The Amateur Computerist

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Opposing Viewpoints

The Impact of Computers on Society: A Debate

"Automation Will Probably Not Help Labor"

by Dave Pollack

(Editors note: This article was written in response to previous articles. See, for example, Upcoming Elections & Computers, Oct, 1988)

You keep suggesting that automation could increase worker's benefits. Theoretically this is probably true, but from a practical standpoint the reverse will probably occur. I notice in the *Amateur Computerist* that Jud Kempson (see Jan, 1989-ed.) also questions this theory. I believe that the impact of the computer on society has to be closely studied.

I have not kept up with any recent literature on the computer impact on man. I did attend an orientation on computers during the 1950's, given by the Army, in which a study was discussed which showed that about 35% of labor force was then engaged in white collar work. It projected a white collar labor force of 7% on the completion of the computer revolution. It hasn't happened yet, but the white collar job trend is certainly downward.

At the time this study was projected, the impact on blue collar work could not be foreseen, but we know now that the computer impact is also going to be significant.

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Shorter Hours Are Needed For Computers to Benefit Labor

by Ronda Hauben

In "Automation Will Not Help Labor," the writer raises the important question: What impact will the computer have on society? He predicts that the computer will lead to diminishing bargaining power for unions. Because of computers, he explains, companies, can now respond to any militancy on the part of U.S. workers by fleeing to low wage, weak regulation areas, be they overseas or at home.

The underlying assumption in this argument is two fold: First, that American industries can introduce computers and automation successfully anywhere and everywhere they want, and thus will look for the lowest wage area with the weakest labor regulations to invest their capital. Second, that companies will produce most efficiently when they are free from the intrusion of government regulation and trade union compulsion.

Similar arguments and assumptions have been made ever since the beginning of the Industrial Revolution. In England, in the early 1800's, these arguments centered around the Ten Hours Bill, a bill to limit the hours of work to ten hours. The manufacturers claimed they needed to be free of all social regulation or compulsion. They argued that the passage of the Ten Hours Bill would ruin England and cause the death of British industry. Factories, they explained, had to be free to work their employees 12 hours a day or more since it was only

in the last few hours that they made their profits. And without profits they would go out of business and Britain would cease to be an industrial power.

Supporters of the Ten Hours Bill answered these objections. They challenged the assumption that the free market philosophy guaranteed the most efficient means of production. They showed that in an unregulated, competitive situation, competing employers did not raise standards for each other. Instead, standards constantly deteriorated as one employer would take new liberties with employees. Then other employers, to keep up with the competition, would be required to take the same liberties. It soon became evident that free market philosophy did not lead to greater productivity, but only to a deterioration in working conditions. And the same inefficiency and lack of forethought exercised with regard to the firm's workers, governed other aspects of the business.(1)

The advocates of factory legislation temporarily won the debate. The Ten Hours Bill went into effect on May 1, 1848. Most employers set out to sabotage it in any way possible. And they kept up their arguments in the press against the principle of factory regulation.

But the harmful effects the manufacturers had predicted failed to materialize. In response to the limitation of hours, workers were more productive because they were better rested and they were given more efficient machines to work with. Labor saving devices were installed, scientific principles were applied to industry, and British industry flourished as never before.

One of the most ardent opponents of shorter hours, Sir James Graham, was forced to acknowledge in Parliament that his previous opposition had been a mistake. He said: "I am sorry once more to be involved in a short-time discussion. I have, however, a confession to make to the House.... Experience has shown to my satisfaction that many of the predictions formerly made against the factory bill have not been verified by the result.... By the vote I shall give tonight, I will endeavor to make some amends for the course I pursued in earlier life in opposing the factory bill." (from Report of the New York Bureau of Labor Statistics, 1900, quoted in **The Case for the Shorter Workday**, Brief by Felix Frankfurter, 1915, p486.)

History has shown it is a myth that regulation prevents the development of a competitive business environment. To the contrary, the passage of the Ten Hours Bill in 1848, provided the stimulus for the development of an efficient and technologically advanced industry in Great Britain. U.S. government officials studying that experience, used it as a model for early U.S. labor regulations. Thus the history of industrial development in the Great Britain and the U.S. has shown that industry expands and flourishes in response to higher wages and increased regulation, not in response to free market, laissez faire policy.

But won't regulation at home just drive manufacturers to transfer automation and computers to the lowest wage areas in the world?

