FREE TAKE ONE

CIE TRS-80™ Bulletin

EDITORIAL CONTENT SUPPLIED BY TRS-80 COMPUTING

Vol. 1 No. 5 Bill McLaughlin, editor April, '79

TRS-80 trademark Tandy Corp., wholly independent of this publication.

Software cassettes $7.50 for up to 77 programs; People's Software sells ..... 6, for little as 10¢ per program ..... back

Durable, full-sized printer just $150 in one-time offer 12

New tape drive nearly as fast as disk unit 3

Text editors equal Pencil features, cut cost and complexity 4

Forth, Tiny C, Fortran for TRS-80 5

Why CP/M? 8

Program in plain English it's 'Natural Language' 8

New disks faster, more reliable 8

Dual-head disks use both sides 9

Write FCC to give prod to community access/data TV 11

CLOAD Magazine improves its tapes

By RALPH MC ELROY, publisher
CLOAD Magazine

Recent issues of CLOAD Magazine whould be a lot easier to load than the early editions.

When we started out in March of '78 (seems like years ago), we felt that a row or two of cassette recorders hooked up to a computer would be sufficient. The computer, an extensively modified dual-disk Altair (all operational Altairs are by definition extensively modified), would be capable of automatically loading each program into memory from the active disk, and outputting it directly to the tape heads. Fortunately, we never implemented that plan. For one thing, we'd be wearing out tape heads faster than we could replace them. For another, we'd be doing nothing but feeding and pulling of the product. There are about twenty reasons why mass duplication "in cassette" does not work.

Forearmed with this information, we approached a company which is in the business of mass duplication of cassettes. They take information from a "pancake" of narrower tape, and spool it into a cassette shell after recording it.

At first, they would take a tape submitted by us, load it into their TRS-80, and record a new master tape. Coupled with the audio/music format which we had on our first issues, this let to enough cutting, mixing and duping to please the most ardent rock musician.

We soon realized that (1) CLOAD Magazine would have to supply a quality master, or (2) CLOAD Magazine would have to pay for the service. As choice (2) would involve a subscription increase of about $60.00 a year, we opted for the former. We had by this time purchased a suitable recorder, and were anxiously awaiting delivery.

(Cload typically includes an about-C45 cassette with about fived programs on it, Level I on one side, II on the other. You also get about three sheets of a very good newsletter.

(CLOAD sells for $3.50 per copy prepaid (CA residents add 6 per cent tax), or $36 per year/$20 for six months. Address is Box 1267, Goleta CA 93017. Ed)

Cook Laboratories offers digital duping

Cook Laboratories, which has pioneered audio recording developments since 1945, now duplicates digital generation of cassette recording.

The firm claims its new digital duping:

1) Loads more easily into everybody's computer, even for the more difficult formats (TRS-80 Level-II?),
2) Loads more reliably than "original" cassettes,
3) Costs less — fewer complaints, less letter writing, fewer exchanges,
4) Is recorded on premium high-density Agfa tape for low dropout (Crolyn available at small increase in cost).

The equipment is a complete digital channel, all the way from the computer-signal restoration of the programmer's original tape, on to the recording heads. No analog (audio) system can approach it for yield or reliability of loading, Cook Labs claims.

Firm offers tape tips

Cook Laboratories suggests cassette software publishers adopt one of the following alternatives, in order of preference:

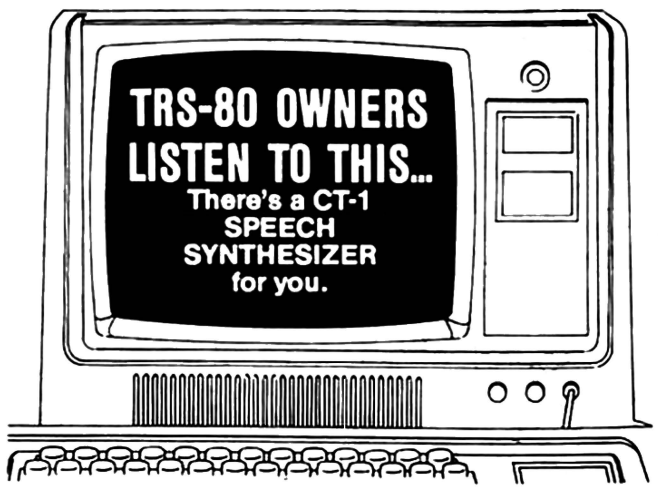
1) Write your programs down into a 15 inch-second full track) reel-to-reel machine, in sequence exactly as you want them to appear on the cassette (or as you want them to appear on the cassette (or record), with 5 or 10 second pauses (usually) between programs. Set recording level at -6 or -7 db and DO NOT change level during recording.
2) As in (1), but a 7.5 ips machine, please do not use 1/4 track machines. Weave of the tracking may compromise the result.
3) If you must use cassette, clean heads, and pressure roller, and ask us for the special heavy-guage Crolyn mastering cassette ($7 ea). Object — minimize jitter and dropouts. A pulse which has been split or interrupted by a small or partial tape dropout may load back into your machine, but others can have problems.

'Data Dubber' dupes even machine tapes

The Peripheral People in Mercer Island, WA, are offering something they call "Data Dubber" which they say lets you obtain perfect CLOADs even from tapes with noise, hum, distortion or minor dropouts—and without constantly adjusting the volume.

They also claim that if instead of connecting the device to computer, you hook it to a second recorder, that "Data Dubber" will make perfect reproductions, just as if the data came from the TRS-80.

Said to work equally well with Level I and II, the accessory is priced at $39.95 postpaid, unconditionally guaranteed if returned within 30 days. Address is Box 524, zip 98040.



That's right. The famous Computalker CT-1 Speech Synthesizer that produces highly-intelligible natural sounding speech can now be installed on your TRS-80.

Completely self-contained, the Model CT-1T comes with its own chassis and power supply, on-board audio amplifier (2 Watts), CSR1 software, and interconnect cable. The CT-1T comes with complete documentation and is available on either 5¼ inch diskette or cassette. TRS-80 Level II and 16K words memory required, 32K words recommended.

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Leaderless cassettes from Tarzac Computer

TARZAC/Computer Services, Box 10203, Norfolk, VA 23513, is currently supplying their C-12 leaderless computer cassette nationwide.

The cassette is a true leaderless five-screw design using 3M brand LN recording tape. No one has ever reported a dropt-out, Cload, or other error when using TARZAC/Computer Cassette.

As many people know, the problem with leadered cassettes is that leaders don't record since it isn't tape, and leaders vary in length from 18 to 24 inches.

With C-12 leaderless computer cassettes there is no leader to fuss with. Price: $1.95 each, in Norelco hard storage box, with lables: $1 shipping charge per order. Also, pre-printed blank cassette labels, on pressure-sensitive yellow-tint stock, are available for 80¢ per sheet of 10 labels or $5 for 10 sheets (100 labels); $1 shipping charge per order.

Solved all his cassette problems

For me, TRS-80 Computing Vol I. No I. was worth the original $12 just for the cassette recorder modifications.

And in Vol. I. No. 2 John Strong's article on cassettes was excellent. To put some of his ideas "together" I will now always "double dump"--and then to prevent losing a bit will then "CLOAD?" This should verify that there are no lost bits.

—ERNEST CHAMBERS, Box 688, Pioneer, CA 95666

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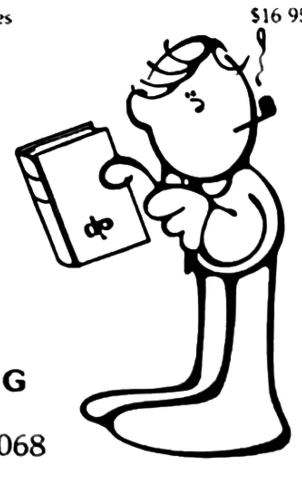

Full sized floppy disk boosts '80s capability

Parasitic Engineering, one of the most established microcomputer products companies, has entered the TRS-80 market with a full-sized floppy disk drive (8"). One of the few people outside of the company that knew of the project, John Dvorak of California Software, discussed the product with the staff of the Computer Information Exchange.

"The project to develop a product line for the TRS-80 began over three months ago. I am basically a marketing man and I was brought in as a consultant; that's how I found out about it," says Dvorak. Company president Howard Fullmer, who is product designer, conceptualized the product.

This full-sized floppy system is simply to interface the TRS-80. It plugs right into the expansion interface after an easy change has been made to the system. The user simply plugs a small circuit board into the disk controller socket in the expansion interface and then replaces the controller chip into a socket provided on the board. It takes about 30 seconds to make the change. The user can easily remove the new board and restore the equipment to its original form. There is no soldering, trace cutting or any surgery involved that may damage the system.

It lets the TRS-80 user keep his system simple, which is the reason he bought it. It also lets users who have already purchased one or more mini-drives still use them, since this system lets you mix or match up to four drives, mini or maxi size."

Parasitic provides the reliable workhorse of full-sized floppies, the Shugart single density 8" drives (SA-800) that have an access time that is roughly five times faster than a mini-disk drive. Each drive can store 250,000 Bytes of information allowing for the first megabyte-TRS-80 (four drives on-line).

The system can run TRS-DOS, as Parasitic will provide a patch allowing use of 8" drives, or the system can run the ubiquitous CP/M (a trademark of Digital Research). The system has been dubbed the Maxi-Disk (TM).

One full sized floppy drive, with power supply, cabinet, documentation and interface board sell for $995. Additional drives with power supplies and cabinet will sell for $845.

Parasitic Maxi-Disk can run standard CP/M. It does not need one of the relocated and mostly incompatible CP/Ms that have been specially rewritten for the TRS-80.

