SPELUNX™

and the Caves of Mr. Seudo

PROGRAM GUIDE

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CREDITS

Spelunx and the Caves of Mr. Seudo was designed and created by Robyn Miller and Rand Miller of Cyan.

"Who does what?" The most important task, coming up with the ideas, is done by both Robyn and Rand. They brainstorm together until there are pages and pages of drawings, doodles and written thoughts. After that, their work diverges. Rand concentrates on scripting and XCMD's. Robyn concentrates on artwork, animation and rendering. When a project is near completion they both work on sound and music (and write the manual.)

In one sense, Rand and Robyn are the only ones involved at Cyan in developing these worlds. But in another very real sense, there are many other people who are in on the development... the many people who have created and continue to create the tools that are absolutely essential to Cyan's work. So Cyan would like to thank the developers of the following products that were used extensively in the creation of Spelunx:

HyperCard by the HyperCard team at Apple and Claris
Think Pascal by Symantec
ResEdit by Apple Computer
StrataVision by Strata
Photoshop by Adobe
Director by MacroMind
SoundEdit by Farallon
Our Macintoshes by Apple

Cyan would also like to thank Andrew, Laurie, Doug, and the many other helpful folks at Brøderbund.

Special thanks to Chris for helping out with the manual,
and to Caroline Rennard for the manual's graphic design.

Thanks to Mark and Kinslee for being such fine box cover models.

Box concept by Robyn and Rand. Box layout and design by Robyn. The box cover renderings were modeled by Robyn using StrataVision 2.0 and the children were added using Photoshop. Thanks to Strata for its invaluable technical assistance in rendering the model, and Dick Maxwell at Strata for speeding up the rendering with his Rocket! Thanks also to Brøderbund for their help with the package design, particularly David and Susan for their insight and input.

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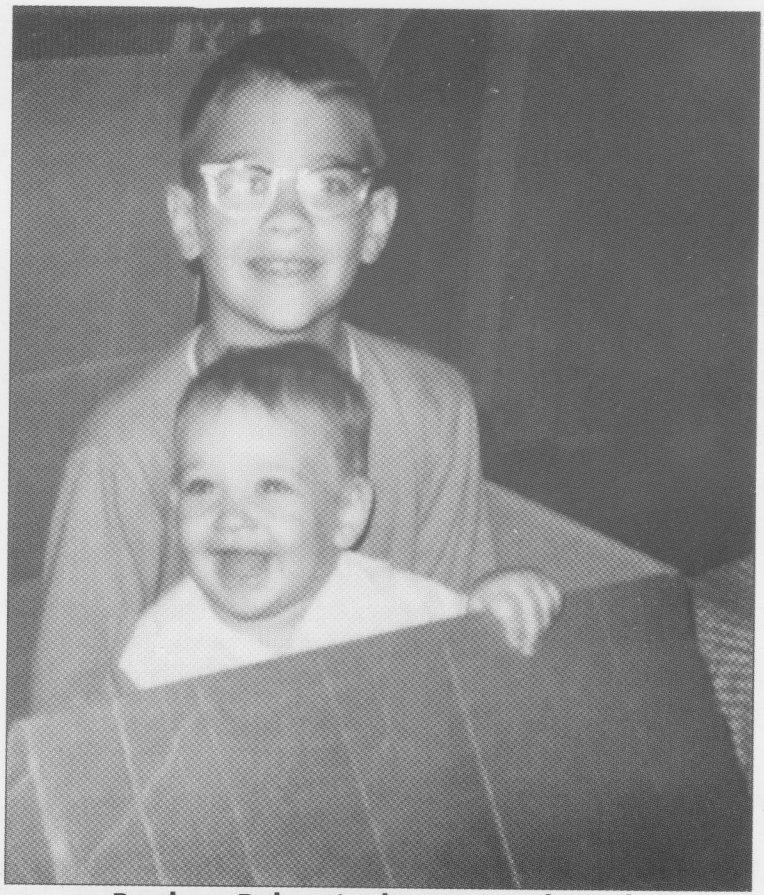


Brothers Robyn (at bottom) and Rand, exploring the mysteries of a cardboard box.

A WORD FROM THE CREATORS...

We don't claim to be educators. What we strove to create with Spelunx was a product that would stimulate the delicate and precious minds of everyone who is young and everyone who remembers what it means to be young!

