# LPS II ® Apple II™ Computer Light Pen System
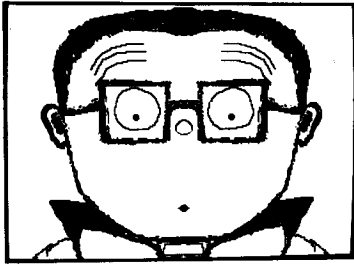

LPS II – Included Software

The standard distribution diskette provided with every LPS II Light Pen System includes several complete graphic drawing programs which are intended as examples of LPS II applications, but are useful tools by themselves.

Also included is a complete point-of-sale DEALER DEMO program as well as **more than one hundred** sample and example programs.
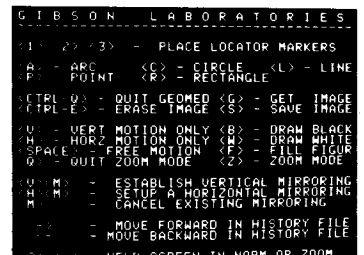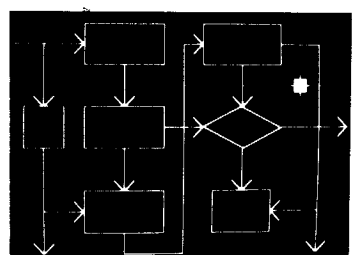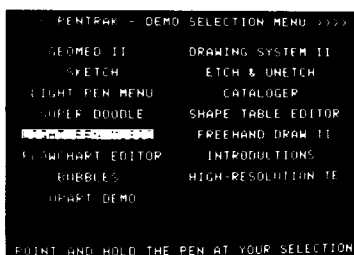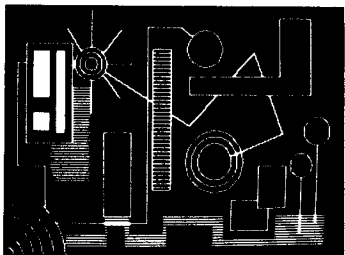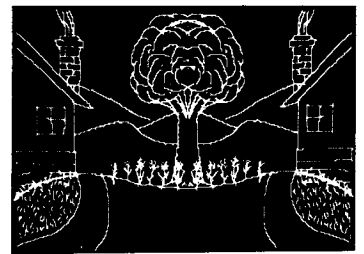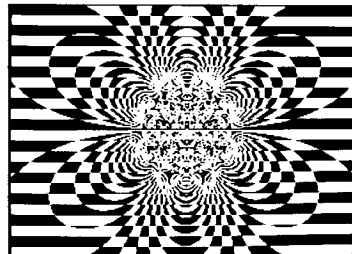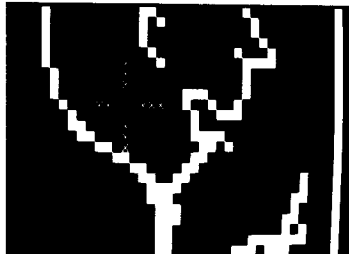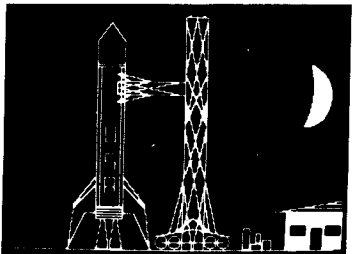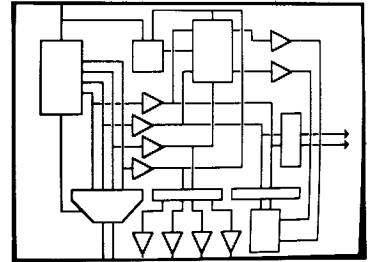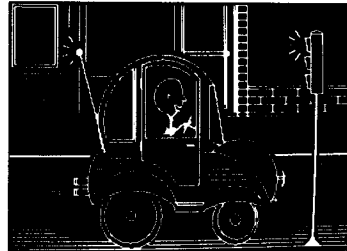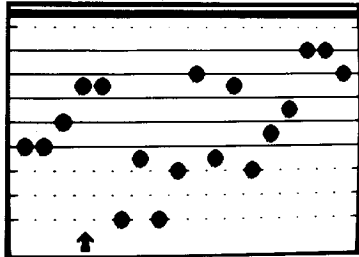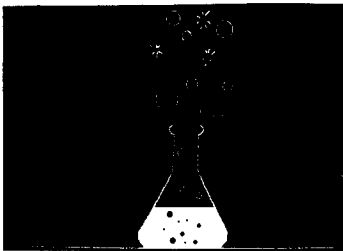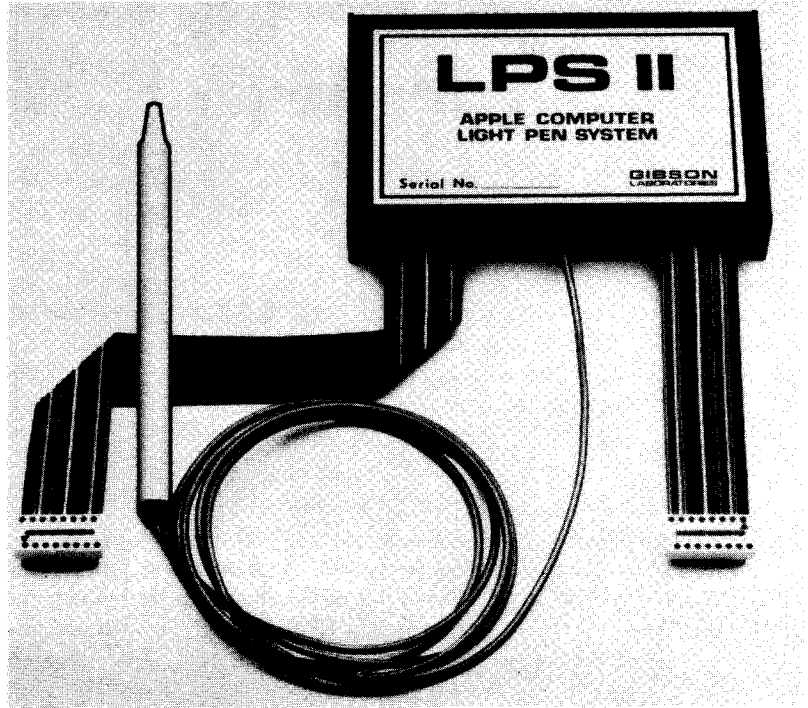