The problem, until now, with trying to run some of the more widely available software has been with the lower memory of the TRS-80 being tied to the Basic/operating system ROM's (read-only memories). *Much commercial software needs that lower memory to operate in. So Parasitic has designed an ingenious product called the Shuffleboard (TM). It plugs right onto the ROM socket* and the ROM plugs into the Shuffleboard in much the same way the user modifies the disk controller configuration. No soldering, no permanent changes to the TRS-80. "It's just like changing a tube in an old TV," says Dvorak. What the Shuffleboard does is allow you to, under software control, bank select whether you want to run under the Basic ROM's or regular RAM (random access memory), like most machines. The Shuffleboard is provided with a copy of Standard CP/M and documentation for $249.

Parasitic Engineering is known for high quality products. The Equinox 100 is considered one of the finest S-100 type microcomputers available. It is used by many OEM's for commercial systems.

Howard Fullmer and Gene Nardi are the co-owners of the firm. Howard recently worked with the well-known designer George Morrow (Thinker Toys) to write the proposed IEEE S-100 bus standard. It was a surprise that a company so involved with the S-100 bus to the point of becoming the authority figure, would not try to adapt the S-100 bus to the TRS-80, as others have. Dvorak says he discussed this with Fullmer, and everyone agreed that making expensive adaptations and hanging a lot of contradictory hardware off of the TRS-80 was not what Parasitic wanted to do. "Keep it simple and clean," said Fullmer.

When asked why Parasitic chose TRS-80 Bulletin, as the vehicle for the first announcement, Dvorak commented: "I think every owner of a TRS-80 reads it, and that's who we are selling to."

For ordering information write: Parasitic Engineering, box 6314, Albany, CA 94706 or phone BAC/VISA/Master Charge orders to 547-6612 between 10:30 am and 4:30 pm PST.

Sees need for independent journal

HOLD THE PHONE !!! You and I are thinking just alike! I just received my first copy of the publication "Interface Age" yesterday (new subscriber) and I came right up out of my chair when I read the first 3 lines of your news release. I just had my TRS-80 upgraded to Level II about a week ago and have been lying awake nights wondering why in thunder they couldn't build that damn thing so it would work on either Level I or Level II. Also... I have only 4K of RAM for the simple reason that I was also wondering why I couldn't install my own 16K memory chips and save. WOW!

All credit due to Tandy Corp I willingly give. A does (every-thing-do-it-yourself kit wouldn't be worth anything on the market, but for us who are itching to do just that....

I am enclosing $15 for a subscription including the first edition, and also a copy of each edition to date of your TRS-80 Bulletin.

—H. C. SMARTT, Box 5105, Eugene OR 97405

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Beta-1 gives M-byte, at near-disk speed

TRS-80 computerists wishing to store up to 1.4 megabytes on a device with reasonably-fast access time may turn to Meca.

This has nothing to do with religion. Meca is a small, Yucca Valley, CA, manufacturer of cassette tape systems. Their new Beta-1 costs less than most disk units ($399), has disk-like performance (its own self-contained operating system and 10-second average access time), built in microprocessor controller, up to four drives and 4 megabytes per system (formatted), up to 2 kilobytes/sec. transfer rate, uses standard Phillips-type digital cassettes, full computer control of dependable Phi-Deck tape transport, reliable asynchronous operation.

Meca says its Beta-1 was specifically designed to make interfacing easy. Its self-contained 8035 microprocessor chip handles all communication, data buffering and formatting, as well as drive control functions. It is said the user need know virtually nothing about magnetic recording to make effective use of the Beta-1.

All communication is performed over a single I/O port, which on the TRS-80 can be the Centronics port on the expansion interface. A low-cost option, available soon, will interface the Beta-I directly to the TRS-80 bus, and provide software link to Levell II Basic.

Thanks to a 256-byte internal data buffer (memory), totally asynchronous operation is possible. Thus I/O operations may be done under Basic without the need to be concerned about timing constraints.

HARDWARE SPECS:

The Beta-1 storage system is composed of a master and from one to three slave drives. The master contains an 8035 microprocessor and interfaces to computer via an 8-bit parallel or optional serial interface (RS232 or current loop).

Each drive is composed of a Phi-Deck cassette transport mechanism and a printed circuit card which contains the necessary electronics to actively control the drive.

The drives contain a tape location generator which allows rapid location of a given data block. Each drive can directly access every byte on the tape.

TAPE ORGANIZATION

The Beta-1 tape may be visualized as a directly addressable set of 256-byte blocks analogous to a very large "two track" disk. Each block has a header and a data field. The header is recorded only once, when the tape is initialized. The data field, however, may be updated as frequently as required.

The blocks are directly or indirectly addressable using the file directory. The number of blocks per track (two tracks/tape) is a function of the tape length. The standard 300 ft. digital cassette will hold 1000 blocks at 800 BPI (bits/inch) and 1 megabyte at 1600 BPI (double-density option).

The function of the various block elements are as follows:

--Header contains tape location information for exact alignment in data update operations,

--Gap allows physical space for turning on write circuits in a data field update operation.

--Data field contains 256 bytes of user information.

--Gap2 allows physical space for turning off write circuits after a data field update.

Directories are located on each track. Each directory holds 63 names—126 per tape. File size may be from one to 256 blocks, or up to 65K bytes. Directory entries are eight bytes long, with five bytes for the file name, one for the number of blocks, and two bytes marking the beginning block.

Beta-1 sells for $399 complete. Additional slave drivers are $270, double-density and RS232 options are each $50, and manuals are available separately for $10. Meca is at box 696, Yucca Valley CA 92284 (714) 365-7686.

Micro Architect offers word processing

Micro Architect has two word processors, both of which are attractive alternatives to what until recently was the only similar software available for TRS-80.

WORD-I helps you prepare letters, memos, documents, manuals and books. It consists of an editor and a text formatter. It accepts lines of text interspersed with lines of format control information, and formats the text into a displayable document. (either on the screen or to a printer.)

In addition to the basic commands of Bell Lab's nroff program, it also provides special commands to make full use of the TRS hardware and Level-II software. Commands let you set page length, width, skip lines, read next data cassette, etc. Line spacing, feed and justification is automatically controlled.

WORD-III is a text processor for the TRS-80 DOS system. It accepts lines of text interspersed with lines of format control information and formats the text into a displayable document. The system helps the user prepare memos, letters, documents, manuals and even books.

Featured are: automatic line filling and adjusting, right margin justification, page numbering, centering, title, page size, line width, indent, vertical spacing control.

WORD-III, which may be the first word processor for the TRS-80 system to store text files in diskette, is written in TRS-80 DOS BASIC, so it is easy to load and expand. Sources are given.

While most of the TRS-80 word processors are cassette-based and have maximum text size same as the available memory, WORD-III is diskette based with size limit the same as the diskette storage.

WORD-III uses the printer interface that already exists in the expansion box. Instructions are given to make software modification to other printers not using "LPRINT" command.

Planned enhancements include manipulating mailing list for MAIL (another Micro Architect software package), on-line input of variables to assist form processing, table of contents, etc. This is the word processor of the future.

Poi Pow, who wrote it, says WORD-III is better than the Electric Pencil in the following:

1) Big price advantage ($25 versus $99).
2) We support diskette file, not just only a program stored in the diskette and using cassette text file. (Electric Pencil will have a true diskette version, but costs $150).
3) No special hardware while Electric Pencil requires some adaptor interface stuff and of course $$.

"Our approach is flexible to expand: just add more control commands; but theirs is deadend. We intend *to add more commands to do: tablo of content*, paragraph control, indexing and integrate with MAIL-III to get name & address information from MAIL-III data file.

4) "Ours can handle big job, like a book (at least, in that direction), but Electric Pencil only good for file in memory".
5) Will not be obsolete, since it is written in BASIC; faster if we have a BASIC compiler, or faster processor while Electric Pencil is written in assembly language.
6) We give sources. "It is tough for us to compete due to our limited advertising budget, but a blessing to the user that order our software instead of the Electric Pencil." We are currently working on enhancement and re-writing the document, which should be easily understood by a user not a hobbyist or a programmer only."

WORD-I, which requires 16K Level II (cassette), sells for $29. Word II, which requires 16K and disk, is $39. Micro Architect is at 96 Dothan st., Arlington MA 02174.

Inventory program is interactive

Micro Architect's INV-III inventory management and control system, which runs on 16K DOS systems, is, according to Micro Architect, interactive, easy to use and upgrade, but yet very powerful. It consists of two programs: data base manager and report generator.

The first program lets you initialize the data base, add, update, display an inventory record. The "level update" command is used to change inventory amount. It also displays the updated level, the amount of this transaction and flags if the inventory is below a pre-defined stock safety level. Daily activity is summarized by giving the total inventory in and out, and the estimated profit for the day.

"Order report" gives you all the inventory below the safety level, and the associated order information, such as the order quantity, the vendor code, the total amount in dollars, etc.

"Performance report" gives you a summary of your inventory system, such as the total inventory cost, total number of out-of-stock items, overstocked items, etc.

The system also assigns priority to order. For example, order out-of-stock items first, then the high-profit items, and then the high-usage items.

A maximum of 640 records is allowed in a diskette or more if the diskette is exclusively used for data. A 9-digit alphanumeric key is used for fast random access. Special buffering technique reduces the wear of the diskette system and speeds up I/O.

Record fields are: description, order amount, stock level, safety level, annual usage, unit cost price, unit sell price, location code and vendor code.

Full documentation is included. Price is just $39 from Micro Architect, 96 Dothan st., Arlington MA 02174.

