

LONG ISLAND COMPUTER ASSOCIATION



THE STACK

Volume.7 No.3

March 1983

P.O. BOX 71, Hicksville, N.Y. 11802

(516) 293-8368

Official Newsletter Of the LONG ISLAND COMPUTER ASSOCIATION, INC.

President, Al Stone

Vice President, Stan Misel

Secretary, Frank Davidoff

Treasurer, Aileen Harrison

Stack Editor, Al Levy

LICA Bulletin Board (516) 561-6590

PRESIDENT'S MESSAGE

Circle the date of Saturday June 4th on your calendars. That's when we hold our second annual Computer and Electronics "Faire". We've learned from the many comments we received concerning our first attempt at such an activity last year.

This time, while our vendors will have ample protected outdoor area on the spacious grounds of the AHRC, there will at the same time be continuous lectures and hardware demonstrations inside our host organization's headquarters building.

If we are to continue as an effective "umbrella organization" for Long Island's ever-growing microcomputer related interest groups, we must make as much information and help available to newcomers as we possibly can. At the same time, we recognize our obligation to hold the interest of the computer-wise veterans among us. Hopefully Faire #2 will further both goals and also raise money for a worthwhile charity.

See the flyer inside this issue of The STACK for details. See you at the Faire!

GENERAL MEETING

The Corporation meets each month on the third Friday evening at the Old Westbury Campus of the New York Institute of Technology. This month our agenda includes the first local area presentation of the EPSON QX-10 computer by Tom Vande Stouwe's BT Enterprises from Bohemia, NY. Steve Perry of Perry Peripherals offers a detailed lecture on computer system maintenance. At the moment, Steve is still looking for a CCTV system to make the associated demonstrations clearer to our increasingly large group. Contact Steve at (516) 744-6462.

SECRETARY'S REPORT ON LICA MEETING OF 18 FEBRUARY 1983

Stan Misel announced that since there was not a quorum present at the last meeting of the Executive Board, there will be another at his house on February 26.

Josh Weinberg spoke briefly on the Computer Learning Center, which is beginning its third semester on February 28. It is offering such courses as programming in BASIC, computer graphics, VISICALC, word processing and data base management. Several LICA members teach there. The Computer Learning offers a 10% discount to LICA members. For information call (516) 626-3450.

Al Levy needs help with the STACK. It has grown during the last year and has become more than a one-man job. He asked for volunteers for corresponding secretary, advertising manager, accounts manager, reporter and people to help print and distribute it.

Phil Cochems announced that our second annual flea market will be held in May, date to be announced later. It will be held at the AHRC again, this time with an indoor area available in case of rain. He is attempting to provide electricity to the vendors. Anyone who would like to help with the flea market, please contact Phil Cochems at (516) 333-4213.

LAST MONTH'S SPEAKER

Ken Aupperle of Intel Corporation was our speaker this evening. He told us of the latest developments in the family of Intel microprocessor chips and gave us an indication of what we might expect in the future.

Intel makes a single chip computer, the 8096, that has the CPU, I/O, RAM and ROM all on board. These are used as simple controllers.

The 80286 and 80186 are 16 bit chips that support the software written for the 8086 and 8088. These have the CPU, clocks, DMA, interrupt controllers all on the same chip.

The 80286 is the first microprocessor product:

- 1) optimized for high performance multitasking
- 2) with integral memory management protection
- 3) with large virtual address space (1 gigabyte)

"The 80286 is the highest performance microprocessor product available by a factor of 3."

The 80286 is designed for a local area network, interconnecting computers within 1 or 2 kilometers with users that number in the hundreds. It features distributed control, high speeds (100K/sec or greater) and shared disks and printers. It uses the IEEE 802 standard, which is known as Ethernet.

SECRETARY'S REPORT ON LICA MEETING OF 18 FEBRUARY 1983
(continued)

Intel makes two chips to control CRT's:

The 82720 is used as a graphics display controller. Graphics functions are integrated onto one chip. Performing functions faster and better than the CPU can do it, such as zooming the display.

The 82730 is used as a video display processor. It is essentially a word processor in hardware. It will handle 32,000 characters on a chip, so that many different fonts are available.

The 80186 and 82730 can be combined for a low cost word processor.

For a combination of text and graphics, the 82730 and 82720 can be put together for very high performance.

Operating systems can be put on a chip. CP/M can be put on a chip for a low cost system. Such a chip would be the heart of a small portable unit (no disk drives) that can be carried around to collect data.

Questions from the audience elicited the following information:

- Intel's largest RAM chip is 64K.
- Intel's largest EPROM chip is 128K.
- Large bubble memory chip can run 4 megabytes on a chip, but size is traded off for speed. A bubble memory chip can be used as a disk replacement in a harsh environment and can be battery operated.
- Floppy disks are here to stay (for at least 10 years). The smaller sizes hold more data because the tolerances are tighter.
- The 8086 is more popular than the 68000 because 1) it came out first and 2) IBM picked it for the PC.
- The Intel 432 does not run ADA on chip as an assembly language. This is a rumor. The 432 has many features that support high level languages and ADA was the first language written for it.
- Software does not run slower on the 16 bit chips than on 8 bit chips. The software that does run slower was either badly written or poor adaptations of 8 bit software for 16 bit chips. "The inertia in the development of computers is in the software world."

Mr. Aupperle's private theory is "If you consider all the man-years that have gone into computers: designing, programming, servicing, selling and using them - and all the work computers have saved - if you gave everyone an abacus and counted the hours it took to do that work, computers probably haven't reached the break-even point yet."

Prepared by Jackie Tulumello in the Secretary's absence.

TECHNICAL TOPICS by Frank Davidoff

This month's column is on a method of approximating decimal numbers to any desired degree of accuracy by a ratio of two integer numbers. The author of this very simple and elegant technique is Jackie Tulumello who was a professional mathematician before she turned her talents to computer programming. There would appear to be many applications for this procedure, so read on.

Better Fractions for Better Approximations by Jackie Tulumello

Many years ago, when life was simple, the state of Indiana tried to make life even simpler for the school children by legislating pi to be 3. Unfortunately, this approximation of pi is a little too crude to be useful. I would like to explore the question of how to find small fractions to closely approximate numbers with decimal parts, such as pi.

Is there a reasonably small fraction which represents pi more accurately than 3 does? The answer is yes. Pi, the constant ratio of the circumference of any circle to its diameter, is often represented by the fraction, $22/7$. Actually, the decimal part of pi continues infinitely without repetition, which means it cannot be expressed exactly as a fraction. ($\text{Pi}=3.1415926536\dots$)

Large computers have calculated pi to thousands of decimal places but 5 or 6 places are adequate for most calculations. ($22/7 = 3.142857\dots$) is precise to two decimal places. ($355/113 = 3.14159292\dots$) does a better job. It represents pi accurately to 6 decimal places.

What follows is a simple algorithm for finding "nice" fractional approximations of decimals. These decimals may represent popular irrational numbers as pi, e and various roots.

X is a positive number, such as pi, with a decimal part. We would like to approximate X with a fraction N/D , where N and D are whole numbers. If $X = N/D$ then $D*X = N$, a whole number. If X is almost equal to N/D , then $D*X$ is almost a whole number. That means if we step through all possible denominators, $D=1,2,3,\dots$ up to a set limit, we can test $D*X$ for being almost a whole number: that is, $D*X$ rounded to an integer minus $D*X$ should be very small. If we want the fraction N/D to be within a tolerance, T, of our number X, then we require that

$$\text{ABS}(\text{FNR}(D*X,0) - D*X) < T*D$$

where $\text{FNR}(D*X,0)$ rounds $D*X$ to the nearest integer.

Coding this algorithm in BASIC is straightforward. I will leave it to you to make things fancier, such as cutting out redundant fractions

Example: $22/7 = 44/14 = 66/21\dots$, using double precision, etc.

