PCC

is published 5 times each school year by DRAGONS and other mythical beasts. (September thru May — no issues during summer mating season). Regular subscriptions cost $4 (for 5 issues, silly) but if you are a real special special creature like a DRAGON or a little kid or a big kid who aint outa high school yet you get a special price like $2 for 5 issues which of course are published by DRAGONS and other ~~spec~~ (whoops) mythical creatures during the skool year from Sept to May.

[One more thing — DRAGONS have to come in person (?) to get the special DRAGON rate]

↳ or send an official DRAGON birth certificate and a picture and vital statistics and the name of my favorite fantasy/science fiction story about DRAGONS or invent an incredible story that I can't resist.

But! OUTSIDE OF U.S. ITS $5 FOR A REGULAR SUBSCRIPTION

Send CHECK or MONEY ORDER OR A LIVE MAGIC DRAGON

TO: PEOPLE'S COMPUTER COMPANY
P.O. BOX 310, MENLO PARK CA 94025

REMEMBER
REG. SUBSCRIPTIONS $4
STUDENTS (UP TO 12TH GRADE) $2
DRAGONS $1/2
AND SO ON

YOUR NAME _____
& ADDRESS _____
& MORE ADDRESS _____
& MORE ADDRESS _____

DRAGONS ONLY COMPLETE THE FOLLOWING,
WHAT KIND OF DRAGON ARE YOU?
_____

WHEN DID YOU FIRST REALIZE YOU WERE A DRAGON?
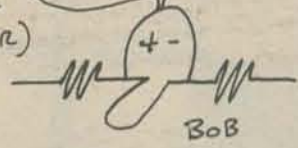_____ (CONTINUED NEXT ISSUE)

ALMOST FORGOT ABOUT BACK ISSUES (THEY ARE REEL CHEEP) WHY NOT BUY A BUNCH AND GIVE THEM AWAY TO KIDS + DRAGONS AND MOTHERS-IN-LAW AND SKOOLS AND LIBRARIES AND PEOPLE WHO DON'T HAVE MUCH FUN EXCEPT WHEN THEY READ PCC. or in other words Oct 72 thru May 73

VOL 1 #1 TO 5
VOL 2 #1 & #2
1 TO 9   1.00 EACH
10 TO 29   50 CENTS EACH
30 TO 99   40 CENTS EACH
100 OR MORE 30 CENTS EACH

(GOT THAT?)

GROUP SUBSCRIPTIONS
10 OR MORE $3 EACH
30 OR MORE 2.50 EACH
100 OR MORE 2.00 EACH
(OR MAKE US AN OFFER)

HELP! I'M ALLERGIC TO DRAGONS
BOB

Clearance Sale!
The chief DRAGON sez you can have ~~ALL~~ (ALL) (FIVE) ... 5 ... issues from last Skool year (1972-73 you know) for ONLY $2.00 (TOO DOLLARS)
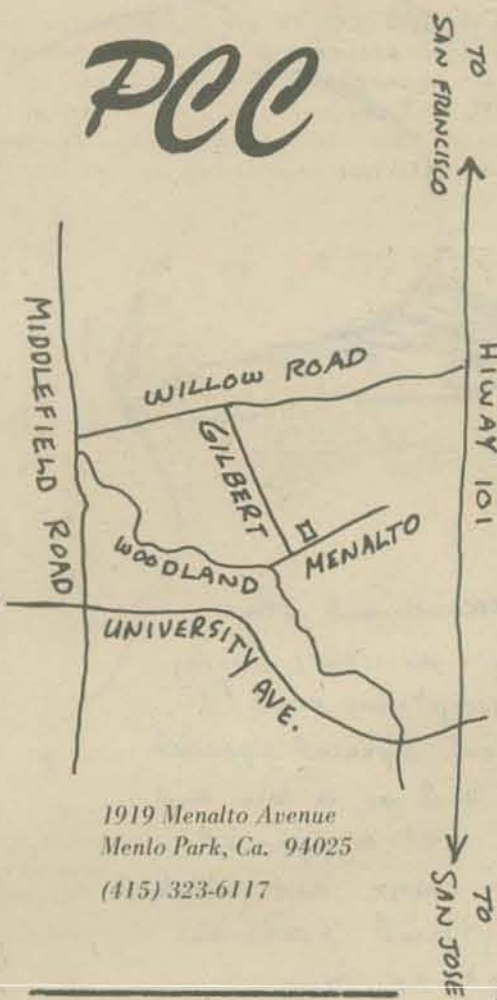
*ALL YOU LUCKY SUBSCRIBERS WILL GET THE SPECIAL ISSUE ON HOW TO BUY A MINICOMPUTER FOR YOUR SCHOOL *** FREE ***

TAXMAN SEZ THAT WE SHOULD TELL YOU THAT MEANS VOLUME 1 NUMBERS 1 THRU 5

Hi! DAVE PUT PUT PUT LEROY

EXARP HCOMA NANTA BITOM

PCC

TO SAN FRANCISCO

MIDDLEFIELD ROAD

WILLOW ROAD
GILBERT
WOODLAND
MENALTO
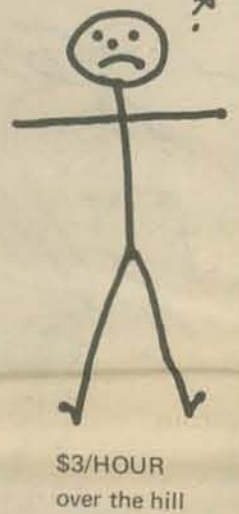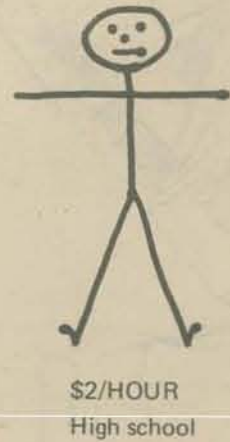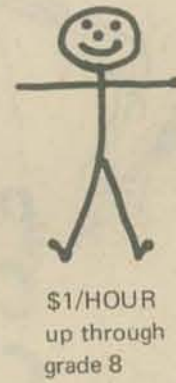UNIVERSITY AVE.

HIWAY 101

TO SAN JOSE

1919 Menalto Avenue
Menlo Park, Ca. 94025
(415) 323-6117

PCC is in a storefront in a little neighborhood shopping center. (Used to be the corner drugstore) 1600 square feet of games, computers, people and ideas.

computer time

Rent computer time when the urge strikes. Cost per hour grows bigger as you grow bigger.

$1/HOUR
up through
grade 8

THURSDAY NITE OPEN HOUSE WENT OUT WITH THE OLD YEAR.

$2/HOUR
High school

Or – we will swap computer time for ???

$3/HOUR
over the hill

Whatever

Every Friday

Ancient and honorable games
Games you never heard of
Games invented Friday nite
Various kinds of talk
Games computers play
Art in process

7-10PM

Sometimes

Rock & Bluegrass – live!
Captain Flash's Amazing Laser
   Light Show
Visual stuff -- slides & films
Greek dancing
Star gazing
Surprises (even we don't know)

Admission:

Admission
FREE
for
.. Some ..
DRAGONS

$0.50
up thru
8th grade

$1.00
9th grade
& beyond

SCHEDULE

Sunday		Probably Closed
Monday		Probably Closed
Tuesday	10AM – 3PM	Field Trips
	3PM – 4PM	Open - Computers Available
	4PM – 6PM	Classes
	7:30PM – 9:30	Classes
Wednesday	10AM – 3PM	Field Trips
	3PM – 9PM	Open - Computers Available
Thursday	10AM – 3PM	Field Trips
	3PM – 6PM	Open - Computers Available
	6PM – 9PM	Probably Open
Friday	10AM – 7PM	Open - Computers Available
	7PM – 10PM	The Whatever (See Description)
Saturday	10AM – 5PM	Open - Computers Available

The last Saturday of every month will be Math Games and Computer Critters Day (see description)

ON PAGE 3

PEOPLE'S COMPUTER COMPANY is a NON-PROFIT CORPORATION.
* Think of us the next time you feel liking giving away a computer or a teletype or a CRT or a disk or a plotter or $1000000.

Liberate Some People From Skool

Take them on a field trip to PCC by skoolbus, car-pool, or bike brigade.

We can take up to 12 at a time for up to 1½ hours.

Field trips can be arranged on Tuesdays, Wednesdays or Thursdays between the hours of 10AM and 3PM.

Info? Call (415)323-6117

Before PCC

2

After PCC

We are offering three classes for folks who have been dying to learn about programming. Right now, the first two are in progress and will be ending by late February. Three groups will start meeting in the following three categories, sometime in late February.

BASIC 4 Beginners *is a hands-on class about BASIC, our favorite programming language. All our games are written in BASIC. The course will last 8 weeks, two hours of hands-on class time every Tuesday (4 - 6 PM or 7:30 -.9:30 PM) plus 10 hours of free computer time. Cost is $40.*

SENIOR PROGRAMMER

CLASSES ARE EXPECTED TO START IN LATE FEBRUARY.

For more info, ask for Dave Kaufman at the PCC number 323-6117.

BASIC 4 Old-Timers *will cover advanced topics in BASIC. At the same time, we will be writing programs and games, focusing on useful techniques and BASIC writing style. The class will meet for 8 weeks of two-hour classes. Class hours are to be arranged. Everyone will also have 10 hours of free computer time. Cost is $40.*

TRICKS OF THE TRADE-OR-GETTING THE MOST OUT OF BASIC *is a new class for people who already have a reading and writing understanding of BASIC. We will talk about writing programs to DO SOMETHING, and the various ways there are of doing IT (whatever the topic is). CONCEPTS such as SUBROUTINES, ARGUMENT PASSING, how to get the most out of the basic BASIC FUNCTIONS (INT, SGN, etc.). Sounds good? There will be 8 weeks of two-hour classes, one per week. Also, you'll get 10 hours of free computer time. Cost is $40.*

math games

Games to learn math by (and have fun with) from first grade up. Match wits with someone . . . another person, yourself, a computer.

We will learn, play, invent board games, paper and pencil games, computer games . . . many games can be played either with the computer or *without* the computer.
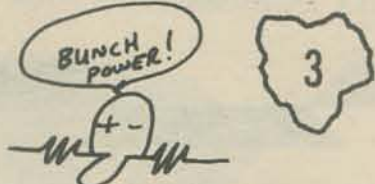
AND learn to program using INCHWORM, LADYBUG, GERMLAND, and other computer critters. Especially designed to show how the concepts of computer programming can be taught to very young children. Best of all, you don't even need a computer! COMPUTER CRITTERS can be used in any classroom. We will, however, have a computer available so you can see the CRITTERS in action on a real computer.

MATH GAMES & COMPUTER CRITTERS will happen the last Saturday of every month, 10AM til 5PM. Next class is Saturday, January 26.

Price: $12 each session for you, or
$10 if you bring a friend (grades 1–8)
The friend is free – 1 friend per student.

& computer critters

*ABOVE - EAGER LEARNER EAGERLY LEARNING **BASIC** WITH HELP FROM FRIENDLY BOOK CALLED 'MY COMPUTER LIKES ME'*

Computers Cost Too Much
so
Let's Do It Together and
Get Quantity Discounts

BUNCH POWER!

3

Computer Manufacturers like to sell multiple copies of hardware. Some of them give good discounts for quantity purchases of the same item.

So . . . we would like to get together with other non-profit groups and schools in the San Francisco area who are interested in getting DISCOUNTS on computer equipment and supplies.

While we are about it, we might as well set up a network to share programs, maintenance, back-up hardware, improve the software the manufacturer sent, build cheap terminals and other peripherals, and generally get more utility for less $$$.
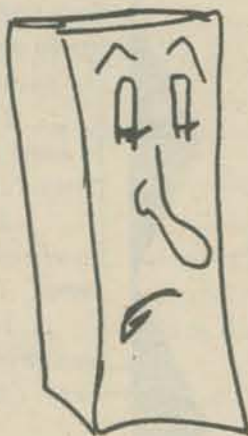
Interested? Call me at People's Computer Company (415) 323-6117

Bob Albrecht

HELP

Dear Bob,
I suggested to Dave that a series on TTY maintenance and repair would be of great value — (why not publish a book like John Muir's "VW for the Complete Idiot")?
You could assume that the reader has TTY manuals (310-B I & II) as well as some diagnostic programs, as well as a soldering iron and go from there. The repair article should be a "troubleshooting" sort of thing.
I'm really looking forward to our computer jamboree in January!
Could you please print the enclosed letter to the editor.

Sincerely
Larry Press

+•+ +•+ +•+ +•+ +•+ +•+ +•+ +•+ +•+ +•+ +•+ +•+

Dear PCC
We have just started a 3-TTY community computer thing in Venice, Calif. Things are going pretty smoothly for now, but we don't have any hardware folks around who understand our TTYs.

HELP   HELP   HELP   HELP

Would anyone in LA either work with us on TTY maintenance and troubleshooting, teach me to do it, or teach a whole class on the topic??
Are there any texts available on TTY? What are good, LA parts sources? What sorts of special tools are needed???

HELP again,

Larry Press
128 Park Place
Venice, Ca. 90291
399-2083

PCC needs the same kind of HELP HELP HELP

+•+ +•+ +•+ +•+ +•+ +•+ +•+ +•+ +•+ +•+ +•+ +•+

HELP WANTED

Small, funky computer resource center needs access to a high-speed paper tape punch on off hours.
Our computer games are used internationally and we need a faster way to copy them than at .10 CPS.

Contact: Dave Kaufman
P.O. Box 310
Menlo Park, Ca. 94025

Or call: 415-323-6117

STAR TRADER

THE DATE IS JAN 1, 2070 AND INTERSTELLAR FLIGHT HAS EXISTED FOR 70 YEARS. THERE ARE SEVERAL STAR SYSTEMS THAT HAVE BEEN COLONIZED. SOME ARE ONLY FRONTIER SYSTEMS, OTHERS ARE OLDER AND MORE DEVELOPED.

EACH OF YOU IS THE CAPTAIN OF TWO INTERSTELLAR TRADING SHIPS. YOU WILL TRAVEL FROM STAR SYSTEM TO STAR SYSTEM, BUYING AND SELLING MERCHANDISE. IF YOU DRIVE A GOOD BARGAIN YOU CAN MAKE LARGE PROFITS.

AS TIME GOES ON, EACH STAR SYSTEM WILL SLOWLY GROW, AND ITS NEEDS WILL CHANGE. A STAR SYSTEM THAT NOW IS SELLING MUCH URANIUM AND RAW METALS CHEAPLY MAY NOT HAVE ENOUGH FOR EXPORT IN A FEW YEARS.

YOUR SHIPS CAN TRAVEL ABOUT TWO LIGHTYEARS IN A WEEK AND CAN CARRY UP TO 30   TONS OF CARGO. ONLY CLASS I AND CLASS II STAR SYSTEMS HAVE BANKS ON THEM. THEY PAY 5% INTEREST AND ANY MONEY YOU DEPOSIT ON ONE PLANET IS AVAILABLE ON ANOTHER - PROVIDED THERE'S A LOCAL BANK.
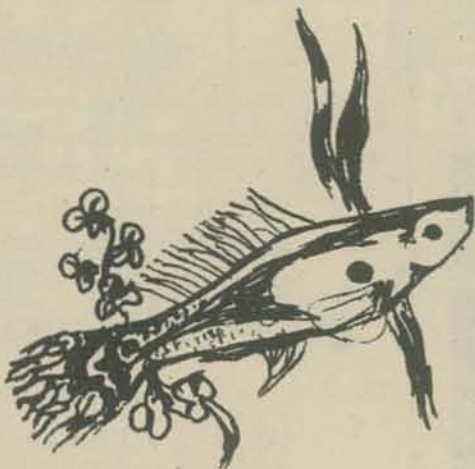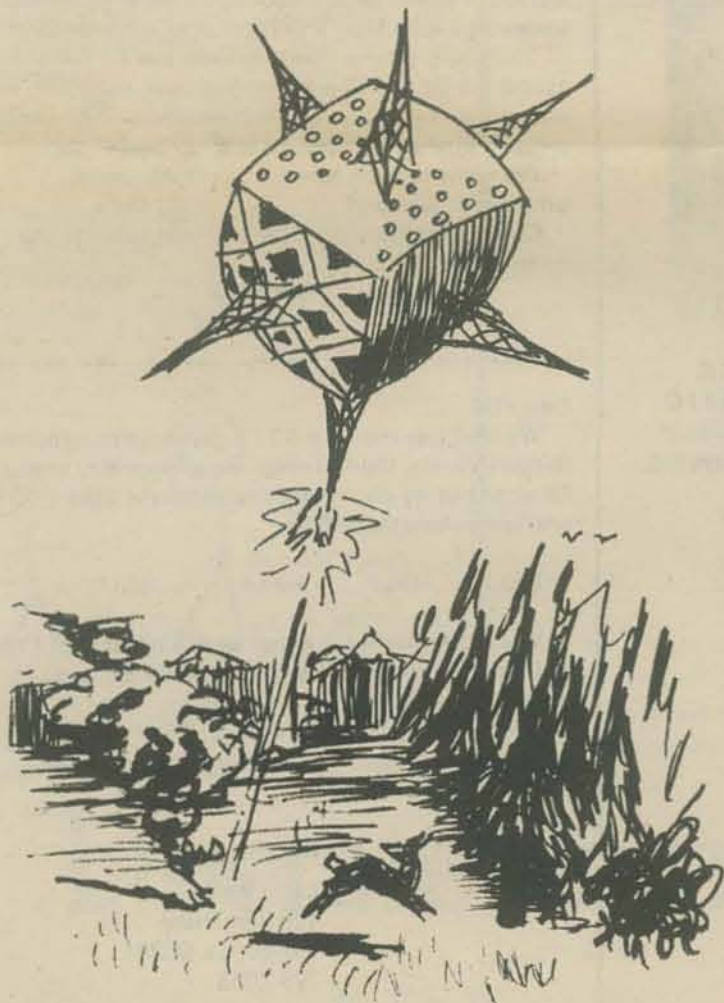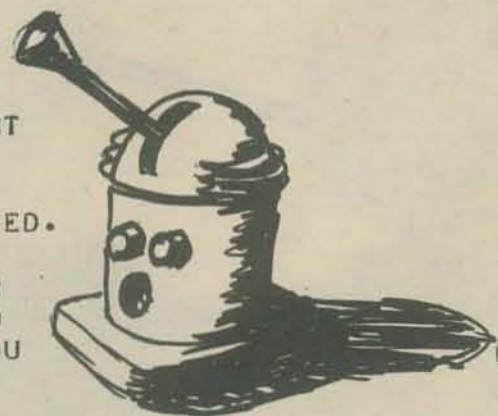
IT IS THE FUTURE. Interstellar space ships link the small community of newly discovered worlds. **YOU** captain two merchant ships with the future of the young, emergent worlds depending upon you and your fellow skippers.