TRS-80 DISK WOES? MEMORY LOSS?
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It lets you maintain data base and produce reports & labels sorted in any field. 500 labels/disk. Random access. 2-digit selection code used.

INVENTORY DOS & 16K $39
While others use inefficient sequential file, we use 9-digit alphanumeric key for fast on-line random access. Record has key, description, level, safety level, order amt., unit cost & price, annual usage, location and vendor code. Reports give order info, performance summary, etc.

KEY RANDOM-ACCESS UTIL DOS & 16K $19
Lets you access a record by specifying a key. Features hashing, blocking, buffering technique, auto I/O error retry, etc.

DISKETTE DATA BASE DOS & 32K $49
You can use it to maintain a data base & produce reports without any programming. Define fields, type, screen & report formats on-line. Almost use up all 32K.

SORT & LINKED-LIST ACCESS UTIL Lev. II
Unlimited # of sort-keys. All data type. Link & unlink a record in a list. 4K. $10 each or $16 both.

CASSETTE WORD PROCESSOR Lev. II & 16K $29
Level I or II cassette software:
data base manager, inventory 16K $20 each
check balance & stock security 4K $10 each
or $15 both
Our competitors offer $99 cassette word processor, $90 sequential 'on-memory' inventory, inflexible mail system that does not produce report, 16K data base. Compare all these basic features first. If still not convinced, send $1 and 2 self-addressed stamped envelopes.

MICRO ARCHITECT
96 Dothan St.
Arlington, MA 02174

Programma editor sells for just $20

For just $20, Programma International is offering an assembly-language-written text editor it says will do anything the $100 Electric Pencil will do, except fill line and justify.

Called PIE, or Programma Improved Editor, the two dimensional, cursor-based system is designed to operate on the TRS-80 Level II (16 K). It generates cassette tapes which are compatible with the TRS-80 Editor/Assembler.

Over 25 commands permit the cursor to be located anywhere on the screen, moved forward or backward a full page, search for a string, append, insert, delete, backspace, set horizontal tabs, and page scroll. Commands are extremely simple to implement, consisting each of a single character depressed simultaneously with the SHIFT key. Any command may be preceded by a numeric or string argument.

PIE is sold on cassette and diskette for the TRS-80, complete with operating instructions. The cassette version is priced at $19.95, and $1.50 postage and handling.

For more information contact Programma International, Inc., 3400 Wilshire blvd., Los Angeles, CA 90010 (213) 384-0579

Has disk payables, McBee receivables

National Software Marketing has in its Inflation Beater series payroll and accounts receivable packages written for a DOS Level II system with two disks and a printer.

Payroll, features include handling 99 employees with monthly, semi-monthly, weekly, and bi-weekly pay periods. There are two hourly rates per employee with overtime equaling 1 1/2 times hourly rate # 1. The program contains a master file maintenance module that permits entering new employees, changing employee data, zeroing QTD data, and zeroing YTD data. It also permits adjustments for normal checks. The program produces a current period check register, quarterly report, year to date report, and employee status reports.

Accounts receivable is designed to replace McBee accounts receivable procedures. There is an in-line credit check capability for 8000 accounts (From-0001-8000). The reports produced include a daily accounts receivable journal, credit check posting report, MTD transactions and totals, master file listing, printed statements, and trial balance. The system uses a balance forward accounting, computes 1.5 percent service charge on unpaid balance, maintains year-to-date service charges for each account, and produces four-lines label data for name/address in master file for each account.

Each package is only $55. Write to Elliot B. Kleiman at National Software Marketing Inc., 4701-McKinley st., Hollywood, FL 33021.

Buyer's Guide lists software

Buyer's Guide Micro Software is a 100- page book designed for the consumer who wants to find sources for software which include stores, magazines, newsletters, software publishers, as well as listings of games, household, educational, and business packages.

For more information write Sueki Bailey or Michael Woodward, Buyer's Guide, 55 Sutter st., suite 495, San Francisco CA 94104.

(body of this ad set on Computerware printer)

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From Programma Int'l comes FORTH!

Since almost the beginning of microcomputing, Forth has been talked about as one of those "ideal" programming languages, but it has been expensive and not readily available (that follows). Now Programma International has it for TRS-80, and it is only $35 (plus $2 postage, CA residents add $2.10 tax).

Forth offers several excellent advantages over other programming languages in that it requires only a fraction of the memory capacity needed by other languages-only 6K. In fact, it may be placed in ROM if desired.

Processing times are only a portion of those required by other languages, such as Fortran or Cobol.

Programma Int'l Forth runs from four to fifteen times faster than Basic.

Software development times are said to be up to half of those needed for other languages.

The basic element of Forth is a word, comparable to a subroutine, which is drawn from words already defined in the Forth system's dictionary. A vocabulary of 200 words make up the Forth dictionary. When programming in Forth, new words which are drawn from the vacabulary can be user-defined, and may then be used to define more complex functions.

Several additional features built into Forth version 1.1 include an incremental assembler, compiler and interpreter, and text editor.

Is Forth easy to learn? Mell Norell, who developed Programma Forth, and wrote the 150-page user's manual, feels it may not be easy for Basic programmers, since Forth uses reverse Polish notation, and is structured. There are no GOTOs.

Programma is developing user software, which also will be low-cost. Included will be mailing list, data base manager, payables, receivables, gen'l ledger, etc. These will all run much faster than similar programs written in Basic.

Upgrades to Programma software are available at cost: postage plus media. For information, contact Programma...,3400 Wilshire bl., Los Angeles CA 90010, (213) 384-0579

Tiny C gives coders structured choice

Tiny C, a subset of the Bell-Telephone-Lab-developed C, is now available for TRS-80 16K Level II systems. Tiny-C is intended primarily for the education and hobbyist markets.

The Tiny-C language handles integer and character data, and arrays of either type. Other features include compound statements, if-else and while *statements, global and local variables, pointer variables, and functions. Functions may have arguments and may return results. Recursion is allowed.*

The interpreter also recognizes calls to functions written in machine language. These, too, may have arguments and return results. A minimum of 16K bytes of memory is recommended to run Tiny-C.

The package includes a Program Preparation System (PPS) with which the user can write, edit, run, debus, store, recall, and link Tiny-C programs. The PPS includes a standard library of Tiny-C software tools. The PPS is written in Tiny-C! Thus it serves as an example of a significant use of Tiny-C, and is also easily adapted to a user's or operating system's requirements.

Why would someone want Tiny C, when his machine already includes Basic? We asked Dennis O'Neill, of Tiny C Associates. "For the same reason he would choose Pascal instead of Fortran", he replied. Ease of programming is the main attraction. Tiny C is a high-level, block-structured language. Basic and Fortran are GOTO languages.

Tiny C says its owner's manual sets a new standard for comprehensive documentation of hobbyist software. It includes a complete reference description of the language, a tutorial walk through of a training program, lots of sample programs including comments on their programming style, and a description of the Program Preparation System. It also includes commented source code listings of the interpreter, and a chapter on how the interpreter works.

Tiny C is available on TRS-80 cassettes for $30, the owner's manual $40, from Tiny-C Associates, box 269, Holmdel NJ 07733.

ComputerMat tallies TRS-80 software

ComputerMat of Lake Havasu City, AZ, is now cataloging computer programs for TRS-80.

Called TRS-80 Software Source, the new publication lists more than 125 sources of TRS-80 software.

Listings include the supplier's name, address, phone, program catalog number, Level of Basic required, amount of memory needed, program description and price.

The TRS-80 Software Source has programs listed and grouped alphabetically by supplier, classification and media source (cassette or disk).

Published three times a year in January, May and September, each new issue will be updated with new sources and listings of programs available. The 125 sources covered in the January issue sell more than 800 different programs.

Software vendors may have their programs listed simply by advising ComputerMat. The Software Source lists only TRS-80 programs.

Subscription price is $10 per year (three issues) or $3.95 per issue. Dealer inquiries are invited, box 1664, zip 86403.

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Quality Business Software
For PET™ or TRS-80™ (level II 16K)

AP1 is a general ledger package with check journal, income statement, balance sheet and checkbook reconciliation routine. Designed for the small business or homeowner. Up to 50 entries and 40 accounts per period $25.00

Payroll computes tax information and updates totals for quarterly and yearly reports. Employees can be salaried or hourly and pay periods can be either weekly, bi-weekly, semi-monthly or monthly. Any number of employees (8 per cassette). $30.00

AP2 has all the features of AP1, plus up to 250 entries per period, Menu, formatter for reports and more. Requires at least 16K in PET or TRS-80. ..... $45.00

B.A. allows management to have available to them information for financial planning decisions utilizing ratio and growth analysis. $30.00

Call or write for your free brochure on all our PET™ & TRS-80™ programs.

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Telephone Orders Welcome

Microsoft releases Fortran system

A Fortran and assembly-language software package for TRS-80 is now available from Microsoft, the people who wrote TRS-80 Level II Basic.

Included are Microsoft's Fortran-80 compiler, macro assembler, text editor and linking loader, one of the first alternatives to Basic programming for TRS-80 disk users.

"TRS-80 Fortran is compatible with Fortrans that are used in business and engineering on computers that cost hundreds of times as much," says Steve Wood, Microsoft general manager.

In addition to Fortran capability, the TRS-80 Fortran package provides the first assembly language development tools for TRS-80 disk systems. Because the editor allows the creation of assembler source files, data files, and Fortran files, the utilization of the TRS-80 disk hardware is greatly expanded.

The Z-80 macro assembler has a complete macro facility, full set of conditionals, relocation pseudo operations, plus many other features not found on other microcomputer assemblers.

The text editor provides fast random access editing capabilities, using straightforward, easy-to-understand commands.