Management decisions, then and now, are subject to economic laws, not to whims and threats. Corporations cannot move expensive automated technology to low wage areas, because once wages have fallen below a certain standard, it is no longer economical to put in labor saving devices. For a company to invest its capital in modern technology, the labor saving devices must cost less than the labor they are replacing. The lower the cost of doing business in a country, because of low wages or lax government regulation, the less economic advantage there is for a manufacturer to put in automation or computers. Consequently, automation does not travel the globe seeking the lowest wages. On the contrary, it is profitable to install advanced technology only where there are high wages and strong government regulations. Technical improvements previously available but not cost effective, will be applied to the processes of produc-

tion only in response to wage increases or improved working conditions. One author explains this phenomena: "But more important still is the influence of high wages and short hours on the practical application of inventions already known. It is an old-established economic maxim... that it is not the greater technical perfection of a process of production, but merely its greater cheapness that settles its practical employment in industry. It is not enough to invent a labour-saving process of production to ensure its adoption; its application must cost less than the labour it replaces." (Lujo Brentano, *Hours and Wages in Relation to Production*, translated by Mrs. Wm. Arnold, London, 1894, p792)

Improved methods of production and machinery require less labor for the production of each item. The result is that products can be sold for lower prices and so more goods can be available to more people, helping to improve the average standard of living. With shorter hour legislation, it has been shown that the same number of workers produce more, each worker works fewer hours, and industry expands.(2)

Not only does the industry within the country flourish, but the more efficient industry is in a stronger position to maintain itself against its low wage foreign rivals.

An observer of British industry explains: "One might cite the textile industries which have been subjected for many years to legislation as well as to the pressure of strong trade unionism. As a result, industry has been organized on such a high plane of efficiency that it has now become one of the staple industries of the country, and exports into the markets of the world in competition with long hours and low wage countries. The same might be said of the shipbuilding industry. (National Conference on the Prevention of Destitution 1912 Papers and Proceedings. London. P.S. King & Son, 1912. The Limitation of the hours of Work. George N. Barnes, M.P. p447 - in *The Case For Shorter Hours,* p794-5)

But companies and stockholders will do all they can to avoid investing in new technology, since to do so requires that they reinvest some of their profits. External compulsion from labor legislation and strong trade unions are required to force capital investment. The whole society, including big corporations, benefit from being forced to update technology. Processes of production are thrust onto a more scientific basis and industry expands and flourishes. But it is only external compulsion from effective factory regulation and strong trade unions, not the "free market" that produces these results.

Computer technology exists today, just as the steam engine existed in 1848. But labor legislation and more aggressive unions are required in the U.S., just as the Ten Hours Bill was required in England, to compel manufacturers to reinvest the capital needed to apply technological advances to industrial production. Thus workers in industrial regions like Flint, Michigan (the heartland of the General Motors Empire and the home of the sit-down that won the UAW) have been campaigning for a prohibition against overtime and for shorter hours for labor.

Computers will not be applied to factory production until employers are forced to do so by pressure from the labor movement. Strong, democratic unions are needed to develop computer technology. The six-hour-day dream of the UAW pioneers becomes a necessity if US society is to successfully apply the computer to factory production. Personal computers and the accompanying automation with PC controlled robots can have a constructive impact on society but they will only have that impact if there is a strong workers movement for shorter hours and necessary labor legislation. The slogan of the old 8-Hour League is once again on the order of the day in the labor movement if American society is to realize the social benefits of the computer: "Whether you work by the piece or the day, decreasing the hours, increases the pay."

Notes:
1)See *The Case for the Factory Acts*, edited by Mrs. Sidney Webb, London, 1901, in *The Case for Shorter Hours*, p793.
2)Statistics show that factory employment remained constant, though it decreased as a percentage of the labor force during the 1945-1970's period. But the same number of factory workers were able to produce a greater quantity of goods because of improved technological equipment.

(Automation... from page one)

A definite impact on how the computer will affect workers is his diminished union bargaining power. He is now competing with workers on an international scale. Currently almost all the large corporations are international in their scope. They move their plants and operations to the countries with the most favorable labor and tax structures. I believe that the results of these practices are going to be devastating to the average worker. Should the unions become too militant, they will move their manufacturing to more favorable areas. This trend has started relatively recently and I anticipate that it will be accelerated in the future.

Automation, better communications and relatively cheap air transportation has helped the Internationalization process, to the detriment of all. It is now possible to establish factories in almost any city in the world which has nearby airport facilities. Current plants require relatively few skilled employees. Parts, raw materials and technical help can be transferred virtually overnight to almost any part of the world. Seaports are no longer needed to ship much of the finished goods produced. Under this environment, labor is not in a good position to demand high wages and other benefits. Automation will probably not help labor.

It would appear that Unionization must also be Internationalized to reverse this trend. I am sure that I don't know the answers to these problems but I cite them as food for thought.

I do believe that unless these problems are studied and understood based upon the realities of our world, future actions by Unions and others socially interested groups, would probably be short sighted and doomed to failure.

You have my permission to publish my observations. If you do, I hope it generates some discussion.

Letters to the Editor

I am sorry that I haven't responded before now.... One thing led to another and so on.

I am sorry that this is hand written. I found a word-processor (loosely titled) program in the back of the manual that came with my COCO (my sole computer) but it was pathetic. It printed backspaces as eights instead of backing up! I tried messing around with it and adding a few subroutines to stop that, but it just messed up worse so I figured it would be easier to write (besides, it could only handle 32 characters a row anyway.)

Now that I've apologized for everything I'd like to say I love the concept of AC. It is the ideal forum for COCO users who would not stand a chance in a big magazine like Radio-Electronics that doesn't even talk about Radio Shack's IBM compatible computers. To the end of giving neglected COCO users some programs to mess around with, and to show them that they're not alone, I enclosed the first of (hopefully) several articles about the poor TRS-80. (See paragraph #2 for apology.)