(The printouts used on these two pages were taken from a 4–person game. STAR TRADER *can also handle 2– or 3–person games, but fewer star systems are generated.)*

You land and you liftoff, you buy local merchandise and sell what you have on board. You trade with the merchants and haggle over prices. Bid too high? Try a little lower. Bid too low? Try again next time!

(You bring your cargo to a face–to–face trading session with the local merchants and their goods and needs. Ships land intermit–tently; a star colony may not have a ship land for 6 or 7 months.)

You buy your raw materials (like Uranium or Metals) on the less developed, newer star systems. With a full ship, you lift off and return to Class I or Class II star systems. There you sell out and load up on goods such as Heavy Equipment, or Medicine. Then out to the periphery for another haul.

(Ships travel 2 lightyears per week, so a round trip from Sol to Fate, which is about 65 lightyears away, would take 65/2 weeks times 2 trips, or 65 weeks.)

But that's not all! As the years progress, the star systems will *slowly develop*, and those on the brisker trading routes will grow faster. ·

(Economic development is based on a macro–economic model read from **DATA** *statements. Want a different developmental pat-tern? Change the* **DATA** *statements!)*
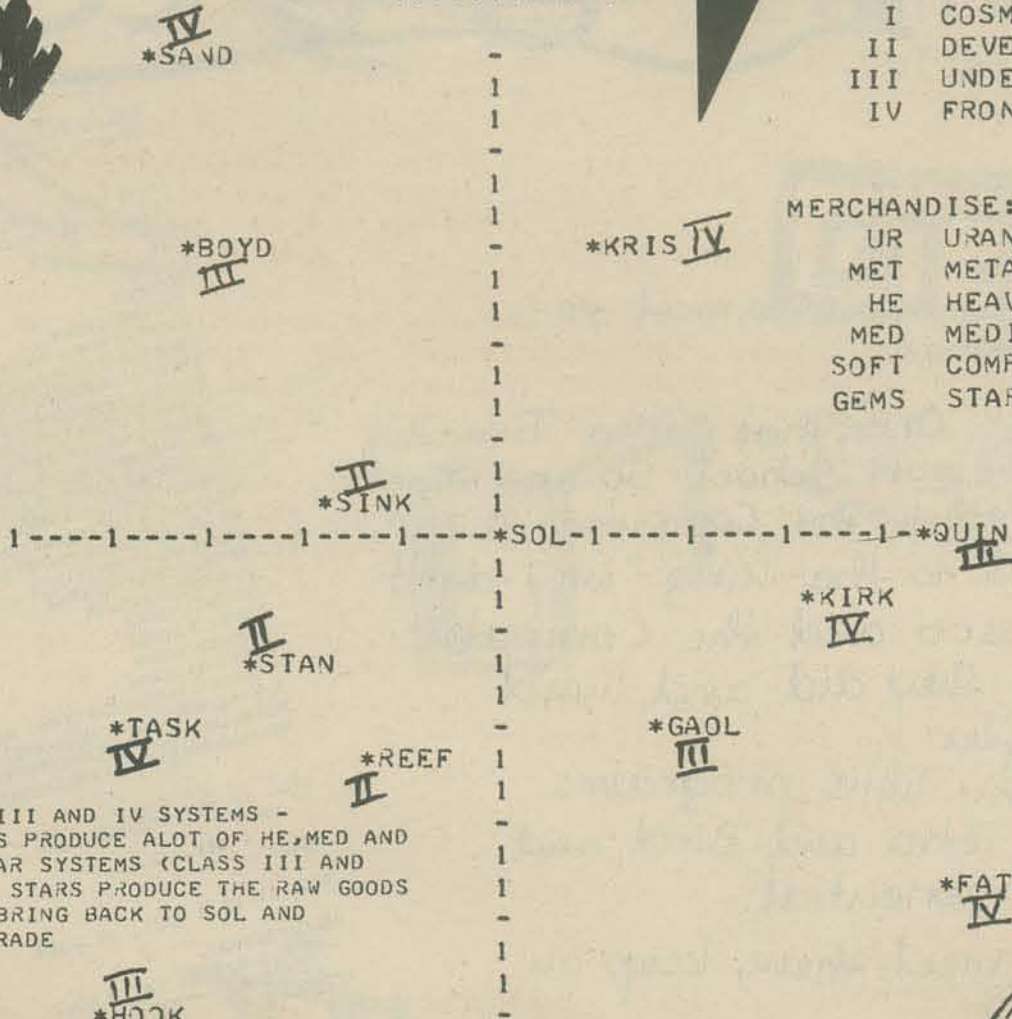
For more info, write to:

Dave Kaufman
People's Computer Company
P.O. Box 310
Menlo Park, Ca.   94025

A copy of the two tapes with instructions costs $10. It's written for the HP 2000F, with **PRINT USING**, **HP** strings, but no files or **ENTER** statements.

```
                                              STAR MAP
                                           ************                      ▶  STAR SYSTEM CLASSES:
          *SAND                                                                    I    COSMOPOLITAN
           IV                                       -                              II   DEVELOPED
                                                    1                              III  UNDERDEVELOPED
                                                    1                              IV   FRONTIER
                                                    -
                                                    1
                                                    1          *KRIS IV      MERCHANDISE:
           *BOYD                                    1                           UR    URANIUM
            III                                     -                           MET   METALS
                                                    1                           HE    HEAVY EQUIPMENT
                                                    1                           MED   MEDICINE
                                                    -                           SOFT  COMPUTER SOFTWARE
                                                    1                           GEMS  STAR GEMS
                                                    1
                            II                      1
                           *SINK                    -
    1----1----1----1----1----1-*SOL-1----1----1----1-*QUIN
                                                    1                           III
                                                    1          *KIRK
                            II                      -           IV
                           *STAN                    1
                                                    1
        *TASK                                       -
         IV          *REEF                *GAOL
                      II                   III
   ALL SHIPS START AT SOL                           -
   ADVICE:  VISIT THE CLASS III AND IV SYSTEMS -    1
   SOL AND THE CLASS II STARS PRODUCE ALOT OF HE,MED AND
   SOFT, WHICH THE POORER STAR SYSTEMS (CLASS III AND
   IV) NEED.  ALSO, THE POOR STARS PRODUCE THE RAW GOODS     *FATE
   UR,MET,GEMS THAT YOU CAN BRING BACK TO SOL AND             IV
   THE CLASS II SYSTEMS IN TRADE
                                                    -
                                                    1
                    III                             1
                   *HOOK
```

THE MAP IS 100 LIGHT-YEARS BY 100 LIGHT-YEARS,
SO THE CROSS-LINES MARK 10 LIGHT-YEAR DISTANCES

```
*******************
* APR 22  , 2070                                        Soft & Gems
* SARA   HAS LANDED ON KRIS                          don't weigh anything
1 WEEK LATE - 'OUR COMPUTER MADE A MISTAKE'

$ ON BOARD   UR    MET    HE    MED   SOFT  GEMS   NET WT
    5 000     0      0    15     10    10     0      25
                         + 15 +10 + . . . . . = 25 tons
WE ARE BUYING:
      HE WE NEED   6        UNITS.HOW MANY ARE YOU SELLING?10
   WE OFFER   42300.        WHAT DO YOU BID?45000
   WE'LL BUY!
      MED WE NEED   4       UNITS.HOW MANY ARE YOU SELLING?10
   WE'LL BID ON  8    UNITS.
   WE OFFER   38200.        WHAT DO YOU BID?41000
   WE'LL BUY!
      SOFT WE NEED   7      UNITS.HOW MANY ARE YOU SELLING?10
   WE OFFER   32400.    WHAT DO YOU BID?38000
   WE OFFER   32800.        WHAT DO YOU BID?36000
   WE'LL BUY!

WE ARE SELLING:
      UR UP TO  6      UNITS.HOW MANY ARE YOU BUYING?6
   WE WANT ABOUT   27100    YOUR OFFER?24000
   WE WANT ABOUT   26900    YOUR OFFER?25000
   SOLD!
      MET UP TO  5      UNITS.HOW MANY ARE YOU BUYING?5
   WE WANT ABOUT   15400    YOUR OFFER?13400
   WE WANT ABOUT   15300    YOUR OFFER?13500
   OUR FINAL OFFER: 15200    YOUR OFFER?14000
   SOLD!
      GEMS UP TO  3      UNITS.HOW MANY ARE YOU BUYING?3
   WE WANT ABOUT   7900    YOUR OFFER?5000
   WE WANT ABOUT   7400    YOUR OFFER?5500
   OUR FINAL OFFER: 7200    YOUR OFFER?6000
   THAT'S TOO LOW
WHAT IS YOUR NEXT PORT OF CALL?SOL
THE ETA AT SOL  IS AUG 6   , 2070
```

TREK 73

is the most realistic Star Trek game we've seen. Bill Char, who's been writing it over the past year, brought down the 5 tapes (they **CHAIN**) and swapped for a copy of **STAR TRADER**. That was about 3 weeks ago and we've been playing alot of **TREK73** since then.

You captain the Enterprise against alien aggressors (Romu-lans, Centaurians, Orions, Arcturians, or Klingons). You choose the number of enemy ships, whose battle strategy is built into **TREK73**.

The game is a real–time simulation, each command repre–senting 2 seconds of battle time. Your moves are timed with **ENTER** statements, so you never have more than 8 seconds of inactivity.
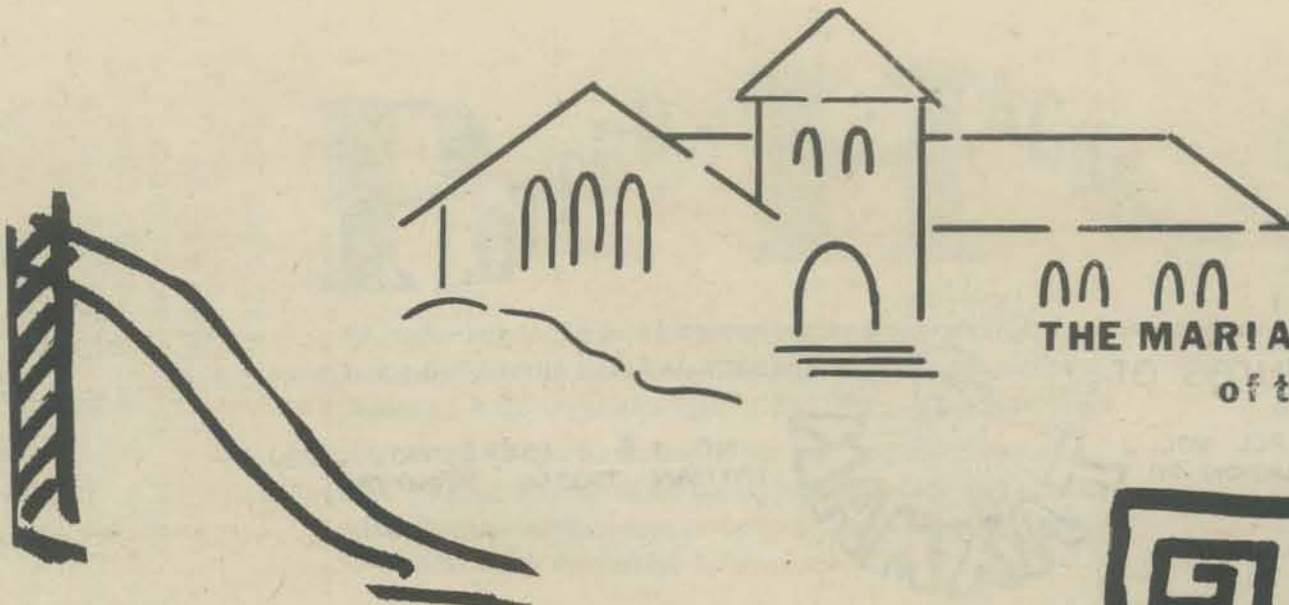
And you have all the facilities originally designed into the Enterprise for the television show -- phasers, photon torpedos,mat–ter–anti–matter probes, warp drives, sensors whose data is presented as 2–inch by 2–inch maps, and complete control over your weapon–ry.
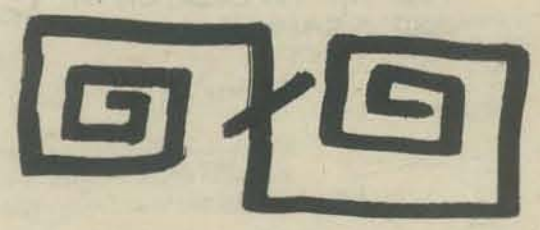
For info or a copy of the tapes ($10), write to:

Bill Char
370 – 31st Avenue
S.F , Ca. 94121

5

T: Hi! What's your name?
A: ? $ Name
T: Well hello there $ Name, nice to meet you.
   May I tell you a story?
A: ?
T: Great! Here goes... Once there was a Princess,
   lived in this Montessori School. So she meets
   this King who lived in the Computer Palace.
   Said the Princess to the King: "why don't
   we put Montessori and the Computer
   together?" So they did and lived
   happily ever after.
   They made many little programs
   called Mat, and Tetra and Bird, and
   etc., etc., — all experiential.

