PRINTOUT

JOSEPH B. SIDOWSKI
University of South Florida, Tampa, Florida 33620

PRODUCTS

Telemetry Activity Monitor

RATAM was developed for remote monitoring of human and animal movements under field conditions. It is intended for larger subjects which are able to carry the 170-g transmitter. Accelerometer-sensor produces signals proportional to the acceleration of the limb. Sensitivity is high enough to record tremors or shivering. FM radio frequency link operates on the frequency of one of 12 TV channels. Price of RATAM is \$5,990 including sensor, transmitter, radio receiver, and printing counter with timer.

Columbia Instruments
950 North Hague Street
Columbus, OH 43204

Temperature Feedback

The J42 thermal monitoring instrument has a self-contained visual display module that allows the subject to discriminate direction of change, rate, and trends in rate of change (acceleration). The visual display works in conjunction with a variety of built-in audio cues: tone changes as temperature changes, repetition rate is proportional to temperature rate of change, and tone can be programmed to activate only when temperature changes in one direction. Price: \$395.

Cyborg Corporation
342 Western Avenue
Boston, MA 02135

Blood Pressure Monitor

The Kenz 45-S sphygmomanometer is portable, solid state, and automatic. Optional equipment includes a digital printer, interval timer, and a foot switch.

Internation Exchange Corporation
Box 41494
Indianapolis, IN 46241

Digital Heart Rate Meters

The Series 200 digital heart rate meters are designed to monitor animals of any size. The meters feature a noninvasive, sterilizable pulse sensor which has no exposed parts or conductive surfaces. All models have hands-free ac-dc operation, including rechargeable batteries and charger, LED display, audible and visual beepers, and arrest alarm.

Impact Instrumentation, Inc.
Building J-1
280 North Midland Avenue
Saddle Brook, NJ 07662

Printer

The Compatible Printer is a stand-alone 16-column unit that is advertised as compatible with BRS/LVE, LVB Corporation, Gerbrands, Grason-Stadler, Coulbourn Instruments, and Lafayette Instruments. The printer accepts inputs from 5- or 12-V solid state systems or 28-V electromechanical systems. Print rate is 3 lines/sec. Price: \$995.

Med Associates, Inc.
Box 47
East Fairfield, VT 05448

Doppler Ultrasound for Blood Flow and Velocity

The BV100 cardiovascular pocket unit allows the user to hear blood flow sounds on either the volume-adjustable built-in loudspeaker or headset. The unit is battery powered. The BV380 blood velocimeter allows the user to see both velocity and direction data on a single meter. Sounds may be heard on built-in loudspeaker or stereo headset. Outputs to tape recorders.

Sonicaid
P.O. Box 714BB
Fredericksburg, VA 22401

Logic Modules

LVB Corporation logic modules may be used in conjunction with the company's "Logic Box" or as a separate system. The modules are compatible with Med Associates physiological modules.

LVB Corporation
Box 2221
Lehigh Valley, PA 18001

Data Storage Device

The Model 5200 carousel tape system is a high-capacity storage device for use with micro- and mini-computers. The unit resembles a circular slide projector and houses 16 ¼-in. tape cartridges in a removable pack. Computer to peripheral interface has been simplified by the incorporation of dual I/O ports and two 8080 microprocessors in the logic circuitry. All house-keeping functions are microprogrammed. Storage

capacity, 32 megabytes. Designed for unattended operation.

National Computer Systems, Inc.
4401 West 76th Street
Minneapolis, MN 55435

Used Computers and Peripherals

American Used Computer (P.O. Box 68, Kenmore Station, Boston, MA 02215) lists the following: Data General (DG) 800 with 8k or 16k start at \$3,500; DG 2/10 with 32k, \$5,950; DG 1200 Nova with 16k, \$2,500; DEC PDP-8/I with 8k at \$1,995; Teletype ASR 33, \$1,300; a green phosphor video monitor, \$150; PDP-12/30 Advanced LINC, \$11,950.