I hope to go from solo-game programs to a graphing program (for all the higher math connoisseurs who want to see graphs but not print them on 32-character paper) and a space simulator (to counter all the airplane ones IBM-compatibles have) and finally to... you guessed it! A couple more solo-games dice-rolling programs!

I also have a few small "COCO-Try-This" programs to send in, too....

The field of computing and free-

lance writing came together nicely for me, since I have delusions of being a writer (though of comic books - and I am NOT going to attempt a program with keeping track of a collection using the tape recorder!) Perhaps writing I could earn enough to buy a computer and advance both goals (no, you have to type all the stories you send in!)

So anyway, I hope you can use my contribution! When I'm fifty and the AC is a big magazine and all the computers use zero-resistance superconductors I'll know I helped start it all!

Scott McMahan
105 Bear Creek Apt #4
Asheville, NC, 28806

I am very pleasantly surprised to receive correspondence from Mr. Stanley of Rockland, Maine, concerning my problem with the MC68000. Actually, I have managed to find most of the parts I could not locate previously. In reference to the 74ALS253 and the 74ALS648, National Semiconductor does manufacture these chips and were kind enough to agree to ship them to me. Active Electronics, Jameco, and BG Micro do not carry these chips and no other dealer contacted carried these chips.

Concerning the 68000 CPU PGA, only SGT Thomson would supply a pin grid array 68000. Jameco does carry a DIP 68000, but does not know the difference between a DIP and a PGA. Their expert sales department sent me a DIP, which I had to return with a letter informing them of the difference between PGA and DIP.

As for the 9229B and the 2149, the 9229B is a FDC and the 2149 is a memory chip. American Design Components carries both, at least in their advertisement. (I have not received these chips from ADC yet.)

The last chip I needed was a 74LS172. Although I have not received a response from Texas Instruments yet, old data sheets indicate TI did manufacture this chip at one time.

The problem I have had to overcome has been basically that the people who directed me to dealers, suppliers, and manufacturers failed to check to see if those items were actually stocked or available, if in fact they actually carried them in the first place. The ALS chips are a good example. I have listings from many dealers, including Active Electronics, none of which lists the ALS chips I need. Dealers/Suppliers are more than happy to send catalogs, however, they will not give any help if their company does not happen to stock those items. I have found that in some cases, dealers will only order specified quantities of chips even though the manufacturer does not require a minimum quantity. This seems strange as the manufacturer is more helpful than the dealers. My hats off to the following companies: National Semiconductor, SGT Thomson, and Texas Instruments.

Please send me information on how to become a member of the Amateur Computerist. Even though I had managed to solve some of my problems concerning this MC68000 piece of junk, your newsletter has been my only communication with someone who was interested enough to reply. Perhaps banning together we can get magazines like Radio-Electronics to become more responsive to their unfortunate readers who upon the GURU's advice purchased an "orphan".

SSG Charley O. Campbell
HHC 7th ATC, Box 3554
APO NY 09114

With reference to my computer, I am currently investigating two new technologies. One Packet Radio, and the other I am endeavoring to install a 3.5 inch, 1.44 meg floppy. I am having difficulty in obtaining firm answers in both areas. Packet radio, provides several options. The first which provides for using the computer as a terminal. With this option there are two different types of computer to radio interface devices in current use. Both relatively expensive. The second option, I discovered recently, a short board which converts the computer to Packet using software.

This method is considerably cheaper. However, I can only find one person who has any contact with this method, and using it would be experimental. With regards to my other problem, I can't find anybody who is in agreement as to whether I can incorporate another 3.5" floppy. The guy I bought the computer from told me it could not be done economically. He insisted that the floppies were connected to the I/O board, which also includes the graphics, printer serial port and clock calendar. He insisted that I would have to replace all those boards to incorporate the 3.5" floppy. I opened the computer case and found him to be wrong. The floppies are connected to a separate board. I talked to several other dealers and each gives me another story although most insists that it could be done. One of my friends had one installed on his computer and it hasn't operated properly since.
Dave Pollack
Sun City, Ariz

COCO CORNER

by Scott McMahan

Welcome to COCO CORNER, the battered refuge for all the forgotten, neglected and lonely users of the COCO: the TRS-80 Color Computer II. The programs here will probably run on a Color Computer I (though you may run out of memory since I have a 64K) and also on the newer Color Computer III.

The COCO is not a bad little computer, once you realize it exists. It is the ideal computer to learn how to program on, since it is just powerful enough to handle without overwhelming the beginner. All my programs are going to be geared for just such a beginning programmer, with bunches of remarks so you can follow what I'm doing.

This month I have a mathematical based program that manipulates numbers so you won't have to. It goes along with the Grail Quest solo role playing books by J. H. Brennan and makes combat infinitely easier since it eliminates rolling dice. Everything is done for you, so you won't have to keep track of all the life points, etc.

