Commodore's PET is a factory-assembled personal computer based on a 6502 microprocessor. The original PET, model 2001-8, is a $795 system that includes a keyboard, cassette tape unit, built-in TV screen, some graphics, upper and lower case, extended 8K BASIC, and 8K of user memory.

SPOT is devoted to the host of applications—routine and wild—which PET users have found for their machines, as well as to the nitty-gritty of repairs and modifications. In other words, almost anything relating to the PET is fit material for this column. Just send Harry your questions, ideas, and tapes c/o PCC. He'll give each of them his careful attention.
— LB

GAMES, THESE ARE ONLY GAMES

This month's column is devoted to a subject that occupies a lot of PET hours, though many users don't want to admit it. Yes, I mean games. But *these* games tax the mind; they're a far cry from the simulations of video games which were a big hit in the early days of the PET and other personal computers. These are games that the whole family can get involved in, that teach problem solving and planning or such specific skills as map-making and exploring. They are games that you build yourself with a set of tools provided by the program creator. Games you can easily spend weeks with. You're not just hitting a moving target on the screen.

I think these programs represent a turning point for microcomputing. They are truly sophisticated. Even if you're an expert programmer, you can't just take the *idea,* and throw together your own version over a weekend. These games took the authors hundreds of hours of work, not just programming, but researching background information for the scenarios.

Of course, they are still games. But they show there are people out there willing to invest the time and energy to do first-rate complex programs. I assume we'll soon see the same amount of talent going into business applications; to date most business-oriented software is thrown together, and often better rewritten from scratch rather than purchased and modified. I have seen a few packages under development at Commodore that look like they'll be first-rate large packages when completed. Get ready for them!

SPOT

The Society of
PET Owners and Trainers

BY HARRY SAAL
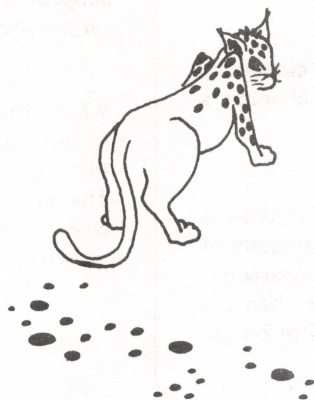
TANKTICS AND LEGIONNAIRE

These two games are written by Chris Crawford, and are available from the Pleiades Game Co., 202 Faro Ave., Davis, CA 95616. Each is run on the "traditional" hex grid of the war gamer, but that's where the similarity ends. *Tanktics* is very cerebral; those of you familiar with war simulation strategy games will feel at home here. It comes with a map of tank terrain over which you maneuver your forces. The PET serves as both your opponent, maneuvering his forces according to the same rules, and also as your battle computer, keeping track of your moves and feeding you information about what you can see out your tank turrets. It's an interesting and complex game, and seems ideal for war game freaks who don't have a partner 24 hours a day.

Legionnaire is more straightforward. You see a grid on the PET screen and have to hunt the enemy by moving around; at the same time he is hunting you. This all happens in real time, and you are constantly feeding separate orders to each of your "tribes," using the PET keyboard. People not into war games will probably do well to start with this one. It is fast moving, easy to learn, and takes quite a bit of planning to do well. *Legionnaire* costs $9 and *Tanktics* $15 (plus 6% tax for California residents).

MAY 1941

This excellent game is an historical simulation of the search for the German battleship *Bismarck* by the British during May 1941. It is related in complexity and realism to the *Tanktics* game above, but has a significant difference. It is not just a physical simulation of the battle, but attempts to be a realistic simulation of actual events. The manual which comes with *May 1941* is a gem, containing far more than playing instructions. It describes the historical event being simulated, the nature and limitations of the ships and planes involved (for example, the probability of spotting the *Bismarck* decreases at night, and during the day of May 23, when there was bad weather in the Atlantic), and the general strategy to use. The biggest problem is locating the *Bismarck* and having forces ready to then chase and engage in battle. It takes patience and planning just to accomplish that much.

The method of entering moves is simple, and the display contains a nice map of the North Atlantic on the righthand side, showing the general land masses and position of ships as they are moved about. History buffs and war gamers will find this game a delight. It is available from Alderaan, P. O. Box 1243, So. Pasadena, CA 91030 for $24.95 (plus 6% tax for California residents).