The Computer Warehouse Store (584 Commonwealth Avenue, Boston, MA 02215) is advertising up to 20% discount on microcomputer systems (IMSAI, INTERSIL, KIM, SCAMP, SOUTHWEST TECH, LEAR SIEGLER, ICOM) with the purchase of a "featured" peripheral.

Newman Computer Exchange lists: new Data General tape system (11 in., 75 ips, 9 track; in cabinet with 4030 controller) at \$7,300; Nova 2/10 with 8k at \$3,450; Nova 1200 with 16k, \$4,165; DEC PDP-8/I with 4k, TC01 controller, two TU55 DECtapes, ASR 33 Teletype, and cabinet at \$5,000; DEC PDP-8/L or 8/I with 4k and ASR 33, \$2,000; new data printer, Model V236, \$5,750; ADDS 580 CRT, \$1,395.

Paper-Tape Reader

The OP-80A (0-5,000 cps) is advertised as a high-speed/low-cost paper-tape reader with no moving parts. Kit is \$74.50; \$95 assembled and tested. The unit is 4.6 x 3.2 x 1.0 in. and weighs less than 1 lb. Connection is through a standard 8-bit parallel interface.

Oliver Audio Engineering
7330 Laurel Canyon Boulevard
North Hollywood, CA 91605

Printer

The EX-800 prints the 96-character ASC-II set and allows typeface changes from 20 to 40 to 80 columns/line. Each character size can be selected by software or by hardwiring. Printout is at up to 160 cps. Price including low-paper detector, bell, and case is \$655.

Axiom Corporation
5932 San Fernando Road
Glendale, CA 91202

Video Terminal

The Conversor 8000 is lightweight and portable, with a display format of 80 characters across with 24 lines. TTY compatible and performs automatic scrolling. Price: \$695.

Computer Conversor Corporation
1961 Old Middlefield Way
Mountain View, CA 94043

Naked Printer Kit

The KP-40 is a printer in kit form priced at \$179. The unit consists of a C. Itoh 7040 print mechanism, an interface/power supply pc board, and all electronic components. The KP-40 has a seven-wire print mechanism and produces 5 by 7 impact dot matrix characters, with a 40-character line and a throughput rate of 75 lines/min.

MPI

P.O. Box 22101
Salt Lake City, UT 84122

Aquatic Activity Monitor

BIOPULSE is an aquatic activity monitor that measures continuously and produces a digital printout. The unit uses a sonic probe device to make continuous measurements. Previous systems generally used photocells. The BIOPULSE system produces no measurable input and thus can be used to measure events during normal diurnal rhythms. The system can be made to store and deliver information on a time-programmed basis. The activity analyzer is tuned to any enclosure. Once this is done, no further adjustments need be made. The unit can run for 300 days without attention, depending on the time sequence selected.

Alpine Laboratories Division
70 Oak Street
Norwood, NJ 07648

Retractable Rat Lever and Control Panel

The G6311 retractable rat lever is a motor-driven heavy-duty rat lever capable of being retracted from or extended into the rat cage on command. The action of the motor-driven lever is smooth and quiet and avoids problems associated with solenoid-driven devices. The lever is dielectrically isolated from the outer housing and may be used as an electrode for shock presentation or proximity testing. Force required to operate the lever is adjustable from 2 to 30 g. The G4655 control panel permits operation of the lever from 24 to 28-V dc programming equipment.

Ralph Gerbrands Company, Inc.
8 Beck Road
Arlington, MA 02174

ECG

This Beckman ECG amplifier accessory is for use with 8- and 16-channel Accutrace EEGs. It provides one channel of ECG data to be recorded simultaneously

on a bottom event marker during EEG recording.