I have provided all the variables and what they do in a list at the beginning of the program, as well as plenty of remarks telling what is going on. Although the routines starting at lines 600 and 870 look like subroutines they are not really, since the computer needs to return way up above where it originally broke off of the main program.

If you wish to omit all the remarks (those phrases that start with ' and have asterisks surrounding them) you may for typing. If you are not a programmer and just want to use this program you really don't need to include them since it would be just extra typing. I do ask that if you use this, please put my name on it and the fact that I wrote it (especially if you intend to give it to friends.) That is the least you can do for a free program.

In the months to come, you can expect a program that graphs equations (using Extended Basic graphics), a space simulator (to counter IBM compatible airplane simulators), mathematical programs, and more role-playing no-dice programs. I also would like to do some Try-This programs.

If anyone would like to come up with a better name for this column, please tell me about it. It would be appreciated! I can't decide if this name is corny or not.

Excelsior has been taken already, so I'll sign off by saying: BE GOOD TO YOURSELF!

```
10  ' ***     GRAIL QUEST    ***
20  ' ***   COMBAT PROGRAM   ***
30  ' *** NO DICE, OF COURSE ***
40  ' ***  BY SCOTT MCMAHAN  ***
50  ' ***     ON 3/12/89     ***
60  ' ************************
70  ' *      VARIABLES         *
80  ' ************************
90  ' * PLP- PIP'S LIFE POINTS *
100 ' * PTH- ROLL PIP NEEDS TO *
      *       HIT ENEMY        *
110 ' * PD- PIP'S DAMAGE ABOVE *
      *   WHAT IS ON DICE ROLL *
120 ' * PP- PIP'S PROTECTION   *
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      *    (ie ARMOR, etc.)    *
130 ' *THE VARIABLES ELP,ETH,ED*
      *AND EP CORRESPOND TO THE*
      *ONES ABOVE, EXCEPT THEY *
      *ARE FOR THE ENEMY NOT   *
      *PIP.                    *
140 ' * D1- FIRST DIE ROLL     *
150 ' * D2- SECOND DIE ROLL    *
160 ' * D3- D1 + D2            *
170 ' * D4-THE RUNNING TOTAL OF*
      *   HOW MANY LIFE POINTS *
      *   THE DEFENDER WILL    *
      *   LOOSE.               *
180 ' * F1- PIP'S ROLL TO GO   *
      *    FIRST.              *
190 ' * F2- ENEMY'S ROLL TO GO *
      *    FIRST.              *
200 ' * Z-WHEN Z=0 PIP HAS JUST*
      *  ATTACKED, AND WHEN Z=1*
      *   THEN ENEMY HAS JUST  *
      *   ATTACKED.            *
210 ' *************************
220 ' * Q$- USED TO TELL IF THE*
      *    USER WANTS TO PUT IN*
      *NEW VALUES FOR PIP OR NO*
230 ' *************************
240 GOSUB 1190
250 CLEAR 1000:CLS
260 ' * THIS GETS ALL PIP'S    *
      * STATISTICS IN AND      *
      * KEEPS THEM             *
270 PRINT" PLEASE SUPPLY ALL OF PIP'S
STATS. THESE WILL BE RETAINED BY THE
COMPUTER ALL THE TIME THIS PROGRAM IS
USED."
280 PRINT" DO NOT ENTER ANY NEGATIVE
NUMBERS WHEN ASKED ABOUT PIP OR THE
ENEMY'S ARMOR !!!! IF IT IS -2 THEN
PUT IN A 2!!"
290 INPUT "PIP'S LIFE POINTS "; PLP
300 INPUT "WHAT DOES PIP NEED TO
HIT"; PTH
310 INPUT "HOW MUCH ADDITIONAL DAMAGE
HAS PIP "; PD
320 INPUT "HOW MUCH DAMAGE ABSORPTION
HAS PIP (AS IN SHIELDS OR ARMOR) ";
PP
330 CLS
340 ' * THIS GETS ENEMY STATS  *
      * THE SAME AS PIP'S      *
350 PRINT "PLEASE SUPPLY THE ENEMY'S
STATS AND DO NOT USE NEGATIVE NUMBERS
FOR ARMOR SINCE THEY WILL MESS UP
THIS PROGRAM !!"
360 INPUT "ENEMY'S LIFE POINTS"; ELP
370 INPUT "WHAT DOES ENEMY NEED TO
HIT"; ETH
380 INPUT "HOW MUCH ADDITIONAL DAMAGE
HAS THE ENEMY"; ED
390 INPUT "HOW MUCH DAMAGE ABSORPTION
HAS THE ENEMY"; EP
400 ' * NOW THE COMPUTER ROLLS *
      * TO SEE WHO GOES FIRST  *
410 F1 = RND(6) + RND(6): F2 = RND(6)
+ RND(6)
420 ' * THEN TELLS THE USER    *
430 IF F1>F2 THEN PRINT "PIP GETS TO
GO FIRST.": Z=0
440 IF F1<F2 THEN PRINT "ENEMY GETS
TO GO FIRST.": Z=1
450 PRINT"PRESS ANY KEY TO BEGIN."
460 ' * WHEN USER PRESSES KEY, *
      * THE COMPUTER STARTS    *
      * COMBAT BY GOING TO THE *
      * SUBROUTINE OF WHOMEVER *
      * GOES FIRST             *
470 IF INKEY$>< "" THEN 480 ELSE 470
480 IF Z = 1 THEN GOTO 870
490 IF Z = 0 THEN GOTO 600
500 ' * WELL, Z HAS TO BE SET  *
      * TO SOMETHING AND 0 WAS *
      * BEING USED.            *