   If you want to meet them, keep on
   looking.
   If you want to buy 'em, write:

```
HELLO THERE IN BIRDLAND!!
WHAT'S YOUR NAME FLYING TYPER?KAREN
HEY THERE BIRD FLYING IN THE SKY,
DO YOU SEE THINGS THE SAME AS I?????
           XX
         XXXX
        XXXXXX
       XXXXXXXXXXX
      XXXXXXXXXXXXXXXXXXX
     XXXXXXXXXXXXXXXXXXXXXXXXX         XX
    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  XXXXX
   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
   XXXXXXXXXXXXXXXXX
   XXXXXXXXXXXXXXX
   XXXXXXXXXXXXX
   XXXXXXXXXXX
   XXXXXXXXXX                          X
   XXXXXXXXX                          XXX
   XXXXXXXX                          XXXX
   XXXXXXX                          XXXXXX
   XXXXXX                          XXXXXXX
   XXXXXXXXXXXXX             XXXXXXXXXXXXX
   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
     XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

NOW, IF THE X'S ARE LAND --
   WHY!
?GULF     I SEE A ----.

YES, IT IS A GULF, BY GOSH.
WELL, ANYWAY,
LET THE X'S BE WATER NOW.
     IT'S A ----------.
?PENSULA

YES, IT SURE AS SHOOTING IS A PENINSULA!

OK BIRD, LET'S TRY IT AGAIN!
WHAT'YA SEE MY FINE FEATHERED FRIEND??
```



```
*READY
GET-PLANT
RUN
HELLO THERE TYPING PERSON.   AND WHO ON EARTH ARE YOU
CARMELA
SO BE IT, YOU ARE CARMELA ON EARTH.
CARMELA, I WOULD LIKE TO DO SOMETHING VERY IMPORTANT WITH YOU.
WOULD YOU?YES
GOOD!

YOU WILL BE NEEDING A FEW THINGS. LIKE:
ONE GLASS JAR (FOR EXAMPLE, AN EMPTY JAM JAR),
SOME SOIL (EARTH, DIRT, WHATEVER YOU CALL IT),
WATER,
AN ORANGE.
TELL ME WHEN YOU HAVE IT ALL.
?OK
GREAT CARMELA.
NOW EAT THE ORANGE - BUT BE SURE TO KEEP THE SEEDS!!!
THEN TELL ME HOW MANY SEEDS YOU HAVE??
ALLRIGHTY.  NOW FILL THE GLASS JAR WITH SOIL.   TELL ME
WHEN YOU ARE DONE.
?OK
NEXT, POKE SOME HOLES INTO THE SOIL WITH YOUR FINGER -
MAKE SURE THAT TWO OF THEM ARE AT THE EDGE OF THE JAR,
RIGHT WHERE THE GLASS IS.  GOT IT?OK

NOW PLACE ONE ORANGE SEED INTO EACH HOLE.  CAN YOU
BE THE TWO BY THE GLASS
?YES
OK.  NOW TUCK THE SEEDS IN SNUGLY, BY SMOOTHING THE SOIL
OVER THEN AND PRESSING IT GENTLY, O.K.
OK

NOW THAT THE SEEDS ARE SAFELY IN THE SOIL, THEY NEED SOME
WATER.  GIVE THEM SOME.  BUT REMEMBER - SEEDS LIKE TO
DRINK, N O T  TO TAKE A BATH . . . READY?YES

ALL YOUR SEEDS NEED NOW IS A LIGHT AND WARM PLACE ON THE
WINDOWSILL WHERE THE SUN CAN REACH THEM.
AND EVERY DAY A D R I N K  OF WATER, OF COURSE. . .
AND WATCH WHAT'S GOING TO HAPPEN.

DO YOU WANT TO DO THIS?YES
THEN WHY DON'T I GIVE YOU A LITTLE POEM BEFORE I SIGN OFF.
I LIKE IT VERY MUCH, I HOPE YOU WILL TOO.

THE SEED      BY AILEEN FISHER

HOW DOES IT KNOW,
THIS LITTLE SEED
IF IT IS TO GROW
TO A FLOWER OR WEED,
IF IT IS TO BE
A VINE OR SHOOT,
OR GROW TO A TREE
WITH A LONG DEEP ROOT?
A SEED IS SO SMALL
WHERE DO YOU SUPPOSE
IT STORES UP ALL
OF THE THINGS IT KNOWS?

IF YOU WANT TO, YOU CAN ASK YOUR MOM OR TEACHER TO GIVE YOU
SOME DRIED BEANS OR PEAS WHICH YOU COULD PLANT THE SAME WAY.

GOODBYE CARMELA.
```


These programs were
written in PILOT by
people at ↙

THE MARIA MONTESSORI SCHOOL
OF THE GOLDEN GATE

20 WOODSIDE AVE.
SAN FRANCISCO, CA. 94127   URSULA THRUSH
PHONE (415) 731-8188   HEADMISTRESS

For info about PILOT see
PCC vol 1 #4 (APRIL 73)
or "A Simple Instructional Language"
by Sylvan Rubin in the NOV 73
issue of COMPUTER DECISIONS,
50 Essex St., Rochelle
          Park NJ
            07662

THE MARIA MONTESSORI SCHOOL
of the Golden Gate

GET-BOOKS
RUN
HI MY NAME IS MARTY WHATS YOURS?
?
WHATS YOUR FAVORATE BOOKS?
?
MINE IS THE PRINCESS AND THE PRINCE DOYOU KNOW IT?
?
WELL ITS ABOUT A PRINCESS AND A PRINCE AND THEY REALLY LIKE
ECHOTHER BUT THEY GET MARRIED BE COUSE HER FATHER
DOESENT LIKE HIM SO HE GETS A KNIGHT TO MARRY HER BUT THE
RINCESS RUNS AWAY WITH THE PRINCE AND THEY GET MARRIED
AND LIVE HAPPYILY EVER AFTER. DID YOU LIKE THE STORY?
?
WELL LETS GET ON   WITH THE GAME!
?
I WILL PART OF THE STORY AND YOU NAME THE OTHER PART O.K.
?
THE THREE BEARS?
?
THE PRINCESS AND THE?
?
LITTLE RED?
?
BYE-BYE FOR NOW

*READY

Jennifer Sebrin
age 9½

GOOD DAY TO YOU, MY DEAR TYPER! AND WHAT IS YOUR NAME?
?SARAS
GOOD DAY THEN, SARAS. ARE YOU PERCHANCE IN THE MOOD FOR A
MATCHING GAME?
?YES
NOW OPEN YOUR PEEPERS AND WATCH CAREFULLY,

ONE

TWO

XEQ-STARS
HI! WHAT'S YOUR NAME?
?
DO YOU WANT TO LEARN ABOUT STARS?
?
I THINK STARS ARE PRETTY. DON'T YOU THINK SO?
?
DID YOU EVER STAY UP ON A CLEAR NIGHT?
?
GOOD. YOU KNOW TOO WHAT IT LOOKS LIKE.
CAN YOU MAKE A POEM ABOUT STARS?
?
THIS PROGRAM WAS WRITTEN BY HELENA HAMILTON. GOOD-BYE.

FOUR

THREE
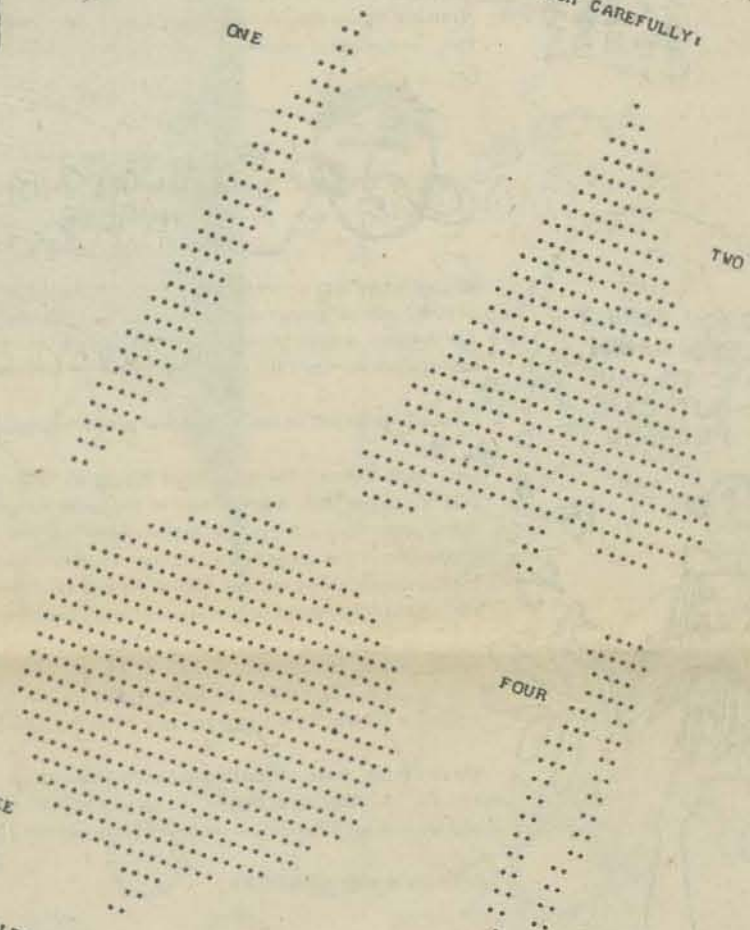
XEQ-POT
THIS PROGRAM WAS WRITTEN BY ERIN RIORDAN
7YRS OLD
HI MY NAME IS DANNY.
WHATS YOURS,
?
DO YOU WANT TO LEARN ABOUT INDIANS?
?
THATS GOOD. HAVE YOU EVER MADE INDIAN THINGS?
?
WOULD YOU LIKE TO MAKE A INDIAN POT.
?
GO GET SOME CLAY AND BRING IT HERE AND A PENCIL TELL
ME WHEN YOU HAVE IT.O.K.
?
O.K. NOW SHAPE IT LIKE A BOWL. NOW WITH THE PENCIL
DRAW A INDIAN DESIGN O.K.
?
NOW GO PUT IT IN THE SUN TO LET IT DRY O.K.
DONT FORGET TO CLEEN UP
BYE-BYE

HOW MANY DIFFERENT KINDS OF SHAPES DO YOU SEE?
?LINIER
TRY AGAIN, COUNT CAREFULLY.
HOW MANY DIFFERENT KINDS OF SHAPES DO YOU SEE?
?FOUR
WHAT DO YOU THINK THEY ARE?
?SPACLY
THEY MAY LOOK LIKE THAT TO YOU, BUT I AM THINKING OF A PART OF A
DINT. GUESS AGAIN.
?LEVS
THEY ARE SHAPES OF LEAVES.
NOW LET'S SEE HOW MANY ACTUAL LEAVES YOU CAN FIND TO MATCH THESE
SHAPES! FIRST TRY THE PLANTS IN THE HOUSE, THEN GO OUTSIDE TO LOOK
E WILL LOOK AT THE SHAPES TOGETHER. COME BACK AND GET LEAFS, AND
OR THEM. WHEN YOU HAVE YOUR LEAVES, COME BACK AND GET LEAFS, AND
STILL LEARN THE NAMES OF THE SHAPES. IF YOU HAVE NO LEAVES, WE CAN
SO, HAPPY HUNTING, LEAFHUNTER!
AND SARAS.....PLEASE BE VERY GENTLE IN PICKING THE LEAVES.
BYE-BYE, SARAS.
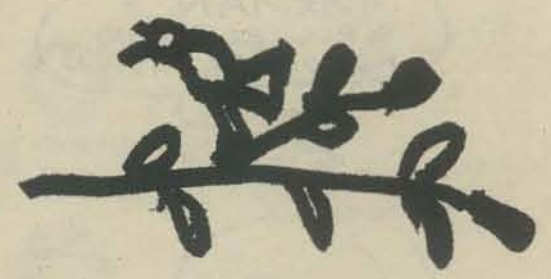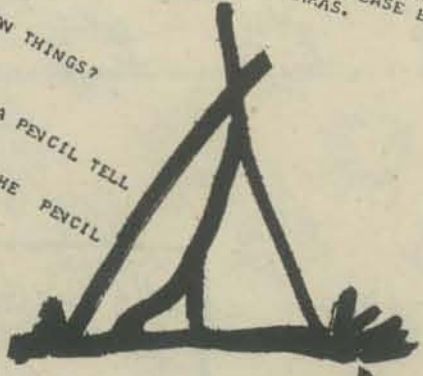
XEQ-BAND
THIS PROGRAM WAS WRITTEN BY CARMELA ROSSI, 8YRS OLD
HI MY NAME IS MARSHA . WHATS YOURS?
?
DO YOU WANT TO LEARN ABOUT INDIANS?
?
THATS GOOD. HAVE YOU EVER MADE INDIAN THINGS?
?
CAN YOU NAME SOME?
?
WOULD YOU LIKE TO MAKE AN INDIAN BAND?
?
THATS GOOD. YOU WILL NEED SCISSORS, A FLOWER, OR A LEAF,
CONSRUCTION PAPER, AND TAPE AND CRAYONS. TELL ME WHEN
YOU HAVE IT?
?
CUT A STRIP OF CONSRUCTION PAPER TO FIT YOUR HEAD BUT DONT
RPE IT. WITH THE CRAYONS YOU WILL DRAW DESIGNS ON IT.THEN
TAKE THE FLOWER AND TAPE IT ON. THEN TAPE THE BAND TOGETHER
KNOW IT IS FINISHED. DONT FORGET TO CLEAN UP.DO YOU LIKE
IT?
?
BYE

QE__XEQ-BUG
THIS PROGRAM WAS WRITTEN BY LIZ CROYLE, 7YRS OLD
HI, MY NAME IS MARY, WHAT IS YOUS?
?
THAT'S A NICE NAME.
?
THIS GAME IS ABOUT INSECTS, CAN YOU NAME SOME?
?
WELL, I CAN TELL YOU ABOUT BEDBUGS.HAVE YOU HEARD OF THEM?
?
WHEN BEDBUGS BITE YOU CNA REALLY FEEL IT! THE MOTHER
BEDBUG LAYS 50 TO 200 EGGS! IMAGINE! NOW LET'S PLAY
THE GAME. IF YOU CAN, TRY TO CATCH A BUTTERFLY.
WHAT COLOR ARE ITS WINGS?
?
IF THEY ARE BLACK IT MIGHT BE A CELERY SWALLOWTAIL
BUTTERFLY. IF THEY ARE WHITE IT MIGHT BE A CABBAGE
BUTTERFLY. IF THEY ARE ORANGE IT MIGHT BE A MONARCH
BUTTERFLY.
ARE BUTTERFLIES PRETTY?
?
YOU CAN LET YOUR BUTTERFLY GO NOW. BYE, BYE.

The Adventures of TAXMAN

: In Which the Fate of All Prime Numbers is Determined

{8}

Dear Max,

We have been looking for a general algorithm for playing TAXMAX. Our findings only apply to a few cases but we are sharing them with you in the hopes that they may be of use to other SCRAMM chapters in their never-ending fight for you. We have included two examples to help clarify our discoveries.

The main thing we have tried to do has been to find a *least upper bound* on the *number of turns* we will have. That tells us the greatest number of integers we will be able to take. If, in fact, we are able to take that many numbers and those numbers are the largest ones that we can get, we will have a *maximum* score. But just because we can find an upper bound on the number of turns doesn't guarantee that we can take that many numbers! Worse yet, even if we could take that many, having an upper bound doesn't tell us how -- that is, we might give up and think that the upper bound is too large and take less turns, simply because we couldn't figure out *in which order* we were supposed to take the integers!!

Max, keep your chin(s) up. In spite of these problems, we believe we have made some progress. Let's look at the list of 15 numbers. Since the TAXMAN must get at least one factor every time, he must get at least half the numbers in the list. Therefore, we can get *at most* half -- that is, we can take *at most* 15/2 or 7.5 numbers.

AN UPPER BOUND IS A CEILING ON SOMETHING. A LEAST UPPER BOUND IS A SMALLEST CEILING.

AH HA. SNEER. YOU'RE BEGINNING TO REALIZE YOU'LL NEVER WIN! YOU AND ALL OF SCRAMM ARE DOOMED TO THE EXHAUSTION OF EXHAUSTIVE SEARCHES. CHORTLE. CHORTLE.

YOU'LL NEVER DEFEAT ME WITH A .5 NUMBER.

STOP HECKLING, TAXMAN, AND LET THE SCRAMM LETTER CONTINUE.

A PROPER FACTOR OF AN INTEGER IS A FACTOR OTHER THAN THAT INTEGER.

We can refine this upper bound. The TAXMAN *always* gets 1 as a factor of the first number we pick since 1 is a *proper factor* of every integer greater than 1. But for us to be able to take a *prime number*, we have to give the TAXMAN the factor 1 since 1 is the *only* proper factor of a prime number. In other words, the TAXMAN gets 1 as a factor first time and that means no more prime numbers for us so if we don't get a prime number right away, we don't get any.

HOW DO YOU EXPECT TO SUCCEED WHEN YOU HAVE TO GIVE ME ALL BUT ONE OF THE PRIMES.

So our first turn is to take the *largest* prime number in the list (if we can only get one prime, let's get the largest!).

Let's continue with the example of the list of 15 numbers. We call the integers 1-7 the *lower half* of the list and the integers 8-15 the *upper half*. Each integer in the lower half is the proper factor of at least one integer in the upper half but no integer in the upper half is the proper factor of *any* number in the list. In particular, the prime numbers in the lower half are factors of integers in the upper half so we may be able to give the TAXMAN one of them in return for a number for us. But except for the largest prime number (which we will take on the first turn), the rest of the primes in the upper half (8-15) *must* go to the TAXMAN without us getting anything in return.

For the list of 15 numbers, 2, 3, 5, 7, 11, and 13 are the primes -- 11 and 13 are in the upper half; we will take 13 on the first turn giving the TAXMAN the factor 1, but we will never be able to take 11 nor can 11 be given to the TAXMAN in return for a number for us. So it's as if we gave 11 to the TAXMAN before we even started and 11 was never in the list!

We can think, then, of starting not with 15 numbers, but with 15 less the primes in the upper half we have to give away, or 15 - 1 = 14. Arguing as before, we can get at most half those numbers or 7. So our upper bound on the number of turns is 7, and we will get a maximum score if we can get the 7 *largest* numbers in the list (remember: 11 doesn't "exist").

Let's try it with HANDTAX.

1	4	2	6	3	7	5	6	4	7	7	6	5	3
*	2	3	*	5	8	7	⑧	⑨	⑩	11	⑫	⑬	⑭	⑮

Score: You -- 81   TAXMAN -- 39   and it's the maximum!!

TAXMIN PLAYERS HAVE FUN TOO !!!

Let's try another example with the list of 20 numbers. The primes in the upper half are 11, 13, 17, and 19. So we have to give away the primes 11, 13, and 17. Our upper bound is therefore

we can get at most half the numbers

$$\text{original size of the list} \longrightarrow (20 - 3) / 2 = 8.5 \longleftarrow \text{upper bound on the number of turns}$$

the number of primes in the upper half that we have to give away

SCRAMM FRIENDS: SEND US YOUR ADVICE, HINTS, STRATEGIES, AND RESULTS FROM PLAYS OF TAXMAN. MAIL TO: TAXMAN % P.C.C., P.O. BOX 310 MENLO PARK, CA. 94025

So if we can get the 8 largest numbers (we gave away 11, 13, and 17 already) we will have the maximum.