Better Fractions for Better Approximations

(Continued)

```
10 REM---Approximate a decimal, X, with a fraction, N/D,
20 REM---within a tolerance, T.
30 REM---The following statement defines a general rounding
40 REM---function; P is always 0 for this program.
50 DEF FNR(Z,P) = INT((Z*10^P)+.5)/10^P
60 INPUT "Decimal to be approximated: ", X
70 INPUT "Within what tolerance"; T
80 T=ABS(T)
90 INPUT "Largest denominator to try"; LIMIT
100 REM--- Main loop
110 FOR D=1 TO LIMIT
120 IF ABS(FNR(D*X,0) - D*X) < T*D THEN 130 ELSE 160
130 N = FNR(D*X,0)
140 PRINT N; "/"; D; "="; N/D
150 PRINT "Difference = "; ABS(N/D-X)
160 NEXT D
```

A typical program run would be as follows:

Program input:

```
Decimal to be approximated    1.41421
Within what tolerance         .002
Largest denominator to try    45
```

Program output:

```
41 / 29 = 1.41379
Difference = 4.16875E-04
58 / 41 = 1.41463
Difference = 4.24147E-04
```

I would enjoy hearing of potential uses for this algorithm. It has been suggested that it could be used to approximate gear ratios with relatively prime fractions for optimal gear wear. While I have enjoyed playing at approximating various irrationals with fractions, the only time I actually used this algorithm was to attempt to find the nature of MBASIC's RANDOMIZE function. I found that their 6 place random decimals were true fractions, the denominator apparently less than 33,000 and the numerator less than the denominator. However, I was not able to discover the algorithm Microsoft uses to get this fraction.

Jackie T.

PLEASE NOTE

LICA can be proud of its members and their accomplishments. The STACK is looking for other LICA experts to submit articles for TECHNICAL TOPICS. Many have been promised, and a few have even been submitted. We are now an organization with diverse levels of "computer literacy." We should keep reaching to keep the STACK at the highest level possible. I for one, promise not to ignore those people with "limited" experience. If you are one of those who have a genuine concern for LICA, its growth and development, and if in addition you have something to contribute which is technically superior or unique, then contact Frank Davidoff or Al Levy. Now is the time for sharing YOUR talent with the rest of the world.

Al Levy

Software for Graphics and Plotting by Jack Schachter

Software that comes in books usually has two advantages: the explanations are good and the price is low. Two books that have recently been published and will be of interest to many computer amateurs are "Graphic Software for Microcomputers" and "Data Plotting Software for Micros" both written by B.J. Korites and published by Kern Publications.

The book on graphics is a self-teaching guide to programs written in Basic that starts with explanations of simple plotting commands and continues with point and line drawings of various shapes. It then shows how to move them around in both translation and rotation and how to add perspective. The more advanced sections on hidden line removal and shading of three-dimensional figures is not available in many other books on graphics and is surprisingly well explained.

The book on plotting starts with a program that creates a data file and then proceeds to use that file to form histograms, pie charts, linear and logarithmic graphs, tables, and isometric plots. It also fits linear and higher order functions to a set of data by the least squares method. The programs are well-written in Basic and are easy to follow. It would have been helpful, however, to have an index.

The major disadvantage of getting software from books is the necessity of keying-in long programs with the attendant errors. Kern publications does sell disks for Apple and IBM and tapes for the TRS-80. Buying the tapes will, however, add almost \$20 to the cost of each. The books cost approximately \$22 for the graphics and \$28 for the plotting. Still, if you are interested in plotting or graphing, this may be worthwhile because the documentation is so good.

A Review of MVP-Forth by Jacob Schachter (516) 549-1711

Forth is a structured language that is quite different from Basic, Fortran and Pascal. In Forth, complete programs are built up out of a number of short and simple programs called screens possibly because they are small enough to fit on your console screen. But, the element that makes Forth unique is its use of the stack.

If you have used a Hewlett-Packard calculator with reverse Polish notation, you have a fairly good idea as to how Forth is programmed. All calculations and passing of data are done by means of two easily accessible stacks. A great deal of the programming then becomes simply a matter of moving numbers to and from these stacks. This is the language's greatest strength, because it simplifies data manipulation, and possibly also its greatest weakness.

High level languages are usually preferred to assembly language because the programmer is not burdened by having to explicitly find a memory location for each value he uses, or for that matter, think about how the memory space is used at all. Neither need he think about moving data around to get it into position for an arithmetic operation. The language takes care of all that. However, in Forth the movement of data to and from the stack is fundamental to programming and as such requires a substantial effort by the programmer not demanded by the others.

I have been using a version of Forth published by Mountain View Press of Mountain View CA. For a relatively small sum, under \$100, you receive everything needed to get you started, including "Starting Forth" by Brodie, probably the best available book for beginners. MVP-Forth, as they call it, is a reasonably complete version which enables you to do all the examples in the book and many others. BE CAREFUL NOT TO USE AN OLD DISK CONTAINING PROGRAMS IN OTHER LANGUAGES. USE A CLEAN DISK. Forth has its own unique way of using disk space and will overwrite other programs.

Forth has been recommended, by its supporters, particularly for real time and graphics programs. It is claimed to be faster than other high level languages although slower than assembly. The January 1983 issue of "Byte" magazine compares a large number of languages for speed on a specific type of program. Forth shows up as about average. However, in Forth as in assembly, a good programmer can make a tremendous difference in speed so that this claim may have justification for real programs rather than the number-crunching tests that are usually used for bench marks.

A Byte to the Core/by Erik Klein

Well readers it seems that another month has rolled around and that I now have another article due. But before I get down to the main core I have a mistake to correct. Minor as it may seem the BDS (Basic Development System) will not alter variable names but it will change keywords. For example, it will change all of the PRINT statements to LPRINT statements in your program thus enabling you to re-route your output, but it will not (as I said last month) change AS's to ACCOUNTS.RECEIVABLES's. Sorry I goofed!

There are in print today a few small publications for the IBM PC. Well maybe more than just a few and several that are quite large. Some of the publications specifically for our machine rival "BYTE" in size. I think that these publications make up quite a large percentage of the total microcomputer publications market in spite of the fact that they are for only one machine.

"PC, The Independent Guide to the IBM Personal Computer" is by far the most hefty of the PC magazines. I'd appreciate it if the topic of the month didn't take up quite as much room. Its reputation precedes it so it will suffice to say that it is an excellent source of information. I personally use my back issues for body building. On a lesser note (about a pound less), "Softalk for the IBM PC" and "Personal Computer Age" are both good publications. Of the two, "Softalk" has the better price (free for the first year) but it, unfortunately, tends to come a little tattered (at least to me). Sometimes it comes so tattered that I wonder just who is the post office at war with anyway? The two magazines both have equally good content.

The newest publications on the scene are "PC World" and the "Programmer's Journal". The premier issue of "PC World" is about the size of a large "Creative Computing" and it is packed full of ads and articles. Its content is rather weak at the moment but I feel that it will get much better with time. An interesting aspect of the magazine is that it is apparently trying to cater to all PC look-alikes as well as to the original. I wish them luck. As a side note, Will Fastie writes a very good IBM column in "Creative Computing" which contains many good reviews and commentaries. It is a good general interest magazine and I recommend it highly. The "Programmer's Journal" is definitely for the programmer. This magazine will probably not be seen reviewing the latest word processors. Instead they might devote their attention to the fastest assembler or to the most compact compiler. If you are a programmer on the IBM PC you should take a close look at this magazine. Its first issue (I think it's the first one, all it says is volume 1) is very interesting but it has just started to develop. The columns have just opened up for further exploration. By the way, some of the titles for the regular columns in the first issue were: "Tools of the Trade/BASIC", "C", "dBASE II", "ASM" and "MISC"

"MISC" is a general crazy column. They have computer jokes and the "Error Message of the Month" and appear to be worth reading. All in all, this magazine review has probably done little to aid you in choosing a PC publication for your library (or budget), so the following list of magazines in the order of my preference might (just might) help. Look at them all, they are very good.

1. "PC, The Independent Guide to the IBM PC"
2. "Softalk"
3. "PC World"
4. "Personal Computer Age"
5. "Programmer's Journal"

"Creative Computing", for those interested, goes for the same price as "PC". I do hope I have cleared at least something up; but alas I feel that I most probably have confused you even further. Anyway, the choice is yours. I recommend making an educated one. GOTO a computer store and buy, or at least look at as many magazines as you can let your taste decide.