Note: All of the screen pictures shown here were drawn using software included with the LPS II on a DOS 3.3 diskette.

GIBSON LABORATORIES

LIGHT PEN BREAKTHROUGH
for APPLE COMPUTERS

NEWS RELEASE   -   FOR IMMEDIATE RELEASE   -   NEWS RELEASE

The world's FIRST and ONLY true High-Resolution Light Pen System with
full 280x192 APPLE Hi-Res Resolution is now available for use with APPLE
II Computers. With the Light Pen, Hi-Resolution graphic information can
be entered through the screen of the APPLE Computer. Applications such
as Computer-Aided Design (CAD), Menu-Selection, Business Graphics,
Computer-Aided Drafting/Architecture, Circuit Analysis, Interactive
Education, Word Processing, Untrained-Operator operation, game playing,
or virtually any application which could benefit from fast, direct, low-
cost, graphic computer interaction can make use of this Light Pen System
(LPS II).

Compatibility with **ALL available languages**, Applesoft and Integer BASIC,
FORTRAN, PASCAL, PILOT, FORTH, and CP/M allows the programmer complete
freedom in his choice of programming environments. Useable in **EVERY**
Screen Mode of the APPLE, the LPS II provides the user's program with
the instantaneous Horizontal and Vertical location of the Pen Point at a
full 60Hz rate. This High Speed allows Animation and true Drawing which
previously required an expensive $900 graphics tablet, rather than $285
for the LPS II, and lacked the immediate visual feedback advantage of
True Light Pen Graphics. Unlike other simulated Light Pens which use a
visually bothersome and slow search technique to locate the desired
coordinate, The LPS II utilizes video synchronization information to
determine the instantaneous Light Pen location when the CRT beam passes.
Available NOW ... Dealer Inquiries Invited.

Features: - True Light Pen Operation - 60Hz coordinate generation
                 - Full 280x192 Hi-Res Screen Resolution
                 - Low-Cost: $285, single unit quantity
                 - VERY EASY to program, no Light Pen experience needed
                 - Compatible with ALL Languages
                 - Operates with ALL APPLE Screen Modes: Text or Graphics
                 - Installs on APPLE motherboard, no I/O slot consumed
                 - Very low power consumption

Includes: - Extensive Documentation, Manuals with numerous examples
                 - Full array of Application Programs on diskette
                 - 90-day limited warranty

Send all inquiries to: Response Manager   See Also: 5x7 Glossy
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************   PLEASE RUN THIS NEWS RELEASE IMMEDIATELY   *************

LPS II - PENTRAK ... Quick Reference Guide
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--- --- --- --- --- --- OVERALL SYNTAX RULES --- --- --- --- --- ---

1. BEGIN each Pentrak statement with the ampersand (&).
2. END each statement with a carriage return (CR) or colon (:).
3. COMBINE any combination of COMMANDS and OPTIONS.
4. SEPARATE each COMMAND and OPTION with a comma (,).
5. SPELL every COMMAND and OPTION exactly.

--- --- --- --- --- --- --- COMMANDS --- --- --- --- --- --- ---

INIT   - Initialize: Presets the Light Pen to a known state.

TRACK(h,v,opt,opt,...)   - Track Function: Generates a Tracking Cursor and tracks the position of the Light Pen at a 60Hz rate on either Hi-res screen. Supports many options shown below. May be abbreviated &T(...).

PEN(h,v,opt,opt,...)   - Pen Function: Waits for a PEN HIT and returns the current location of the Light Pen. Alternatively, may wait for a Keypress or zero pen veloctiy before returning to Applesoft (see options KEY and ZVn). Works on all screen modes. Abbreviated &P(...).