HANDTAX shows how to do it.

1	3	2	4	2	7	6	5	8	3	7	7	7	6	2	5	7	8	6	4
*	2	3	*	5	8	7	8	8	⑩	11	⑫	13	⑭	⑮	⑯	17	⑱	⑲	⑳

Score: You -- 124   TAXMAN -- 86

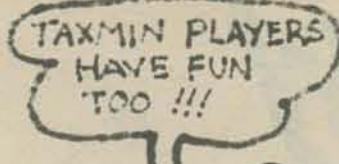The general formula for our upper bound on the number of turns is:
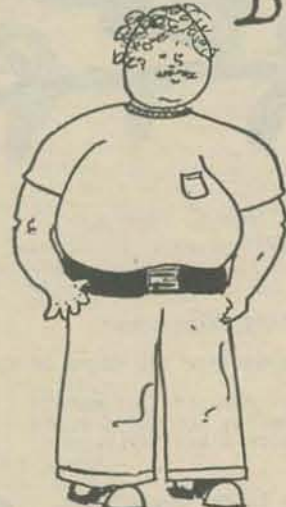
$$U = (n - g) / 2$$

where

U is our least upper bound on the number of turns we have

n is the size of the original list

g is the number of primes we have to *give away* (which is one less than the number of primes in the upper half of the list)

May your successes be many in your struggle with the TAXMAN.

Is THE TAXMAN'S DREAD PREDICTION CORRECT ?

Is OUR FATE NOTHING MORE THAN THE ENDLESS TOIL OF EXHAUSTIVE SEARCHES ?

WHAT MIGHT FUTURE SCRAMM EFFORTS DECOMPOSE ?

BE SURE NOT TO MISS THE NEXT THRILL-PACKED EPISODE ! ★★★

Hoping you can get all that's coming to you,
SCRAMM
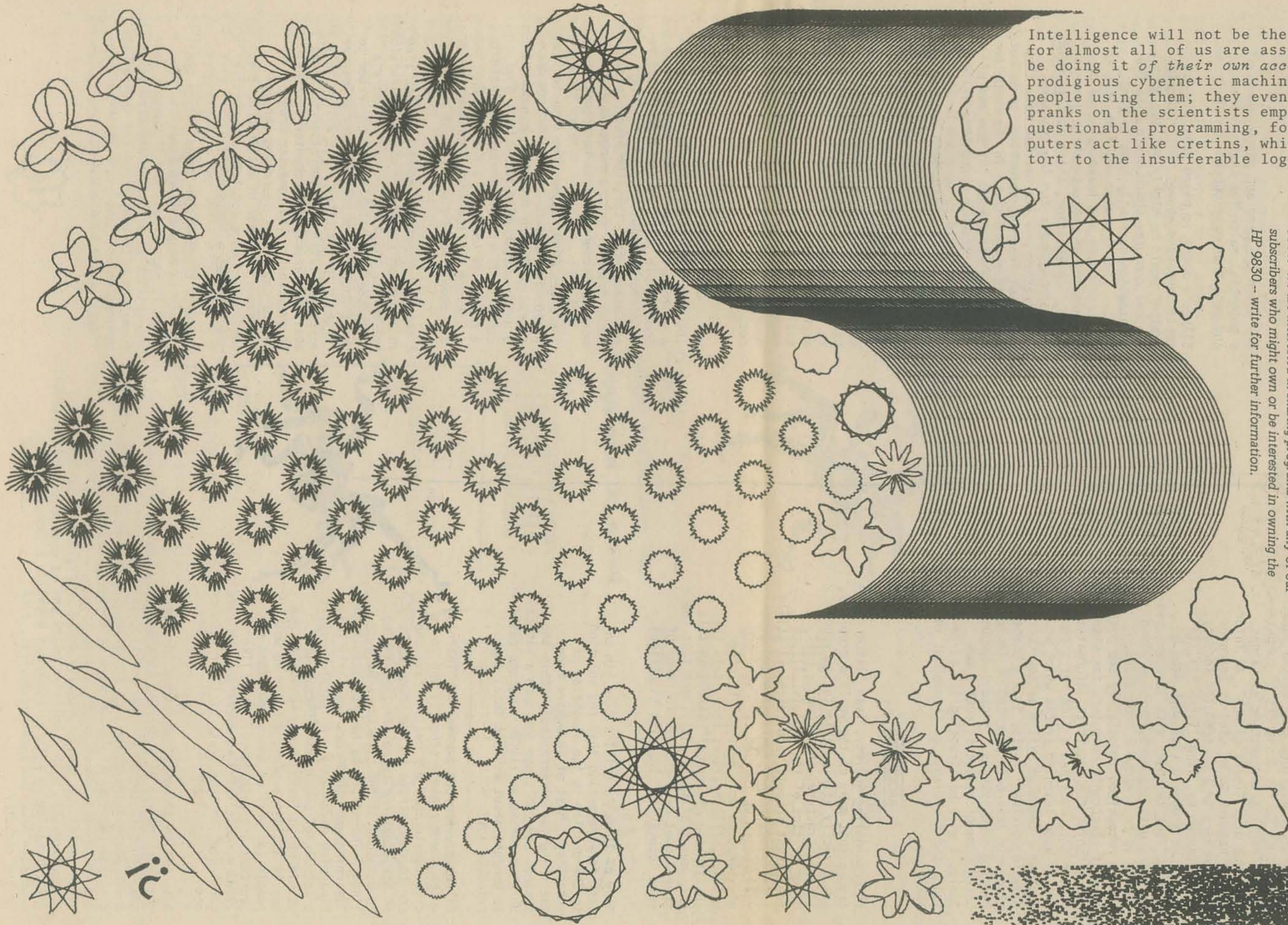
Intelligence will not be the precipitating force, for almost all of us are asses; the computers will be doing it *of their own accord*. We already have prodigious cybernetic machines far superior to the people using them; they even get away with serious pranks on the scientists employing them for their questionable programming, for sometimes the computers act like cretins, which is a marvelous retort to the insufferable logic of human beings.

— *SALVADOR DALI*

PLOTTER... PACKS... LOT

We made these pictures with programs we wrote using a Hewlett-Packard 9830 with a plotter. Thank you, HP (especially Jean Danver), for the indefinite loan of $20,000 worth of hardware. Stay tuned for more exciting things that you can do with the 9830. We are interested in sharing programs with any of our subscribers who might own or be interested in owning the HP 9830 — write for further information.

9
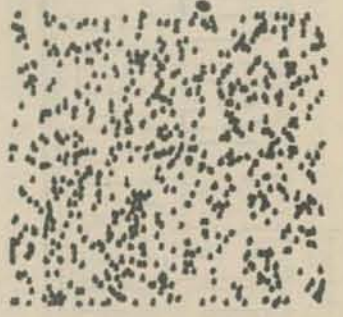
A Computer-based INFORMATION EXCHANGE

This article outlines some of the ideas and issues facing designers of computer-based learning/information exchanges. The idea of a "learning web", an information network to be used by learners and teachers in a de-schooled society, was advanced by Ivan Illich [1], in 1969. He proposed that such webs be able to link teachers with learners and learners with learners, perhaps going so far as to arrange a rendezvous. Illich recognized immediately the potential of electronic computers for storing and matching the requisite information. Silber [2], outlined a plan for a community-wide learning system which would include a computer system as the coordinating device. During 1973 a number of people have been planning or implementing such systems. Because computer based communications is such a new field, I will be stressing its advantages and disadvantages throughout this article.

BACKGROUND

In Deschooling Society, Ivan Illich argues that many of the world's problems are directly attributable to its educational structure, the school. Like other critics of the schools, Illich feels that schools (and teachers) stifle creativity, reward conformity and generally botch up the job they were commissioned to do. But, unlike other critics, Illich argues that it is the institution of "school" itself that is the source of the trouble, and that the school must be abandoned in favor of more "convivial" learning situations.

Many of Illich's critics take him to task for suggesting that the solution to the problem is the abolition of schooling. Most of them have been searching for alternatives within the system, and don't see how such a radical de-structuring as Illich suggests could be brought about without total chaos ensueing [3].

Illich *did* propose a model for learning which could replace schools, and it is unfortunate that his critics have chosen to concentrate on the unworkability of his utopian plan rather than trying to use some of the structures he outlined. The structure he proposes is the "learning web" (now more popularly called "learning exchange"). A learning-web is a network of people and information within which learners may work. In one way it is like a giant library in which people (as well as books and other resources) are catalogued. Much like a library, most learning exchanges use card catalogues to keep track of their resources.

But, Illich proposes even more. He sees the learning web as a dynamic catalog -- changing with the people who use it. It would possess the ability to schedule meetings between people who were interested in learning about or discussing specific topics. A small community could accomplish this with a bulletin board and a card catalog -- a large community might need more powerful indexing devices, such as the computer.

The Evanston, Illinois, Learning Exchange was formed several years ago by a group of students interested in testing this idea. They catalogued the abilities of each member of the group and placed this information on file. As time went by, the listing expanded and the Learning Exchange went into full-time operation. The exchange now lists thousands of people with specific skills they are willing to teach. Listings are contained in several card files. Community members call one of a number of telephones at the exchange, are given the name and phone number of a potential match for their interest, and must then make contact on their own.

Silber's model is based upon the concepts developed above. His "Learning System" would be highly reliant upon a central computer which would hold the information currently kept in card files. This computer would be able to match teachers and learners based upon a hierarchy of subject-matter descriptions. In addition, the computer would make appointments for the teachers. Once teacher and learner had met, they would set learning-objectives to be met and would record these in the computer for future reference. At the end of the learner/teacher encounter, evaluation data would be recorded by the computer and linked to both teacher and learner characteristics. Thus, future learners would be able to determine which of a number of teachers might be best for their specific learner-characteristics (age, sex, intelligence, experience, ...). Such data would rapidly swamp a manually-operated learning exchange. (In fact, this question of evaluation of the learner/teacher encounter is being hotly debated at this moment; should there be evaluation or not?)

THE COMPUTER

The computer is really proposed only as a coordinating device for the exchange. Some people think the student should be in direct contact with the computer, and others feel that the presence of a human mediator (not a programmer, but more of a counselor) is necessary.

There are many reasons the computer is proposed, however. First, it can coordinate much more data than a human, in a given amount of search-time. The computer is also instantly available to a number of users -- a card catalog has a limited surface area, and only one or two people may be using it at a time.

A computer-terminal, which may look like an overgrown typewriter with a television set on it, could be located anywhere a telephone is available, and connected to the computer by phone whenever a learner requests information. This effectively makes the catalog of learning-resources available anywhere a computer terminal is available. The computer programs may be capable of searching through thousands of items in a second or two, thus making more complete and precise matches than a human could.

However, the computer doesn't have the ability to help a learner with a request which is imprecise. And it doesn't have the ability to associate one item of information with another on the spur of the moment, unless that association was previously noted by a human user.

System designers often attempt to specify in advance *all* categories of information or all modes of usage for their computer systems. This is the characteristic, and perhaps the most reliable way, of producing computerized systems. However, most of these systems are inflexible, and incapable of change if the "outside world" changes. Therefore, a computer-based exchange must be organized in the most general way possible.

As a hypothetical model, I will now propose a system to be implemented within a Computer Aided-Instruction system, the HYPERTUTOR. The system will look almost like a card-file. Each "card" is called a "record", and contains a small amount of information (perhaps 640 characters as a maximum). Each record is associated with one or more "descriptors", which are words or phrases describing the content of the record. These may also contain cross-references to other descriptors. Information on teachers or other learning-resources is entered as records, classified by existing descriptors (if possible) and may then be retrieved by users.

For example, a guitar teacher may call us and ask to be listed in the exchange. We enter his name, phone number, address and other information into a single record. We then classify this record under "guitar", "classical guitar" and perhaps "music". Any descriptor which is new to the system will be automatically added to the descriptor list (and perhaps later revised by either a system supervisor or by student users).

Several classifications of information will be designed into the system. A "teacher record" will contain information on teachers or potential teachers. Each record will be filed under proper descriptors and may be retrieved by any user. But some information in a record may be protected (for instance, address might not be released to learners, but might be available for those people who are charged with updating the information stored in the exchange). A second type of record would be the "learner-record", stored by a user who wanted to find "learning peers" to work with him on a particular subject or project. As new teacher-records are added, searches might be made to find any learners who were entered before a teacher in the appropriate category was available. A third type of record would be the "message" or "bulletin" record. These are communications which use the computer as the storage and delivery medium. A "message" is always associated with a specific destination (usually a person's name, but sometimes a place) and are designated so that they may only be retrieved by the addressee. Bulletins, on the other hand, are classified by descriptors, and may be retrieved just as any other record. They might, for example, contain a notice of a guitar concert, which could be retrieved by any interested user.

References:
[1] Ivan Illich, Deschooling ociety, Harper & Row, New York, 1971
[2] Ken Silber, "The Learning System", Audiovisual Instruction, Sept., 1973
[3] After Deschooling, What?, Alan Gartner, ed., Harper & Row, New York, 1973

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It might be possible to finance an exchange by donations, but experience has shown this to be unlikely. The Evanston

Learning Exchange, which serves a city of about 80,000 people, would cost roughly $24,000 per year to operate manually, and that is probably a low estimate of what it would cost to run as a computer-based system. Only a small percentage is donated. Therefore, an exchange must be self-supporting to run. One potential source of income is the teachers who list themselves and charge students for lessons. They can be asked to pay a small fee (perhaps a percentage of their first lesson) which could be roughly what it would cost to take out an ad in a newspaper. (This raises the question of what a computer-based exchange offers above and beyond the classified section of the Village-Voice.)

Users searching for learning-peers may also be asked for payment, since their records require as much work and storage space on the computer as those for teachers. Users who perform searches also require computer time during the search, but require no storage space. Therefore, some charge will probably be made for searching. Will the exchange bring enough satisfaction that a person would be willing to pay about what a good paperback would cost ($1.00 to 2.00)? Which would *you* choose?

These questions and many others will be raised (and some of them answered) at a day-long conference on computer-based learning exchanges. The conference will be directed at producing a design for systems to be developed in the Chicago area, and at exposing some already conceived designs (such as the one outlined above) to constructive criticism. The FEEDBACK card at the end of this newsletter is also a viable mechanism for responding to the ideas and questions asked here. Please respond!
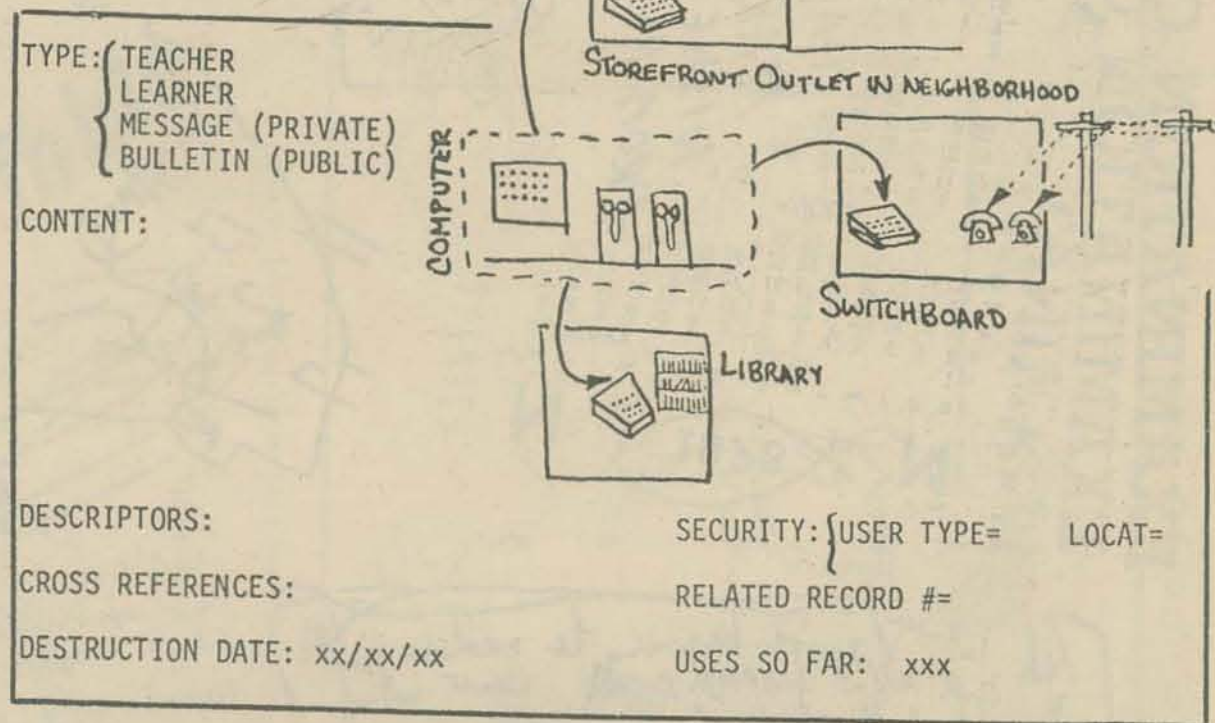
Jim Schuyler

CAT
2003 SHERIDAN RD.
EVANSTON, Il. 60201

FORMAT

TYPE: TEACHER
      LEARNER
      MESSAGE (PRIVATE)
      BULLETIN (PUBLIC)

CONTENT:

DESCRIPTORS:

CROSS REFERENCES:

DESTRUCTION DATE: xx/xx/xx

SECURITY: USER TYPE=   LOCAT=

RELATED RECORD #=

USES SO FAR: xxx

CONTENT: Is free-form and may be altered by originator of record.
         TEACHER-record - name, (address), phone, qualifications or comment
         LEARNER-record - name, (address), phone
         MESSAGE or BULLETIN - the message is the content
SECURITY: Record may only be retrieved by certain types or locations.
          For instance, a BULLETIN for San Francisco might be tagged by location.