The second topic that I will briefly cover is the Princeton Graphic Systems RGB Monitor (RGB means Red-Green-Blue). The monitor itself is built, as far as I can see, rather well. The casing is in the same style as the IBM monochrome display and the unit matches the PC very well. The colors are crisp and the resolution is quite high. In general it is a very good monitor. I have found that when using a color display in eighty column mode I find it is easiest to read with the background set to blue (color 1) and the foreground set to high intensity white (color 15). Well that's all for this month. Bye!!

I B M P C U G A

A comes after 9 and before B. When you count from zero to "ten" it goes ...8, 9, A, B, C, D, E, F, 10. It's obvious!

The computer has influenced all of our lives in many different ways; the way we count is the least of them. Since I've had my computer I've grown accustomed to the tremendous ease of writing that the word processor brings to me. I am, right now, taking a course in Pascal, writing two software reviews, thinking about the speakers at the upcoming meeting and

But that is not the subject I really want to speak to you about in this article.

The more things change the more they remain the same. That is a statement my father told me. What I want to speak about is the fact that our group is acting, working, talking about something that concerns us. It really doesn't matter what that concern is, nor when the object that we are concerned about was first conceived. What does matter is the gathering that it occasions. We each come here because of our own desires, each of us suspecting that the best route to fulfilling those desires might be in group action. Those among us who have blinders on will, in a short time, leave. Those among us who take the time to look about realize that here is an opportunity to meet people with common concerns, that in contributing your own efforts to help them that they in turn will help you. There is a tremendous amount of strength in a group, each of us augments it with what we do best.

The gathering, to discuss a subject of complexity, a subject of common concern, has been happening since before recorded history. The more things change the more they remain the same. What really matters is that I will be seeing you at our next meeting on March 11th at 7:30 in the NYIT, Commack Branch. Until then; Happy Computing, Marvin Freifeld

I.B.M. P.C./Users Group of L.I.C.A. Diskette #1 by Marc David Seidel

The I.B.M. P.C. Users Group is pleased to offer you a public domain diskette consisting of various games, utilities and other useful programs.

There are many fun and amusing games. Among these are Othello, a very quick moving version of this popular game with excellent game play; Yahtzee, an excellent recreation of this dice rolling game for one to five players with the option of playing the computer; Slot Machine, simulated slot machine with real odds and great graphics; and Black Jack, real time gambling with an automatic point count.

Also there are many useful utilities such as spoolers #1 and #2, these print spoolers reserve 20k of memory to allow you to print while working be on another program at the same time. SD is a super directory program, it lets you see a directory of files categorized by either size, extension, alphabetic order or by creation time. If you have a color graphics card and a monochrome printer adapter card you can use Color80, Color40, and Mono80. These programs change between the mono card and color card and they change to either 40 or 80 column modes.

I.B.M. P.C. Users Group diskette #1 is available for five dollars at the next meeting at NYIT Commack Branch, Feb.11. The diskette is a copy of the Manhattan Micro Disk #2 and 3 combined into one double sided diskette.

* 1983 DUES *

Now is the time to renew your membership. 1983 dues were due in January. Members wishing to pay dues via the U.S. MAIL should send all checks to:

L . I . C . A .
P . O . B O X 71
HICKSVILLE N Y 11802

SPEEDING UP MICROSOFT BASIC PROGRAMS - Stan Misel

One of the great advantages that high level languages have over assembly language is that the programmer need not be concerned about where a variable is stored in memory. In interpreted Microsoft BASIC, for example, you can merely state that $A=B+C$ and the interpreter grabs the value of B from somewhere in RAM, adds the value of C from another memory location, and stores the result in yet a different address. The BASIC programmer doesn't usually know or care what these addresses are. Obviously, though, the BASIC interpreter must keep track of these storage locations.

How does the Microsoft BASIC interpreter keep track of these storage locations? It sets up a table that lists the active variable names and pointers to the addresses that contain the values. The list starts with the first variable used by your program and additional entries are made in the table as more variables are introduced. Whenever a reference is made to a variable, this list is searched. The search is sequential, starting at the beginning of the table. Therefore, we would expect that the program could execute faster if the variable is near the beginning of the list so it can be found more quickly.

Let's try a simple demo of this technique. The following program sets up 26 integer variables and then uses two of them as counters in for..next loops. The program was written in CP/M MBASIC version 5, but should run without change in almost any Microsoft BASIC dialect.

```
10 DEFINT A-Z
20 A=0:B=0:C=0:D=0:E=0:F=0:G=0:H=0
25 I=0:J=0:K=0:L=0:M=0:N=0:O=0:P=0
30 Q=0:R=0:S=0:T=0:U=0:V=0:W=0:X=0:Y=0:Z=0
40 GOSUB 150
50 PRINT "Starting for 'A': 'Start your stop watch
60 FOR A=1 TO 30000
70 NEXT A
80 PRINT "Finished for 'A': 'Stop your watch & note time
90 GOSUB 150
100 PRINT "Starting for 'Z': 'Start your stop watch
110 FOR Z=1 TO 30000
120 NEXT Z
130 PRINT "Finished for 'Z': 'Stop your watch & note time
140 END
150 PRINT "Hit any key to continue"
160 AS=INKEY$: IF AS="" THEN 160 ELSE RETURN
```

Based on the previous discussion, we would expect that the loop for the A variable (lines 60 and 70) should take less time than the loop involving the Z variable (lines 110 and 120). In fact, on my machine it took less than half as long!

We can put this information to work for us to speed up our programs. All that we have to do is make sure that BASIC can easily find the variables in the parts of the program that we want to execute at top speed. For example, loop counters (such as those in our demo) should be placed near the beginning of the list. This can easily be accomplished by a declaration statement, e.g., $N=0$, near the start of the program.

This property of MBASIC has been fully exploited by a proprietary program for the TRS-80 Models I & III called "FASTER". This is a Z80 machine language program that executes in the background together with the BASIC interpreter. "FASTER" presents data on variable usage and makes suggestions about the order of variable declarations that would speed program execution.

Artificial intelligence is a phrase for which there are almost as many definitions as there are for the word intelligence. It has been said that "for the sake of expediency, let's define artificial intelligence as the mimicking of human behavior and decision making by computer." (1) This description, with its inherent vagueness is to be preferred to "... a system is judged to have the property of intelligence based on observations of the system's behavior, if it can adopt itself to novel situations, has the capacity to reason, to understand the relationship between facts, to discover meanings, and to recognize truth. Also one often expects an intelligent system to learn; i.e., to improve its level of performance on the basis of past experiences". (2) This last definition depends upon phrases which are in themselves imprecise, i.e., 'novel situations,' 'reason,' 'understand,' and the most imprecise of all 'to recognize truth.'

Perhaps the most precise definition of artificial intelligence is to be drawn from thermodynamics. The second law of thermodynamics states that for all isolated systems at or near equilibrium any process will have a tendency to increase the system's entropy (decrease the system's order.) This has led, in the case of biological systems, to the corollary: "In this collective mode of self organization, far from thermodynamic equilibrium, the entropy of a system drops dramatically; the information content rises. The increasing entropy dictum of the second law is no longer valid because the system is not in equilibrium. The key features of systems that can support such entropy-decreasing modes are that;

1. They are not isolated systems: they draw energy and material from their surroundings; (they feed)
2. They are complex systems of many interacting parts, and the interactions must be nonlinear." (3)

R.M. Kiehn of the Physics Dept. of the University of Houston then continues in "Artificial Intelligence and Entropy" to extend the concept of a local, nonequilibrium system to the computer. (4) This has formed the basis of my definition:

'**Artificial intelligence** can be achieved in a machine which draws energy from its surroundings, is not in isolated surroundings and is a complex system of many parts which interact in a non-linear way. Artificial intelligence is achieved when the machine produces more order at its output(s) than it was given at its input(s).'

