—final date for proposing candidates to the Nominations Committee.
March 28—Nominations Committee report mailed to Governing Board; Nominations Committee selections asked for candidate statements/biographies.
April 28—final day for secretary to receive petitions from board members.
May 8—Governing Board selects nominees.
July issue—names of board-selected nominees and call for additional nominee petitions published in Computer.
July 1—candidate statements/biographies to Los Alamitos office.
July 25—last day for secretary to receive petitions from society members.
September 1—ballots mailed.
October 15—final day to receive marked ballots.
December issue—winners' names published in Computer.
Market report predicts boom in medical EDP equipment

Growing at nearly 11 percent annually through the mid-1990's, electronic data processing equipment expenditures will register the most dramatic gains of the biomedical electronic market, according to Predicasts, Inc. In *Biomedical Electronic Patient Care Systems*, Predicasts' analysts state that the concept of patient care systems—complete with data acquisition, input, manipulation, storage and retrieval capabilities—is becoming increasingly widespread.

Although medical EDP equipment has many obvious business applications, given the notorious paperwork burden of hospitals, rapid strides will be made in patient care areas such as information handling, computer diagnosis, and especially patient monitoring, which will be the single fastest-growing EDP application. Total medical expenditures on EDP equipment will reach $3.7 billion in 1995, over four times current levels.

Diagnostic equipment, however, will remain the dominant biomedical electronics sector with sales reaching $4.1 billion in 1995; therapeutic equipment will near $3 billion. Growth in conventional patient care monitoring equipment will slow due to the trend towards modules supported by multi-function central computers.

In most states, all institutions other than federal hospitals must now produce a certificate of need to purchase a computer tomographic scanner. These prestigious, extremely expensive (average $500,000) units currently require maintenance that can cost as much as 20 percent of the original price. In addition, technological advances rapidly render a CT scanner obsolete. Nevertheless, Predicasts' study maintains that long-term prospects are good for CTs. Prices will stabilize as manufacturers begin to recover development costs while technological refinement slows product turnover. CT equipment will be commonplace in large hospitals by the mid-1980's, and sales will reach $470 million by 1995.

US health care expenditures will grow over four-fold by 1995, reaching nearly $1 trillion, 10.8 percent of the GNP. Contributing factors include population growth, increasing health standards, expanded insurance coverage and federal spending, and sharply rising medical costs.

Predicasts says that Americans will undergo a three-fold increase in medical care prices by 1995. Spiraling demand for expensive, sophisticated services is reducing employee patient loads and productivity, while federal minimum wage laws and rising equipment costs are inflating expenses. In addition, the structure of the US health care system—with the government and insurance companies paying for most hospitalization and testing—is weakening incentives to keep costs down.

*Biomedical Electronic Patient Care Systems*, a 170-page report, is available for $775 from Predicasts, Inc., 200 University Circle Research Center, 11001 Cedar Ave., Cleveland, OH 44106; (216) 795-3000.

Program offers training for medical applications

In the wake of a rapidly expanding partnership between medicine and technology, the Biomedical Engineering Department of the University of Virginia's School of Medicine and School of Engineering and Applied Science has established a post-doctoral program for training in the application of computers in medicine.

Directed by biomedical engineering professor and chairman Ernst O. Attinger, the program is one of seven in the country. It is supported by a five-year, $80,000-a-year grant from the National Library of Medicine and offers a master of engineering to MDs and to PhDs in science-related fields.

One of the program's major goals, according to Attinger, who is also a professor of physiology, is the development of computerized medical information systems that will be cost-effective and have widespread applications in public health care.

JEDEC approves new memory standards

The Electronic Industries Association recently announced the approval of a new standard for 28-pin, 8-bit word memories (version B) by the JEDEC Council. The standard will be published as an addendum to the JEDEC standard No. 21, "Configuration for Solid State Memories," and replaces the version B material pertaining to this particular configuration. Other 8-bit memory standards currently in process will be published as part of this comprehensive standard document upon completion of the remaining work.

The new standard encompasses 16K, 32K, and 64K 28-pin pseudostatic RAMs; 16K, 32K, and 64K 28-pin static RAMs; 48K, 128K, and 256K 28-pin EPROMs; and 64K, 128K, and 256K 28-pin ROMs. Other memory standards also approved by the council were for a 16K × 1 (5-volt) dynamic RAM packaged in a 16-pin DIP, a 64K × 1 (5-volt) address multiplexed dynamic RAM, also packaged in a 16-pin DIP, and an 8K × 8, 24-pin EPROM.

These memory standards define the pin configurations, the pin functions, and provide pin-out schematics. In addition, the dynamic RAM standards define the timing involved and show characteristic waveforms for the alternate pin-1 (refresh) function.

For additional information contact EIA, 2001 Eye Street N.W., Washington, DC 20006; (202) 457-4981.

DEC software exchange established

A free software exchange service has been established by Digital Publications, Inc., for Digital Equipment Corporation PDP-8 computer users. This service allows PDP-8 users to submit their software for software exchange credits which can be used to obtain any software listed in the *Quarterly Software Exchange Bulletin*.