Fortran-80 includes all of ANSI 1966 Fortran (except the COMPLEX data type) plus enhancements such as mixed mode arithmetic, logical operations on integer data, ENCODE/DECODE for format operations to memory, and end-of-file and error-condition trapping for read and write operations.

The $350 package is fully compatible with TRSDOS. It is supplied on two minidiskettes and requires a minimum 32K TRS-80 disk system.

JADE HAS WHAT YOUR TRS-80 NEEDS!

Announcing the easy way to add 16K!

Jade's memory expansion kit contains everything you need to **add 16K** of memory to **either your keyboard or expansion interface** in just 15 minutes. Kit includes memory chips, DIP programming blocks, protective anti-static material, and concise, easy to follow instructions. Jade unconditionally backs this kit with a 90 day warranty on all parts.

Price **$75.00**

Vista V80 Mini Disk System for TRS-80

Introducing the Vista V80 Mini Disk System

23% MORE STORAGE CAPACITY– Increases your usable storage capacity 23% from 55,000 to 67,800 bytes on drive one.

FASTER DRIVE– Electronically equal to the TRS-80 Mini-Disk System, but up to 8 times faster (track-to-track access in 5ms for the V80 versus 40ms for TRS-80).

HERE'S WHAT YOU GET: Minifloppy disk drive/Power Supply/ Regular board/Compact case/Cable.

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Special Introductory Price:

$395.00 INCLUDES CABLE

Requires 16K Ram, Level II Basic, Ex. R.

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Software for the TRS-80

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100 very useful Level II Programs on 5 Cassettes, packaged in an attractive case, all for only **$49.95**

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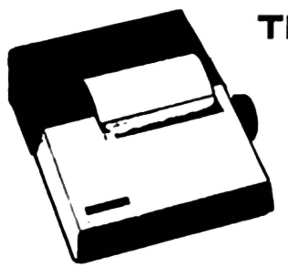

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TRS-80 Interface Cable $45.00

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People's Software

CONTINUED FROM BACK PAGE:

Besides the Tape 1 programs listed on back of booklet, Level II tapes have: speed reading, touch typing, sales receipt tally, decision maker, mail addressing, straight-line & double declining depreciation, revolving charge account, mastermind, tic-tac-toe, grand prix, bingo, state capitals, etch sketch, hangman.

TAPE 2: fully documented in "Some Common Basic Programs" by Lon Poole + Mary Borchers (Osborne & Associates, 630 Bancroft way, Berkeley CA 94710—$7.50 plus 50¢ for U.P.S. delivery, else 4th Class Mail), programs include: Investment, future value regular deposits; regular withdrawals, initial, minimum (for withdrawals), nominal interest, effective & earned—interest; depreciation rate, amount depreciation; salvage value; discount com'l paper; loan principal, regular & last payment, remaining balance, term—loan; mortgate amortization; greatest common denom.; integer prime factors; polygon area; triangle parts; analysis, operations two vectors; radian/deg., deg./radian conversion; coordinate; coordinate conversion; coordinate, polar equation, functions plot; linear, curvilinear interpolation; Simpson's + trapezoidal rules, Gaussian quadrature integration; derivative.

Side 2: quadratic equation, polynomial (Newton) & half-interval-search roots; trig polynomial; simultaneous equations; linear programming; matrix addition, subtraction scalar multiplication, multiplication, inversion; permutations & combinations; Mann-Whitney U test; mean, variance, standard deviation; geometric mean & deviation; binomial, Poisson, normal, Chi-square distribution; Chi-sq., student's t-distribution test; F-distribution; linear correlation coefficient; linear, multiple-linear, Nth order, geometric, exponential regression; system reliability; future projections; Federal withholding taxes; tax depreciation schedule; check writer; recipe cost; map check; day of week; days between two dates; anglo to metric; alphabetize.

New schedule for Bulletin

Starting with this issue, TRS-80 Bulletin will come out monthly.

The Bulletin originally had been seen as a publication of irregular frequency, about three or four issues per year.

Industry developments are now coming at such a rapid pace that it has become imperative that the Bulletin move to its new schedule.

The Bulletin first appeared in June '78 as a medium in which sample pages of TRS-80 Computing could be disseminated. Circulation was 10,000, and these were rapidly snapped up, largely by visitors to Nat'l Computer Conference in Anaheim, CA.

We credit Shelly Howard of Micro Computer Devices (Selecterm) for the next stage of Bulletin development: we opened it up to advertising, and increased circulation to 45,000. Advertising rates were set at cost, and CIE simply hoped to help the industry, by providing a low-cost advertising medium, and reduce its own advertising costs.

By the current issue, both ad rates and circulation had doubled, to 90,000. Issue 1:6, to be distributed at Computer Faire in May, will go out to 100,000 TRS-80 users. Ad rates will remain a modest $500, $255 and $130, for magazine-sized full, half and quarter page ads, respectively (full: 10 x 7", half: 4 7/8 deep x 7" wide or 10" deep x 3 3/8, quarter 4 7/8, x 3 3/8). Eighth-page ads are accepted at half the quarter-page rate, half the depth.

FORMAT CHANGE:

This issue of TRS-80 Bulletin is the first using our new format.

No longer a sampler for TRS-80 Computing, TRS-80 Bulletin aims at supplementing the paid-circulation publication. Product and club news, and advertising, need widest-possible circulation to be effective. Therefore, product and club news will be put in the Bulletin, freeing TRS-80 Computing for how-to articles, and programs.

The Bulletin is being developed as a strong publication which can help support the paid publication.

CIRCULATION:

The Bulletin goes to the 5,000 paid subscribers to TRS-80 Computing, to more than 5,000 non-subscribers who have answered our magazine advertisements, and in bulk drops to clubs, computer stores, and 2,600 college computer instructors.

Anyone wishing bulk quantities should let us know.

FUTURE DEVELOPMENT:

In future issues we wish to start a service directory for both software and hardware service. Independent technicians should be available throughout the U.S., so that TRS-80 users can have the option of taking their service problems to someone other than Radio Shack.

Similarly, those wishing professional help with programming should be able to consult the Service Directory and find a nearby professional programmer familiar with the TRS-80.

Advertising rates will be $10 per month for name, address, phone number, under suitable heading.

PEOPLE'S SOFTWARE: 77-program tape, all for just $7.50

Now TRS-80 owners don't have to shell out a bundle of money—or work hard—to get a good assortment of programs for the world's most popular computer:

There is People's Software—up to 77 public-domain programs on one cassette tape, for $7.50, plus 50¢ postage and handling (CA residents add 45¢ tax—FOREIGN orders must be paid in U.S. funds, and postage is $1 per tape, via air).

Computer Information Exchange has been concerned about how public domain software can be easily made available to the public.

Anyone with a library of computer magazines can keyboard-in a wealth of software, at no more cost than the user's time and frustration. CIE's experience has been about 150 hours for the 77-program Tape 2. Assuming that $1 of the $7.50 selling price of the software is medium cost (the tape), a person doing the job himself will be saving 4.33¢ per programming hour. Tape 1, even though it contains far fewer programs, half of which came from the San Diego TUG (user group), required many more hours preparation.

People's software was not brought out to compete with commercial software. CIE encourages TRS-80 users to market programs. The nonprofit organization gives free space in the Bulletin, as well as offering low-cost Bulletin ads. Good commercial software is the foundation of our TRS-80 computing, starting with our Micro Soft Level II Basic ROMs.

Just the same, personal computing can be made much more rewarding for everyone if users will share the fruits of their labor—and if a way can be found to distribute this inexpensively, in machine readable form (no 4.33¢-per-hour keyboarding!).

Digital Equipment Corp. computer users, by joining DECUS, have been able to share programs inexpensively. Now Radio Shack users have People's Software.

Write programs for People's Software

Here's a software exchange that will give you possibly 150 to one for your TRS-80 program, be it in Basic, assembly language, machine code, Forth, Pascal, Fortran, C, Cobol, Pilot, or any other of the many languages for TRS-80.

Give CIE a good, usable, original program which you have written (no copying off a commercial program, PLEASE!), and if we accept it, we will give you two copies of the release print containing your program. People's Software has put as many as 77 programs per cassette, so if your program is on a tape with 75 or so other programs, you will be getting back 150 for one!

We are particularly looking for useful programs, although games will be accepted. Programs may be adapted from those in books, but extensive changes must be made, and you must credit your source. Programs in magazines may be copied or adapted, providing the program itself does not bear a copyright notice or other restriction. The magazine copyright does not cover individual programs or articles.

People's Software is particularly looking for a good native-code Pilot, and for Pilot programs. Also a good text editor, formatter, for business software, utilities and tutorials.

Also, tutorials about Basic, Forth, Pilot, and all the other programs. Here is a good chance for an instructor to get published, and put his work in the public domain, and yet still make a little money on it. Do a tutorial on any programming language. We're particularly anxious to see them for Basic, Forth and Pilot. Anyone having a language tutorial written on tape, donate it to People's Software. We'll give you a couple copies, and will wholesale them to you at the dealer rate, or better (40% or more discount). You can sell them to your students, and other local

Some plain words about Word Processing

Microtronix introduces the "Turnkey" Word Processing Package for $2150

Simply put, Word Processing is a system that treats text as a steady stream of characters. Think of it as a form of paperless typing that enables you to compose, edit, and store large amounts of text. Just punch in the copy, edit and print. It's really that simple.

Word Processing: The Keyword is Flexibility.

Paperwork: It's expensive not only in time and money, but in space as well. Cutting through the wads of paperwork is what Word Processing is all about.