The precise point at which a machine can increase the order of its surroundings (decrease the entropy) might not be known any more precisely than the phrases of the foregoing definitions; however it is no longer necessary to think of artificial intelligence with the overlay of human or biological characteristics. This is an attempt to break "the reckless anthropomorphization of the computer." (4) The construct above is satisfying because it removes the human qualities from the definition of artificial intelligence. It is dissatisfying because it is no easier to quantify. After viewing some of the tasks that are being attempted under the topic of artificial intelligence it will be possible for us to formulate a 'common sense' definition of artificial intelligence.

Work in artificial intelligence is divided into a number of areas. These include game playing, pattern recognition, generalized problem solving, language comprehension, language translation and robotics. Games playing is the generally the best approach to a heuristic understanding of what artificial intelligence is about. A computer playing chess is sometimes unpredictable, goal oriented and smart. The truly sophisticated programs, running on the larger mainframes can win in a match with anyone having a ranking less than that of Grand Master. The programs do not have the ability to determine the outcome of the game (we humans don't either) and therefore must evaluate a position to influence the outcome of the game. If the game does not result in a machine win it is desirable to have the machine review and change the method used to evaluate a situation in an effort to find a more appropriate set of evaluation criteria. The machine is 'learning.' First impressions, according to the foregoing, is that artificial intelligence consists, at least in part, of being unpredictable, goal oriented, smart, evaluating a position and learning.

Pattern recognition is generally a problem of classification, determining if a pattern is a 'friend or foe', a chicken or a duck. Artificial intelligence can be said, in this case, to consist of the attempt to classify differences and similarities between objects. These differences and similarities are made at the smallest possible 'unit' recognition. If a computer were trying to recognize a particular face it might have to recognize the nostrils, nose, eye, hair, ears, mouth, cheeks, hairline, colors of skin, texture, etc. as they would appear in any position, from any perspective. The way in which these different parts of a face would be recognized might consist of contrast and color. With so many sub-units to be examined in a multiplicity of way it is a formidable task, one which, in many respects, is practically never determinate, one in which decisions, based on probabilities, have to be made.

Problem solving has, as a subset, games playing. Problem solving, as a subset of artificial intelligence, is used when an initial state is defined, we have a desired goal state and, most important, when the transpositions from the initial state to the goal state are not evident. There have been many attempts at developing general methods for solving these problems. These have ranged from brute force (trying everything) to some very sophisticated inductive (called heuristic) ways of reducing the size of the problem.

Language comprehension and translation are two interrelated tasks that are being attempted with the aid of computers. The problem to be surmounted is that the words we use do not have precise meanings, there meaning will change according to the words and sentences used around them. In addition each person has the ability to interpret a sentence, paragraph or book differently. It is almost impossible to program a computer to recognize 'meanings' except in some specialized and restricted subsets of a natural language. The problems involved with just extracting the meaning of the original sentence are almost insurmountable with the present generation of mainframes. Some of the phases of the recognition process are:

- *Lexical analysis and dictionary lookup
- *Syntax analysis (parsing)
- *Semantic processing
- *Discourse

Although the problems of a general purpose language recognition machine appear insurmountable there is a much more circumscribed area where a microprocessor is called upon to recognize written english. There is a program, Eliza, that came from Joseph Weizenbaum of MIT in 1966 as a demonstration of language comprehension artificial intelligence. Eliza functions as a nondirective psychotherapist that analyzes each sentence as the user types it in and then responds with its own comment or question. It is a stunning demonstration of artificial intelligence at the microcomputer level, especially with the uninitiated. There are quite a few games available that also partake of artificial intelligence. Games by Infocom such as Deadline or Zork 1, 2 or 3 use their version of a parser, etc. to carry on a typed 'conversation' with the player.

The problems involved with translations are much more difficult because the aforementioned problems exist with the additional problem of synthesizing the meaning in the second language.

Robotics is the last subject to be treated. The design of a robot is liable to partake of any and, perhaps, all of the foregoing manifestations of artificial intelligence. A robot with vision and/or hearing would use pattern recognition and/or language comprehension. For performing different tasks problem solving would be involved. Robotics is a hardware/software realization of artificial intelligence.

Just from looking at the different tasks that are being attempted under the title of Artificial intelligence it is another definition of the subject that suggests itself. 'If a problem is conceptually difficult for man to solve and if it is being given to a machine to solve then that machine is said to exhibit artificial intelligence.'

FOOTNOTES

- (1) Rosenbaum, R.L., "Artificial Intelligence: What Is It?," BYTE, April 1977, Vol.2, No.4, Page 50
- (2) Findler, N.V., Encyclopedia of Computer Science, First Edition, Van Nostrand Reinhold and Company, 1976, Page 106
- (3) Kiehn, R. M., "Artificial Intelligence and Entropy," BYTE, June 1979, Vol.4, No.6, Pages 152-154
- (4) Ibid
- (5) Weizenbaum, J., "Computer Power and Human Reason," W. H. Freeman and Co., 1976, Chapter 8, Page 205

SOFTWARE SUPPORT: HOW DO WE GET IT? by Howard Rachlin
(written for the FEBRUARY edition of THE STACK)

Last month we discussed one of the problems with software, its cost. This month I'd like to discuss another more serious problem, software support. A significant percentage of money collected for software is used to provide assistance to users. How effective is this support? From my experience, it can vary.

When I obtained my copy of ELECTRONIC DISK from B&L Computer Consultants I had some problems in using it. The problem turned out to be simple. I had copied the program onto a disk formatted for double sided use while the program must be called from a single sided disk. Bob Huntsman, the programmer, called me back within an hour and promptly cleared up the problem. Bob has in fact always responded quickly to any calls whether to discuss problems or to listen to suggestions. This ready assistance has been provided for a program with a suggested cost of \$15.

This is in sharp contrast to my experience with Ashton-Tate and their dBASE program. This program has a list price of \$700! Since their dealers are apparently not really qualified to discuss the program (at least I couldn't find one in our area) they offer a unique trial. A disk with all of the programs' capabilities is provided but it is limited to a maximum database of fifteen records. If you do not find dBASE suitable you can return it (with the full version disk still in its sealed plastic bag) for a full refund. This implies a company who cares.

My use for dBASE is a specialized mailing list maintenance program for sales and marketing purposes. A prime requirement for me is the ability to convert an existing database of over 3,000 records to dBASE. The manual was written for the CP/M version and their instructions didn't work with the PC/DOS version. I called California for help and found all the technicians busy. I was given to the message center and left my name, phone number, and a description of the problem. Three days later I called again. The techs were still too busy to talk to me and I left another message. After another week I tried again. This time I asked for the Sales Department. I explained my problem, the lack of support, and that the end of my 30 day trial was approaching. I couldn't even find out if dBASE would work. They assured me they would have a technician back to me in fifteen minutes. I'm still waiting, a week later.

There are others like Ashton-Tate, unfortunately, and we must provide our own protection or support. Please let us know if you have particular problems in obtaining support for a software package you've bought. Perhaps someone in the group can help, or at least other potential purchasers can be warned.

We're also forming special interest sub-groups where sufficient interest exists (dBASE and PASCAL groups now meet).

P.S. (added 3/12/83) I found a way to convert basic files to dBASE files myself. Ashton Tate will be coming to our April meeting.

Micro Thoughts - Al Levy

For those of you who did not take advantage of the **Advanced Basic Course** helmed by Bob Kowitt, let me tell you, you missed a wonderful day and plenty of information. Bob has a treasure chest of advanced techniques which we (the students) explored, questioned and discussed. LICA promotes intimate classes at a professional level for the cost of a night out.

During that afternoon we exchanged ideas on keeping track of data records and the efficiency of various techniques. I probably do as much record keeping with my computer as anyone in the club. Due to the nature of my business, I keep track of 20,000 customers plus 60,000 pieces of inventory. None of this is unique until we add in two more variables. I run a mail auction, and the files have to be somewhat interactive. The (maillist) customers are bidding on the inventory and there are no established prices. In addition, there are no two identical lots. If that isn't enough, consider a system designed to handle that information on three 5" drives, each holding a maximum of 90K bytes. (One drive must contain a system disk which leaves about 50K bytes for user programs and/or data on that drive.)