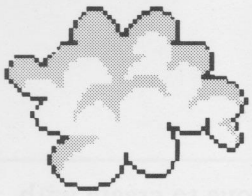
We don't remember school as being a particularly stimulating environment. Except for the chemistry teacher who mixed chemicals and made explosions, and the grade school teacher who brought chicken eggs in to hatch in an incubator, and the science teacher who took us to the observatory late one night to see the rings of Saturn, and the music teacher who let us sing *Hey Jude* instead of *Climb Every Mountain*, and the art teacher that let us stretch pop bottles in the kiln, and the reading teacher who dressed up like Aslan and read *The Chronicles of Narnia* to the class. And the list goes on...

So we left the "school" out of Spelunx. What we did put in is the same fun those special teachers were trying to add to school, the things that seem to open kids' eyes. The things kids dream about: fantastic stories, peculiar animals, games, characters, wild plants, music, outer space, art, and on and on...

But as we added all this "dream" stuff, we began to realize that it was all in the form of what many would call "learning" stuff. Maybe those special teachers were teaching after all, and we never even realized it! Maybe learning and fun are not diametrically opposed.

We added peculiar animals and we found we could create biological and ecological experiments. We added outer space and we found we could create lessons on the planets, the solar system, and even geometry and math! We added music and we found we could teach basic elements of procedural programming (not to

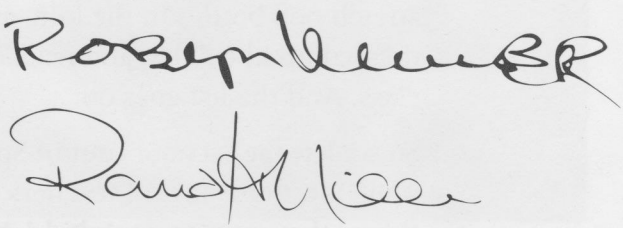
mention music and basic music theory). We added stories and we found that we could teach sentence structure and reading skills. We added art and found that we could encourage creativity. But most of all we found that children became interested in learning more on their own, because they found out that learning can be fun.



So does all this "learning" stuff mean you've bought an educational product? Perhaps. But we'd much rather think of it as a fun product—a product that will stimulate minds and imaginations and cause you, your children, or your students to dream.

And so begins your adventure into the Caves of Mr. Seudo. We haven't covered everything in this guide, because discovering things on your own is more than half the fun. And remember... your Spelunx adventure is just beginning. Spelunx is more than just a few rooms and a few tunnels—it's an entire underground, expandable cave kingdom!

Happy Spelunking,



Robyn Miller and Rand Miller

ABOUT THIS GUIDE...

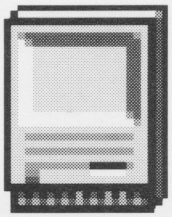
THIS IS NOT AN INSTRUCTION MANUAL! We've provided, in what we feel is an easy-to-read and enjoyable format, some interesting facts, tricks, and tips that will help you, your child, or your students enjoy the Spelunx worlds even more. Before you even consider going further in this guide, however, you should find the sheet labeled *Installing Spelunx* and get Spelunx installed on your hard disk. As soon as you install Spelunx, you should look at the *Getting Started* section of this guide, and then you can jump right in and start exploring!

But... if you want to get the most out of Spelunx there are some important things you should know! It just so happens that we've provided information about those important things in the following sections of this guide...

- The *Exploring the Caves of Mr. Seudo* section provides you with some of the behind-the-scenes functions and purposes of the activities that are included in *Spelunx and the Caves of Mr. Seudo.*
- The *Building Spelunx* section of the guide explains how to expand and customize your own personal Spelunx cave kingdom.

GETTING STARTED

Installation



Step by step installation instructions can be found on the sheet labeled "Installation." You should use this sheet to install Spelunx. If you don't have the installation sheet, follow these general installation instructions...

1. Insert disk 1 of Spelunx and drag the contents of the disk onto your hard disk. Follow the same procedure for Disk 2, 3 and 4.

2. Double click on any of the files labelled Spelunx. This will begin decompressing files onto your hard drive.

3. When installation is complete there will be a folder on your hard disk called SPELUNX that contains the Spelunx files.

Quitting Spelunx

Because younger children are naturally curious (and possibly destructive), you probably don't want them exploring your nice, clean hard disk. This is why Spelunx quits in a slightly unconventional way. To quit Spelunx, hold down the command key while you press Q.