- Correspondence — Direct mail, questionnaires, press releases, sales proposals, and announcements.
- Academic — Graduate theses, literary manuscripts, and research notes.
- Legal Documents — Leases, wills, and briefs.
- Accounting — Ledger and journal entries, billings and invoices, collection letters, and monthly statements.

Type that standard form and save for future use on audio cassette (included) or optional disc drive. Add varable information and with the press of a button your final copy is printed.

The $8000.00 word Processing Package at a fraction of the cost.

You've read about Lanier Word Processing, and IBM's Mag Card Unit. Now think practical. Here's a system that performs on a par with the "biggies" that is tailored to your budget.

The System

Radio Shack TRS-80 Level I with 16K memory. Serviceable at any local Radio Shack Store $799

Anderson-Jacobson 841 Serial Printer. The "State of the Art" bidirectional terminal containing a heavy duty IBM 745 Selectric. An excellent "off-line" typewriter as well $1195.00

"The Electric Pencil" - Software. Designed for the TRS-80. Features include correction, insertion and deletion of letters, words, lines, and paragraphs. Contains user defined output format. Add $50 for disk base version $99.95

TRS-232 Interface - To connect your TRS-80 to the Anderson-Jacobson 841. No expansion interface needed $49.95

Pick up the phone and call our toll-free number. Talk to us about options. We can adapt a Word Processing Package to your present system.

Other Equipment

Special Sale on Printers: Save $50 to $150.
Integral Data IP/125 $749
IP/225 Tractor $899
Anadex DP 8000 Bi-directional Tractor $995
Texas Inst. 15" Bi-directional Tractor $1895

Micropolis Disk Drive for the TRS-80
1027-I Expands storage capacity to 89K or approximately 15,000 words per diskette. $499
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Novation (Radio Shack) "Cat" send/receive with free software $199.95

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CP/M offers standardization

By JOE E. SHELDON

(The CP/M operating system being newly available to TRS-80 disk users, we asked Joe, who is president of Cybernetics, to comment on it.)

CP/M (Control Program/Microcomputer), as you probably know, is the most widely-used operating system ever written (including minicomputers and mainframes) from the standpoint of the number of different manufacturers' computer systems using it. That fact alone makes it worth considering since a computer user or programmer can more easily transfer his efforts from one type of system to another with a common operating system (instead of spending his time re-learning the quirks and syntax requirements of some other, presumably similar operating system). The mechanics of actually transferring executable programs (or data from or to either system become greatly simplified in this sort of an environment.

Additionally, CP/M includes as standard items a really powerful text editor and assembler plus the super-handy, flexible utility PIP (Peripheral Interchange Program). The conventions used within the operating system for specifying things to be done are both easy to learn and consistent to use which is a great aid to one just getting going (or to an "old pro" who tends to be forgetful). For assembly language programs, the utility DDT (Dynamic Debugging Tool) provides a vital and easy-to-use debugging package and disassembler.

One of the many nice features of CP/M is the use of natural-seeming "ambiguous" (or "wild card") file references. It is often quite convenient to refer to a set of files rather than make explicit reference to each file. It is very simple for example, to obtain a display (on the CRT or printer or both) of all Basic source program files by entering a command with "BAS" which specifies all filenames having the file type "BAS". This convenience is extended further by the use of the character "?" in a file reference to mean "any character". For example if you had three source programs named "PROG1.BAS", and "PROG2.BAS", and "PROG3.BAS" (the quotes are not required in CP/M, but are added here for clarity), you could refer to all three by entering a command with "PROG?.BAS" as the file reference which would specify all three of the files.

Perhaps the most valuable feature of CP/M, however, is the wide range of *software packages that its use opens up.* There are many professionally-done (and documented) applications- and system-software packages for sale on CP/M-based systems. Because of this and as a natural adjunct to CP/M, we are also offering CBASIC2 which is widely used in many of these applications packages.

CBASIC (the "2" is merely the latest version number) is at least as high a level Basic as L-II (we consider it even higher as a matter of fact, but I have no wish to waste time in a debating contest) plus it offers some features that are truly vital for applications use.

CBASIC is not a source interpreter (as is Level II Basic) but instead has a compiler phase which out-puts an intermediate file which is in turn executed by a run-time package. Some of the important advantages of this for applications use are:

1) It is not necessary to distribute source code (the intermediate file may be distributed for use). In the present environment this becomes very important to software developers who wish to retain some protection for their work.

2) Truly useful (many would say "absolutely mandatory") inclusion of comments in the source code may be made without a size or run-time penalty in the intermediate file (the "executable" file, if you will), since comments take no space in the intermediate file. If you have ever come back to modify one of your own programs months later, you will instantly realize the value comments can have to ease this burden. With a source interpreter, it is a great temptation (or even mandatory) to reduce the comments because of the size and load-time penalties they cause in the "executable" file.

3) In applications work, programs tend to be large and have many variables. For documentation and maintenance purposes, a very worthwhile advantage is gained by being able to prepare a cross-reference of (among other things) the locations in which these variables are used. CBASIC includes just this capability with its XREF phase if the programmer desires to use it.

CBASIC also has many other "bells & whistles", but I am only trying to highlight some of them for you and indicate our reasoning in offering CP/M and CBASIC for business applications use.

(Cybernetics sells CP/M with editor, assembler, debugger, utilities and six-manual set for $145; CBASIC2 compiler, with manual, $95; and DSPOOL print spooler, with manual, $75. They are at 8041 Newman av., Suite 208, Huntington Beach CA 92647, (714) 848-1922.

TRS-80 means business! ! !
...with CP/M, CBASIC2, & applications software.

CP/M ("the software bus") & CBASIC2 (the standard for business software) bring new power and versatility to the TRS-80 for practical use.

CP/M Operating System (w/Editor, Assembler, Debugger, Utilities & 6 manual set) $145
CBASIC2 Compiler (w/manual) . . . . . $ 95
DSPOOL Print Spooler (w/manual). . . . . $ 75

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*Osborne & Assoc. ACCTS. RECEIVABLE & ACCTS. PAYABLE $250
*Osborne & Assoc. GENERAL LEDGER. $250
*=CBASIC2 source programs; add $15 (each) for applicable O & A book.

APH - Self-administered Automated Patient History. $175

Write/call for additional software available & FREE "CP/M Primer".

CA residents add 6% tax. Visa, M/C,M/O,Check OK.

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*           *                    *
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*                   *      *     *
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* View the constellations in the *
* night sky with this unique     *
* graphic display program. Then, *
* travel to any star in the      *
* night sky and view the night   *
* sky as it would appear on a    *
* planet orbiting your chosen    *
* star. It is written in Level   *
* II BASIC, requires 16K and is  *
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MARCH 1979 INTERFACE AGE 27

'Natural language' uses plain English

By MICHAEL CLARK

What is natural language? For our purposes, natural language is common, ordinary English—the expression of facts using simple sentences.

NLOS/1 is a system which allows the computer to "understand" the information conveyed to it through simple sentences and to answer questions concerning the information conveyed.

This ability makes the system an excellent tool for the creation, management and inquiry to a conversational data base of facts and figures.

It can also be an educational tool — as a study in artificial intelligence through an examination of the internal workings of the program, or by its reaction to math reading problems of various complexity.

It can be an excellent tool in teaching English grammar, sentence structure and logical deductive reasoning to students, young and old alike.

In any case, holding a conversation with your computer can be a lot of fun.

HOW IT WORKS:

Let's see how the system accomplishes this and what its limitations are:

First, we have to get down to the basics of English. The system recognizes phrases grouped together in a sentence. A phrase is a group of one or more words that, together, convey a concept or identify an entity. These phrases can convey a subject, a verb, a preposition, a conjunction, a modifier or a question invoker. These represent the grammatical types that NLOS/1 can handle.

You may ask — why not recognize individual words rather than phrases so that the conventional grammatical types—nouns, adjectives, verbs, adverbs, prepositions, conjunctions, interjections, and pronouns may be used? Well, recognizing nothing smaller than a phrase alleviates the problem of context usage. For example—"the President of the United States" contains adjectives, nouns and a preposition, yet the phrase identifies a single subject. Each grammatical type further conveys a type of information. Subjects identify a person (a who-"Tom", etc.), a place (a where—"New York City", ets.), or a thing (a what—"a banana", etc).

Verbs convey the type of object clause they affect—in ("Tom said nothing" and "Tom went home", etc.), "said acts on "what" and "went" acts on "where". Every sentence must have a verb. Prepositions introduce subjects which show what ("as a clown"), when ("on my birthday"), where ("in town"), why ("to go home") and how ("by going home").

"Why" or "how" prepositional phrases are usually a combination of prepositions and verbs (such as why—"to go to"), while most other prepositional phrases consist of a single prepositional word.

Conjunctions show no type of information but are used to combine two adjacent subject phrases into a single subject clause. Because of this, conjunctions are restricted to "and" type conjunctive phrases. Also, only one conjunction may be used in each sentence analyzed by the system. The reason for this lies in the way NLOS/1 associates one subject to another in its deductive reasoning processes. This will be discussed further when I explain the problem solving algorithm.

Modifiers are adjectives and adverbs. As adjectives, modifiers appearing immediatly before a subject relate to that subject. These show what ("red", "lazy", etc.), association ("a", "the", "their", etc. — associative modifiers are generally for aesthetic use only and are ignored by the system in its deductive reasoning), multiplication ("times as many", etc.) and numeric ("100", etc). Multiplicative and numeric modifiers are very important in the deductive reasoning processes but numbers must appear before multiplicative modifiers in subject clauses (as in "10 times as many boxes", etc.). As adverbs, modifiers may appear before or after a verb phrase and show "how" (quickly", etc.).

With all of the above taken into consideration, you can see how the system can break down a sentence into who, what, when, where, why and how catagories of information.