Like many fledgling programmers, I began by programming the computer to do almost everything fairly literally. (Look at the 1st record, the 2nd, etc.) When files started growing and swapping of disks became burdensome I tried some shortcuts. My first awareness of better possibilities came the day President Stone visited my office. He checked out my monitor and in his usual regal, comforting tones, he bellowed "What are you inventing this time Levy!" It was apparent that he was not too happy with my new wheel. Any experienced programmer could have issued a convenient shrug plus a number of garden variety epithets for my efforts but not this guy. Instead, he took the time to explain a common practice of putting the "number of existing records" plus "the next available (open) record" and a few other pieces of information in the "Header" or first record of the data file. (*) See diagrams 1 and 2

To put it simply, I had the computer read and count each record. When a blank ("") was encountered the number was stored in a variable. When the End Of File marker was found, a report was forthcoming such as:

"There Are 2000 Records In The Data File"

"The Next Open Entry Is #50"

This pleased me because it looked quite computerish but to tell the truth, waiting in line at the Motor Vehicle Bureau takes less time. By using the "HEADER technique" in a data file your program can read the "first entry" in that file and know immediately that there are 2000 records and the next open entry.

IF this is news to you THEN be sure to write a line in your program which not only reads the header FOR it is important to update the header information the NEXT time your data file is altered

Diagram #1

```
=====
data record #1
=====
data record #2
=====
data record #3
=====
data record #4
=====
data record #5
=====
data record #6
=====
data record #7
=====
data record #8
=====
```

Diagram #2

```
=====
2000 50 ( Header )
=====
data record #1
=====
data record #2
=====
data record #3
=====
data record #4
=====
data record #5
=====
data record #6
=====
data record #7
=====
```

=====

Long Island Computer Association, Inc. - Special Interest Groups

SUB-GROUP CHAIRMEN PHONE (516) Meetings Each Month

=====

6502	Steve Perry	744-6462	
680X	Roger Kaucher	796-8746	
IBM	Marvin Freifeld	724-0574	2nd Friday 7:00
COMMODORE	Phil Cochems	333-4213	3rd Friday 7:00
PolyMorphic	Al Levy	293-8368	3rd Friday 7:00
S-100	Richard Wilson	731-6912	2nd Friday 7:30
TRS-80	Ed Zulkowski	938-3320	2nd Friday 7:00

Now Forming

Color Computer S. Perry Jenkins Box 62 Southampton NY 11968

NEC PC-8000 Jerry Worthing 735-2952

APPLE IIG Looking For Chairperson Call: Al Levy

The Stack is now available at the following locations

Compu-Aid	222-68 Braddock Ave	Queens Village
Computer Ifics	14 Cold Spring Road	Syosset
ComputerLand	79 Westbury Ave	Carle Place
Computerland	6181 Jericho Turnpike	Commack
Computer Learning Center	78 Wolver Hollow Road	Brookville
Computer Microsystems	1196 Northern Blvd	Manhasset
Cousins Video	1238 Hicksville Rd	Massapequa
Future Visions	70 Broad Hollow Rd	Melville
Harrison Computer Ctr.	2263 Broadhollow Rd	E. Farmingdale
L.I. Computer General Store	103 Atlantic Ave	Lynbrook
Programs Unlimited	20A Jericho Tpke	Jericho
Programs Unlimited	Smithtown Mall	Smithtown
Programs Unlimited	5002 Jericho Turnpike	Commack
Software Emporium	151 Mineola/Willie Ave	Roslyn Hghts
Spartan Electronics	6094 Jericho Turnpike	Commack
The Computer Touch	709 Route 110	Melville
Tri-County Elea Market	3041 Hempstead Tpke (2nd Fl)	Levittown

COMMERCIAL ADVERTISING POLICY:

In an effort to cover our costs of duplication and mailing, and to provide a more extensive monthly edition of THE STACK, commercial display ads are accepted in 1/4 1/2 and Full Page sizes. Minimum participation is for three months. The three month rates are \$50, \$75, and \$125 respectively. Copy need not be the same each month. Camera ready preferably. Type setting & layout work available at additional charge. All checks should be made payable to LICA.

The Long Island Computer Association, INC. is open to everyone, amateur or professional with an interest in computers, computer applications, programming, or related subjects. Dues are \$12.00 per year which includes monthly issues of this publication. The STACK is mailed to other computer clubs on an exchange basis as well as to various technical publishers. Permission for reprinting or quoting items in The STACK is granted providing that credit is given & a copy of the reprint is sent to The STACK. Members can vote in club elections, & place non-commercial classified ads (at no charge) and commercial ads at nominal cost. Member articles and other data affecting The STACK must be received by the 15th day of any month, to be published in the following issue.

All copy should be sent to: Al Levy P.O. Box 71, Hicksville N.Y. 11801 (516) 293-8368

T H A N K S to Tom Vande Stouwe for donating the needed 15 cpi print-wheel to LICA. For the March Meeting, Mr. Vande Stouwe will be talking on the Epson QX-10 computer system.

6502 USERS GROUP NEWSLETTER

GEORGE CARLSON

48 Ridgewood Ave.

Central Islip, N.Y.

11722

516 234-0037

Hello computerists! What's new these days? Keeping up with new developments in this world of computers is the challenge that keeps most people interested. If you are interested in the new machines that are out there and want information, the computer association is a good place to start. The 6502 user group is one of the many subgroups which the club has to offer its' members. Anyone who wants information concerning computers are welcome to attend the 6502 user group. We meet one hour before the regular meeting in the room across the hall.

The 6502 subgroup is an informal meeting with a variety of people with different experience and backgrounds in computers. The 6502 is definitely holding its own as there are many advanced computers using the 6502 microprocessor. Hardware and software are two parts of the computer. Hardware hackers often discuss interfacing problems they have and many problems are often solved by the membership. Many questions are asked as to what computer should I buy and what's so great about the 6502. This group has done its homework. Today, I can safely say the the 6502 is the most popular microprocessor used today. The VIC, ATARI, APPLES, and the Ohio Scientific computers just to name a few attest to its popularity. It might not have the instruction set of a Z80 but who uses all the instructions anyway. The two factors which make the 6502 so capable a processor are its 11 basic addressing modes including pre-indexed and post-indexed indirect addressing also known as zero paged pipelined architecture which allows for fast execution of large programs. Enough sticking up for an underdog.

Currently, the hardware is way ahead of software and there is a lag of a couple of years in software development to the many uprocessors that are out there. Therefore I will be devoting myself the next couple of months to the Pascal language. I don't care for compiler languages perse' but you can't fight everyone so I'm going along just to see if there is light at the end of the software quagmire. I like BASIC due to the fact that it is very user friendly, it is being improved daily to the point where structured BASIC programming can look very much like Pascal programs. I like the fact that I can find logical errors much easier in BASIC than I can in Pascal but improvements are being made, with the introduction of MODULA-2. It is now available on the 68000 based SAGE computer. MODULA-2 is a language that was developed by the developer of Pascal and it is said that Modula-2 will eventually take the place of Pascal. So the language debate continues. By the way, the SAGE computer comes with UCSD Pascal as the standard operating system, though CPM will be available probably as an option. Anybody who wants to get into Pascal programming is welcome to add there veiws on the language and will be looking at how Pascal programs are written in order to get a better understanding of this structured programming language.

Information is the key to understanding, and a forum like the one at our our subgroup is an excellent place for the testing of our ideas. Hope to see you people at the meeting.