STARFLEET ORION

Starfleet Orion is an interesting concept; unfortunately, it takes little advantage of some of the graphic capabilities of the PET and its excellent video display. Basically, *Starfleet Orion* is a two-player game between opposing forces. Each has ships of differing capabilities, and can enter a series of orders for each without the opposing player observing them. Once done, the two forces engage in battle, and this continues until one of the two sides

is destroyed. Ships can move, attack with torpedoes or beams, use shields for protection, etc. It is a shame that the human factors and the computer's capability in move determination aren't used better because the basic premise is pretty interesting. The Battle Manual that comes with *Starfleet Orion* gives 12 different scenarios which can be entered, each producing very different challenges. *Starfleet Orion* is available for $16.95 from Automated Simulations, P. O. Box 4232, Mountain View, CA 94040.

QUEST

Quest is a challenging diversion in which you must locate a treasure and then escape from a series of interconnected rooms within a 3-dimensional maze. At each turn you can try to move North, East, South, West, Up or Down as you attempt to avoid various traps and problems. It is an engrossing activity, and is especially educational for young children learning about maps and navigation. The descriptions are clever, and the interconnections between rooms not simple at all. For example, one of the more challenging paths you must traverse takes you through rooms called "a little twisty maze," "a little twisting maze," "a twisty little maze," or "a twisting little maze!" *Quest* is available from the Peninsula Computer Project, Peninsula Way, Menlo Park, CA 94025 for $9.95 (plus 6% tax for California residents).

HUNT AND HUNTWRITER

The May-June issue of *Recreational Computing* contained an article by Michael Richter describing his meta-games: *Hunt* and its game generator program, *Huntwriter*. *Hunt* combines the environment of *Quest* with the flexibility of *Starfleet Orion* or *Adventure* (below). *Hunt* is a table-driven game in which the scenarios (generally fantasy simulations) are provided in the form of table or data tapes, which are first read in. The neat thing about *Hunt* is that you can write your *own* game using *Huntwriter*. While it is limited compared to *Quest* or *Adventure,* it does allow you to build a game around a special interest (say *Oz* or a particular TV series). You can incorporate names and places you choose instead of being restricted to the author's choice. *Hunt* is now available from Computer Way, P. O. Box 7006, Madison, WI 53707 for $10.

ADVENTURE

And now, the real thing! All these computerized fantasy simulations trace their origins back to the original grand-daddy *Adventure,* written first at MIT by Willy Crowther, and then expanded extensively by Don Woods of the Stanford Artificial Intelligence Laboratory. Those games are based on the non-computerized fantasy game, Dungeons and Dragons, by Dave Arneson and Gary Gygax. The computer versions (see *RC,* July-August 1979, for an article on *Zork*) are all large, complex programs, which occupy hundreds of kilobytes of storage, and typically take tens to hundreds of hours to play.

They contain a delightful fantasy atmosphere, with literally dozens of puzzles that need to be solved in your quest for treasure and points. Numerous challenges need to be met, using objects discovered along the way, moving them from place to place, with nary a clue from the program about what is going on. You learn as you go, and have to be very creative to survive more than a few moves. In fact, these games are somewhat like intricate Chinese wooden puzzles—there is really only one way to do them; any little mistake along the way, and you are hopelessly lost, and must begin again.

Adventure, by Scott Adams, is the microcomputer realization of these big sophisticated mainframe games. Adams' version is also table-driven, and the overall structure is described in an article which appeared in the *NCC '79 Personal Computing Proceedings,* pp. 218-223, entitled "An Adventure in Small Computer Game Simulation." (It was scheduled to be reprinted in the August 1979 issue of *Creative Computing.*) *Adventure* provides a far richer environment for constructing games than Richter's *Huntwriter;* of course, this means that one can't easily generate one's own, and unfortunately Adams doesn't (yet) distribute his meta-program for game-building and editing. There are already three different adventure games running with the Adams interpreter; each takes literally hundreds and hundreds of moves to complete (fortunately, you can save a game in progress) and have taken hundreds and hundreds of hours to produce.

The first version I saw was a cassette-based version for the TRS-80. It was written entirely in BASIC, and was excruciatingly slow. It has been converted for the PET, and is available from AB Computers, 115 E. Stump Road, Montgomeryville, PA 18936, for $7.95. Note that it runs *only* on PETs which are 24K or bigger. This is the first of the three *Adventures,* and is quite a bit faster on the PET than the original TRS-80 version. I expect that the other two will be available shortly as well.