I feel much more like I do now than when I got here.

the second monthly

Merry Christmas and a Happy New Year

BERTONI'S FRESHA FISHA MARKET
322-4424

From all our dead Fisha that pass this way

1929 Menalto Ave.
Menlo Park, Calif.

The window that lends clocks never closes.
The stones that pay interest never drink.

— SALVADOR DALI

I do not exclude the possibility of revolt by the machine against the individual, or its replacing him ... Take another example: Captain Moore is a very nice person, but I have no proof that someday he may not bite me ... The ocelot never bites, but machines, like slaves, always revolt in the end.

SOME TEACHERS CONFUSE PEOPLE AND COMPUTERS. PEOPLE ARE REALLY GOOD AT THINKING, FEELING AND CHEATING. COMPUTERS ARE REALLY GOOD AT DOING TRIVIAL THINGS, LIKE COUNTING FROM 1 TO 1000. SO ... HERE WE GO ...

J=2*(I2-1

e 2x2 array :

J=3*(I2-

le 3x3 array

B(1)=∅
B(2)=4

in write a

ie were to dr
e this :

1∅∅∅xxxx
1∅∅∅xRR1xxx!
1∅1∅xIxIRx1∅1
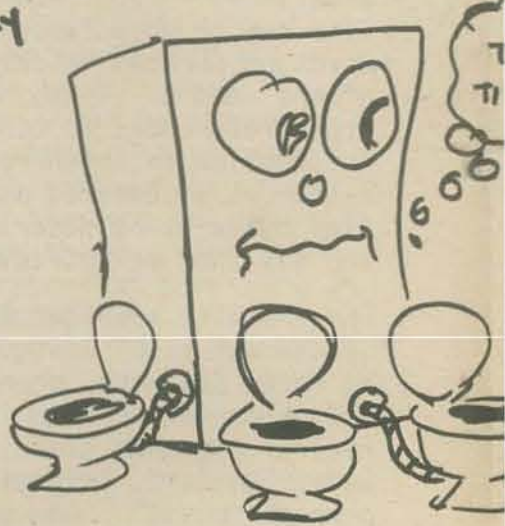
in fact, sinc
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y number of "
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Any numbe
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Where base gi
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function may
kxxxxxx be ti

This is an e
is simply on
(or even as
pointers and

TIME TO RE-ORDER?

25¢ A KEY

Don Lancaster's first article in the February 1973 issue of Radio-Electronics described how to build a flexible, professional quality keyboard for a mere quarter (25¢) a key. Then in April's issue, he described how to couple the keyboard to a computer by building an ASCII Keyboard Encoder. Back again in September's issue, Don gave the complete story on how to build a TV typewriter. Sound like fun? Send $2.00 and get full construction details (including full size circuit board patterns).

KARL

25¢ 25¢ 25¢
25¢ 25¢
25¢ 25¢

Marc... help!
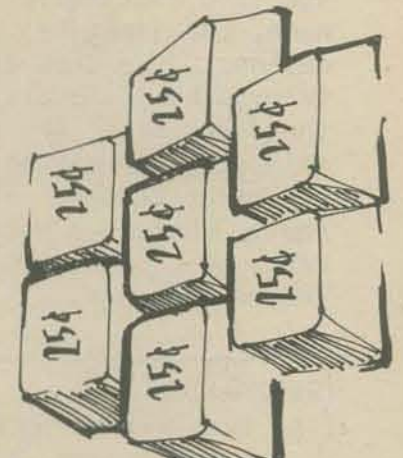
EXAMINATION COPY
EXAMINATION
EXAMINA

Success

N

1978

HAPPY NEW YEAR AND BEST WISHES FOR 197#
FROM ALL OF US HERE AT P.C.C.

P.C.C.

DECEMBER
1 2
3 4 5 6 7 8 9
10 11 12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30
31

NOVEMBER
1 2 3 4
5 6 7 8 9 10 11
12 13 14 15 16 17 18
19 20 21 22 23 24 25
26 27 28 29 30

JUNE
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3 4 5 6 7 8 9
10 11 12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30

JULY
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2 3 4 5 6 7 8
9 10 11 12 13 14 15
16 17 18 19 20 21 22
23 24 25 26 27 28 29
30 31

AUGUST
1 2 3 4 5
6 7 8 9 10 11 12
13 14 15 16 17 18 19
20 21 22 23 24 25 26
27 28 29 30 31

JANUARY
S M T W T F S
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31

CLA CLL
Clear
Clear out data
test for in
Jmp -1
test for out
Jmp -1
output
CLA CLL
Jmp 243

Ah you're beginning to realise you'll never win!

(Sneeze)

ARRAY
ARRAY
ARRAY

PCC Graffiti Gallery

's no curved metal, s

THIS IS TIME-SHARING?

Forgot to tell you — the NODE that branches out to the next level is called the MOTHER NODE and the NODES it is connected to are the DAUGHTER NODES.

Beat the Energy Shortage
with an
Electric Motorcycle

ROY KAYLOR, JR
⚡ ELECTRONIC ⚡
ENGINEER
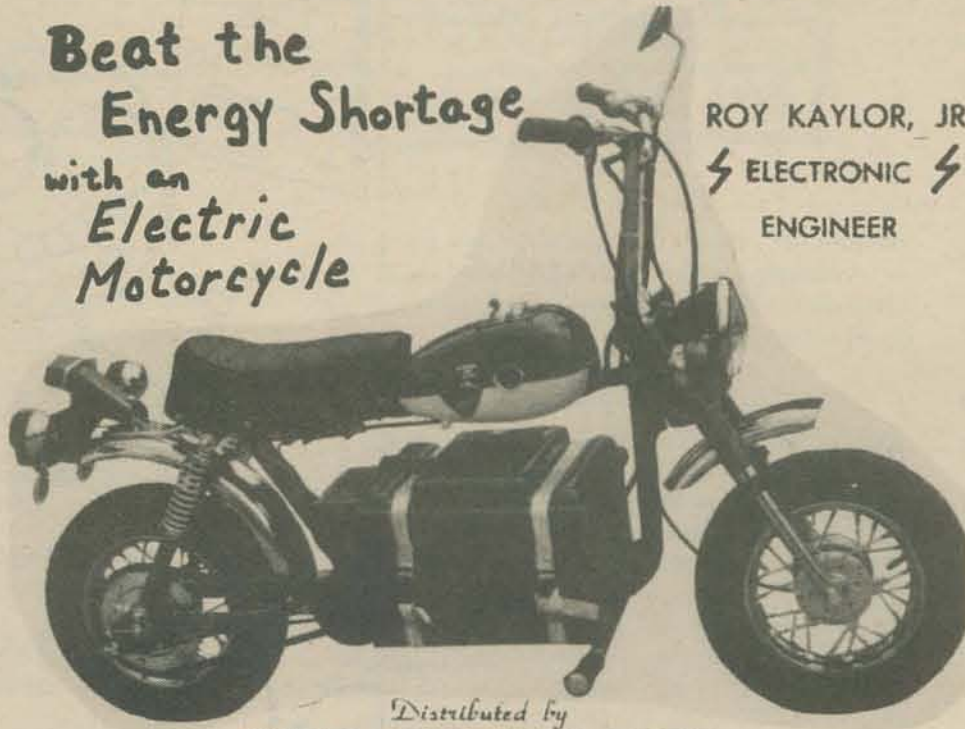
Distributed by
KAYLOR ELECTRONIC PRODUCTS
1918 Menalto Avenue
Menlo Park, California 94025
(415) 325-6900

*** XTRA ***
* SPECIAL ISSUE *
* "HOW TO BUY *
* A MINI COMPUTER *
* FOR YOURSELF, *
* YOUR SCHOOL OR *
* A FRIEND" IN *
* FEB 74. FREE *
* TO SUBSCRIBERS *
*** XTRA ***

THERE'S NO EXCUSE FOR IDIOTS IN THE UNITED STATES. AFTER ALL WE HAVE ONE FOR PRESIDENT...

Think Metric

METER STICKS ARE NICE NUMBER LINES TO HELP KIDS PLAY NUMBER, TRAP, STARS AND OTHER MATH GAMES. GET EM FROM PRODUCTS OF THE BEHAVIORAL SCIENCES 1140 DELL AVE., CAMPBELL CA 95008

MAN, DEBUG THY "ELF!

EAST
NORTH
SOUTH
0 1 2 3 4 5 6 7 8 9

NOT WHOLE KNOT

WHOLE KNOT HOLE

Zelazny

scribble

Chögyam

BLACK
MUSH ROOM
OLIVE
ONION
PEPPERS

Glide

September, 1973

HEWLETT PACKARD EDUCATIONAL USERS GROUP NEWSLETTER

Dear Bob, I suggested to DAve that

Marc — I redid the formulas above because of the I's and the ones.

Jerry Brown's DOMEFILM is coming!!!

Roger Zelazny
Nine Princes In Amber

— see page 20 for review →

Letters

wumpi

Dear People:

Enclosed is a Post Office money order for five dollars, in payment for back issues. I would like issues Volume 1, 1 through 5, one of each, if they are available.

Can I get Marc LeBrun's permission to reproduce some of his "The Programmer's Toolbox" on-line? They would be usefull supplements to a course in BASIC that I am currently writing for the Xerox Sigma 6. (Reproduction would be on the TTY only.)

Also enclosed is the definitive Wumpus picture. Any deviations between this and other proposed Wumpi (plural of Wumpus) are probably due to inadequate lighting in the caves. Your 'WUMPO' appears to be identical to a program I tried at the National Computer Conference here in New York last June. It was included in the catalogs of Basic Timesharing Inc. I don't know how long it took the Wumpus to cross the U.S., but as you can see the Wumpus proliferation rate is quite high.

Logging off,

Robert Culley
19 Cross Street
Williston Park, N.Y. 11596

Wumpi can teleport ANYWHERE!
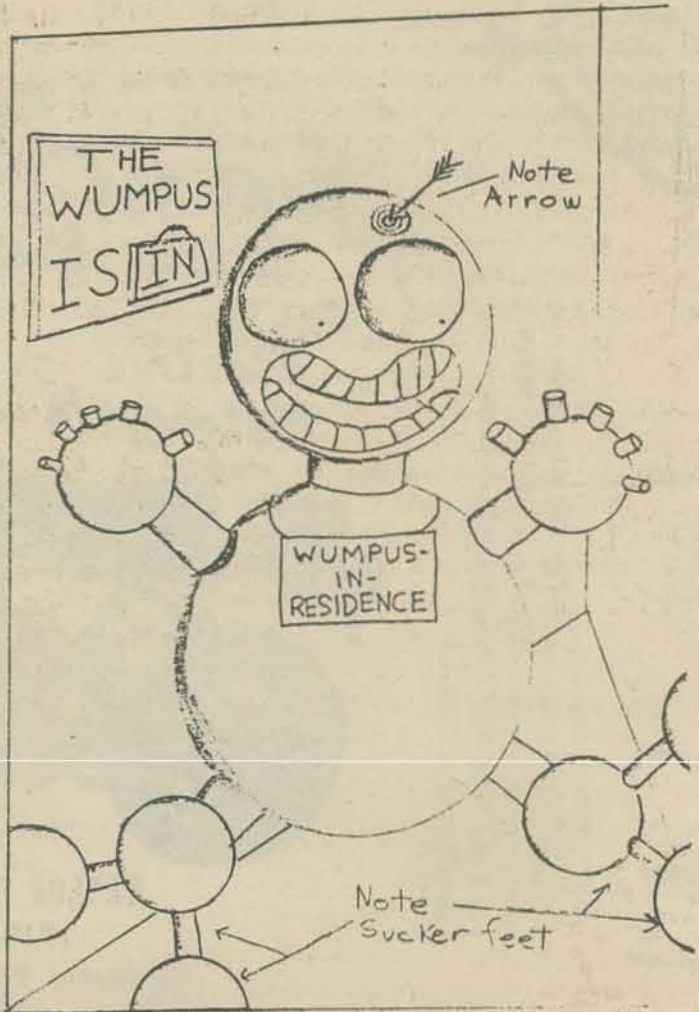
By ROBERT CULLEY
(Posthumous – a Wumpus got him)

Star trader

Gentlemen:

The 10/73 Infosystems contained descriptions of some of the computer games you've developed. Since I'm building my own mini-computer (using a National Semi-Conductor IMP 16-C), I would be interested in adapting the Star-Trader game (intergalactic commerce) to my machine. Where can I get information on a) machine language program listing, b) high order program listing, c) flow chart, and d) other documentation for the Star-Trader game?

As a matter of fact, I had already done some thinking on the design of an intergalactic commerce game, but hadn't begun working on programming. I would be very interested in seeing what you have done. If available for a fee, let me know what it is.

Sincerely,

Ms. S. L. Shakocius
Spectrum Technology Service
Box 942
Palos Verdes Estates, Ca. 90274

utopy

Dear Sirs:

Thanks a lot for the copy of your magazine — I enjoyed it immensely! I enclose US $4 for Vol. 1: No. 1—4, and will certainly subscribe for the year 1973-74 when I've looked them through.

For Sweden your way of handling computers is an Utopy, thru an over production of students of Numerical Analysis (I'm one of them, but thank heavens I'm doing something useful too. High Energy Physics . . .) has caused a disastrous breakdown of the magic around the Machine Monsters Producing Too High Telephone Bills.

Actually they have a terminal at the Inst., in a small secret room, and a selected few have the key to the door.

This autumn they've begun with programming for physics students. A 5-week course for the 4th term of physics studies; FORTRAN — if you've heard about that language.

OK, send the magazines.

Yours sincerely

Ralph Haglund, B.Sc.
Jarnakravagen 23D
S-22225 Lund
Sweden

imaging

Dear People:

I would love to discuss reality/fantasy of computer imaging systems if you can make it to the City sometime. Do you have any info on used disc memories?

Dave Meyer
NCET
288-7th St.
San Francisco, Ca. 94103

bowling

I have a HP2114A with 8K memory + high speed tape reader and 33 TTY. I use BASIC mostly as FORTRAN takes too long to compile.

Is there a bowling score program available for 40 players on 6 teams? Ten players are substitutes that are assigned to absent players to make 5 player teams of mixed groups (male-female).

Kenneth Karow
Amtron, Inc.
14820 S. Kedzie
Midlothian, Ill. 60445

DCC east?

Dear Sir:

Enclosed is check for $4 for subscription to the People's Computer Company, I saw article in Edu7.

I have a PDP-11 in my lab and bring friends, neighbors, my kids and other kids to my lab nights and weekends to do much the kind of thing you do (on a smaller scale). They like the games/simulations. Do you sell tapes of your games or books on the subject?

Sincerely

Hal P. Waters
4001 Shaler Drive
Wheaton, Md. 20902

Sure. See BOOKSTORE on pages 22 & 23

Bob —

Very glad to be getting the back issues -- I assume you are now into Vol. 2 and that this means I won't have missed any -- Great!

If you would, I'd appreciate those sample copies -- I'm sure I can circulate however many you send. So far, I've found no one into APL and virtually no one doing any work with CAI -- it will be good to get into contact with a wider range of computer related people through your mag. (Though someone here is going around collecting science fiction stories with computers as major themes or characters -- [that sounds interesting] -- don't know what for yet . . .)

Compiler writing and Translating Writing languages are the major emphasis I've discovered here so far -- the Info. Sci. dept. has many 'famous' people working in these areas. Doesn't do much for me yet, but that may change. Open House sounds interesting -- waiting, 4 papers . . .

Carter DePaul Jr.
Box 104 — Kresge, UCSC
Santa Cruz, Ca. 95064

ode

Ode to a School Computer
David Ahl

I was stayin' after school a week or so ago
'Cause I told a teacher where she could go

She had me settin' in this big old room
With a bunch of machines that just looked like doom

There's this big Mutha machine with flashin' lights
And a couple of funny-lookin' electric typewrites

Well I thought I'd type somethin' for the fun of it
So I hunted and pecked out just one word – "shit"

Before I could lean back in my chair and get steady
That machine typed WHAT, and then it said READY

So I typed a whole line of them four-letter words
But it just replied WHAT and READY like it hadn't heard

Well I figured since I couldn't go out fishin'
I'd teach that stupid machine to listen

So I picked up this book called Teach Yourself BASIC
And sat down at that Teletype prepared to face it

First I found to make that machine type my bit
I just had to put a PRINT in front of it

And then I found out that thing could add
And subtract and multiply and divide like mad

I found out too it knew all kinds of games
Like craps and blackjack and a cannon to aim

I was havin' all kinds of fun when that teacher walked in
She just looked at my output and started to grin

I kind of sheepishly asked if I could stay a while more
She said, "Sure; when you go just shut the door."