Beckman Instruments, Inc.
Electronic Instruments Division
2900 River Road
Schiller Park, IL 60176

Pulse Sensor

The pulse sensor measures capillary pulsations from the fingertips, ear lobes, toes, or forehead. With a finger clip, the sensor is placed inside the clip on a Velcro button before slipping the clip onto a finger or toe. It can just as easily be lifted from its Velcro button and taped to forehead or ear.

Fairfield Medical Products
2777 Summer Street
Stamford, CT 06905

BRIEFS

Micro Market

Shipments of microcomputers, \$45 million in 1975, are expected to reach \$1.2 billion by 1985.

Cross-Cultural Research

A 16-week international project on cross-cultural research for behavioral and social scientists was held at the East-West Culture Learning Institute in Honolulu, January 5 through April 30, 1977. The 18 participants were from the Phillipines, Australia, Japan, Iran, Korea, Nepal, India, Thailand, and the United States. Information concerning the proceedings is available from John H. Williams, The East-West Center, 1777 East-West Road, Honolulu, HI 96822.

Animal Conditioner

The KCF-177 monitors and controls eight conditioning experiments: continuous reinforcement, control yoked to continuous reinforcement, delayed reinforcement, fixed ratio, variable ratio, fixed interval, variable interval, and extinction. Up to four animals can be simultaneously conditioned on the same or different schedules. An incorporated microcomputer is used in the automatic training mode, where the ratio or interval schedule can be automatically adjusted to vary in either direction from an experimenter-defined starting point, depending upon the animal's success in learning. The computer memory maintains information about the temporal sequence of responding and adjusts the schedule to reflect the animal's ability to acquire more stringent schedules. The computer program is contained in nonvolatile ready-only memory. Schedules remain programmable in that the experimenter is allowed to specify parameters such as time delays, ranges, ratios, and so forth, through the use of thumbwheel switches. No knowledge of computers or software is required.

The KCF-177 comes with power supply for \$995. The system carries a 1-year limited warranty on parts and labor.

K.C. Forseth Company
P.O. Box 466
Hanover, NH 03755

Psychological Equipment

Electronic Developments markets psychological instruments including tachistoscopes (three-field is \$2,820, six-field binocular is \$4,858), voice keys, process timers, counters, and skin conductance meters (\$388) with add-on audio feedback unit (\$79). Catalog and price list is available on request.

Electronic Developments
W.C.R. & B.I. Withers Ltd.
Unit 37/E Platt's Eyot
Lower Sunbury Road
Hampton, Middlesex
England TW12 2HF

Add-Subtract Counter

Kessler-Ellis Products Company (Atlantic Highlands, NJ) markets an electronic add-subtract counter at \$90. The unit comes with six .2-in. high-LED displays or four .4-in. orange high-efficiency LED displays.

Adjustable Lens Mounts

Newport Research Corporation (18235 Mt. Baldy Circle, Fountain Valley, CA 92708) recently introduced two new adjustable lens mounts, Models ALM-2 (\$80) and ALM-4 (\$85). The v-grooves in this mount are an integral part of a rod, do not swivel during mounting, and only axial pressure is applied to the lens when securing it.

Euthanasia Solution

T-61 Euthanasia solution is a combination of three products: a general anesthetic, a muscle relaxant, and a local anesthetic. It is rapid acting, dependable, and comparable to pentobarbital sodium, but is not subject to the Controlled Substances Act of 1970. The solution results in cerebral death within seconds, no apparent signs of pain or discomfort, no incontinence, and no apparent voluntary or involuntary spasm. Animal dosages are supplied.

National Laboratories Corporation
Somerville, NJ 08876

Laser and Electro-Optical Systems Conference

The second biennial Conference on Laser and Electro-Optical Systems (CLEOS) sponsored by the Institute of Electrical and Electronics Engineers and the Optical Society of America will be held February 7-9, 1978, at the Town and Country Hotel in San Diego, CA. Further

information is available from M. Chang, Newport Research Corporation, 18235 Mr. Baldy Circle, Fountain Valley, CA 92708.