But better things are on the way! There is now a machine-language version available for the TRS-80, which is incredibly good. It is as fast as could be desired, providing instantaneous response to moves, giving an excellent scrolled screen display, and is fast to load and save. Adams is working on the machine language equivalent for the PET and Apple, and it should be ready by the end of the year.

Adams' *Adventure* is exquisite. It is a true tour-de-force, running on only a 16K TRS-80. Both parts of Adams' work are so well done, it is hard to know which one to praise most—the overall *Adventure* interpreter, or the games themselves. Computerized fantasy games have arrived!
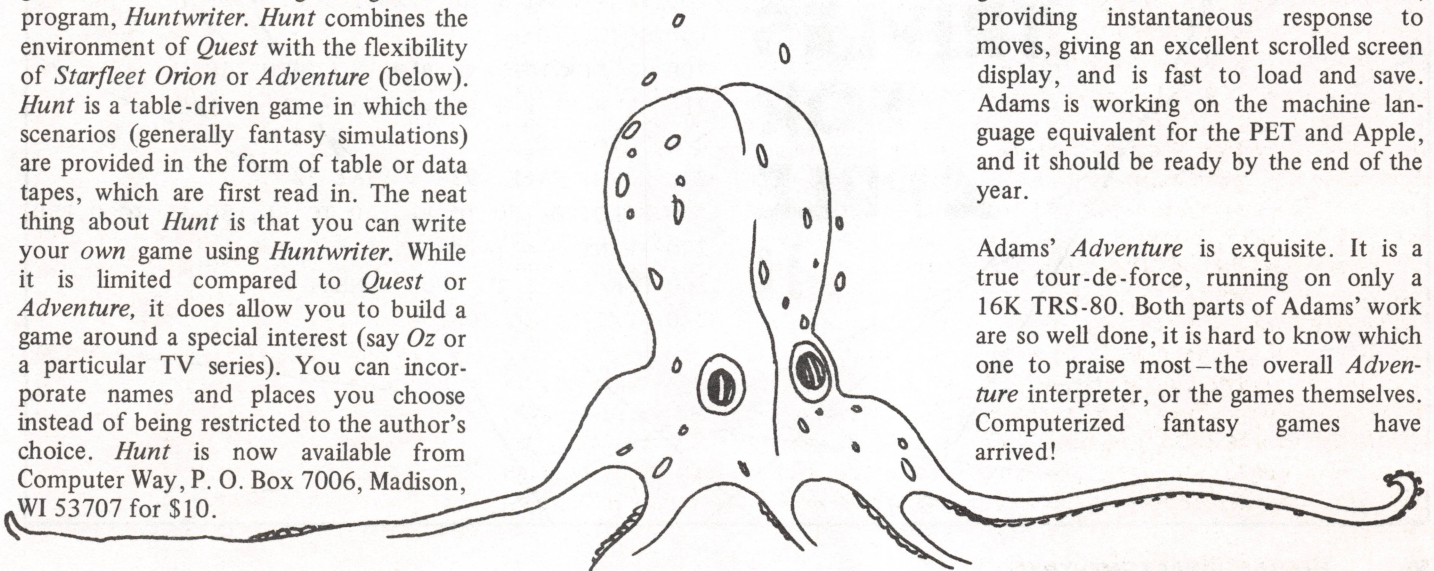
BY JIM DAY

The Applesoft program shown below generates and displays Pythagorean triples. The dimensions of a right triangle having integral sides are determined by the relationships defined in line 150 of the program. The rest of the program draws a picture of each triangle, scaled to fit the screen, and displays the dimensions.

GRAPHIC TRIPLES FOR APPLE II

```
100 REM  PYTHAGOREAN TRIPLES
110 CALL -936
120 M = 1 : HCOLOR = 3
130 M = M+1
140 FOR N = 1 TO M-1
150 A = M*M-N*N : B = 2*M*N : C = M*M+N*N
160 A1 = A : B1 = B : C1 = C
170 IF C1 > 75 THEN 200
180 A1 = 2*A1 : B1 = 2*B1 : C1 = 2*C1
190 GOTO 170
200 IF A1 < 150 AND B1 < 150 THEN 230
210 A1 = A1/2 : B1 = B1/2 : C1 = C1/2
220 GOTO 200
230 HGR : CALL -936 : VTAB 22
240 HPLOT 0,150 TO B1,150 TO B1,150-A1 TO 0,150
250 PRINT "A=";A;" B=";B;" C=";C
260 FOR W = 1 TO 3000 : NEXT W
270 NEXT N : GOTO 130
```