I tried some more games like football and poker
And a parachute jump written by some kind of joker

There was one where I could try to land on the moon
It would crash and blow up if I fired the engines too soon

Well, I played on through supper and into the night
And then finally quit when I saw dawn's first light

Some girls I know are a hole lot cuter
But I found a new kind of high with that computer

DEC
146 Main Street
Maynard, Ma. 01754

free

update

the children's museum
the Tamaicaway / Boston 02130 / Ja2-4800

An article about us appeared in the May 1973 edition of "People's Computer Company", a newsletter/tabloid that comes from Menlo Park, California (and which, incidentally, is an excellent resource for people interested in computers and education).

Since then, a number of things have changed.

We're now two years old, and our equipment configuration has changed somewhat; the Teletype with dialup lines has been removed because of the extremely high overhead caused by telephone line charges, on the order of $150 per month, and the cost of renting the terminal, about $70 per month.

We have now completed the design and implementation of a general-purpose interface to the PDP-8/I that permits the computer to sense the states of 12 switches and to control the states of 12 relays using the computer's external negative bus. We have also completed initial development of our edition of the LOGO project at MIT's "turtle": ours is built from an Erecter set (or, actually, its British equivalent, a MECCANO set) and plain run-of-the-mill electric motors instead of fancy stepping types. Our I/O interface can control two of them; the turtle cost about $100 in parts to build, and the interface was built with about $450 of surplus electronic parts. People interested in the design should contact me for particulars.

To help us in our goal of making computers directly accessible to people and helping people understand what computers are all about, we are looking for help in the form of time, money, or equipment: time, to help maintain our equipment and to help implement the applications programs we'll need; equipment like terminals, CRT's, plotters, disks, tape drives, controllers, memory, central processors —— practically anything that's available for donation or loan to a nonprofit educational institution. We're interested in used an/or repairable equipment, too, and in ASR33's that can be torn down and used for parts (we like to build one working Teletype out of two sick ones,). We also want to develop and maintain contact with people who are doing things like us, or who are just interested in what we're doing.

Bill Mayhew
Computer Resource Developer
The Childrens Museum
Jamaicaway
Boston, Ma. 02130

We, too, are looking for help in the form of time, money or equipment. HELP! Bring people, & or equipment to PCC. (Especially people who can fix things or build things)

{15}

LUCY

YOU BLOCKHEAD CHARLIE BROWN!

Dear Sir:

On Tuesday Nov. 6 a group of people from Covington School came to the center. I was one of them.

One of the computers was programmed to type pictures of the Peanuts characters. There was no program for Lucy Van Pelt so I said I would type a picture of her and send it to you. Well here it is.

If you do decide to use it and make a program, I would appreciate one of the pictures from the computer.

Thank you very much.

Sincerely,

Linda Kleitman
12387 Stonebrook
Los Altos Hills, Ca. 94022

Dear Joan

Dear Sir:

I read with interest the letter from (Mrs.) Joan Ramuta regarding simulation and gaming for high school students (PCC V2 N2 p5). There is a thesis "Computer Simulation for High School Students" by Sema Marks (CUNY, 535 E. Eighteenth St., NY NY 10021) published by Westinghouse Learning Corporation. A second resource is "The Guide to Simulation Games and Training", Zuckerman and Horn, Info. Res. Inc., 1675 Massachusetts Ave, Cambridge, Ma. 02138.

The IIT MST/CS (a description of its genesis and relevance will appear soon in the MAA Monthly) is a partial long-term solution to our nation's computer illiteracy problem. Anyone with other ideas about long-term or short term solutions to that problem is invited to submit those suggestions in writing to the ACM Special Interest Group for Computers and Society (SIGCAS) for publication in the SIGCAS Newsletter.

Peter Lykos
Chm, SIGCAS
IIT
Chicago, Ill. 60616

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Houston

Thanks for the book, check enclosed. I rent computer time on an outside machine to do "service bureau" business processing (accts rec., general ledger, etc.). We're getting into mini-computers basicly for a word processing system. Next would be a system using CRTs for 360/370 programmers to write & edit programs on a floppy disk. Initial compile would be on the mini with final compiles on the 360/370. Next would be on-line business applications. We're starting a free car-pool service to Metropolitan Houston. We would also like to make a system available to Houston programmers, University of Houston, Rice U, etc. No telling what ingenious good someone might come up to help society. The mini-computer will be a tremendous influence on our future and the good of our society. Your project shows genius and is certainly the way to go and to be commended.

W. H. Short
Ventex
3737 Greenway Plaza 504
Houston, TX. 77027

dragons

Our teacher's name is on the little yellow sheet. We are indeed students! Enclosed are two checks for $2.00 for a year's subscription to your great paper.

John Sherman
Scott Hicks

Florence, Oregon

Little yellow sheet ↓

```
FOR:  SIUSLAW    FROM: GUY WARREN   11/21/73   10:49  AM

   THE PEOPLE WHO NEED A PEN, I HAVE THAT INFO YOU NEEDED, THE
ADDRESS IS

          PEOPLE'S COMPUTER COMPANY
          P.O. BOX 310
          MENLO PARK, CALIFORNIA 94025
   PRICE OF THE MAGAZINE IS $2.00 FOR STUDENTS, $4.00 FOR OTHERS
AND SPECIAL ARRANGEMENTS WILL BE MADE IF YOU ARE A DRAGON.
END OF MESSAGE.  DO YOU WANT IT REMOVED FROM THE FILE? YES
```

120 LET X = ...
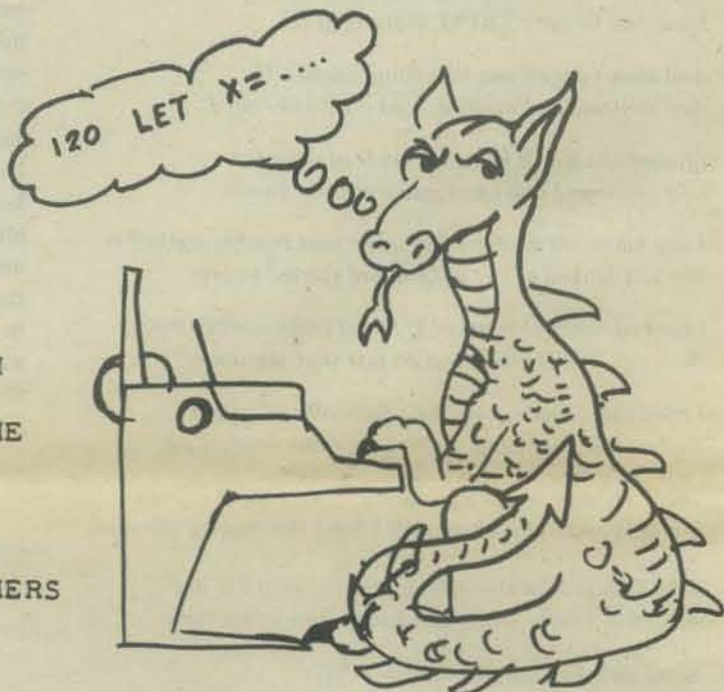
9830

Dear Mr. Kaufman,

I was just going through my computer file, looking for interesting specs, programs, etc., when I came across your letter to me of September 19. I now have something to reply about, so I am replying.

I have finally convinced my father to buy a computer! Well, actually it's a programmable calculator, HP's model 9830. Do you know anything about the model? We are to expect delivery in late December. I am going on Monday to a programming seminar in Dallas, sponsored by HP. I shall be taking your CAVES tapes so that I may finally be able to use and program them, along with the tape I bought to MARKET.

Have you written the book about using the CAVES programs yet? Please let me know when you do.

Back to the computer. We are getting the basic calculator, along with additional memory amounting to a grand total of 7616 bytes, along with string variables. It will be for my father's feedyard operation and, I hope, for me to play games on. Do you know of any somewhat standard business programs I could find? Such things as employee hours and tax info, customer accounts and billing records, etc., I think, are what, he has in mind.

Looking forward to hearing from you, and to my next issue of PCC.

Very truly yours,
Stephen Bates
1915 Jefferson St.
Pecos, TX 79772

PS A few friends and I are planning to drive out this summer to Las Vegas and San Francisco. If we do, we will certainly find our way to PCCenter.

See ya this summer, Steve.

See page 9 for HP 9830 stuff

ANY OTHER 9830 GAME PLAYERS OUT THERE? LET'S EXCHANGE IDEAS, PROGRAMS, MAYBE EVEN CASSETTES. WE HAVE 9830, PLOTTER AND XTRA CASSETTE READER AT PCC -
bob

16

fan mail

Dear Dave,

I was quite pleased on Friday to receive my copies of PCC. For some reason, I got three, but I won't complain; one for me, one for a fellow computer freak who is too cheap to shell out $2, and one for my computer advisor, as such , at school. Anyway, it was one of your best.
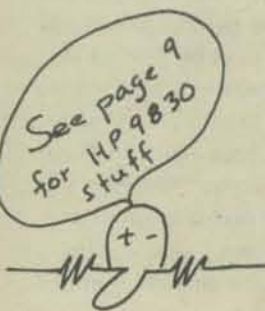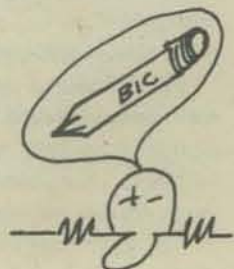
I was very pleased to see, on page 11, that the 9830 has made its way to PCC. What experience have you had with it? What peripherals do you have, and what output device(s)?

I was also very pleased to see the WUMPUS and PUBLIC CAVES games. Could I possibly get these on a 9830 cassette for our system, since we will have no paper tape input device? Could I send you a cassette? We will have strings.

As I (think I) told you about in my last gospel, I attended (or was, at that time, about to attend) a computer seminar in Richardson, Texas. I did go, and enjoyed it immensely, besides learning quite a bit, I took to the seminar the paper tapes for the CAVES series of games, which, as you may remember, I never got a chance to program. Well, to make a long story short, I read the tapes onto cassettes and played the games in my spare time. All the other people at the seminar were intrigued by your CAVES games and the MARKET game, which I also took, and requested copies of the tapes. Also, back issues of PCC and other bits of literature (which I had gotten through PCC) were occupying interest of the men there. It was a lot of fun, and I anxiously await the delivery of our calculator so I may use the CAVES games some on my friends, etc. I want to study the subroutines some time, and try to figure out what makes the games work as they do. Have you written the Using CAVES book yet?

Sincerely,
Stephen Bates

STEPHEN BATES CURRENTLY HOLDS THE RECORD FOR THE MOST LETTERS TO PCC. DON'T LET THIS RECORD STAND! GET BUSY AND WRITE LOTS OF LETTERS TO PCC ▽

whole knot hole
Make the hole WHOLE

Thirty spokes are made one by holes in a hub
By vacancies joining them for a wheel's use;
The use of clay in moulding pitchers
Comes from the hollow of its absence;
Doors, windows, in a house,
Are used for their emptiness:
Thus we are helped by what is not
To use what is.

Lao Tzu

not whole knot

CUT HERE

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A
A
A A
A A A
A A
A

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TUO TUL
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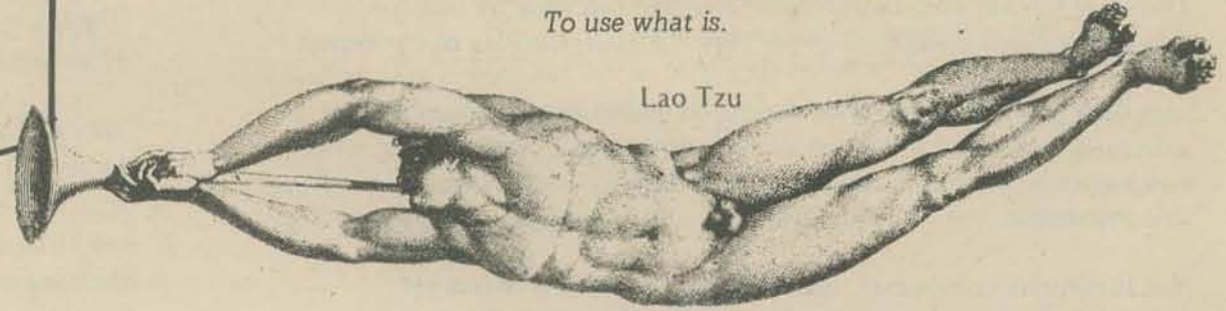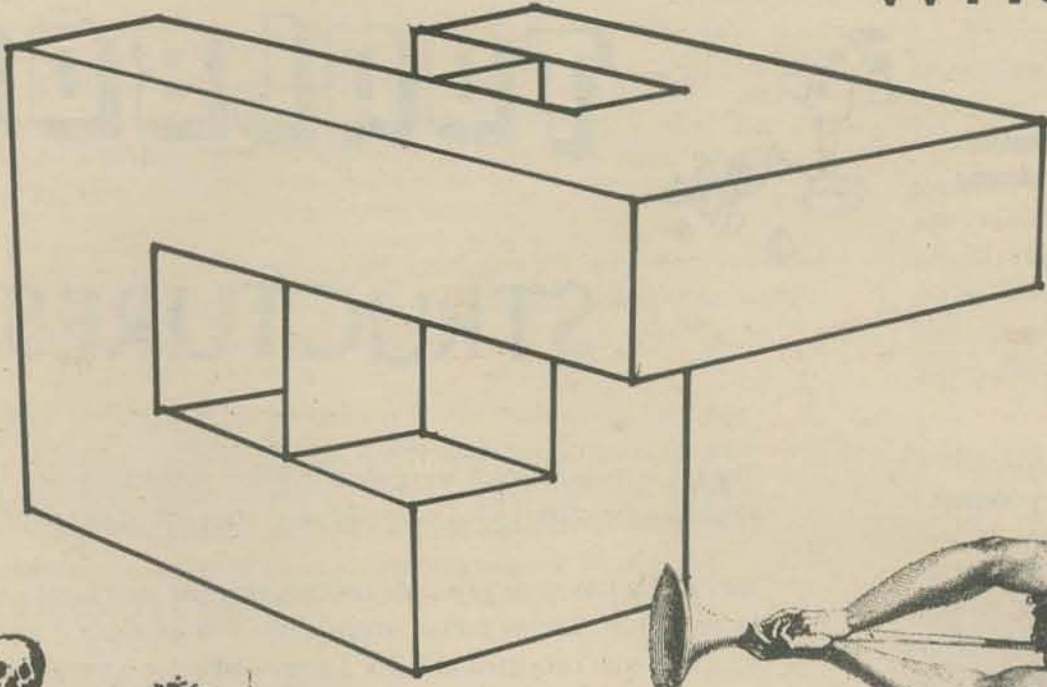
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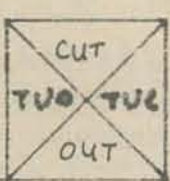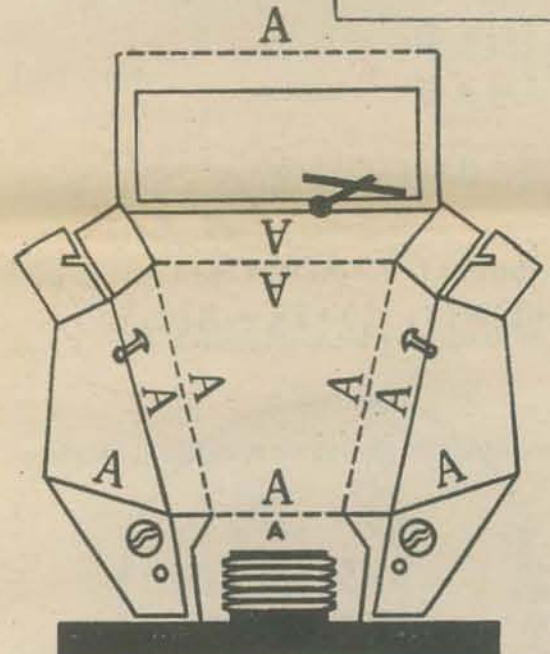
C. for insert (D)
D. cut to insert (C)

THE MIRROVR which Flatters not.

me

CUT HERE

1:30
2:00
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5:30

cut it out of sheet metal with a "Nipper"

and I will be happy to send you a *deluxe individualized* reply✓*

17

THE PROGRAMMER'S
by marc le brun

[Each issue we will present an "advanced" programming technique: with explanations, examples, programs and problems. We welcome suggestions for topics of interest to you.]

TOOLBOX

ADDRESSING

STRUCTURES

This issue we will expand the ideas presented last issue by incorporating another idea mentioned in the May '73 issue; the idea of a *pointer*.

Last time you'll remember, we developed *addressing functions* for structures which had some sort of a regular pattern, by devising a *numbering method* for that structure, and then constructing a suitable expression.

