mgm." and "idea." is much better than "conceptualization."

(9) Be specific, and give examples. It's not enough to say that a program works well for you. The reader wants details.

(10) Get a couple of good books on grammar and language usage. We highly recommend *The Elements of Style* by William Strunk and E. B. White (only 78 pages, but stuffed with good information) and the *Harbrace College Handbook*.

Miscellaneous

● Use subheadings for each new section
● Avoid footnotes. Try to reference your articles and books in the text. You can also include a bibliography at the end of your article.
● If you write a product or system review, send a copy of the manuscript to the company first so they can check it for accuracy and make any necessary comments.
● Put all drawings on separate sheets of paper—never in the text. We have excellent draftsmen who redraw all diagrams and schematics, so be sure that your sketches are complete, neat and readable. Put parts values on the schematic rather than in a separate parts list. Use terms IC1, R1 and C2, etc., only if you are referring to them in the text.
● Label all drawings as Fig. 1, Fig. 2 and so on. Be sure to sequentially reference figures in the text. Write a caption for each and include this with the article text.
● All logic diagrams should reflect signal flow from left to right, and, if possible, should not have signals enter or exit the diagram except from the left to the right sides, respectively.
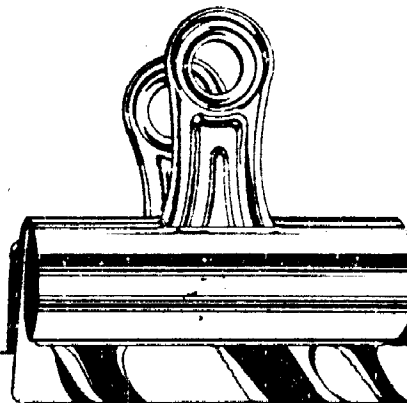
Photographs

Good photographs make an article much more interesting. If you can't locate a well-equipped amateur photographer, use a professional. The amateur will probably do the job in exchange for a credit line in your article. The professional will, of course, charge you a fee, but the article will probably bring you at least

that much more. Photos 5" × 7" are OK, but 8" × 10" are preferred. Instamatics and Polaroids just don't cut it. You'll want an overall photo of the equipment, plus views of any area that will be helpful to the reader who wants to duplicate your effort. Captions are separate and can be put at the end of the article text. (Number the back of each photo, along an edge, to correspond with each caption. *Do not* use felt-tip pens! Their ink tends to bleed through and ruin the photographs.) *Do not* use figure numbers for photos.

The Manuscript

Use regular typing paper. Erasable bond is verboten—it smears and is almost impossible to edit. Double-space your manuscript, leaving wide margins. Number the pages. Do not type titles, subtitles or text in all capitals. Avoid unnecessary capitalization. Manuscripts single-spaced or typed in all caps will automatically be returned for revision. Underlining a word indicates that it is to be in italics. Keep a carbon copy, just in case; accidents do happen. Send us the original. Finally, include your name, article title and page number on every sheet of paper you submit.

When submitting program listings, remember that they will be reproduced exactly as you send them in. This means that they must be sharp and clean. Check your ribbon before you run them out. And no pencilled-in corrections!

Include this form with submissions.

Additional Information for Kilobaud Microcomputing

Article Title _____ ARCADE RESURRECTION _____

Article No. (office use only) _____

Please write a synopsis of your article in 25 words or less. Use complete sentences. Example: Now that Heath has boarded the Z-80 bandwagon, keep in step with the HZ8 adapter.

_____ In the interim between 1978 and the present, third parties have been supporting the Bally Arcade, until AstroVision's output could be generated.

Please write a short description of yourself, and include your address. Example: Dash Riprock (108 Bootstomp St. Keene NH 03431) is the president of the Boffo Software Emporium.

_____ Bob Fabris has been publishing the ARCADIAN Newsletter for Bally enthusiasts since 1978, from 3626 Morrie Dr., San Jose, CA 95127

Originally sold as a pure TV game accessory beginning in November, 1977, the Bally Arcade was upgraded to computer status by the introduction of a Basic cartridge in August, 1978. This ROM cartridge contained a version of Dr. Wang's Palo Alto Tiny Basic, restructured to utilize the onboard Z80 CPU and to accommodate three custom IC's that were included in the original unit to provide arcade color and sound features. An upgrade was promised that would provide a full-size keyboard, additional memory, and a new language called Z-GRASS. The author started to publish the ARCADIAN Newsletter when the Basic cartridge appeared, to support users with documentation and software since the factory was loathe to part with any data. By disassembling the Basic cartridge and on-board ROM, many interesting features were discovered and were published in the Newsletter for use of the subscribers.

..Here was an Integer Basic that could manipulate decimal numbers with up to seven digits either side of the decimal point.

..Normally capable of placing any two of 256 colors on the screen, manipulation allowed four colors.

..PEEK and POKE commands allowed rapid speed machine code programs.

..CALLs could be made to on-board routines.

..Each of the three voices of the music generators are accessible allowing melody and counterpoint.