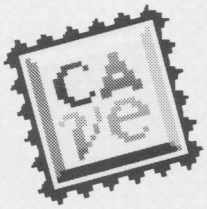
Other Important Guidelines

Once Spelunx begins, just click on anything that looks interesting. Move things around the screen with the mouse. Move through tunnels by clicking ahead. If you want to turn around, simply click on the side of the screen in the direction you want to turn. It's all fairly intuitive; you'll have the hang of it in no time! Soon you'll be spinning the planets with the Pseudo Scope, or making the puppets in the Spelunx-Tumnus room mimic your own voice!

Spelunx and the Caves of Mr. Seudo has some activities that can take advantage of the built-in microphones on the Mac LC and

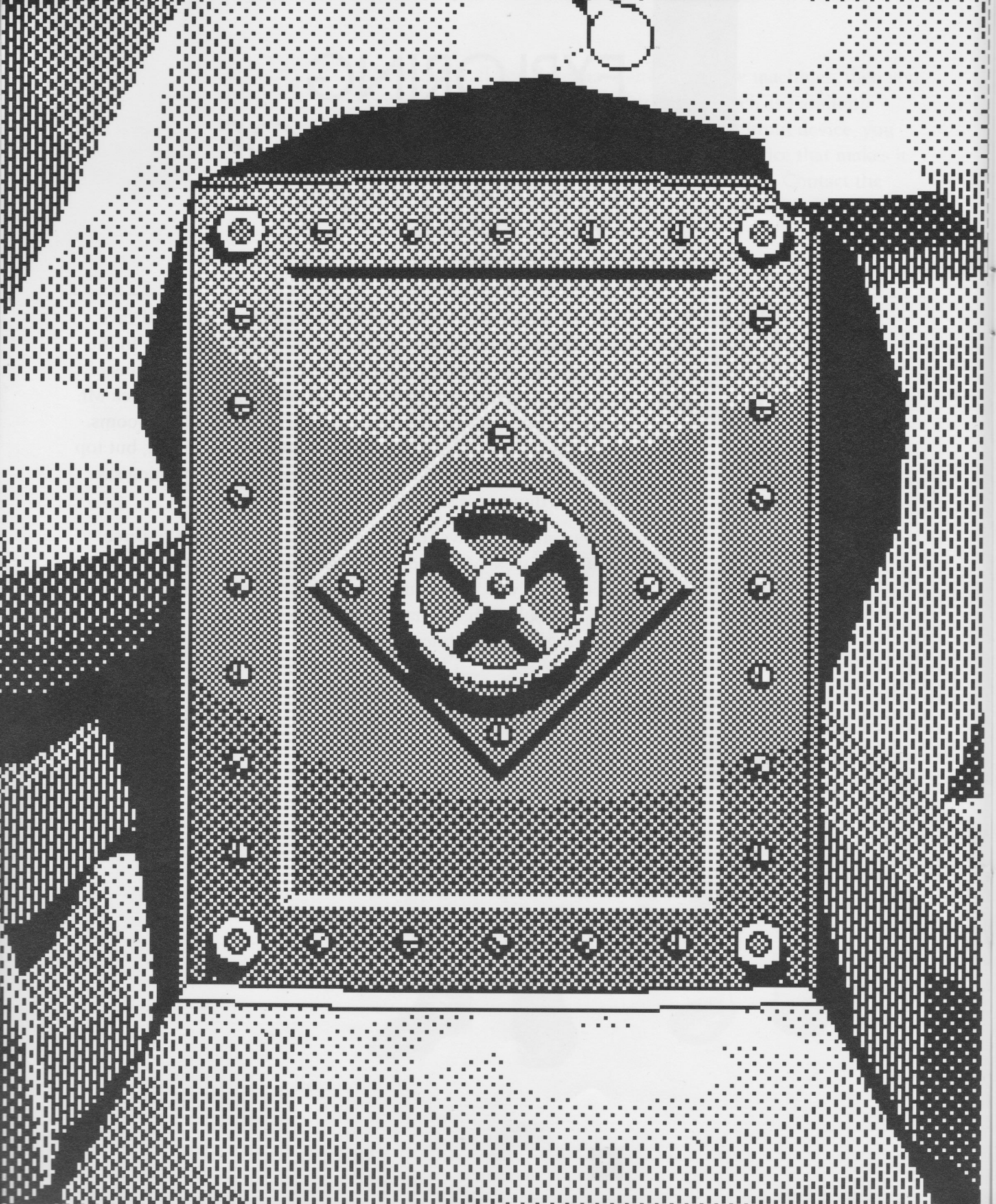
the Mac IIsi. If you don't have either of these machines, then you can use a third party sound input device, such as Farallon's MacRecorder. If you use a third party sound input device, you should make sure you have a driver for the device that makes it work with the Macintosh Sound Input Manager. Contact the company that supplied your sound input device for more information.