510 Z = 9
520 ' * THE COMPUTER RETURNS   *
      * TO THIS POINT AFTER A  *
      * ROUND OF COMBAT TO SEE *
      * IF ANYONE IS DEAD.     *
530 CLS: IF PLP =< 5 THEN PRINT "PIP
IS UNCONSCIOUS. COMBAT IS OVER. PIP
IS  A  GONER.  GO  TO  SECTION  14
IMMEDIATELY, UNLESS OTHERWISE DIRECT-
ED.": GOTO 1100
540 IF ELP <= 5 AND ELP > 0 THEN
PRINT "ENEMY IS TOTALLY UNCONSCIOUS.
PIP MAY DEAL THE COUP-DE-GRACE IF HE
PLEASES.": GOTO 1150
550 IF ELP =< 0 THEN PRINT "ENEMY HAS
BEEN KILLED. DEAD.": GOTO 1150
560 ' * IF NO ONE IS DECEASED, *
      * THE D VARIABLES ARE    *
      * CLEARED AND COMBAT     *
      * GOES TO THE NEXT PERSON*
570 D1 = 0: D2 = 0: D3 = 0: D4 = 0
580 IF Z = 0 THEN GOTO 870
590 IF Z = 1 THEN GOTO 600
600 REM *** PIP ATTACKS ***
610 ' * PIP GETS TO CLOBBER    *
      * HIS OPPONENT.....      *
620 CLS
630 D1 = RND(6): D2 = RND(6)
640 D3 = D1 + D2
650 PRINT "PIP ROLLED A "PTH" TO
HIT."
670 ' * THE ROLL IS CHECKED TO *
      * SEE IF PIP EVEN HITS   *
      * AND IF NOT THEN IT     *
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      * RETURNS TO THE MAIN    *
      * PROGRAM                 *
680 IF D3 >= PTH THEN GOTO 700
690 PRINT "PIP DOES NOT HIT.": GOTO
860
700 PRINT "PIP'S ATTACK IS SUCCESS-
FUL."
710 ' * THE NEEDED TO HIT       *
      * NUMBER IS SUBTRACTED    *
      * FROM PIP'S ROLL TO GET  *
      * THE DICE DAMAGE         *
720 D4 = D3 - PTH
730 ' * PIP'S ADDITIONAL        *
      * DAMAGE IS ADDED IN      *
740 D4 = D4 + PD
750 ' * ENEMY'S ARMOR IS NOW    *
      * SUBTRACTED FROM THE     *
      * TOTAL DAMAGE            *
760 D4 = D4 - EP
770 ' * AND A SAFEGUARD IS PUT  *
      * IN SO THE TOTAL CAN'T   *
      * BE LESS THAN ZERO       *
      * BECAUSE THAT WOULD      *
      * GIVE ENEMY LIFE POINTS  *
780 IF D4 < 0 THEN D4 = 0
790 ' * LIFE POINTS LOST ARE    *
      * SUBTRACTED FROM TOTAL   *
800 ELP = ELP - D4
810 ' * ALL THE RESULTS ARE     *
      * PRINTED OUT             *
820  PRINT  "ENEMY  LOST  "D4"  LIFE
POINTS."
830 PRINT "ENEMY NOW HAS "ELP" LIFE
POINTS."
840 ' * AND IT IS OVER FOR      *
      * THIS ROUND              *
850 PRINT: PRINT: PRINT "ROUND OVER
-PRESS ANY KEY TO CONTINUE COMBAT."
860 IF INKEY$ >< "" THEN Z = 0: GOTO
530 ELSE 860
870 REM *** ENEMY ATTACKS ***
880 ' * THIS SUBROUTINE WORKS   *
      * EXACTLY LIKE THE ONE    *
      * BEFORE IT EXCEPT PIP    *
      * AND ENEMY ARE SWITCHED  *
890 ' * SO ADDITIONAL REMS ARE  *
      * NOT NECESSARY           *
900 CLS
910 D1 = RND(6): D2 = RND(6)
920 D3 = D1 + D2
930 PRINT "ENEMY ROLLED "D1" AND "D2
940 PRINT "HE NEEDS "ETH" TO HIT."
950 IF D3 >= ETH THEN GOTO 970
960 PRINT "ENEMY DOES NOT HIT.": GOTO
1060
970   PRINT   "ENEMY'S   ATTACK   IS
SUCCESSFUL."
980 D4 = D3 - ETH
990 D4 = D4 + ED
1000 D4 = D4 - PP
1010 IF D4 < 0 THEN D4 = 0
1020 PLP = PLP - D4
1030  PRINT  "PIP  LOST  "D4"  LIFE
POINTS."
1040 PRINT "PIP NOW HAS "PLP" LIFE
POINTS."
1050 PRINT: PRINT: PRINT "ROUND OVER
- PRESS ANY KEY TO CONTINUE COMBAT."
1060 IF INKEY$ >< "" THEN Z = 1: GOTO
530 ELSE 1060
1070 ' *** COMBAT IS OVER ***
1080 ' * COMBAT IS FINISHED,    *
       * AND THIS TIES UP THE   *
       * LOOSE ENDS             *
1090 ' * IF PIP IS DECEASED OR  *
       * KNOCKED OUT THEN THE   *
       * USER IS GIVEN THE      *
       * OPTION OF CREATING NEW*
       * STATS FOR PIP          *
1100 PRINT "COMBAT IS TERMINATED FOR
PIP."
1110 INPUT "DO YOU WANT TO KEEP THIS
PIP IN THE COMPUTER'S MEMORY (Y/N)";
Q$
1120 IF Q$ = "Y" THEN GOTO 1160
1130 IF Q$ = "N" THEN GOTO 250
1140 ' * THIS ENDS ONE COMBAT   *
       * AND STARTS A NEW ONE   *
1150 PRINT "ENEMY IS CONQUERED. PIP
STILL LIVES WITH "PLP" LIFE POINTS."
1160 PRINT: PRINT: PRINT
1170 PRINT "PRESS ANY KEY TO HAVE A
NEW COMBAT WITH A NEW ENEMY."
1180 IF INKEY$ >< "" THEN GOTO 330
ELSE 1180
1190 CLS
1200 ' * THIS PRINTS OUT THE    *
       * FIRST SCREEN'S         *
       * INTRODUCTORY STUFF     *
1210 PRINT "          GRAILQUEST"
1220  PRINT  "  COMPUTERIZED  COMBAT
SYSTEM THAT GUARANTEES YOU WILL NOT
HAVE  TO  SPEND  UNNECESSARY  TIME  ON
DICE AND OTHER NOW ANTIQUE SYSTEMS OF
SOLO-ROLE PLAYING."
1230 PRINT: PRINT "THIS WAS WRITTEN
BY SCOTT MCMAHAN ON 3-12-89 FOR USE
BY PEOPLE AS FED UP WITH DICE ROLLING
AS HE WAS."
1240 PRINT: PRINT "PRESS ANY KEY TO
BEGIN COMBAT."
1250 IF INKEY$ >< "" THEN RETURN ELSE
1250
```