While a limiting characteristic of the Basic is that it will not access any more than 1.8K of RAM, considerable cleverness has been exhibited by users to create useful and provocative programs.

Third Party Support

Bally kept extending the expected availability date for their upgrade system, blaming delays on the FCC, or chip manufacturer, etc., but

after over a year of waffling by Bally, the ARCADIAN publisher decided it was time to "do it ourselves". A contract was about to be let for the creation of a keyboard/memory addition when it was announced that Fidelity Electronics was interested in purchasing the Bally Consumer Products Div. The addition was put on the shelf since it was not feasible to compete with the factory - but after another six months of negotiations, that deal fell through. The approach then taken by the ARCADIAN was the creation of small additions which would allow the user to have some additional capacity at a relatively low cost, and he could incrementally expand his unit as his desires and/or pocket book would allow. As a result, these sources are providing the following systems:

1.   Perkins Engineering: The BLUE RAM - A cornerstone device containing 4.2K of static RAM and two 8-bit parallel I/O ports. Storage of any of the following is possible, or some combination thereof: 2100 string entries of two bytes each; 4000 bytes of machine code programming; 3800 bytes of Basic programming, using the Blue RAM Operating System. This device mounts directly to the 50-pin connector at the rear of the Arcade's motherboard (accessible from the outside). Inasmuch as it has its own power supply, it can retain its program while the Arcade unit is shut down. Memory is write-protected by software or a convenient switch. A number of utility programs have been written to expand its usefulness, some having to do with added accessories which utilize the I/O ports provided via the included Zero Insertion Force socket.

A.   A 62-key full service keyboard can be attached to one of the I/O ports to augment the Arcade's keypad.

B.   An Operating System provides editing and parameter passing.

C.   A BSR controller emits an ultrasonic signal to activate the BSR remote control system under Arcade program control, providing 16 117v outlets with on/off or dimming commands at 10 minute intervals in a 24-hour program.

D.   A MODEM accessory allows attachment of a Livermore STAR for telephone communication as well as a BASE 2 printer.

2.   Perkins Engineering: A modified Arcade motherboard is under development that allows HI RES and MED RES programming. In these modes, the screen has 204 x 160 (like Intellivision), or 204 x 320 pixel format for the finest detail of any low priced system. This system increases the IC count of the Arcade from 34 to 73, and requires a larger transformer.

3.   Alternative Engineering Corp.: VIPER SYSTEMS

VIPER SYSTEMS are available in three basic configurations, with a choice of 1, 5, or 10 plug-in module capabilities. Plug-in circuit modules are interchangeable, allowing easy system upgrading. All VIPER SYSTEMS are supported by the new 8K Extended Basic 1.0 which is included on tape. (see Item 4. below.)

The VIPER SYSTEM 1 is a stand-alone 16K byte RAM memory expansion, utilizing the same plug-in RAM module as the SYSTEMS 5 and 10. This module allows 4, 8 or 16K bank boundary selection and features 8K or 16K Write Protect. Other features of the SYSTEM 1 include an ASCII keyboard input port, heavy duty power supply, and switched AC outlet.

The VIPER SYSTEM 5 is built around an 8 port I/O module, leaving 4 slots for RAM or other plug-in optional system monitor, 2400 baud cassette tape interface with dual machine control, 5 watt audio amplifier, 300 baud printer output port, and extended addressing.

The SYSTEM 5 also includes an ASCII keyboard input port and switched AC outlet.

The VIPER SYSTEM 10 is a 5-slot expansion cabinet for the SYSTEM 5 allowing memory expansion up to 128K bytes.

Both the VIPER SYSTEMS 5 and 10 incorporate an aluminum card rack with nylon guides, fan mount, and 5-slot motherboard.

The VIPER SYSTEM keyboard is a 62 key ASCII encoded unit with a 10 foot coiled interconnect cable for remote operation. It features upper and lower case, control characters for Extended Basic command words, and a code function for alternate character sets.

4. Consortium: EXTENDED BALLY BASIC is an 8K version of the 4K original that is compatible with the basic Arcade machine and both memory additions described above. It is available in a cartridge (EPROM), for use in the Arcade or in conjunction with the BLUE RAM device; or on a tape, for use with the VIPER or a home-brew memory addition. By doubling the size of the language, more enhancements are available, and certain limitations requred by the original are removed, especially that of memory addressing. As a result, Extended Basic provides greater capacity and graphic versatility. Some of the features it contains include: smaller 3 x 5 characters as well as the original 5 x 7 font; POINT and CIRCLE commands added to the original BOX and LINE, SCROLL (forward or backward); SNAP, which stores any selected portion of the screen in memory for later reappearance, at any other screen location, using SHOW; four colors on the screen from the 256 choices; plus user-defined limits of text and graphic areas on the screen.

Robert Fabris   Arcade Resurrection   -4-

5. Anderson Research and Design: THE COMPUTER EAR is a speech
recognition device consisting of a microphone and electronics that
will convert speech inputs to suitable signals for entry through a
hand controller port, using an optical coupler. Once digitized and
stored into the Arcade memory, the signal waits for another oral input,
for comparison and matching. Software is provided to allow access into
a Basic program once a match is made.