EXPLORING THE CAVES OF MR. SEUDO



Spelunx began as Professor Alexander Spelunx's personal cave kingdom. (See *The History of Spelunx*, in the *office library* in the Spelunx-Nemo room for more information.) With the brains of Professor Spelunx and the handiwork of his faithful sidekick Mr. Seudo, the cave kingdom was expanded to thousands of rooms. (Actually nobody knows for sure how many rooms exist, but top scientists who are very knowledgeable in this type of thing say there are thousands of them.)

Spelunx and the Caves of Mr. Seudo gives you access to three rooms that were Mr. Seudo's favorites. By the way, each of these three rooms was named after a character from one of Mr. Seudo's favorite books. Legend has it that Mr. Seudo named the rooms himself, but no one knows for sure.



SPELUNX-NEMO ROOM

This room is named after that notorious but heroic man of the ocean: Captain Nemo. This was the first room that Professor Spelunx and Mr. Seudo ever built. In fact, it contains their offices!

The Pondering Seudo Scope

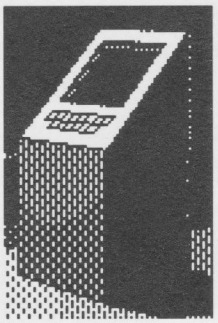
It won't take you long to find something that looks like a telescope in one of the levels of the Spelunx-Nemo room. Professor Spelunx designed this activity with two very diverse purposes in mind. First, he wanted a place where he and Mr. Seudo could look at and interact with some of the planets (and moons) of the solar system. Second, he wanted to introduce Mr. Seudo to the basic principles of Cartesian coordinates. First, let's talk about the planets.

Looking through the P. Seudo Scope (which, as you might have guessed, was named after Mr. Seudo), you'll be able to see a planet, a moon, or another little surprise. Whatever it is that you see will be spinning and it should look something like this:

What's not immediately obvious, however, is that you can actually grab these planets and turn them by hand. You can set them spinning again at any speed you want, even backwards. Try it. It's a little tricky at first, but you'll have the hang of it in no time.

Now, let's say you get tired of spinning Saturn, and you'd like to examine some other planets. It's time to learn about *Cartesian coordinates* and the *Planet Finder*.

The Planet Finder is that little pedestal beside the P. Seudo scope.



This little mechanism is the device by which you re-position the P. Seudo Scope to look at other planets, moons, or whatever. And it's based on what are called *Cartesian coordinates*. Professor Spelunx prefers to call them *rectangular coordinates*, while Mr. Seudo likes to call it "that x, y plotting stuff."

The little squares that look like this:  on the planet finder grid are planets. The blinking square on the grid is where the telescope is aimed right now. If you want to aim the telescope at another planet, you can do so by pushing the numbered buttons at the bottom to enter the horizontal (x) and vertical (y) coordinates of the new planet you would like to view. While this may sound complex, sometimes experimenting with complex concepts is a much better way to learn about them than a drawn-out explanation. Give it a try, and you'll soon understand a little bit about *Cartesian coordinates*.

More Planet Activities

For years, Mr. Seudo went through life not understanding how big Jupiter was in relation to the Earth, or how big the Sun was in relation to Jupiter. Professor Spelunx finally designed a little magical "picture" to teach Seudo these simple concepts, and when Seudo saw it for the first time he was quite shocked. You probably will be too!

This picture now hangs above Professor Spelunx's desk in the lower level of the Spelunx-Nemo room. Click on a planet to zoom in closer to that planet. Click again and continue zooming closer and closer (how close can you go?).

Oh yes, if you are at all curious and want to learn a little bit more about the planets, there is a book on the subject, written by Professor Spelunx, sitting on a nearby bookshelf in the Spelunx-Nemo room.

Gasses and Light

Professor Spelunx needed a simple desk lamp. He was well aware that neon or fluorescent lights could make use of a variety of gasses, but he couldn't decide which gas was best.

Being the eccentric professor that he is, Spelunx designed his lamp to work with multiple gasses, thus avoiding having to make such a difficult decision.