THE EIGHTH ANNUAL TRENTON COMPUTER FESTIVAL

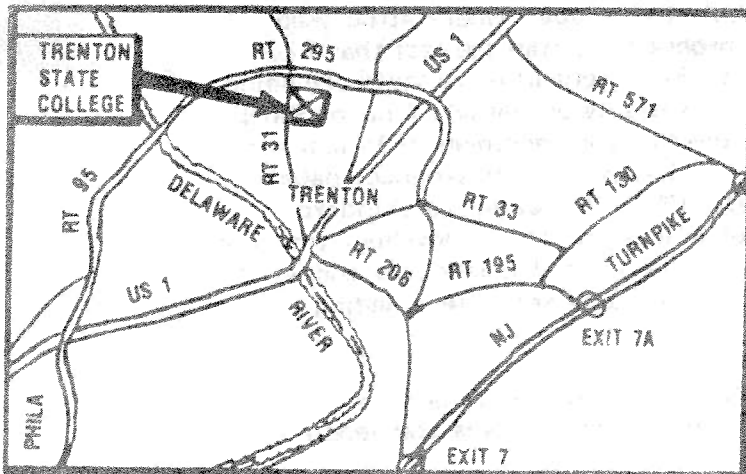
TRENTON STATE COLLEGE • TRENTON NJ
SATURDAY • APRIL 16, 1983 • 10 AM - 6 PM
SUNDAY • APRIL 17, 1983 • 10 AM - 4 PM



TRENTON
STATE COLLEGE

• Bigger and better than last year! •

Attendance exceeded 10,000 last year • huge outdoor flea market • enlarged indoor commercial exhibitor area • 9 simultaneous technical sessions • user group sessions • free courses, demonstrations, new computer graphics theater • Saturday night banquet • computer conference sessions and forums on software, hardware, home applications, education, music, robotics, amateur radio, the arts and more (Saturday) • user group sessions on Apple, Radio Shack, CPM/SIGM, IBM, PET, etc. • special tutoring sessions for the general public and novices (Sunday) • and much, much more! • convenient to New York City and Philadelphia



EASY TO GET TO FREE PARKING FOR OVER 6000 CARS

Admission/Registration

- \$5.00 Covers both days and all events (except banquet)
- \$3.00 For students/senior citizens
- \$15.00 For Flea Market spots for the entire weekend (includes one admission ticket)

Banquet

- \$10.00 Saturday Night

Sponsored by:

Amateur Computer Group of NJ, Philadelphia Area Computer Society, Trenton State College Computer Society, Central New Jersey Computer Club, Institute of Electrical and Electronic Engineers/ACM Princeton Section and the Department of Engineering Technology, Trenton State College.

**THE ORIGINAL
PERSONAL COMPUTER SHOW**



ADMISSION

\$ 2⁰⁰

TO
BUYERS

DOOR
PRIZES

FOOD

&

REFRESHMENTS
AVAILABLE

ADEQUATE
FREE
PARKING

PRESENTS
THE

Second Annual

Computer Faire

INDOOR

COMPUTER
SYSTEMS
DEMOS
&
LECTURES

OUTDOOR

NEW & USED
EQUIPMENT
MART

SATURDAY

JUNE 4, 1983

9 AM - 5 PM

no rain date

WHERE:

115 E. BETHPAGE RD.
PLAINVIEW, N.Y.

{see reverse side for}
directions

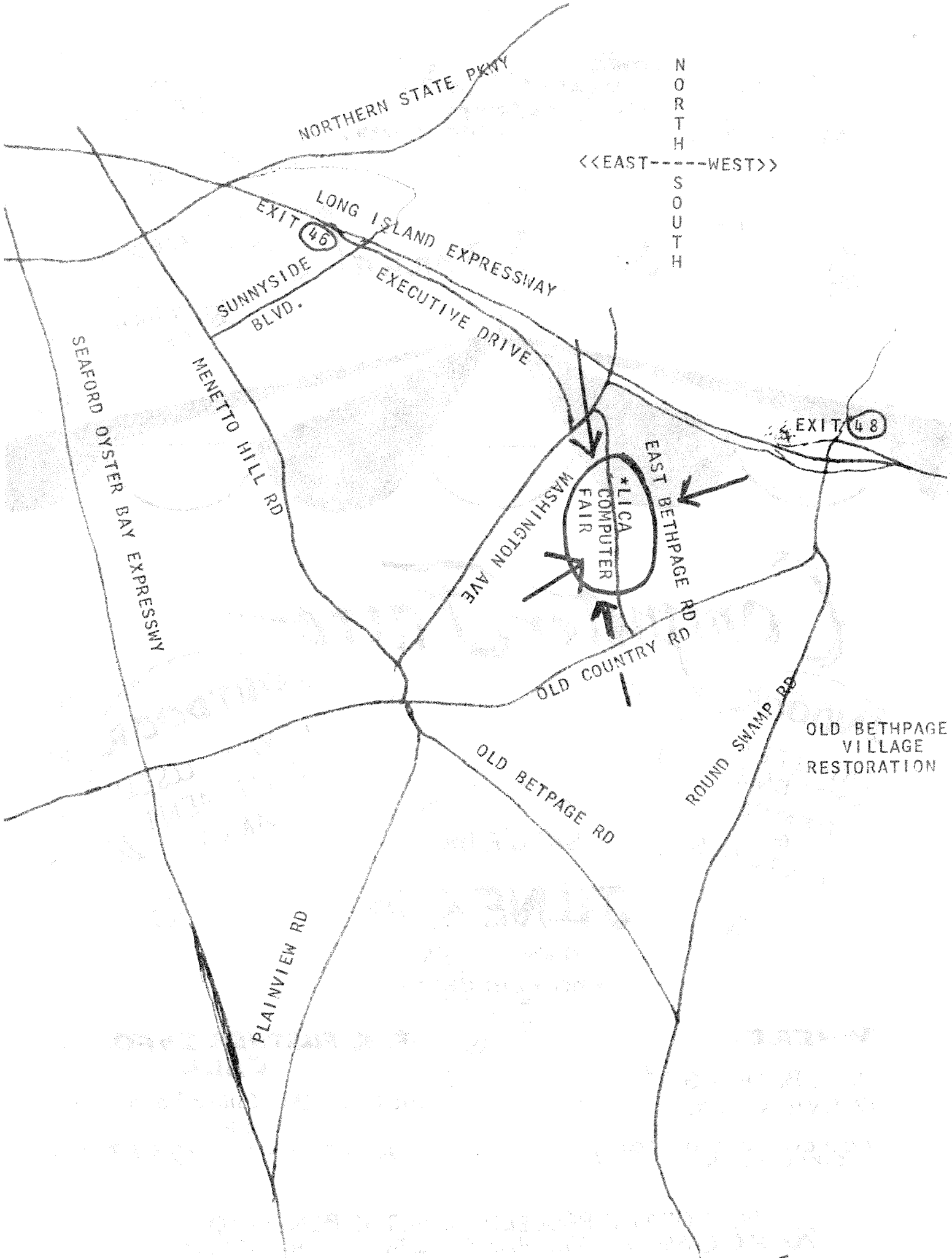
**FOR FURTHER INFO.
CALL**

PHIL COCHEMS - (516) 333-4213

OR

AL LEVY - (516) 293-8368

PART OF THE PROCEEDS FOR THE BENEFIT OF
AHRC (ASSN. FOR THE HELP OF RETARDED CHILDREN)



NORTHERN STATE PKWY

N
O
R
T
H

S
O
U
T
H

<<EAST---WEST>>

LONG ISLAND EXPRESSWAY
EXIT 46

SUNNYSIDE BLVD.

EXECUTIVE DRIVE

SEAFORD OYSTER BAY EXPRESSWAY

MENETTO HILL RD

WASHINGTON AVE

*LICA
COMPUTER
FAIR

EAST BETHPAGE RD

EXIT 48

OLD COUNTRY RD

OLD BETHPAGE RD

ROUND SWAMP RD

OLD BETHPAGE
VILLAGE
RESTORATION

PLAINVIEW RD

PolyMorphic Users Group Secretary's Report

Our first meeting was chaired by Al Levy. The topic for the night "Listing A Disk In Disabled Or Enabled Mode." A sector = 255 bytes, the directory uses 4 sectors (1000 bytes), "L" works equally as well as "LIST", and to list any drive other than the system drive "L 2" or "L 5" is used. On booting, the herald "(Exec 95 06/12/81 - Top Of Ram FFFF)" appears at the top of the screen. To save words and room, the rest of this report will show the screen display.