Not all structures, however, just lie down and let themselves get addressed all over by some *simple* addressing function. Even very small structures can have extremely grandiose addressing functions:

Consider the following capricious 19 element structure of 4 rows with 5, 4, 7 and 3 elements in each row:
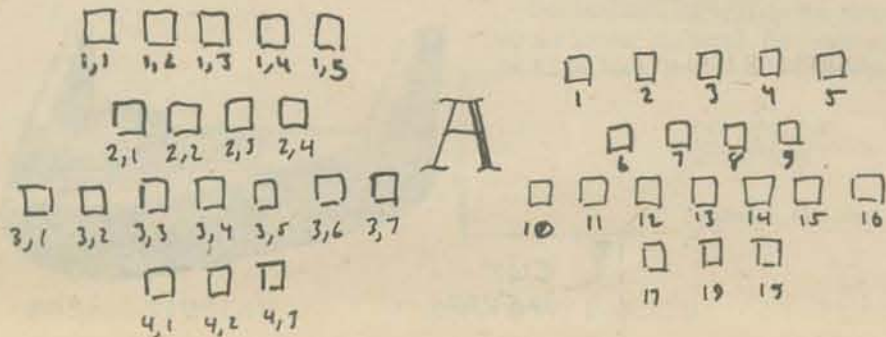
The addressing function for this little widgit is —

$$J = I_1 * (8 * I_1^2 - 3\emptyset * I_1 + 82)/12 + I_2$$

Clearly this is excessively complicated. Unfortunately we would expect the situation to get worse for larger and even more arbitrary structures. Here is a much simpler way to do addressing on A:

First we define a list of length 4 called B and store the following values in B.

$$B(1) = \emptyset$$
$$B(2) = 5$$
$$B(3) = 9$$
$$B(4) = 16$$

Now we can address A with the following expression:

$$J = B(I_1) + I_2$$

Ah, *much* better! (Everything in computer science should be so simple!) We outsmarted A by storing the values of the complicated function of I1 in B, and then just looking them up instead of computing them each time.

If we look a little more closely at what was just done we discover a peculiar fact; what we actually did was to store *four* different structures (in this case we called them "rows") in the *same* array! To keep them straight we kept four *pointers* in B, one to point at the beginning (minus one) of each row.
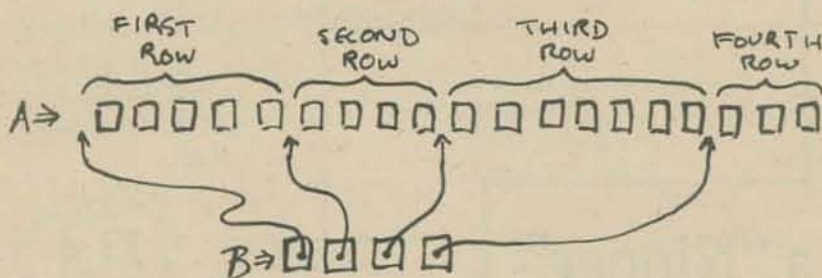
The pointers in B which were used to point at the beginning of each structure are often called *base addresses* for each of the structures.

We can use this same principle anytime that the structures we wish to address have some sort of irregularity. For example if we had a structure that consisted of a 2 x 2 array and a 3 x 3 array we could use I1 to denote *which* of the two arrays we are addressing and then use the addressing functions

$$J = 2 * (I_2 - 1) + I_3$$

for the 2 x 2 array and
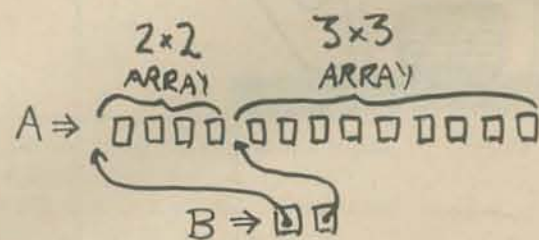
$$J = 3 * (I_2 - 1) + I_3$$

for the 3 x 3 array. By setting

$$B(1) = \emptyset$$
$$B(2) = 4$$

we can write an addressing routine for A as follows:

```
1000 REM *** DOUBLE ADDRESSER ***
1010 J = (I_1 + 1) * (I_2 - 1) + I_3 + B(I_1)
1020 RETURN
```

If we were to draw a picture of what is going on it would look something like this:

In fact, since we can always treat a regular structure as though it were a one-dimensional array (by using addressing functions) and we can store any number of "rows" in a single array (by using pointers) we come to the conclusion that —

> *Any number of any sort of structures may be stored in a single one-dimensional array.*

All we have to do is use the following *generalized addressing function;*

$$J = base(I1) + address(I2, I3, ...)$$

Where *base* gives the base address of structure number I1 and where *address* is the addressing function for that type of structure. In fact the *addressing function may also be of the general form given above!* That is, it may also be treated as an "array" and contain further sub-structures.

This is an extremely handy fact since the actual physical memory of the computer is simply one big long one-dimensional array, and every time you use an array (or even a simple variable) in BASIC there are probably several layers of pointers and addressing functions involved.

To summarize what has been developed so far, we treat all structures as being equivalent to a one-dimensional array, and we use addressing functions for regular structures, and pointers for irregular structures.

[In what ways are addressing functions and pointers alike? In what ways are they dissimilar? Does it make any difference if we were to think of the B above as a function instead of an array?]

Very often the array of base addresses is also made part of the big array by making the array slightly longer and then storing it at one end or the other. Returning to the first example (the 5, 4, 7 and 3 column widget) we could also store the base addresses in A by first dimensioning A to contain 23 elements (the original 19 plus the 4 base addresses) and setting
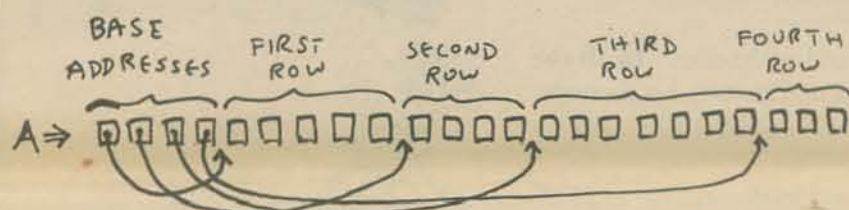
$$A(1) = 4$$
$$A(2) = 9$$
$$A(3) = 13$$
$$A(4) = 2\emptyset$$

(How are these values related to the values that were stored in B?)

The addressing function then becomes:

$$J = A(I_1) + I_2$$

And here is a picture of what is going on in A:

BASE ADDRESSES   FIRST ROW   SECOND ROW   THIRD ROW   FOURTH ROW

A ⇒

Notice how A contains the definition of its own structure.

If we examine structures of greater and greater complexity we find that they contain an ever larger number of pointers. At some point it becomes more convenient to think of the pointers as being attached to each individual cell. An example of a structure organized in this way is described on page 21 of this issue in Dave Kaufman's article article on the TREE SUBROUTINES. In the structures mentioned there each cell or node has pointers to it's "ancestor" and "daughters". (See page 21 for further explanation of these terms and a discussion of an implementation of these ideas)

Finally, I will explain why I made the error described in the errata in the last issue. This error, (the inclusion of a superflous "+1" in an addressing expression, is due to the fact that at the assembly level and in most higher level languages array addressing begins with a zero element (e.g., A(0)). However, the base address for arrays in the BASICK system I was using (an HP 2000 series) is one instead of zero, and the error arose in the process of kludging up my expressions to allow for this fact.

You will find that the idea of structures will be very useful in numerous programming situations. Here are some projects to get started with:

(1) Program the game of WUMPUS (Nov. 73, PCC) using an —

addressing function
or
pointer structure

to represent the caves in which the WUMPUS lives.

(2) Program the INCHWORM (May and Sept. 73) for

a hexagonal lattice
or
a cubical lattice

(3) Write a program which will determine which pieces on a chess board are *en prise*, that is, attacked by an opponent's piece.
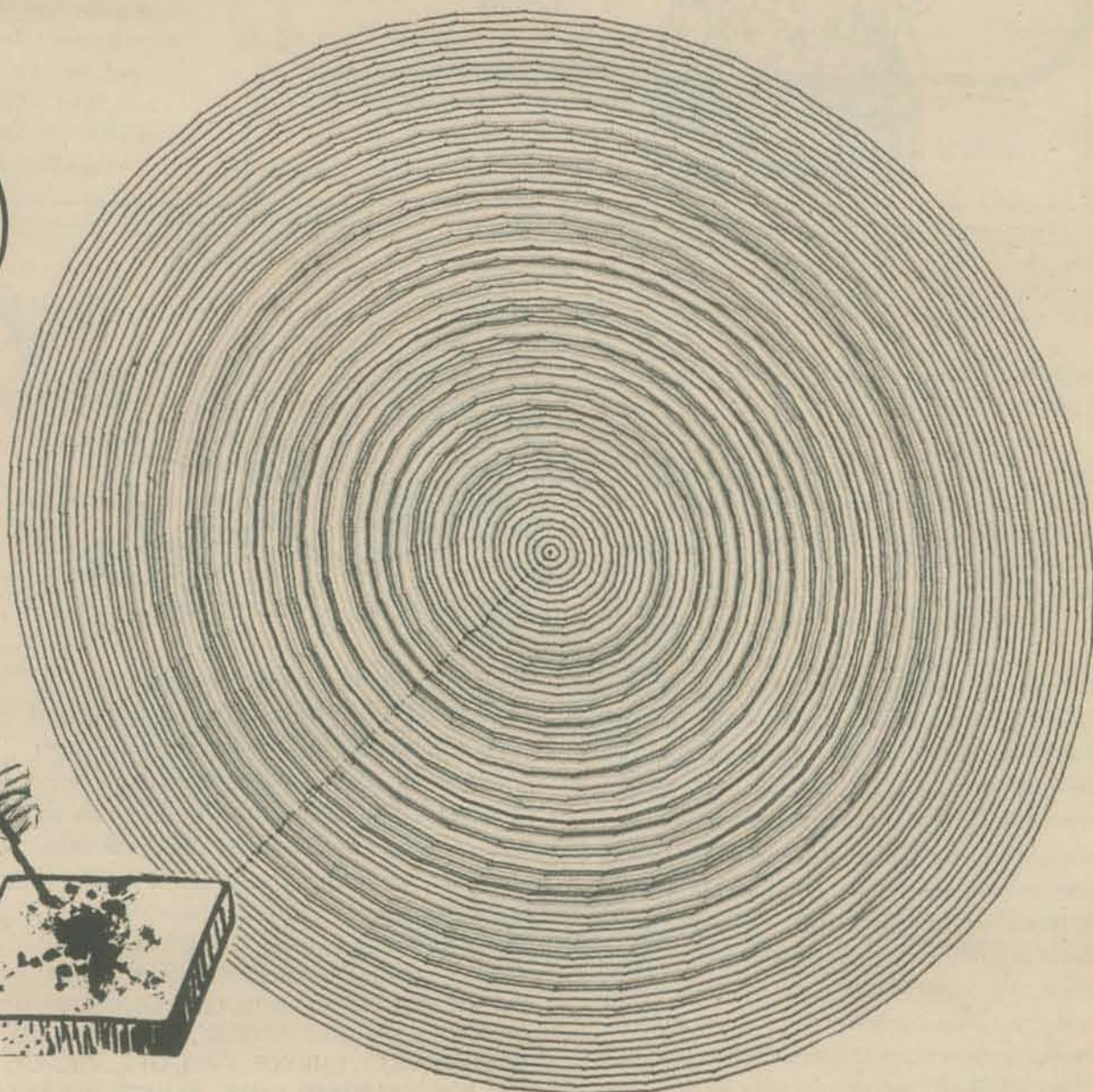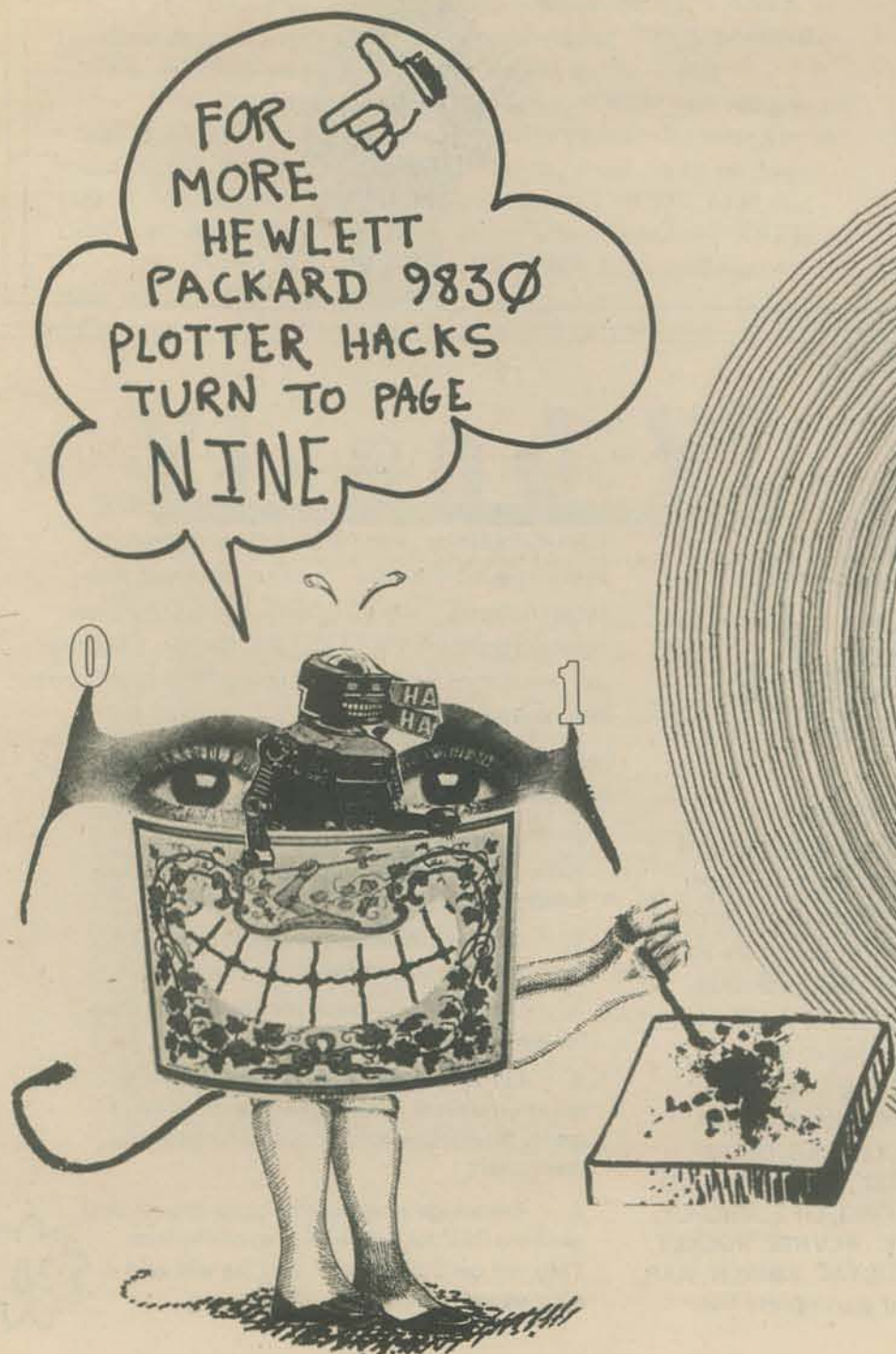
BOOK REVIEWS

NINE PRINCES IN AMBER

-- Roger Zelazny

Have you had the impression that this world of ours is unreal, an out--of--focus image of some other, *real* world? I have too, and so has Roger Zelazny.

This book is about such a person, who *knows* that ours is a shadow world. A world which is one of an infinitude of partial distor-tions of *the one true world.* **A M B E R.**

Corwin is his name and he is in exile. He is of royal blood, one of nine princes still alive. The immortal king of **Amber**, Oberon, is missing and presumed dead, leaving nine jealous sons to decide between themselves who will wear the purple.

It is not easy to return to **Amber.** To travel amongst the Shadow worlds is possible only for a prince or princess of the blood, and difficult even for them. Corwin's brother Eric has installed him-self in **Amber**, with the support of several others of the Family. He is soon to crown himself king, and Corwin must find the other exiled members of the Family to oppose this.

Corwin feels somewhat fond of the mortals who dwell in Shadows, an unusual thing, unknown to his brothers and sisters. To them, only **Amber** is real, and those who dwell in Shadows are fair game to be used however they wish. What difference to an immortal who is pausing in passage for a few generations?

The powers each has are derived from **Amber**, as is their will. The further from **Amber** each travels, the more *possibility* re-places *certainty.* In **Amber**, only one's will is effective. In the Shadows, potential and possibility are also important ingredients for causation.

Corwin feels he must oppose Eric, and so he does. In all the lands of Shadows, he muses over his hatred of Eric and his feelings for the people who dwell in Shadows.