XLINES(h,v,opt,opt,...)   - Xor Lines Funcn: Draws horizontal and vertical dotted lines crossing at any location specified. Lines are drawn by Exclusive-Oring and are erased by a second XLines at the same location. Abbreviate &X(...).

ZOOM(h,v)   - Zoom Function: Very quickly zooms any 40h by 24v area of either Hi-res screen onto the primary text page. Abbreviate &Z(...).

CLEANUP   - Cleanup: Removes any 'debris' which Pentrak may have left on the Hi-res screens if RESET was hit by mistake while in Track mode. If the Tracking cursor or the blinking lines were on the Hi-res screen at the time, they are removed.

START   - Start Pen: Conditions the Light Pen to begin looking for a Pen Hit.

CLICK   - Activate Click-On-Exit option with default tone.
CLICK!   - Generate a Click sound immediately. Useful for Applesoft Music and sound effects.
CLICK(dur,freq)   - Activate Click-On-Exit exit option and specify tone.
CLICK!(dur,freq)   - Generate specified Click sound immediately.

TP   - Text Primary: These six, two-character commands have two functions: When
TS   - Text Secondary: not used in the Track function, they cause an immediate
·LP   - Lo-res Primary: change to that screen. When used within a Track function,
LS   - Lo-res Secondary: they activate the Screen-Lift Function and specify which
HP   - Hi-res Primary: screen will be seen behind the main screen.
HS   - Hi-res Secondary:

CHP / CHS   - Clear Hi-res Primary / Secondary. Immediately clears the entire Hi-res page to black.
DHP / DHS   - Draw Hi-res Primary / Secondary. Specifies which Hi-res page for Pentrak functions.

NEG   - Negate: Immediately negates the entire current Hi-res Page.

(See back of page for Pentrak Options and Examples)

PENTRAK is a machine language driver Gibson Laboratory's LPS II – Light Pen System for the Apple II Plus

--- --- --- --- --- --- --- --- OPTIONS --- --- --- --- --- --- --- --

KEY	– Key Escape Mode:	Escapes back to Applesoft from the Track or Pen functions when any key is pressed or when either game button changes state.
ZVn	– Zero Velocity Escape Mode:	Escapes back to Applesoft from Track or Pen functions when the Light Pen has been motionless for 'n' screen refreshes.
LINES(on,off)	– Lines Option Mode:	Specifies the Lines-on and Lines-off times for the blinking lines option in Track. The times are specified in numbers of screen refreshes.
RT	– Rough Terrain Track Mode:	Indicates to Pentrak that you wish to see 'through' the tracking cursor while tracking. When the Pen velocity is low enough, the duty-cycle of the tracking cursor is lowered allowing the Hi-res image under the cursor to be seen.
HLO / VLO	– Horz / Vert Line Only:	Specifies that only one line (either horz or vert) is to be drawn rather than both. May be used in Track function or in the XLines function.
HMO / VMO	– Horz / Vert Motion Only:	restricts the allowable motion of the tracking cursor in either the horz or vert direction. Also, when using the Pen function, restricts qualified Pen hits to a specifiable portion of the screen.
GFn	– Glitch Filter:	Specifies the radius of a window, outside of which single pen-hit events are to be ignored. Default is 10.
MAPn	– Mapping Option:	restricts X and Y coordinates returned by Track and Pen to lie on intersections of a grid with a pitch of 'n'. When drawing, the nearest grid coordinate is returned rather than the actual Pen location.
MIXED	– Mixed Mode:	Specifies that mixed text and graphics will be shown whenever the primary Hi-res page is selected.
NOMIX	– No Mixed Mode:	Specifies that the primary Hi-res page will be viewed without four lines of text at the bottom.
NC	– No Cursor:	Used with the Track function when drawing on an all-white screen.

--- --- --- --- --- --- --- --- PENTRAK EXAMPLES --- --- --- --- --- --- --- ---

&TRACK(X,Y,KEY,LINES)

This statement places a tracking cursor onto the current Hi-res screen with flashing dotted cross-lines. The cursor and the lines will track the pen's motion with full animation at a 60Hz rate until a keyboard key is pressed, or a paddle button state is changed. Upon return to Applesoft, the variables X and Y will contain the horizontal and vertical coordinates of the Pen at the instant the return was made. The variable KEY will contain a number that indicates the reason for the return. If ($0 \lesssim KEY \lesssim 127$) then a keyboard key was pressed, and the value of KEY is the ASCII code of the key pressed. If ($128 \lesssim KEY \lesssim 131$) then a paddle bottom change caused the return and KEY-128 is binary-coded with the new state of the buttons.

```
10 HGR2 : HCOLOR=0 : &NEG
20 &T(X,Y,KEY,ZV0,NC) : IF KEY=255 THEN HPLOT X,Y : GOTO 20
```

This short but complete program will switch to the secondary Hi-res screen and fill it with white. Then will draw with black dots wherever the Light Pen is moved until any key is pressed. The ZV0 option requests Pentrak to return as soon as a pen-hit is received. If KEY equals 255 then a keypress did not cause the return. Applesoft then plots a black dot (HCOLOR=0) at the returned X,Y location and goes back to do it again.