LIST: gives the following display.

DISABLED MODE

Disk MAILICA has 52 files on it.
705 sectors in use, 6 deleted, 1759 sectors free.

Size	Name
1	MENU.BS
25	OLDFILE.BS
29	PRINTFILE.BS
21	SORTFILE.BS
4	Lldef.ED
1	SPACE.ED
6	SAVER.BS
1	H/VMI.BS
21	REPORT.BS
2	YEARLY.BS
1	M.TX
1	O.TX
1	D.TX
1	LABEL.TX
1	LABELCOM.TX
1	REPORTCOM.TX
4	STACK.DX
5	SCOPY.GO
3	AL-SAYER.BS
2	STEP-2.BS
3	COMMAND.LI
3	NL.TX
4	Report+.TX
7	EVENTS.TX
3	Report-2.TX
3	NEWLIST.TX

EXTENSIONS

.BS = BASIC PROGRAM
.GO = Machine Code Program
.OV = Overlay
.TX = Text
.SY = Library For Macro Assembler
.PS = Poly System IO
.DT = Data
.ED = Library For Editor
.DX = Sub Directory
.LI = (LICA Special)
.IN = Formatter File
.AS = DisAssembled Source
.MU = Machine Code Music File (song)
.FX = Forth Program
.AD = ADA Program
.FT = Fortran Program

Size = Number Of Sectors

Addr = Address On Disk

LA = Loading Address In Memory

SA = STARTING ADDRESS of program (If its a program)
BASIC Version Number For Compressed BASIC Files
Length Of Each Record In Fixed Length Data Files
Address of 00 = Editable File

NAME = Name Of File

ENABLED MODE

Disk MAILICA has 52 files on it.

705 sectors in use, 6 deleted, 1759 sectors free.

Size	Addr	La	SA	Name
8	4	2000	2000	Exec.OV
8	C	2000	2000	Gfid.OV
8	14	2000	2000	Dfn1.OV
8	1C	2000	2000	Dfn2.OV
8	24	2000	2000	Dfn3.OV
8	2C	2000	2000	Efun.OV
23	34	3200	3200	Edit.GO
8	4B	2000	2000	Prnt.OV
11	53	3200	3200	Setup.GO
2	5E	3000	3000	Sio.PS
8	60	2000	2000	Emsg.OV
8	68	2000	2000	Pack.OV
2	70	3200	3200	ARISE.GO
2	72	2000	2000	Xref.OV
8	74	2000	2000	Berr.OV
7	7C	2000	2000	Bslv.OV
8	83	2000	2000	Bfun.OV
7	8B	2000	2000	Bdlr.OV
51	92	3200	3200	BASIC.GO
1	C5	3200	3200	BIT.GO
6	C6	2000	2000	Hsr+.OV
5	CC	3200	3200	Compare.GO
3	D1	3200	3200	COMPARE.GO
1	D4	3200	3200	WAIT.GO
1	D5	0	0	MENU.BS
25	D6	0	0	OLDFILE.BS
29	EF	0	0	PRINTFILE.BS
21	10C	0	0	SORTFILE.BS
4	121	0	0	Lldef.ED
1	125	0	0	SPACE.ED
6	126	0	0	SAVER.BS
1	12C	0	0	H/VMI.BS
21	12D	0	0	REPORT.BS
2	142	0	0	YEARLY.BS
1	144	0	0	M.TX
1	145	0	0	O.TX
1	146	0	0	D.TX
1	147	0	0	LABEL.TX
1	148	0	0	LABELCOM.TX
1	149	0	0	REPORTCOM.TX
4	14B	101	101	STACK.DX
5	1C2	3200	3200	SCOPY.GO
3	1C7	0	0	AL-SAYER.BS
2	1CA	0	0	STEP-2.BS
3	1CC	0	0	COMMAND.LI
3	2A7	0	0	NL.TX
4	2AA	0	0	Report+.TX
7	2AE	0	0	EVENTS.TX
3	2BB	0	0	Report-2.TX
3	2BE	0	0	NEWLIST.TX

=====

CLASSIFIED ADS

=====

ACCOUNTING, record keeping & Tax Services provided weekly, monthly, or quarterly (basis to suit). Sales Tax, Employer Wage Forms, Bank Records, Cash Receipts and Disbursement Journals, General Ledgers etc. Small business and personal accounts invited. AILEEN HARRISON: (516) 938-6769

11 X 15 (2 PART) CONTINUOUS FORM PAPER: Limited quantity / first come first served / only \$20 per carton, \$15 per carton to LICA members. This paper has a company logo in lower right hand corner. Good for rough copies and "in house" printouts.

LOW COST PRINTING: Type setting, collating, punching and binding services

Diablo HYTYPE II (model 1620) 1200 Baud, Pin feed platen, full Keyboard, like new/30 day warranty.

MULTISTRIKE RIBBONS: for Diablo HYTYPE II \$5.00 each

PolyMorphic S-100 COMPUTER SYSTEM, like new. ASCII keyboard, Video Monitor, (2) 5" SSSD Shugart drives (capacity for more), and 56K RAM. Software includes Macro Assembler, Editor, Word Processor, BASIC, Confidence Disk, many other goodies. (\$2000 in software alone) CP/M can be installed as an option. A new board will be released shortly to upgrade this system using the (80 MHz 8086 + 8207 RAM controller + 82720 Graphics Display Processor) The new system will use CP/M, CP/M-86, North Star CP/M, and the Poly operating systems. As is usual with this company, all software will be upward compatible. The STACK is written on a Poly. I own three and I am selling one. Service contract available. If interested or if you want to try this IEEE S-100 computer, call: Al Levy (516) 293-8368.

IBM SYSTEM/38 PROGRAMMERS: An exceptional opportunity to join a dynamic young Data Processing Firm. Excellent salary and benefits. If you have over two years experience in programming preferably on an IBM/38 using COBOL, give us a call at (516) 293-0144 or send resume to The Wheatly Group, Ltd. 425 Broad Hollow Road - Melville, NY 11747

REPAIR SERVICE: KIM, SYM, AIM-65 Single Board Computers. **NEW OKIDATA MODEL 82A PRINTER** fully tested with full warranty \$499. Interface cables for most personal computers are available. **BMC COLOR MONITORS** UNDER \$300.00 CALL: Steve Perry (516) 744-6462

FOR SALE: DIABLO HYTYPE I Cables, case, power supply and tractor. Has serial interface that emulates 1640. Uses Centronics, serial or IEEE 488 interface. \$875 or \$550 without interface. Jerry Harrison (516) 938-6769

CAD TOOLS: Anyone interested in CAD tools for personal computers? We offer schematic entry, verification, component placement, autorouting, NC photo/pen plotting. NC Dsign, 58 Hillside Ave, Williston Park, NY 11596 Phone: (212) 358-8764

SELL OR TRADE: Lear Siegler ADM 30 console, Com Data Modem 302F-33, G.E. Terminet 30, Teletype Model 33, Call: John Camarata, (516) 921-3919

Shugart 801 Drive Late model with Power One power supply, signal and power cables, complete in metal case and with all manuals \$250. Don Victorson (516) 757-0768

The Following ad was submitted on a piece of yellow lined paper, probably at the general meeting. It is hand written and there is no name attached. Will the owner please notify me so that a name and phone number can be inserted?

COMPUTER REPAIR PERSON WANTED Must have car. Salary plus commission based on experience plus expenses for travel. To repair S-100 bus rack & Pkts (in the field). Must know CP/M DOS and SOL DOS. Responsible, mature, and good appearance are a necessity. Can lead to departmental responsibility. Call: (???) ??-????