Simple sentences used with the system should have only one piece of information in each of these catagories.

Question invokers may be used in a sentence to request the missing catagory of information represented by the question invoker. For example — if you tell the system "Tom ran home to have dinner", you could later ask "who ran home to have dinner?" and the system would reply "Tom"; or, "Tom ran where" would reply "home"; or "why did Tom run home" would reply "to have dinner" assuming that "ran" and "did run" have the same root verb—this will be discussed later.

Question invokers, therefore, can request who, what, when, where, why, or how. A special class of question invoker "how many" exists which is used to invoke the deductive reasoning process.

Also, a sentence beginning with a verb phrase invokes a yes/no type of response (given "Tom shined his shoes" you could ask "did Tom shine his shoes?"). Notice that the verb phrase "did shine" has been broken up around the subject to do this. The system would respond "yes" if the information was true or "no" if the information was false or unknown.

Punctuation is not allowed within a defined phrase and is ignored in sentences. Also, numeric modifiers are recognized without formal definition and are not allowed within defined phrases. This would also disallow contractions or non-integer numeric modifiers in sentences.

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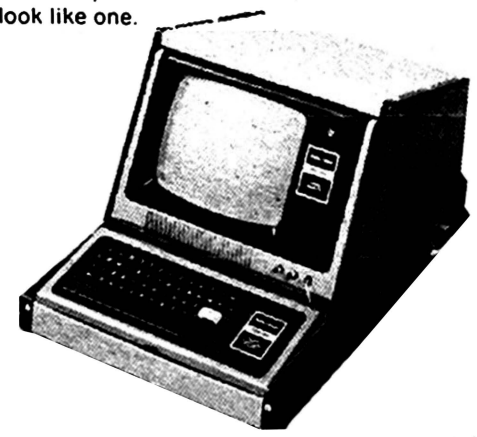

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047

'Question evokers' can ask '3Ws, H'

(Continued from column 1)

By means of a utility routine in the system, phrases are formally defined to and maintained by the system in a dictionary which stores the phrases, its grammatical usage, and the type of information it conveys.

A phrase already in the dictionary may be redefined. To have a phrase deleted or ignored, you simply redefine it as an associative modifier since this type of phrase is for aesthetic purposes only and is ignored in sentence analysis. If a phrase is redefined, the redefinition only applies to sentences analyzed after the redefinition.

Different phrases may contain the same word or words but in different sequences or in combination with other words.

For verb phrases, the system also requires a root phrase which normalizes the time references implied by verbs. For example — "went" and "did go" are both "past go". Whenever a verb phrase is encountered in sentence analysis, it is replaced by its root phrase. This allows such analysis as "Tom went home" and "did Tom go home" with the system replying "yes".

An additional utility lists the vocabulary of phrases along with their characteristics to allow the user to review his dictionary.

ENCYCLOPEDIA SECTION:

As sentences are received and analyzed by the system, the information extracted is stored in a special section of the dictionary structured like an encyclopedia. This section is referenced by use of question invokers or yes/no question invokers as discussed earlier.

A special note—a simple form of compound sentences can be handled by the system during sentence analysis.

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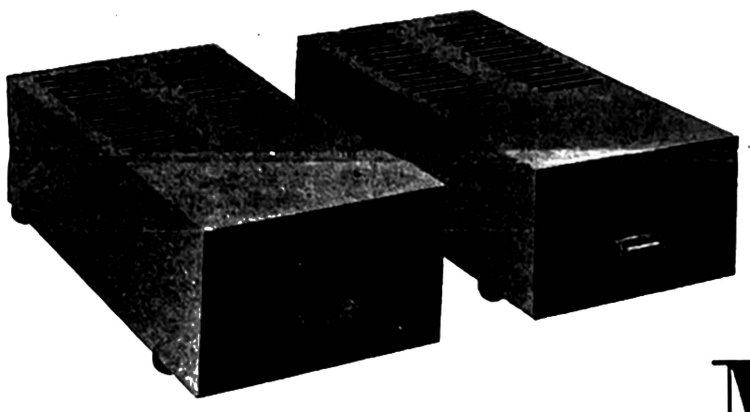

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Track Density	48 TPI
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Transfer Rate:	
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Average	75 ms
Settle	15 ms
Head Load Time	35 ms
Power Up Delay	1 Sec

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NLOS/1 can cope with up to 3 subjects

(Continued from page 8)

A noun followed by a verb may introduce another sentence (as in "Tom said Dick went home"). In this example the system treats the one sentence as two statements: "Tom said what (Dick went home)" and "Dick went home".

The system also contains a utility routine for scrolling thru the encyclopedia section of the dictionary to allow the user to view the information the system has thus far received, analyzed and cataloged. This display shows the information in the sentences and the "information type" catagories they were assigned. The sentences are shown in the sequence they were received to show the flow of changes in facts.

SUBJECT RELATIONSHIPS:

Another function of sentence analysis, which is critical to the deductive reasoning process, is the association of one subject in a sentence relative to the other subjects in the sentence.

For example-in "Tom has 3 balls in a box", two relationships are extracted: "Tom" with "3-balls" and "3 balls" with "box". If you were to ask "how many balls has Tom", the system would reply "3". Notice that the "how many" questioning sentence can relate only one subject to another and can not be conditioned by any how, why or when type clauses.

If a conjunction is used as in "Tom and Dick have a car", the relationships extracted are: "Tom" with "car" and "Dick" with "car"' but, in "Tom and Dick have a car and a truck", if two conjunctions were allowed, the relationships would be "Tom" with "car", "Dick" with "car", "Tom" with "truck" and "Dick" with "truck". The system can only handle up to 3 subjects in a relationship at one time; so, only one conjunction is allowed per sentence.

These relationships are also stored in a special section of the dictionary structured to handle one-to-one associations. Along with each of the two subjects in a relationship, the dictionary also stores the numeric modifiers, if any, and the multiplicative modifiers, if any, associated with those subjects. Both subjects in a relationship may not contain multiplicative modifiers and association dictionary entries are not built if the sentence has "how", "why" or "when" type clauses because the system can not handle conditional relationships in its deductive reasoning processes. For example—in "Tom ran quickly to the store" would not relate "Tom" with "store" because of the how"quickly". Also, "3 times as many balls are used for 2 times the boxes" because of the abstract nature of the relationship between balls and boxes.

DEDUCTIVE REASONING:

And now for the deductive reasoning process—let's consider the following sample problem: given the following dictionary of phrase—a when preposition "on", an associative modifier "their", a what subject "vacation", a who subject "Dick", a where verb "visited" with root "past visit", an associative modifier "a", a where subject "farm", a when prepostion "while", a where subject "there", a who subject "he", a what verb "noticed" with root "past notice", a what subject "pen", a what verb "containing" with root "present contain", a what subject "chickens", a what subject "pigs", a what verb "said" with root "past say", a who subject "they", a what verb "were" with root "past be", a multiplicative modifier "times as many", a what preposition "as", a what verb "counted" with root "past count", a what subject "legs", a where preposition "in", an associative modifier "the", a what verb "have" with root "present have", a conjunction "and", and a how many question invoker "how many"; the following sentences can be analyzed by the system-"chickens have 2 legs:, "pigs have 4 legs", "on their vacation Tom and Dick visited a farm", "while there they noticed a pen containing chickens and pigs", "Tom said there were 3 times as many chickens as pigs", "Dick said he counted 100 legs in the pen", and "how many chickens were in the pen". The system would reply with the answer to the last questioning sentence — "30".

How could the system have deduced this? Let's look at the approach the system takes: the system would first make all the subject-to-subject relationships possible—"chickens" with "2 legs", "pigs" with "4 legs", "pen" with "chickens", "pen with "pigs", "Tom" with "there", "there" with "3 times as many chickens", "3 times as many chickens" with "pigs", "Dick" with "he", "he" with "100 legs" and "100 legs" with "pen". Since "pen" is the area of concern in which to search for "how many", the relationships involving "pen" are selected—"chickens", "pigs", "100 legs".

If a non-multiplicative numeric modifier had been associated with chickens, that number would be the answer (the system accepts facts given it as truth; but, if the system had been asked "how many chickens were in 3 pens", the answer found would be multiplied by 3). The system must now look for a relationship with a non-multiplicative numeric modifier to give "pen" a numerical base of equivalence. This relationship would be "100 legs". Since "100 legs" is to be treated as "pen", the remaining "pen" relationships are matched against all of the other relationships in the dictionary in order to pick out those relationships with "legs". This would result in the selection of the following relationships—"chickens" with "2 legs" and "pigs" with "4 legs". The system must also check for any relationships between the resultant subjects. This search shows the relationship of "3 times as many chickens" with "pigs".

NLOS/1 can deduce number, using math

(Continued from column 1)

With all of this selected information, an equation can be formulated "100 legs" equals "3 times as many chickens" plus "pigs". Substituting the number of legs represented by chickens and pigs, a common unit of measure can be applied to the equation. This yields the equation—"100 legs" equals "3 times as many" times "2 legs" plus "4 legs" or 100 equals 6X plus 4X. Then X equals 100 and since there are "3 times as many chickens", there must be 3 times 10 or 30 chickens. At this point, the system would simply print "30" and ask for another sentence.

The above algorithm can be applied to a wide variety of math reading style problems. It can be an educational experience just exploring the many variations possible.

The dictionary you construct and its component phrases, sentences, and subject relationships can be stored as a file on cassette tape and then reloaded at the beginning of a session. This allows an accumulated data base of information to be maintained for inquiry purposes.

As you can see, the possibilities with NLOS/1 are "endless" and it should be a well used addition to anyone's library of TRS-80 programs.