6. Richard Houser, publisher - SOFTWARE AND HARDWARE SOURCEBOOK is
a catalog/listing of over 300 items dealing with the Arcade. It acts
as a complete index of all programs printed with a brief description
of each, and includes a list of all known hardware available for
purchase.

Rebirth

Meanwhile, Bally did succeed in selling its Consumer Products Division
to AstroVision, Inc., a Columbus-based company that controls E. F. Johnson, the
CB manufacturer. Johnson had been constructing the Bally motherboard for some
time under subcontract.

AstroVision has promised to continue sale of the Arcade, expand the number
of game cartridges available, and produce the long-awaited memory addition. So
far, the promises have started to come true...

o   The Arcade game package itself is in production. The motherboard
has been revised by a change to the parts layout to avoid heat
concentrations that plagued the Bally system.

o   The Tiny Basic cartridge has been revised to be more useful to
the neophyte, primarily by the addition of TRACE and EDIT functions.
A second string array, scroll control, clarification of sound and noise
generation commands, and incorporation within memory of locations where
hardware can be added are other features that have been included.
This cartridge also includes a 2000 baud cassette interface which

loads at better than six times the old rate, and additionally loads

the screen image, the values stored in both arrays, and the values

of all variables onto the tape.

o   The marketing scheme will combine the Arcade machine and the new

Tiny Basic cartridge into a single package, identified as the ARCADE

"PLUS". All purchasers will therefore receive a free Basic cartridge

with their game machine and be receptive to computer operations.

o   New games are in various stages of work. Fifteen are slated for

production this year. These include: Galactic Invaders, Biorythm,

Space Fortress, and Music.

o   The memory/keyboard addition is slated for this Fall. A preliminary

batch of hand-wired units were sent out for field testing over a 60-

day period.

Critiques and inputs were fed back to AstroVision for their consideration.

This addition, dubbed the "ADD-UNDER", will contain an additional 32K of RAM

and 24K of ROM, plus a keyboard. The screen will be configured at 160 x 102

pixels, and will have four color capability (out of a pallet of 256). Other

features are: connector for disc storage of data; connection to audio amplifier

input; dual cassette control; multi-dimensional arrays; interpreted and compiled

modes; and an extended math package; to name a few. The biggest advantage this

addition will have over any of the other commercial units is the inclusion of

Dr. Tom DeFanti's ZGRASS language. This highly graphically oriented system allows

the user to produce displays of great versatility. Adding the commands of

POINT and ELLIPSE to the existing LINE and BOX enables the programmer to create

virtually any shape on the screen. Using SNAP to store the picture in an array, he can then reproduce it at will anywhere on the screen, any number of times, using SHOW. The language supports the use of a "Macro", which is a subroutine that can run concurrently with one or more other subroutines. This operation is called "Multitasking", and the ZGRASS will handle up to 127 macros at once. Animation is possible by placing images in macros and SHOWing them in sequence using the multitask technique. As a method of training, the ZGRASS contains a library of instructions called up by the command HELP which provides a list of commands and their required formats. ZGRASS has been in use in Dr. DeFanti's classes at the University of Illinois for some time now, and recently has been available in the UV-1 computer marketed by Datamax. The AstroVision product differs primarily in not having the high resolution screen of the UV-1.

Personal Growth

As a direct result of the very existance of the ARCADIAN, a number of subscribers have found new or additional job opportunities. There is the obvious development of hardware/software to fill the needs of others for games, utilities, etc., which sets up a small group of individual entrepreneurs.

There is, however, another group of subscribers who have received job offers to devote full - or part-time activity to the development of Arcade-oriented projects. The efforts these people have successfully made to keep interest in the Arcade device from deteriorating during the interim between introduction of the Bally Basic in 1978 and the fullfillment of the Add-On promise, by AstroVision, by virtue of their activity and support of the ARCADIAN has resulted in their recognition in the job market.

The ARCADIAN's role as forum, test bed, stimulator, and possibly guide, is perhaps unique in this field.

Robert Fabris Arcade Resurrection   -7-
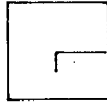
WAYNE GREEN INC.

PETERBOROUGH, NEW HAMPSHIRE 03458 USA

December 30, 1981

Robert Fabis
3826 Morrie Drive
San Jose CA
95127

Dear Fabis!

       RE: Arcade Resurrection   -

    Thank you for your article submission to
Microcomputing. After careful review of your Ball Arcade
(Astro Vision Arcade article), the editorial staff has
decided against accepting your article for publication.
Although the article was well prepared & well written, we
do not think this subject will appeal to a sufficient number
of our readers. Therefore, we are returning your manuscript
to you.

    Thank you for your interest in our publication and
your submittal.

                    Sincerely,

                    Dennis Brisson
                    Managing Editor
                    Microcomputing

DB/ps
Encl.