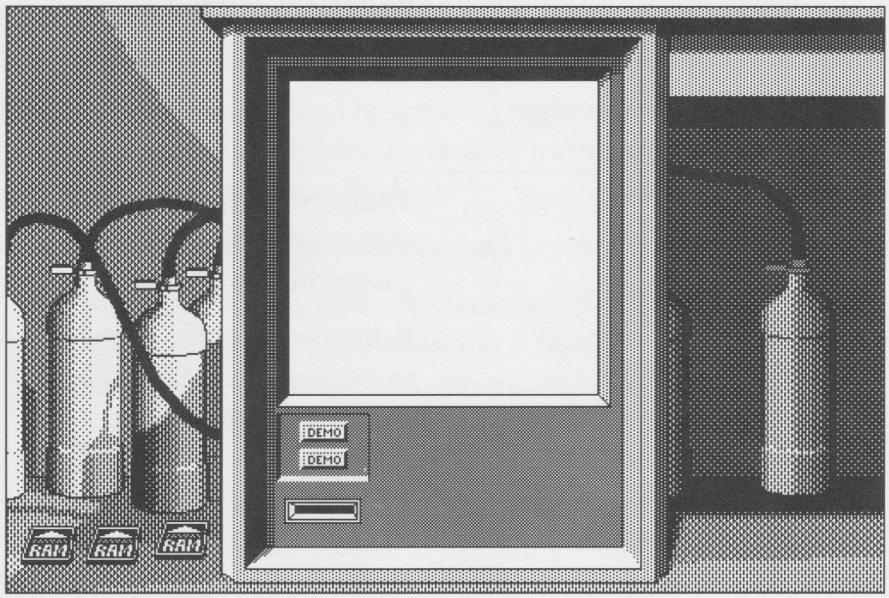
Lab Notes

A neon light consists of a hollow tube of glass that has electrodes at both ends. The tube is filled with neon or another gas and the electrodes are hooked up to an electrical source. When the electrical voltage is high enough, the electricity will travel through the gas in the tube from one electrode to the other. This "arc" of electricity causes the gas to radiate light.

The Desk Drawer

Professor Spelunx, being the inventor that he is, was always doodling and scribbling. He kept a place to doodle and scribble very handy—right in his desk drawer. Using the Desk Drawer, you can not only scribble and paint in a variety of colors, you can also record your drawings. The Desk Drawer remembers each "brush stroke" and can redraw any artistic creation with the same strokes, lines and patterns (or colors, if you have a color monitor) that the "artist" used to create it. You'll probably be able to figure out most of the Desk Drawer functions, but just in case you have trouble, here's how the Desk Drawer works...

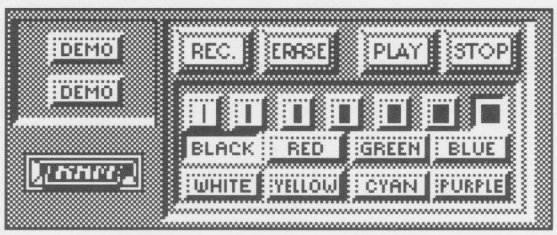
The first time you arrive at the Desk Drawer, it should look like this:



To see how the Desk Drawer "plays" a drawing, press one of the *demo* buttons. You can wait until the drawing is finished or you can stop the drawing by clicking on something else.

You'll notice several little "cartridges" sitting on the ground beside the Desk Drawer. These are battery-powered RAM (random access memory) cartridges, and you'll use these to store the drawings you create using the Desk Drawer. If you've ever used a home video game machine, you're probably already familiar with plugging cartridges into slots. These RAM cartridges work the same way. Just pick up a cartridge and shove it into the slot on the Desk Drawer.

After you plug in a RAM cartridge, the Desk Drawer reveals a control panel:



Don't let all those buttons scare you. This Desk Drawer works something like your average tape recorder; it's very easy to use. Let's "play" the drawing that's been previously recorded onto this RAM cartridge. Press the *play* button. A drawing should begin to appear. You can wait for this drawing to finish, or you can stop the drawing by pressing the *stop* button.

Each RAM cartridge contains one drawing. To record a new drawing on a RAM cartridge you'll first probably want to erase the existing drawing. Press the erase button. You now have a "blank slate," so to speak.