NLOS/1 is available on cassette, with instructions. for $5.95 from Cybermate, R.D. #3, Box 192A Nazareth, PA 18064, phone: (215) 759-6873, (check or money order only). Please allow 4 to 6 weeks for delivery.

Natural language is the way of the future in computers and NLOS/1 is the first step toward that future. Enhanced versions of NLOS/1 will be made available to current users of NLOS/1 for only a copying charge of $2 as new developments become available. One area of future development is the use of conditional relationships in the deductive reasoning process.

NLOS/1 is written in Level II BASIC and requires 16K. This allows users with Level II experience to customize or experiment with the program logic.

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Firm says spikes spell computer woe

Crashes, memory loss and program glitches are often caused by AC power line hash and surges, according to Electronic Specialists. They say peripheral and processor equipment interaction also contribute to program woes.

To combat these problems, the firm has expanded its isolator line. Model ISO-2 comprises two filtered banks of three-prong AC sockets (six sockets total) with integral surge suppression. Each socket bank is filter isolated from the other bank and from the AC power line.

Intended for microprocessor systems with limited processor/peripheral interaction problems, the ISO-2 also provides isolation from disruptive and expensive AC power line surges and hash. Applications include precautionary installation to isolate portions of the system, with the entire system isolated from AC power line hazards.

Connecting to the 125VAC power line with a standard three-prong plug, model ISO-2 can isolate and protect an 1875-watt total load, with each socket bank capable of isolating a 1,000 watt load. ISO-2 gives interaction, surge and hash isolation for just $49.95, according to Electronic Specialists, Inc., Box 122, Natick MA 01760.

Mini Printerm mates to TRS-80

Printer Terminals Corp. of Ramona, CA claims for its Mini Printerm Model 879 performance superior to Centronics Model 779 and Lkidata Model 110 printers.

The firm says the Printerm, which easily interfaces to TRS-80, has by far the least number of mechanical parts of any printer on the market, thus the greatest reliability.

Printerm says its product is a rugged, heavy-duty cycle data-processing-oriented printer, as opposed to a limited duty cycle or "semi-toy" product such as the Anadex, C. Itoh, Epson or Practical Automation printers.

Price is $1,395 with roll friction paper feed, $1,495 with that plus pin-form feed. Standard features include expanded character set (double-wide letters, full 96-character ASCII set), and dual interface(RS-232 and parallel), other interfaces available on special order.

Also, software on/off control, out-of-paper stop-print and busy signal, top-of-form (pin form feed model) to 256 lines, and front or rear bottom paper feed (pin-form feed model).

Warranty is 90 days, including freight within the USA, and delivery is one week after receiving order.

Options include switch-selectable character spacing from 10 characters/inch (80 column) to 16.5 characters/inch (132 column), and snap in/out ribbon cartridge. Also, none-wire print head with 9x9 matrix font (standard is 7-high x 9), and 2K-character buffer for reduced processor time.
Printerm is at box 535, Ramona CA 92065 (714)-789-5200.

'Fastgammon' game uses machine code

Fastgammon is the name of a backgammon-playing program now available for TRS-80.

According to the game's creator, Bob Christiansen of Quality Software, the name Fastgammon was chosen because the computer's decision-making is very quick — usually less than a second per move. This is because the fact that Fastgammon is programmed entirely in machine language.

Fastgammon displays a backgammon board on the video screen. The computer rolls the dice and displays the roll. The player inputs his or her moves and watches as the men move from point to point on the board. Then the dice are rolled for the computer and the computer responds with its move. The left hand edge of the screen is reserved for alphanumeric data and allows the player to review the computer's last move as well as his own.

Fastgammon is produced and distributed by Quality Software, 10051 Odessa av., Sepulveda CA 91343.

Music board just plugs in

Mumford Micro Systems has just released a music board that plugs directly into the expansion port and is addressable in Level II with only one statement (the OUTport command) to produce any note of the chromatic scale in a 4-octive range.

It also may be addressed in Level I with machine code. The Mumford Music board has a scale accuracy of better than .15% (produced by digital division) and is tuneable. Two boards may be daisy-chained for chording. It has a built-in amplifier and volume control. Two versions are available. The first has jacks for a speaker and power (6-12VDC a $4 adaptor at Radio Shack) and costs $74.95. The second is mounted in a mahogany ca with speaker and power supply or $94.95.

Both versions include an operating system on cassette (Level II Basic) that plays an Irish tune and allows easy reprogramming for other sequences by specifying the note, octave, and duration.
Write Mumford Micro Systems, Box 435-B, Summerland, CA 93067.

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Orcomp's software is provided in two forms: (1) a complete source code listing with other design and use information (. no cassette is provided); (2) all the documentation mentioned above plus a TRS-80 compatible cassette in either Level I or Level II format, but not both.

When ordering, please include the specific order number for materials requested. Please remit in U.S. funds only. Enclose check or money order for the exact amount.

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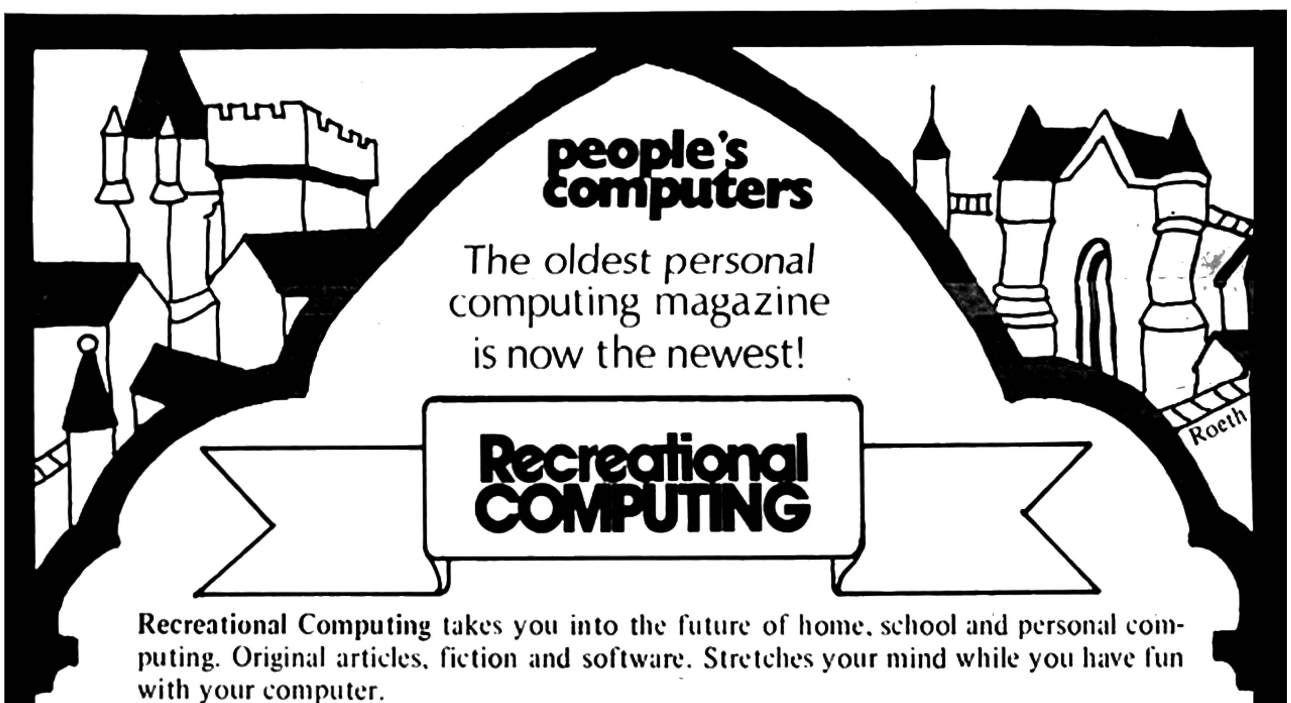
Discount printers at Compulease

Compulease carries a full line of printers for TRS-80, from thermal-type to Centronics models ranging from 60 to 180 CPS, all shipped at discount prices.

The firm also carries Verbatim diskettes for TRS-80 at $4.89 each. For information write Whitted Enterprises, Compulease div., 1228 24th av., Longview WA 98632.



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Communicate, end commuting

"More than 600,000 people a month have been applying for citizens band radio licenses," says Ed Piller, senior staff engineer for Fairchild Camera & Instrument. "Sooner or later, some of them are going to start thinking of what's beyond CB... ham radio and amateur TV is the answer."

Amateur television has already arrived for Ed and a few associates from the Long Island Mobile Amateur Radio Club (LIMARC). Last August, they completed work on the first amateur TV "repeater," or rebroadcasting station in the New York area.

Recently, the new "network" began teaching over the air. Classes in amateur radio and basic electronics originating from three Syosset school system amateur radio TV terminals will broadcast interactive lectures via UHF transmissions for the first time.

One of the first practical uses of the new ATV systems began early this year when the Syosset school system incorporated the LIMARC system into its basic electronics courses. By teaching students how the equipment works, amateur licensed industrial technology instructors hope to motivate CB-toting students to further their knowledge of electronics. If several schools hook up with the system, students could listen to a lecture at a different school and participate in the class discussion.

"It's communicating instead of commuting," says Ed, who was instrumental in selling the system to the Syosette schools. "Why do people have to travel to a university compus for advanced classes, or rely on the limited courses available through commercial television? With interactive television, people could stay home or go to a communication room in a local library or community center and get the same information. This type of system is feasible with our current ATV setup on Long Island.