COMMODORE COUNTY USA

John Gritzmacher Jr.

This short basic program when typed in will allow the user to change the color of the cursor by simply poking the value of the color desired into the location 49169. In Basic:[POKE 49169, xx] where XX would be the color number.

Commodore 64 BASIC Program

```
5 REM SCREEN
10 PRINT CHR$(147):REM clear screen
& home cursor
20 PRINT CHR$(19); B + 49151
30 READ A
40 IF A = -1 THEN 100
50 B = B + 1
60 POKE B + 49151, A: Q = Q + A
70 GOTO 20
80 DATA 120, 169, 016, 141, 020,
003, 169, 192
85 DATA 141, 021, 003, 088, 096,
000, 000, 000
90 DATA 169, 001, 141, 134, 002,
076, 049, 234
95 DATA 169, 147, 076, 210, 255,
096, -001
100 IF Q <> 2938 THEN PRINT "ERROR
IN DATA! ": END
110 SYS 49176: SYS 49152
120 PRINT "TO CHANGE THE CURSOR'S
COLOR, TYPE:": PRINT CHR$(17)
130 PRINT "POKE 49169, XX"
140 PRINT CHR$(17);"WHERE XX = ANY
NUMBER BETWEEN 0 - 255"
150 PRINT CHR$(17);"TO CLEAR THE
SCREEN, TYPE:": PRINT CHR$(17)
160 PRINT "SYS 49176"
170 END
```

To use the program simply type it into basic and save it to disk. Then type RUN and the program will install the machine language portion of the program into memory. If you have entered the data statements wrong however, the program will stop and say: ERROR IN DATA ! When this happen check the data numbers in lines 80-95. Also, check that you have the number 2938 in line 100. After the machine language is installed and executed, the Basic program responds with a message telling you how to change the color, and how to clear the screen with a SYS command. Also, the cursor should be white (to change the start up color of the cursor from white to any other color, change 001 in line 90 to any number from 0-255.)

To incorporate this program into your Basic programs, leave out lines 120-170. All you have to do is start your program after this and all is well.

Try for fun, running this program after you have run the SCREEN program.

```
5 REM RAINBOW!
10 S = 49169: SYS 49176
20 A = INT(RND(1) * 255)
30 POKE S, A
40 PRINT "RAINBOW !"
50 GOTO 20
```

Have fun !