BRS/LVE Price List

BRS/LVE recently published a new price list. Individual lists are available for solid state, electro-mechanical, and computer control, as well as for animal and human environmental. Not all items were affected and there were both increases and decreases.

James W. Webster, Sales Manager

BRS/LVE

5301 Holland Drive

Beltsville, MD 20705

Image Evaluation Conference

A symposium on "Recent Advances in the Psychophysical and Visual Aspects of Image Evaluation" will be held October 24-25, 1977, at the Holiday Inn Downtown, 120 East Main Street, Rochester, NY 14604. Cooperating societies include: Optical Society of America, Psychonomic Society, and Association for Research in Vision and Ophthalmology. Sponsor is the Society of Photographic Scientists and Engineers (1411 K Street, NW, Suite 930, Washington, DC 20005).

Heart-Monitoring Exerciser

Keiper (Rockenhausen, West Germany) is marketing a heart monitoring bicycle exerciser based on Rockwell International's PPS-4/2 microcomputer. "Dynavit" operates when the user punches his or her weight, age, and sex into a keyboard; heart rate is fed into the system from a wristband sensor during pedaling. The microcomputer calculates a "health factor" on a scale of 0-150 which contains algorithms developed by Keiper and stored in program memory. If the cyclist's pulse is excessive, a red light flashes and the operator lets up by slowing the pedaling or reducing pedal load via a pushbutton control. Price is expected to be \$1,000 in the U.S.

Microcomputer of the 1980s

William Baker, group director for microprocessors at National Semiconductor Corporation, predicts that the super microcomputer of the 1980s will consist of a single 300-mils-square chip to hold an 8-bit CPU, 16k PROM, 1k RAM, 8-bit ADC, 8-channel mux, registers, I/O, and other devices. He predicts the chip will be available in 4 years (1981).

Plasma Display Terminals

Interstate Electronics Corporation in Anaheim, CA will introduce a standard line of plasma display terminals in 1977.

TICCIT

Hazeltine Corporation (Greenlawn, NY) has acquired commercial rights to TICCIT, a computer-aided

instruction system from Mitre Corporation on an exclusive basis for 2 years. TICCIT (timeshared, interactive, computer-controlled, instructional television) uses minicomputers and modified color TV sets as terminals to provide individual instruction to as many as 128 students simultaneously. Hazeltine plans to market the system through a new facility in the Washington, DC area. The approach of TICCIT is different than that of the big computer-based PLATO system that Control Data Corporation recently commercialized. PLATO was developed at the University of Illinois.

Semiconductor Replacement Guide

The Workman Electronic Products Semiconductor Catalog and Replacement Guide consists of 175 pages that list and cross-reference more than 75,000 manufacturer numbers to more than 200 Workman replacements. A cross-reference to other major semiconductor manufacturers is included. Write Workman Electronic Products, P.O. Box 3828, Sarasota, FL 33578.

Animal Behavior Brochure

Coulbourn Instruments, Inc. (Box 2551, Lehigh Valley, PA 18001) recently published a brochure covering modular cages, shockers, and programming equipment for studies of animal behavior. Copies are available on request.

Microprocessor Cross-Assemblers

Designed for DEC's PDP-8 minicomputers, the X8 (Cross-8) series of two-pass microprocessor cross-assemblers runs in 8k of memory under the OS/8 operating system. According to the developers, the X8 series fills a software gap experienced by many PDP-8 users involved with microprocessor program development. Cross-assemblers are available for the 6502, 6800, and 8080 microprocessors. Assemblers for the 2650 and F8 microprocessors are near completion.