Dave Kaufman

Nine Princes in Amber
– Roger Zelazny
Avon Science Fiction
75¢ paperback
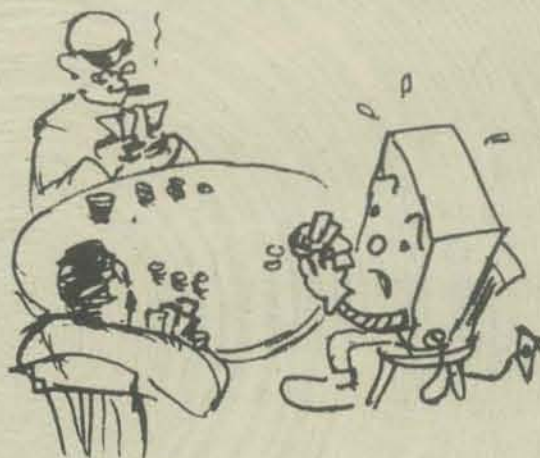A division of the Hearst Corporation
959 Eighth Avenue
New York, New York   10019

BASIC Computer Games
Edited by David Ahl

DEC
Software Distribution Center
146 Main Street
Maynard, Mass. 01754
Price $5.00

OR FROM PCC BOOKSTORE SEE PAGE 23

It's not the first collection of computer games says the introduction, nor will it be the last, but we sure recommend it for your library. Dave Ahl has collected 101 BASIC games from throughout the country (many were written by young kids, some by older kids, and some by teachers). They are published in this 250 page volume that includes a good description of each game, a listing (that in some cases requires a magnifying glass to read) and a run showing how the program works. In many cases Dave has made suggestion like "Play HMRABI before you play KING." He even attempted to group the games by "family" for your convenience.

I'm not a gaming guru, as are some of my colleagues around here, but my evaluation of these games was that some of them are super (not just the ones we contributed) and every-one should have access to them, some are just good . . . and some (few) are disappointingly childish . . . but that doesn't mean they're bad, that's just my evaluation of them. You'll recognize many of these names — AMAZIN, BAGELS, BASBAL, BASKET, BATNUM, BINGO, BLKJAC, BOXING, CALNDR, CHECKR, CHOMP, CIVILW, CRAPS, DICE, FOOTBL, GOLF, GOMUKU, HANG, HOCKEY, HURKLE, KING, LIFE, MNOPLY, NIM, POETRY, POKER, QUBIC, REVRSE, ROCKET, ROULET, SLOTS, SPACWR, TICTAC, 23MTCH, WAR, YAHTZE . . .   and this is *not* a complete list.

There are a few problems, however. Dave "fixed" all of these so they work on a PDP11 RSTS BASIC PLUS system. RSTS BASIC has so many special "goodie" features that you will have to "refix" the programs to work on your system (unless it's RSTS). But that's a challenge — as a matter of fact it's a good learning experience for your students.

Let's conclude with five suggestions on how to use this book —

1.   Put the games you like, as is, into your system public library or onto punch tape so everyone can use them.

2.   Give your students the task of converting these games so they will work on your system.

3.   Let your students use the book to get ideas for games they might like to write.

4.   Let your students be challenged to write better versions or make improvements to the games (everyone wants to make a better Space War game!).

5.   Encourage your students to contribute their games to DEC for future editions of the book. They will get their name in print (so will you) — what an ego trip!
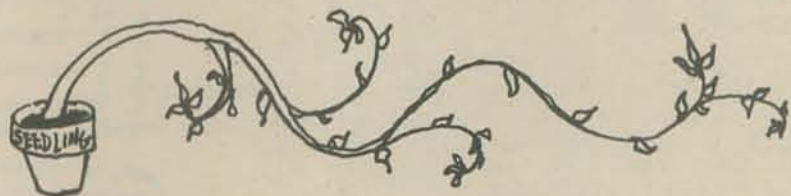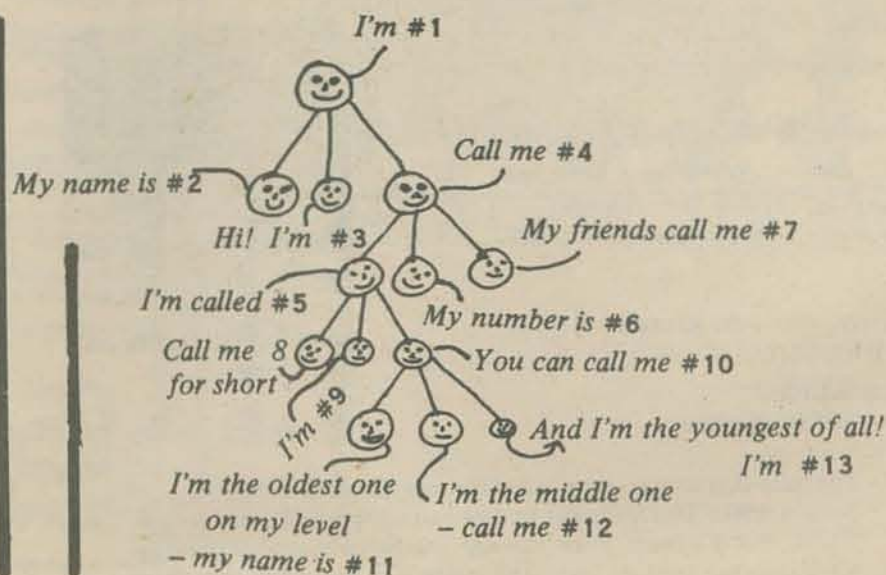
LeRoy

INSIDE THE CAVES
by dave of the caves

> The CAVES family of games so far consists of CAVES1, CAVES2, CAVES3, PUBLIC CAVES.
>
> You are invited to come inside the CAVES and see how they are constructed.

Last issue we left the CAVES looking like this:

I'm #1

Call me #4

My name is #2

Hi! I'm #3

My friends call me #7

I'm called #5

My number is #6

Call me 8 for short

You can call me #10

I'm #9

And I'm the youngest of all! I'm #13

I'm the oldest one on my level — my name is #11

I'm the middle one – call me #12

In computer talk, this is called a **TREE** structure and the little circles are called **NODES**. The CAVES games all use **TREE** structures, pretending that each **NODE** is a cavern and each con—nection a tunnel.

The CAVES1 program which constructed the CAVES in the drawing uses a core set of subroutines called **TREE SUBROU—TINES**, which have a common entry point in line 7500.

While building or moving through a **TREE**, you always GOSUB 7500. The subroutines are pretty clever -- by changing the value of V1, you can add **NODES** on any level, go up or down, look at the daughter **NODES** of your current **NODE** (one at a time), cut **NODES** off, prune them, or hop around the **TREE**.

And when the subroutines RETURN, they will pass a value back in V2 that tells you how things went.

ideas

Now, without mincing words, I'll show you how CAVES1 created the **TREE** structure at the beginning of this page:

```
10  V1=0
20  GOSUB 7500

30  D1=N1
40  FOR L=1 TO 4
50  FOR D=1 TO 3
60  D1=D1+1
70  V1=1

80  GOSUB 7500
90  NEXT D
100 D1=D1-INT(3*RND(0))
110 V1=6
120 GOSUB 7500
130 NEXT L
140 O=N1
```
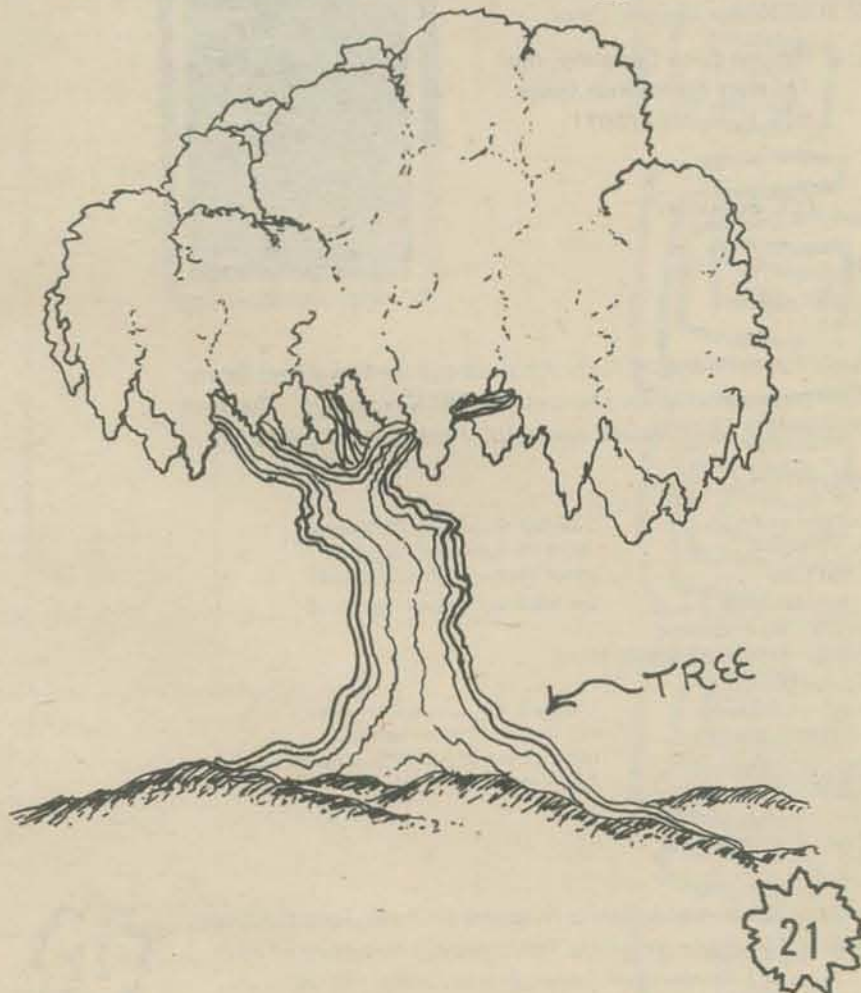
initialize; make #1 the current NODE
All TREE functions are accomplished by GOSUB 7500 -- V1 determines *which* functions

pick a new name for next daughter
this functions adds D1 as next daughter

pick one of the last 3 NODES
this function goes down to D1

Since each L loop moves you down to a random daughter NODE, use the last one as the Out NODE

Next issue I'll show you how to use **TREE SUBROUTINES** in your own programs and games! See ya !!!

V1 and V2

```
7400   REM *** TREE SUBROUTINES BEGIN ***
7402   REM SACRED NAMES: N(127),P(385),L(99),N9,P1,P2,P3,P4,P5,P9,
7404   REM               L1,FNP,FNN
7406   REM ARGUMENT: V1,V2,N1,D1
7408   REM N1 IS NAME OF CURRENT NODE (FOR TOP NODE, N1=1)
7410   REM D1 IS NAME OF DAUGHTER NODE
7412   REM NODE NAMES CAN BE ANY NUMBER EXCEPT 9999
7414   REM
7416   REM V1=  0 INITIALIZE TREE, MAKE #1 THE CURRENT NODE
7418   REM      1 ADD D1 AS NEXT DAUGHTER TO CURRENT NODE
7420   REM      2 CUT D1 OFF FROM CURRENT NODE (BUT LEAVE IT AND
7422   REM        ALL BELOW IT)
7424   REM      3 PRUNE D1 (AND ALL BELOW IT) FROM TREE
7426   REM      4 GO UP FROM N1 TO MOTHER NODE (UNLESS AT TOP)
7428   REM      5 GO UP FROM N1 THE WAY YOU CAME (UNLESS AT TOP)
7430   REM      6 GO DOWN TO D1 FROM CURRENT NODE (IF LEGAL)
7432   REM      7 RETURN WITH NEXT DAUGHTER NODE (AFTER D1) IN D1
7434   REM        IF NO MORE, D1=9999
7436   REM        IF D1 ISN'T A DAUGHTER OF CURRENT NODE, RETURN WITH
7438   REM        FIRST DAUGHTER NODE
7440   REM      8 RESET CURRENT NODE TO D1, WHEREVER IT IS IN TREE
7442   REM
7444   REM V2=  2  INSTRUCTION CARRIED OUT, BUT D1 IS A NEW NODE NAME
7446   REM      1  INSTRUCTION CARRIED OUT
7448   REM     -1 CANNOT MOVE UP (OR DOWN) BECAUSE ON TOP (BOTTOM)
7450   REM     -2 MORE THAN 99 NODES
7452   REM     -3 TOO MANY CONNECTIONS
7454   REM     -4 D1 IS NOT A NODE NAME
7480   DIM N(127),P(385),L(99)
7482   DEF FNP(X)=INT(P(X)/512)
7484   DEF FNN(X)=P(X)-INT(P(X)/512)*512
7500   REM ***ENTRY POINT FOR TREE SUBROUTINES
```

TREE

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PCC BOOKSTORE

My Computer Likes Me *by Dymax*

from: Dymax

from: PCC
P.O. Box 310
Menlo Park, Calif. 94025

$1.49
1972; 64 pages

In an easy going, conversational style, this 64 page workbook introduces BASIC to young or old. Designed to be used with frequent access to a timeshare terminal (learn by doing!), we use this large format book in our introductory workshops for people with no previous computer experience or knowledge of programming. The teaching examples are oriented around population problems and demographic data. Over 20,000 of this popular book now in use.
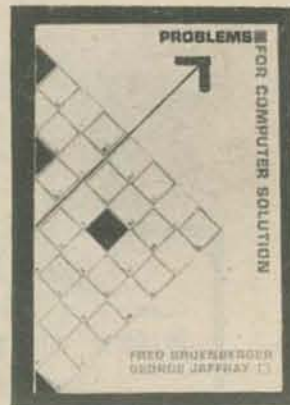
BASIC Programming *by Kemeny and Kurtz* (2nd Edition)

from: John Wiley and Sons, Inc.
605 Third Avenue
New York, NY 10016
or PCC Bookstore

$6.95
1967, 1971; 150 pages

On the first day, Kemeny and Kurtz invented BASIC. Then they wrote a book. We don't recommend this book for learning BASIC but we do recommend it as a reference guide . . . applications resource . . . idea generator for people who already know a little BASIC.

Here is a sampling of section titles —

What is BASIC? What is Timesharing? **String Variables** Curve Plotting **Prime Numbers** Random Numbers **Dealing a Bridge Hand** Knight's Tour **Tic-Tac-Toe — A Heuristic Approach** Tax Depreciation **Critical Path Analysis** String Files **Linear Regression** Electrical Networks **Markov Chains** Polynomials **Marriage Rules in a Primitive Society** A Mode from Ecology **Harmony in Music**

Basic BASIC *by James S. Coan*

from: Hayden Book Company, Inc.
116 West Fourteenth Street
New York, NY 10011

or

PCC Bookstore

$5.95
1970; 256 pages

Beginners can learn BASIC from this book but we like it best for its excellent chapters on applications of the BASIC language. The book is full of sample programs and problems. Here's what it looks like —

CHAPTER TITLES

Introduction to BASIC
Writing a Program
Loops and Lists
Computer Functions
Elementary Data Processing
Introduction to INPUT and RESTORE
Specific Applications
The Quadratic Equation
Trigonometry
Complex Numbers
Polynomials
MAT Instruction in BASIC
Elementary Probability

The first 6 chapters (103 pages) cover all the elementary language elements of BASIC and are relatively nonmathematical.

Chapters 7 — 13 can be read in any order and cover various applications of BASIC — mostly heavy math.

Plus appendices — (A) Storing Programs on Paper Tape (b) Error Diagnosis (C) Special Formatting Functions (D) Summary of Flow-chart Shapes (E) Summary of Statements in BASIC (F) Index of Programs in Text (G) Answers to Even Numbered Problems.

Problems for Computer Solution

by Fred Gruenberger & George Jaffray

from: John Wiley and Sons, Inc.
605 Third Avenue
New York, NY 10016
or PCC Bookstore

$6.95
1965; 401 pages

After you learn to talk to computers, what do you talk about? If you want inspiration, try this book. 92 problems, something for everyone — easy, hard, math, non-math, all beautifully written.

BASIC *by Albrecht, Finkel and Brown*

from: John Wiley & Sons, Inc.
~~605 Third Avenue~~
New York, NY 10026

or

PCC Bookstore

$3.95
1973; 325 pages

The following is an excerpt from EduHelp, September, 1973 . . . "The book is similar (in style only) to Albrecht's popular Teach Yourself BASIC, but it is much more thorough and better organized. It is designed as a self-teaching text. The self-tests at the end of each chapter are excellent and easily permit the user to review the text on any missed sections, as the answers refer back to the frame number in the chapter. The text is very suitable for any grade level, as the examples are not solely based on math, but are taken from business, social science, humanities and simple statistics. This reviewer believes it will be THE text used in the majority of schools. Get a copy and see for yourself."

See Review, PCC Vol. 1, No. 4

tapes

These are our very own computer games. They are written in a standard form of BASIC and will run on any system that uses Dartmouth BASIC. When strings are used they are standard Hewlett-Packard strings and you may have to modify the programs for your system. If you are a PCC subscriber, you can get free listings of all our games — send a stamped, self-addressed envelop for EACH listing. For the tapes themselves, these prices apply [we'll trade tapes too, write Dave Kaufman to make a deal].

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STAR TRADER *	10.00
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SUNSIGN **	3.00
CHOMP	3.00

* *Featured in this issue.*
** *These program use HP Strings*

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See Review on Page 20. ⤵			
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