OUT OF THE HEART OF THE ABACUS COMES THE COMPUTER

by Floyd Hoke-Miller (8/1/89)

The China Question as a Portent of Man's Future

How are recent events in China related to the coming of the personal computer? The computer is a weapon to break in a new level of civilization. It portends a better, more humanistic approach to life for everybody rather than just for a few. The Chinese were the first to make the simple observation that besides machines doing physical work, there is no reason why machines shouldn't be able to help with mental work. The abacus grew out of this observation to became universally used in Asia. Similarly, today the personal computer is ushering in the age of universal use of today's cybernetic sciences.

The Chinese people have been patient and perseverant. China is the only nation on the face of the globe that has not been changed by domination by other nations. When threatened China withdrew behind its Great Wall and kept its secrets within itself, but also kept out news of the rest of the world. But that won't work any more. Now China is exploding, in part because the computer is a tool that releases secrets.

The explosion in China is an explosion waiting to happen in every country in the world. History has brought man to the end of dominance by natural occurrences. More and more the natural concourse of conditions is changed to man made consequences. The promise of modern technology is a

better life for all because more is possible with less effort. But everywhere today the man on the job is still working the same or a similar number of hours his predecessors did seventy years ago. The working man is accomplishing more but the gap between him and the owners of the machinery he uses is still growing. That fact is the clue to the explosion in China.

The computer is being fought over by two forces: the pro and the amateur. The pro is using the computer for price, for love of revenue; the amateur for premise, for love of the people. The amateur seeks liberation; the pro, domination. So far the computer is being used for domination. And who is dominating? Everywhere a minority of the people. And who is suffering? Everywhere the main portion of the people. The students and workers of China are the amateurs and they have taken on the pros of China, the Communist Party. Party politics is usually only for the professionals, doing it for the aggrandizement of their individual gain. The amateurs are into politics for the love of humanity. Usually, the amateurs feel little chance of success but the personal computer has added to their strength.

The added strength the personal computer makes possible is that of democracy. In the hands of the amateur, the computer is a force for a more democratic, less autocratic world. The explosion in China was a demand for more democracy, for an uncensored press so that all people would be fully informed. That demand and the wide spread availability of personal computers mean more people can be involved in the decisions of what is to be done. Democratic decisions can be wrong but they stand on the law of averages that they will be more right than autocratic decisions will be. Also democratic action can bring mistakes but more often it will be correct because it is based on the opinion of more than a minority. Also, the majority will act on average in the service of itself and therefore aiming for the betterment of the majority. The greater gain for the greater amount of people will come out of the majority principle defeating the minority principle that now dominates.

The Chinese students and workers have taken up the fight of all amateurs, the fight for an uncensored press, for democracy, and for sharing not hoarding. They deserve the support of amateurs everywhere. The computer will enhance the exchange between peoples and their participation in the affairs that affect their lives. Therefore, the fight of the Chinese and the fight of amateurs everywhere is for shorter hours of necessary work so that the people have time to study, think, use computers, communicate with each other, figure out, make democratic decisions and take democratic actions. Everywhere, the fight is for shorter hours of work and more democracy. The possibility is in our hands, if we would only use it.

History Of The Computer
PART III

by Ronda Hauben

(Editor's Note: This is the 3rd part of a 4 part article that began in the Jan., 1989 issue. See note accompanying previous parts for the background of article. This article is accompanied by a BASIC (IBM version) program which is interspersed with the relevant sections of the article.)

```
1250 PRINT "PDP-8 1963"
1260 PRINT "MINICOMPUTER $18,000"
1270 PRINT "CHIPS AVAILABLE"
1280 PRINT "1974 DEC (DIGITAL EQUIP-
MENT CORP REFUSES"
1290 PRINT "TO MAKE HOME COMPUTER"
1292 PRINT "SAYS NO ONE WOULD WANT
ONE"
1295 GOSUB 5000
```

Digital Equipment Corp. introduced the first affordable mini-computer in 1963 -- the PDP-8. Only the fraction of the cost of a mainframe, it still cost $18,000. And it ran only one program at a time.

In 1969, the PDP-8 inspired another important breakthrough. Ted Hoff was an engineer at Intel, a manufacturer

of semi-conductor memory chips in California's Silicon Valley. He had been asked to design a special chip for Busicom, a Japanese adding machine manufacturer, who was Intel's customer. Hoff had a PDP-8 which he used for his research near his desk at Intel. Hoff tells how the PDP-8 inspired him to invent the microprocessor, a semiconductor chip which contains the CPU or the brains of the computer on a single chip. "I looked at the PDP-8," he remembers, "I looked at the Busicom plans [for a series of specially designed chips - ed], and I wondered why the calculator should be so much more complex." The significance of the computer-on-a-chip breakthrough was that "Hoff now had in hand a rudimentary general-purpose computer that not only could run a complex calculator (like Busicom's), but also could control an elevator or a set of traffic lights, and perform many other tasks, depending on its program."(See Rogers, Everett, and Larsen, Judith, *Silicon Valley Fever*, N.Y., p105)

Hoff's first microprocessor chip was called the 4004 chip. This was soon followed by the 8008 chip in 1972. The 8008 chip was powerful enough to run a small computer.