Sierra Digital Systems

1440 Westfield Avenue

Reno, NV 89505

Inexpensive Pigeon Cages

(Submitted by William L. Palya, St. Joseph's College, Rensselaer, IN 47978)

Where cost and technical limitations are primary considerations and pigeon dust is a comparatively minor consideration, serviceable cages and foodcups may usually be obtained from local poultry equipment suppliers. Chicken "laying" cages are available in several styles and sizes and typically come in banks of 8, 10, or 16 cages which are easily attached directly to a wall. Each open-wire cage in an 11 cage bank costs between \$1.50 and \$2.00 per cage.

We are presently using Chore-Time (Milford, IN) laying cages (25.4 x 45.7 x 35.6 cm) mounted upside down. The extended bottoms provide support for the dropping paper and also provide a cover over the food

and water cups. The doors can be installed upside down, which provides unobstructed access to the pigeons without interference by the roof.

Device to Facilitate Pigeon Weighing

(Submitted by Robert Epstein, University of Maryland Baltimore County, Baltimore, MD 21228)

A modification of the device introduced by Catania (1962) for weighing pigeons has been used with some success at the University of Maryland Baltimore County. The original device was a frustum-shaped tube of cellulose acetate that was fixed to the baseplate of a scale. To weigh a pigeon, the bird was pushed head first into the larger end of the tube until it was firmly held in place, and then the experimenter read the scale. Unfortunately, if the bird tilted its head as it was being pushed into the tube, the bird had to be reinserted to avoid damaging one of its eyes as it rubbed against the plastic. Furthermore, the handler lost control of the bird momentarily when removing it from the tube. Finally, the tube was not easy to clean and typically accumulated waste where the ends of the plastic sheet overlapped.

The current modification eliminates these problems. It utilizes a plastic sheet similar to the one that formed the Catania device, but the sheet is not permanently fixed in the shape of a tube. The sheet is supported by a U-shaped metal brace, and both the brace and the sheet are bolted to the baseplate of the scale. The sheet is normally open at the top. A bird is weighed by placing it in the "U" with one hand, and then wrapping it into the sheet with the other hand. The wrap is held tight by Velcro strips that are attached to it. Neither the direction of the bird nor the position of its legs makes any difference when placing it in the wrap. The bird is removed by detaching the Velcro and unwrapping the bird with one hand while taking hold of the bird with the other hand.

The Velcro may be positioned so that the wrap can be fixed in the frustum shape of Catania's original device, facilitating "freedom of choice" for laboratory personnel. A detailed template of the wrap is available without charge from the author.

REFERENCE

- Catania, A. C. Solution to a weighty problem. *Journal of the Experimental Analysis of Behavior*. 1962, 5, 480.

Update on Self-Luminous Fixation Annuli

(Submitted by Aleeza Cerf-Beare, University of Maryland Baltimore County, Baltimore, MD 21228)

In the course of re-instrumenting a pathway incorporating the self-luminous fixation ring described previously (Cerf-Beare & Leach, 1975), it became necessary to make a new ring which was to be located inside a blackened viewing tube, adjacent to a lens. It became apparent that it is not necessary to squeeze the

luminous compound into a plastic tube, a laborious and time-consuming process. Instead, a groove, 2 mm deep and wide, was milled into a round lens-less lens mount, and the compound was squeezed directly into the groove until it was uniformly filled. After the compound had dried (about 12 h), the lens mount was placed next to a mounted lens in the viewing tube so that the luminous ring appears to the observer as surrounding the lens.

In this position, however, no light reaches the annulus until after stimulus presentations have been in progress for some time, that is, after some of the light entering from the stimulus side of the optical pathway becomes absorbed by the ring. Therefore, in order to make the ring visible before the experiment begins, light from a small desk lamp is shone into the tube (at the observer's end of the tube) for 5 min. Sufficient light is thus absorbed by the ring so that the dark-adapted observer has no problem locating the ring subsequent to removal of the lamp and before stimulus exposure begins. Light from subsequent stimulus exposures permits the ring to continue fluorescing for the duration of each experiment. An alternative way in which the ring can initially be activated is to provide space for the temporary insertion of a front-surface mirror. Light from a number of (preexperimental) stimulus exposures would be reflected back by the mirror and thus activate the annulus. A third alternative is to activate a photo flash unit 5-10 times directly in front of the tube. This activates the ring, even through a 1-mm artificial pupil, to remain visible for 3 h.