"We intend to petition the FCC for an allocation of suitable frequencies which can be used for the establishment of regional 'communicasting' nets. It's possible to bring information and advanced education to people all over the country...a cost-effective nationwide classroom without walls—all electronically."

Basically an upgraded offshoot of the popular ham radio, amateur television uses a TV transmitter and receiver, a TV camera and a regular television set with a special converter attachment. The operator can broadcast his voice and a television picture of whatever is in front of the camera to another ATV operator.

Because of typically weak signals from the unsophisticated home equipment, contact between operators has been limited to an operator's local area. But with the construction of the new repeater *station in Plainview, NY, a few miles from Fairchild's Syosset plant, where Ed works, he expects* a boom of new operators able to transmit pictures as far as 80 miles.

"The repeater will receive the weak signals from home transmitters and rebroadcast them," Ed says. "More *ATV operators* will then be able to broadcast pictures back and forth with better reception due to increased signal strength, created by the height of the station tower (320 feet). The picture should be as sharp as a commercial television broadcast."

Ed, who joined Fairchild in 1969, has been an active ham operator since 1937 and is one of the founders of LIMARC. His professional accomplishments in communications include supervision of the installation of NBC television and antenna equipment on the Empire State Building and work on the team responsible for engineering the first UHF-TV station.

Now a senior engineer and advanced development specialist at Space and Defense Systems Division, Ed has been one of the major forces behind establishment of amateur television on Long Island.

"In the early sixties, I was spending about two hours a day commuting, and I felt that rather than just waste that time, I could be talking with other people while I drove. When I installed a mobile amateur radio in my car, I discovered a group of people—primarily engineers and technicians—with similar interests. In 1965, we formed LIMARC." (Ed notes that amateur radio is different from Citizens Band radio, the current craze. CB sets have limited range and operate on fewer frequencies.)

CAA hopes to open TV band to data & community access

Through the use of his own experimental TV repeater, the president of Communicasting Association of America hopes to demonstrate the practicability of low-cost community multiple access telecommunications with audio, video and data that can ultimately be picked up by any UHF TV receiver, providing that the FCC modifies its rules.

Ed Pillar, W2KPQ, is president of the nonprofit organization, which is dedicated to utilizing the radio spectrum for educational and scientific telecommunications. He is also chairman of the Amateur Television Repeater Committee of the Long Island Mobile Amateur Radio Club (LIMARC) and a charter and founding member of the Long Island Computer Association (LICA).

In January, 1977, together with the Center for Advanced Study in Education of the City University of New York, he petitioned the FCC to allocate 14 UHF television channels for a new Community Educational Radio Fixed Service (CERFS).

CERFS would employ the communicasting concept. That is the use of co-channel multi-lateral communication to educate and enlighten the participants, as well as a listening/viewing audience.

Piller urges those interested in supporting this concept to write to the FCC, Washington DC 20554, and ask to be put on the mailing list for all future notices on Docket 78-253 BC 78 253.

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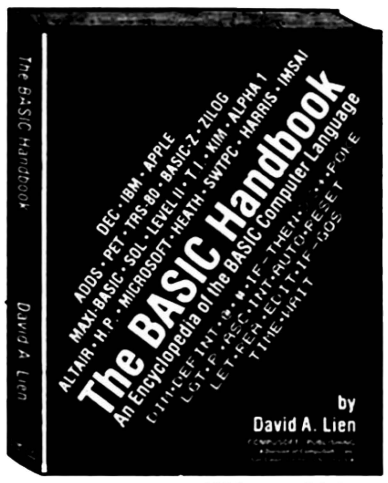

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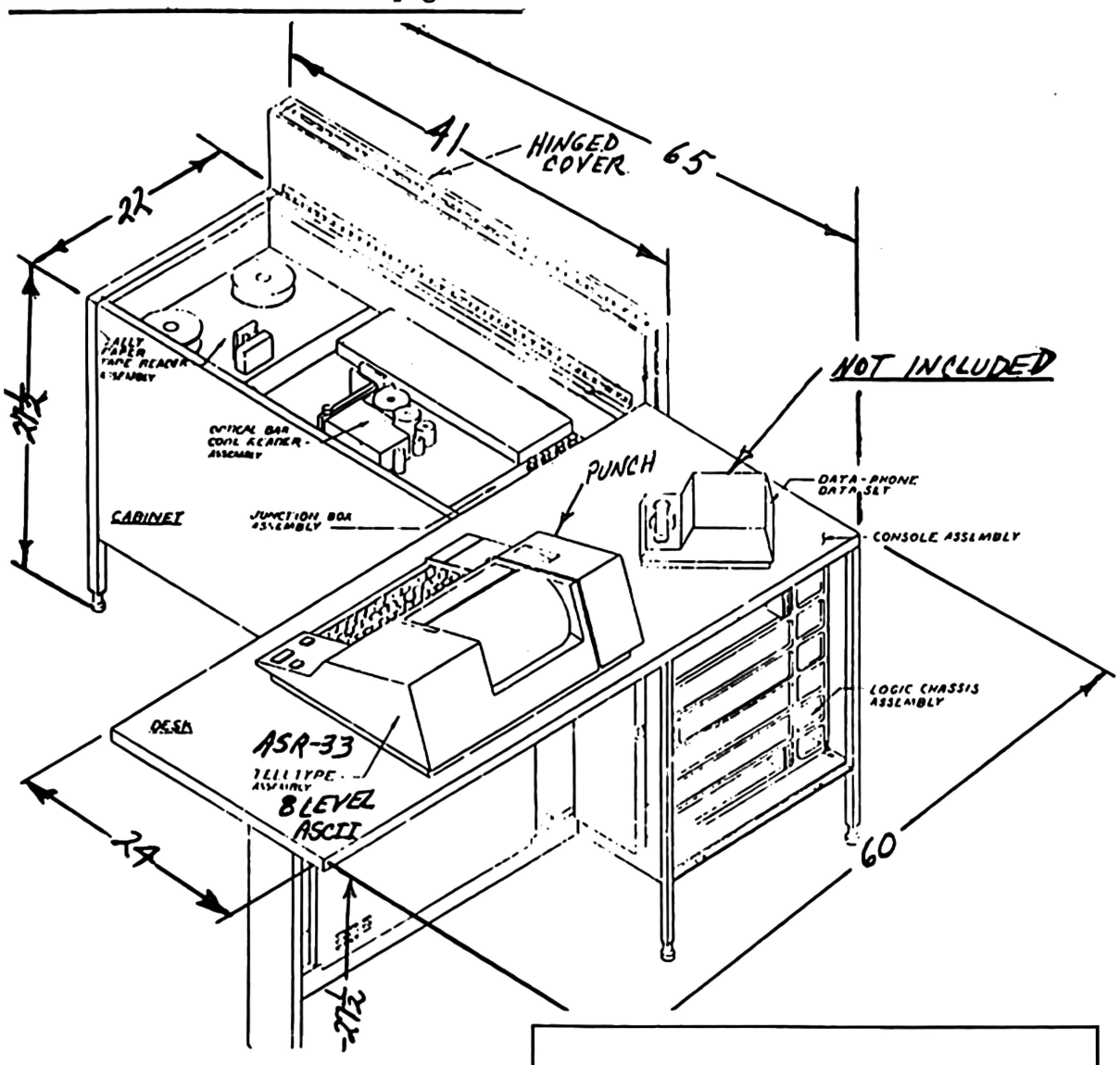

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I would appreciate information about programs appreciate for use with advanced 4th, 5th and 6th graders.

—DIANE WESLEY facilitator, gifted children program, Fuerte School, 11625 Fuerte dr., El Cajon CA 92020

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Enhanced ASR-33 Teletype terminals are available for from $150 to $295 from nonprofit Communicasting Association of America.

The ASR-33 was the basic ASCII I/O device back at the dawn of microcomputing, a distant three and four years ago.

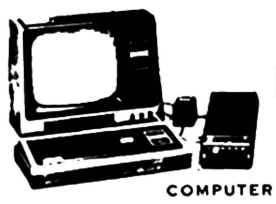
The printers typically write in all-caps, at a rate of about 10 characters/sec.

Ed Piller, CAA president, arranged to have the terminals made available at nominal fee to computerists and amateur radio operators, at the invitation of a large electronics brokerage house.

ASR-33s can be interfaced to TRS-80 either through the optional serial port on the TRS-80 expansion interface, or other serial attachments, including the $50 one from Small System Hardware.

The Teletypes are in place at locations throughout the United States. Ed believes they should as reasonably as possible be given to the end user for educational and scientific purposes, and are subject to prior sale.

Persons interested in obtaining an ASR-33s at a fraction of typical market price may contact Ed at 80 Birchwood Park Drive, Sayosset NY 11791 (516) 938-561. No collect calls will be accepted.



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Interface connects serial printer

H & K Computer Corp. recently announced development of its parallel-to-serial interface module for TRS-80.

Use of the new module allows the TRS-80 user to expand his system without purchasing the expansion chassis.

The new parallel-to-serial interface is plug compatible with the TRS-80 keyboard, CRT or expansion chassis and other printers. Baud rates and line feeding are switch selectable with automatic buffering and delay for the carriage return; allowing compatibility with individual terminals.

The parallel to serial interface module sells for $150.00.

For more information please contact Harold Schonhoeft, president, H & K Computer Corporation, 15 East 31st. st., Kansas City MO 64108, (816) 561-1776.

Hard-copy printouts from Computer Data

Printouts of programs for Level II and disk Basic Users are available from Computer Generated Data, box 10203, Norfolk VA 23513, (804) 853-2304—no collect calls.

For $9.50, Com Gen provides Two printouts of programs up to 500 lines. The price for longer programs is $12.50.

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(Continued on page 6)

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