TROUBLE WITH HEADHUNTERS? Get ahead on your own! I'll help by providing these low-cost services, tailored especially for computer people: (*) Proven resume writing and editing (samples upon request), (*) Job search and follow up skills, (*) Interview techniques and practice, (*) Special rates for entry-level grads, (*) Packages and group rates available. Any or all of the above offered by an EDP employment consultant and computer buff with college teaching experience. Call Phyllis Lehmann (or leave message) at (212) 636-5716 or (516) 427-6405

CALENDAR OF EVENTS IN THE NEW YORK METROPOLITAN AREA

- JUNE** 4 1983 LICA COMPUTER FAIRE AND EXPO at AHRC in Plainview. 9:00 AM to 5:00 PM. Seminars - Indoor Exhibits - Outdoor Dealers - \$2.00 per person, Children Under 12 admitted free. Volunteers needed now. Booths are available for vendors and New Product Dealers. Call Phil Cochems at (516) 333-4213
- MAY** 1983 A dBASE course will be sponsored by LICA on two Saturdays in MAY. No date has been set yet but the course will be given by Bob Kowitt. \$30 per person, limited enrollment. For details contact Lester Lutzker (516) MA1-7780 or Al Levy (516) 293-8368
- APRIL** 14-17 NEW YORK COMPUTER SHOW AND SOFTWARE EXPOSITION at the Nassau Coliseum in Uniondale. LICA will have a booth at this computer show. Volunteers are needed to man the table and/or booth. Contact Len Printz at (516) 379-8743
- APRIL** 16-17 See The Flyer In The March STACK
- THE EIGHTH ANNUAL TRENTON COMPUTER FESTIVAL 10:00 AM till 6:00 PM. See The Flyer In The March STACK

OTHER 1983 EVENTS FROM NORTHEAST EXPOSITIONS

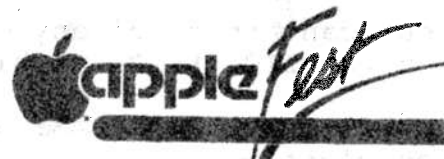
THE NATIONAL COMPUTER SHOWS AND SOFTWARE EXPOSITIONS

The East Coast Computer Faire
 Friday-Sunday, June 3-5, 1983
 Hynes Auditorium, Boston, MA

**The Twin Cities Computer Show
 & Software Exposition**
 Thursday-Sunday, September 15-18, 1983
 Minneapolis Auditorium, Minneapolis, MN

**The Rocky Mountain Computer Show
 & Software Exposition**
 Thursday-Saturday, September 22-24, 1983
 Denver Merchandise Mart, Denver, CO

**The Northeast Business Computer Show
 & Software Exposition**
 Thursday-Saturday, November 10-12, 1983
 Hynes Auditorium, Boston, MA



Applefest/Anaheim
 Friday-Sunday, April 15-17, 1983
 Anaheim Convention Center, Anaheim, CA

Applefest/Boston
 Friday-Sunday, May 13-15, 1983
 Bayside Exposition Center, Boston, MA

Applefest/San Francisco
 Friday-Sunday, October 28-30, 1983
 Moscone Center, San Francisco, CA



**CP/M '83
 EAST**

CP/M '83 East
 Thursday-Saturday, September 29-October 1, 1983
 Hynes Auditorium, Boston, MA

NOTICES

This was the month of Murphy's revenge. If it could go wrong, it did. My apologies for being so late with the STACK. This month we had every type of breakdown, (except nervous) imaginable. Last breakdown was my mimeo machine. If some of the pages look very light this was due to problems with the machine. It will be fixed before the next issue. Al

L I C A F A I R E

TOO MUCH CANNOT BE SAID. We need the help of many people. We are asking volunteers to man the ticket gates, park cars, help clean up, and additional chores. Please call Aileen Harrison, Al Stone, Phil Cochems or me (Al Levy). All of our phone numbers can be found elsewhere in the STACK.

People are needed immediately to distribute flyers, sign up vendors, and talk to NEW PRODUCT people. We also are looking for speakers to fill in the SEMINAR slots. We would like to have all the assignments completed by April 30. If you are a Ham Radio person or if you call various Bulletin Boards, send the word.

We would also like to present as many micros (doing their thing) indoors at the FAIRE. Can you bring a machine and if so which programs would you like to demo? See Phil Cochems.

If you can think of any dealer who would like to have a table, mention the LICA FAIRE to him.

P.S. Don't check the EAST and WEST indicators on the LICA FAIRE map too closely.

THE NEW YORK COMPUTER SHOW

I know that this is mentioned on another page but it is worth mentioning again. Thursday - Sunday April 14-17 at the Nassau Coliseum in Uniondale. A booth has been donated to LICA. We will need people to help out, answering questions, promoting good will etc. If you can help, PLEASE DO! Call Leonard Printz at 731-1649 or 731-7796

NEWS RELEASE

The perfect interface tool for all users of microcomputers and their RS-232 based peripherals. Now available for \$37.95 The poor man's breakout box has just been made available by REMARK DATACOM INC. (516) 367-3806 for details.

Business Card Advertising

The STACK will be printing a page of business cards. Yours can be included. Cost to members is \$25 per year, non members \$50 per year. Your business may be computer related or not.

=====

(212) 465-8529



Compu-Aid
MICRO-COMPUTERS
SALES - SERVICE - SUPPLIES

H. ROMERO
Engineer

222-68 BRADDOCK AVE.
QUEENS VILLAGE, NEW YORK 11428



COMPUTERS
VIDEO

SPECTRUM PROJECTS

93-15 86th DRIVE
WOODHAVEN, N.Y. 11421

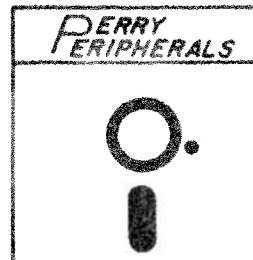
(212) 441-2807 (VOICE)
(212) 441-3755 (DATA)

**Business
Operating
Support
Group**

(516) 889-8779

BRUCE E. BARCHAK
JOHN P. GRECO
COMPUTER SYSTEMS CONSULTANT

4584 AUSTIN BLVD.
ISLAND PARK, N.Y. 11558



STEVEN E. PERRY

BOX 924
MILLER PLACE, N.Y. 11764
(516) 744-6462

PERIPHERALS and SOFTWARE
for 6502 MICROCOMPUTERS
an HDE DISTRIBUTOR

Programming and
Repair Service

ELECTRONIC ORDERING
1-516-293-5519
CBBS

DAVE SCHWARTZ, OWNER
1-516-293-5698
VOICE



(516) 669-8147



DBM Enterprises

63 NORTH UTICA AVENUE
NORTH MASSAPEQUA, N.Y. 11768

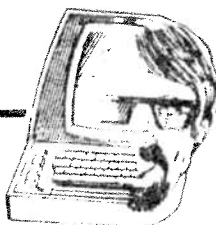
TELEPHONE, MAIL & ELECTRONIC ORDERING OF
COMPUTER PERIPHERALS, SUPPLIES, ACCESSORIES
AND OTHER ASSORTED GOODIES

ANGELO TULUMELLO, Ph.D.
Consulting Chemist

P.O. BOX 314
LINDENHURST, N.Y. 11757

The Computer Consultant

Robert Kowitt
1727 N. Jerusalem Rd., E. Meadow, NY 11554
(516) 483-5781 or 481-8552



TELEPHONE
(516) 541-4098

B S E MICROSYSTEMS
BUSINESS CONSULTANTS

ROBERT SEWALL, CDP
OWNER/OPERATOR

29 LINDSEY STREET
MASSAPEQUA, NEW YORK 11758

DRIVING

* 500 bldg *

*

Dead End
Lot
Parking

UNION TURN

C.W. POST
College

701
R
e
c
t
o
r

N
W
S
E

Northern Blvd. (25A)

The Stock
LONG ISLAND
COMPUTER ASSOCIATION
PO BOX 71 - HICKSVILLE, NY 11802

ADDRESS CORRECTION REQUESTED

BULK RATE
U.S. POSTAGE
PAID
PERMIT 44
JERICHO, N.Y.

APPLICATION FOR MEMBERSHIP (Please Print)

Name: _____

Address: _____

City/State: _____ Zip: _____

Telephone: _____ Date: _____

Computer Equipment Owned: (OPTIONAL)

Referenced to LICA by: _____

Please enclose \$12.00 DUES and send to:

L.I.C.A. P.O. BOX 71 HICKSVILLE, N.Y. 11802