REFERENCE

- Cerf-Beare, A., & Leach, L. Instrumentation of a self-luminous fixation annulus. *Behavior Research Methods & Instrumentation*. 1975, 7, 281-282.

Up-Down Counters

Teledyne Semiconductor (1300 Terra Bella Avenue, Mountain View, CA 94042) has added two new up-down (reversible) counters. The HiNIL 373 (decade) and 374 (hexadecimal) counters feature master-slave flip-flops with active outputs triggered by a low- to high-level transition of either of two clock inputs while the other is high. Pulsing one clock input causes the device to count up; pulsing the other causes it to count down. Other features include high noise immunity, carry and borrow outputs for N-bit cascading, clear input independent of count and load, individual preset for each flip-flop, and synchronous operation.

Speechlab

The May 1977 issue of *Popular Electronics* (pages 43-50) features an article on Speechlab, described as "the first hobbyist vocal interface for a computer." Speechlab is priced at approximately \$250. The single pc board plugs into an Altair-bus connector (used by many microcomputer manufacturers). One section of the program allows the computer to accept

a vocal input (via a microphone), analyze the spoken word, and create a digitized version that is stored in memory. The second part of the program allows the user to speak to Speechlab and have the computer generate the output selected for that particular sound. Vocabulary size is a function of the speech recognition algorithm used and the amount of memory available.

RAM

Fairchild Camera and Instrument Corporation (LSI Group, 464 Ellis Street, Mountain View, CA 94042) is offering a new dynamic bipolar 4,096-bit random access memory (RAM) designed for operation in a single 5-V dc supply. Two versions are in production. The 93481 has a maximum access time of 120 nsec, with 280-nsec cycle time of 75 nsec. The faster 93481A has a maximum access time of 100 nsec, with 240-nsec cycle time.

Operational Amplifier

A new low-cost dual operational amplifier with a unity gain bandwidth over 2.5 MHz has been introduced by Motorola Semiconductor Products (P.O. Box 20912, Phoenix, AZ 85036). The new devices feature a typical large-signal voltage gain of 200 V/mV and a CMRR of 90 dB.

Wideband Bioamplifier

Coulbourn Instruments (Box 2551, Lehigh Valley, PA 18001) is marketing a new S75-02 wide-band amplifier. The standard unit covers from 100 Hz to

20 KHz. A special unit is available covering 100 Hz to 20 KHz.

Birds of Prey as Research Subjects

The March/April 1977 (pages 44-46) issue of *Lab Animal* has an instructive article on the care and handling of birds of prey in captivity. Information covers restraint, feeding, caging, sexing, and releasing of these birds. Diets are described for hawks, eagles, falcons, and owls.

National On-Line Computer Conference

The 1977 meeting of the National Conference on the Use of On-Line Computers in Psychology will be held on November 9, the day before the Psychonomic Society Meetings. The Conference will be held at Catholic University, Washington, DC. The local arrangement chairman is Dr. James Howard, Department of Psychology, Catholic University of America, Washington, DC 20064. Other members of the local arrangements committee are B. James Starr of Howard University and Alan Silverberg of Walter Reed.

Information concerning membership or participation in the Conference may be obtained from Dr. Daniel Bailey (or Dr. Peter Polson), CLIPR, BPSY E318, Department of Psychology, University of Colorado, Boulder, CO 80309. Individuals or firms interested in exhibiting should contact the exhibits chairman: Robert Fitzhugh, Unit Director, Computer Services, Learning Research and Development Center, University of Pittsburgh, Pittsburgh, PA 15260.