Also available, via a dial-up line, is the electronic magazine *Digital Digest*. For additional information write to PDP-8 Software Exchange, 3169 Holcomb Bridge Rd., Suite 307, Dept. 1135, Norcross, GA 30071.
New reports predict falling costs, expanding markets through 1985

Creative Strategies International, a market research firm, has prepared three new reports that predict rapid expansion of the microprocessor/microcomputer, low-cost computer printer, and portable terminal markets through 1985.

Microprocessor/microcomputer market. In *The Microprocessor/Microcomputer Industry*, CSI predicts that worldwide sales of microprocessors and microcomputer products will top $5 billion by 1985, reflecting a compound annual growth rate of 32 percent. Despite the participation of more than 100 competitors, the industry remains fairly concentrated, with the top four firms accounting for 80 percent of revenues. The barriers to entering the microprocessor/microcomputer industry have become significant and will increase as the technology escalates and the industry matures. Companies choosing to enter the field will have to make a major commitment in software and systems support to be successful.

The US is currently the major consumer of microprocessor-based products, accounting for nearly three-fifths of the total market. By 1985 this figure will decrease to less than half, due to maturing technological sophistication in other countries. Most of the difference will be made up by the Japanese and Western European markets, which together will account for an increase of nearly 35 percent in the world market.

The largest increase in unit shipments through 1985 will be in microcomputer boards. Microprocessor and microcomputer chips, as well as general-purpose microcomputer nucleus systems, will grow at rates greater than 30 percent compounded annually. Although 8-bit models dominate today, over the next five years the highest growth segments will be 16- and 32-bit models. These advanced architectures will gain at the expense of 4-bit MPUs and, to some extent, the 8-bit versions. The telecommunications equipment market, with its move from analog to digital technology, represents one of the high-growth markets for integrated circuits and is an ideal marketplace for the microprocessor.

The Japanese will continue to chip away at the production lead now held by the US and will begin to take a pace-setting role in product innovation. US firms, however, still have a three-to-five-year lead in most segments and are beginning to reevaluate their strategies in order to retain this lead.

Low-cost computer printer market. The US market for low-cost computer printers will exceed $300 million by 1985, reflecting a compound annual growth rate of 24 percent. During the forecast period, unit shipments will more than triple, according to *Low-cost Computer Printers*.

CSI defines a low-cost computer printer as one that prints at least 40 characters per line and is available to the end user for $1000 or less. Products that currently meet these criteria are serial impact matrix and thermal and electrosensitive nonimpact printers.

Serial impact matrix printers will account for approximately 80 percent of the low-cost printers sold in 1980. The multiple copy capability provided by this technology makes it particularly suitable for use in small business and professional applications. These markets are still largely untapped and offer huge potential. Technological advances may also contribute to the 32 percent compound annual growth rate forecast for impact printers. Improved print quality is expected to make impact matrix printers a viable alternative to the daisywheel printers currently used in low-end word processing applications. The greater speed and lower cost of impact matrix printers will make them very attractive to word processing end users.

Reliability and low cost have led to the popularity of nonimpact printers in the home/hobby market segment, but their outstanding graphics capability suggests that their future success lies in instrumentation applications.

The CRT hardcopy application segment is still small, but offers significant potential. The trend toward distributed data processing with intelligent terminals in remote locations will increase the demand for low-cost printers. Currently, more expensive printers are being interfaced with intelligent terminals, but as the capability and print quality of low-cost printers improves they will be used in distributed data processing systems.

The report states that impact and nonimpact printers will generally remain in separate application areas and continue to coexist in relative peace. Prices are expected to creep even lower, bottoming out near the middle of the forecast period when inflation and rising labor costs will make further price declines infeasible even for the large manufacturers.

Portable terminal market. Competition in portable terminals will be intense during the next five years as new vendors such as Tandy, Apple, IBM, DEC, and Sears enter the marketplace. Current indicators, however, point to a market that is expanding rapidly enough to permit success by many participants. In *Portable Terminals*, CSI forecasts worldwide revenues of nearly $900 million by 1985, a compound annual growth rate of 31.5 percent; the growth rate for foreign revenues will be considerably higher as many US vendors make a concerted effort to penetrate overseas markets.

A portable terminal is defined by CSI as a handheld or briefcase terminal used primarily for business applications, with some type of communication capability and a cost of less than $10,000.

Traditional applications, such as order entry for inventory replenishment, currently account for over three-quarters of the market for handheld units, but this percentage will decrease considerably by 1985. One of the largest new markets is in the area of route accounting. Major handheld vendors are marketing units for use in sales and delivery in the soft drink, dairy, liquor, tobacco, and pharmaceutical distribution fields.

The 1980’s will mark the beginning of a more extensive type of briefcase function—distributive data processing. Terminals are being manufactured that are self-contained, programmable microcomputer systems with internal, as well as removable, storage. The majority of present end users are engineers or specially trained programmers in field analysis and testing, but CSI expects this end-user configuration to change significantly as industries such as insurance and real estate become fully automated.

Increased competition and new technological developments will result in substantial price decreases for nonintelligent, smart, and microcomputer-based briefcase units during the forecast period. Despite these lower prices, revenues for this market will more than triple by 1985.

These reports are priced at $1195 each. For further information contact Creative Strategies International, 4340 Stevens Creek Blvd., Suite 275, San Jose, CA 95129; (408) 249-7550.