By 1972 electronic components called Integrated Circuits were sophisticated and inexpensive enough to make a small and inexpensive personal computer possible. Many computer companies, especially Digital (DEC) and the other large minicomputer makers, had the resources to have developed one. Technically the task wasn't complicated -- the logic chips or microprocessors were available. But the big computer companies claimed they couldn't imagine why anyone -- any ordinary person, that it, would want a computer. For example, on May 17, 1974, David Ahl, an engineer working in DEC's marketing research dept. presented a plan to DEC for small computers. Ken Olsen (President of DEC) said, "I can't see any reason that anybody would want a computer of his own."

```
1294 PRINT "KEMENY & KURTZ"
1296 PRINT "BASIC LANGUAGE 1960'S"
1298 PRINT
1299 GOSUB 5000
```

There were other people who saw the future differently. During the early 1960's, Tom Kurtz and John Kemeny, two Dartmouth professors wanted to make the large computers then in the universities available to students. So they created the computer language BASIC and the method of multi-use called time-sharing.

John Kemeny explains their rationale: "We...designed a few simple instructions for the lay user to enable him to write his first few computer programs with very little training."(*Man and the Computer*, NY, 1972,p. 30)

Thus the BASIC, (Beginner's All-Purpose Symbolic Instruction Code) programming language was born. At Dartmouth they taught students to program and frowned on what has come to be commonly known as Computer Aided Instruction (CAI). Why? Kemeny explained that it wasn't for the computer to replace a book or a teacher. And that the rote learning and mechanical drill possible with CAI "used only a small fraction of a modern computer." (Kemeny, p 77)

Instead of CAI, Kemeny noted the significant learning possible with computers by asking students to write programs. He explains: "Most of our students write a great many programs for the computer. In this process the student is the teacher and the computer is the student."

"The students learn an enormous amount by being forced to teach the computer how to solve a given problem. Much of the teaching of mathematics and science consists of the development of algorithms or recipes for the solution of problems. In traditional education the student is supposed to absorb an algorithm by working out three examples of it. Quite typically the student gets so involved in the complexities of the arithmetic or algebra involved that he completely loses track of the algorithm itself. When he programs a computer to work out the examples, the exact opposite occurs. The student must concentrate on the basic principles; he must understand the algorithm thoroughly in order to be

able to explain it to a computer. On the other hand he does not have to do any arithmetic or algebra. At Dartmouth we have seen hundreds of examples of spectacular success of learning thru teaching the computer."(Kemeny, p. 79)

Kemeny explained that it is crucial to "teach the student how to program the computer in ways that take advantage of its full power and avoid its limitation. Most students [after this experience-ed] leave with a thorough understanding of the nature of modern computers and with a good idea how they may be used in later life. Since in CAI the student plays a rather passive role, somewhat like learning a language from a phonograph record, none of these benefits accrue." (Kemeny, p 80)

He proposed the need for computers to be made freely available "so students before graduating acquire a good understanding of their use." "Only if we manage to bring up a computer-educated generation, " he warned, "will society have modern computers fully available to solve its serious problems. While computers alone cannot solve the problems of society, these problems are too complex to be solved without highly sophisticated use of computers." (Kemeny, p 80) The fight in the mid 1970's to develop the personal computer demonstrated that his premonition proved correct.

THE BATTLE TO DEVELOP THE PERSONAL COMPUTER

```
1300 PRINT "JONATHAN TITUS"
1310 PRINT "FALL 1973
1320 PRINT "BUILDS MARK-8 USING 8008 CHIP"
1325 PRINT "ANNOUNCED IN"
1330 PRINT "RADIO ELECTRONICS MAG"
1340 PRINT "JULY 1974 ISSUE"
1350 PRINT "10,000 PEOPLE"
1360 PRINT "ORDERED INSTRUCTIONS"
1365 GOSUB 5000
```

Given the computer industry's refusal to develop personal computers, the task fell to people who dreamed of owning their own computers -- electronic hobbyists, hackers and science fair enthusiasts. And the programming language BASIC played a significant role in this development.

For example, in the early 1970's Jonathan Titus who was interested in electronics and tinkering, had a sense of the importance of the microprocessor. When Intel introduced the 8-bit 8008 chip, Titus studied it and realized that it was powerful enough to run a small computer. He ordered the 8008 from Intel. The chip cost him $120. With it he received a free applications manual with circuit diagrams. He went to work and had a prototype computer by Fall 1973. He wanted to share his design with other hobbyists. He decided to write a letter to two well known hobbyist magazines, Popular Electronics and Radio Electronics, asking if they were interested in running an article on the Mark-8, his homemade computer. Larry Steckler, the editor of Radio Electronics was excited by his proposal and flew out to Blacksburg, Va. to see Titus's computer. (See Augarten, p. 269)

"The machine was about the size of a large breadbox," writes Augarten, "... programs had to be entered one bit at a time by flipping a set of toggle switches on the face of the machine." (p 269) And programs were lost forever when the machine was turned off. But the small computer worked.

(to be continued)

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