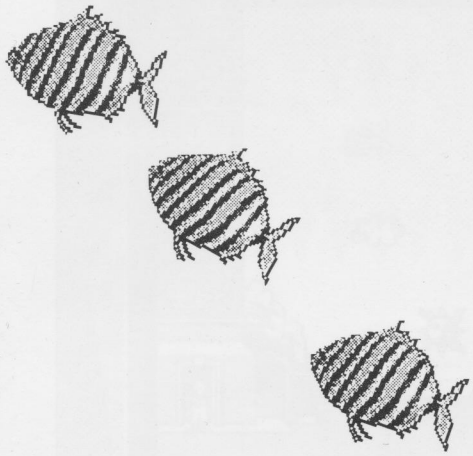
You're ready to record. Press the *record* button and paint away!

If you'd like to paint with a different color/pattern, choose a different color/pattern while you're drawing and continue with your masterpiece. Or change the size of your brush by picking from one of the brush size buttons.

When you're finished, press *stop*. Now press *play* and watch the Desk Drawer redraw your creation. What a beautiful picture: you're an artist!

When you're ready to draw another picture, unplug the RAM cartridge and replace it with another one. Remember that each cartridge can hold only one drawing, so don't record over a drawing that you are especially fond of.

Some additional tips and tricks:



If you want to erase parts of your drawing, use a fat brush and the color white.

Holding down the shift key will constrain the drawing to only horizontal or vertical lines.

Clicking while holding down the option key will draw a line from the previous line's ending position to the position at which you clicked.

You can touch-up or change an already existing painting. Press stop at any point in a play sequence. Then, without pressing the erase button, press record. This will allow you to record new brush strokes on top of old artwork.

You can create "animations" with the Desk Drawer using a simple method. Draw something like a dot on the screen. Now draw another dot next to first one and then erase the first dot using

white paint. Continue on with this process, drawing dots and erasing dots. When you finally press play, the Desk Drawer will give the illusion of a dot that moves around the screen. To see a prerecorded example of this process, press the bottom *demo* button on the Desk Drawer.

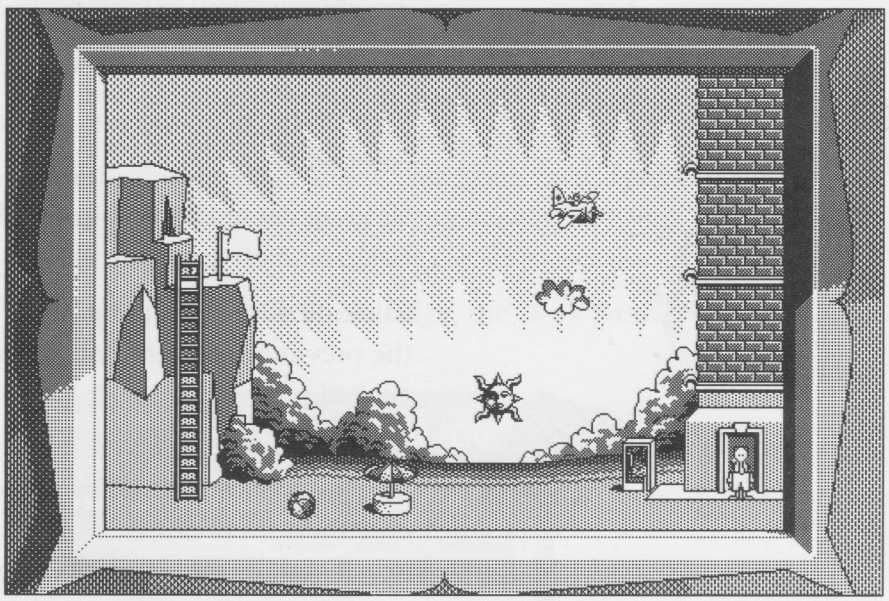
The History of Spelunx and Other Books

If you want to know exactly who Mr. Seudo is and how he met Professor Spelunx and why they built their underground kingdom, read this story. Mr. Seudo wrote it, and it's an incredible yarn. You'll find it on a bookshelf with some other neat books...

...like an empty diary! Some folks love keeping diaries. If you'd like to put your thoughts down here, remember that you can use a Locking Hub (see page 37) to keep other nosy folks away from your personal writings.

Playing with a Painting

One day, Mr. Seudo mentioned to Professor Spelunx that it would be nice if he had a picture to hang above his desk. On his next birthday, Professor Spelunx surprised Mr. Seudo with a picture that did more than just hang above a desk; it was interactive.

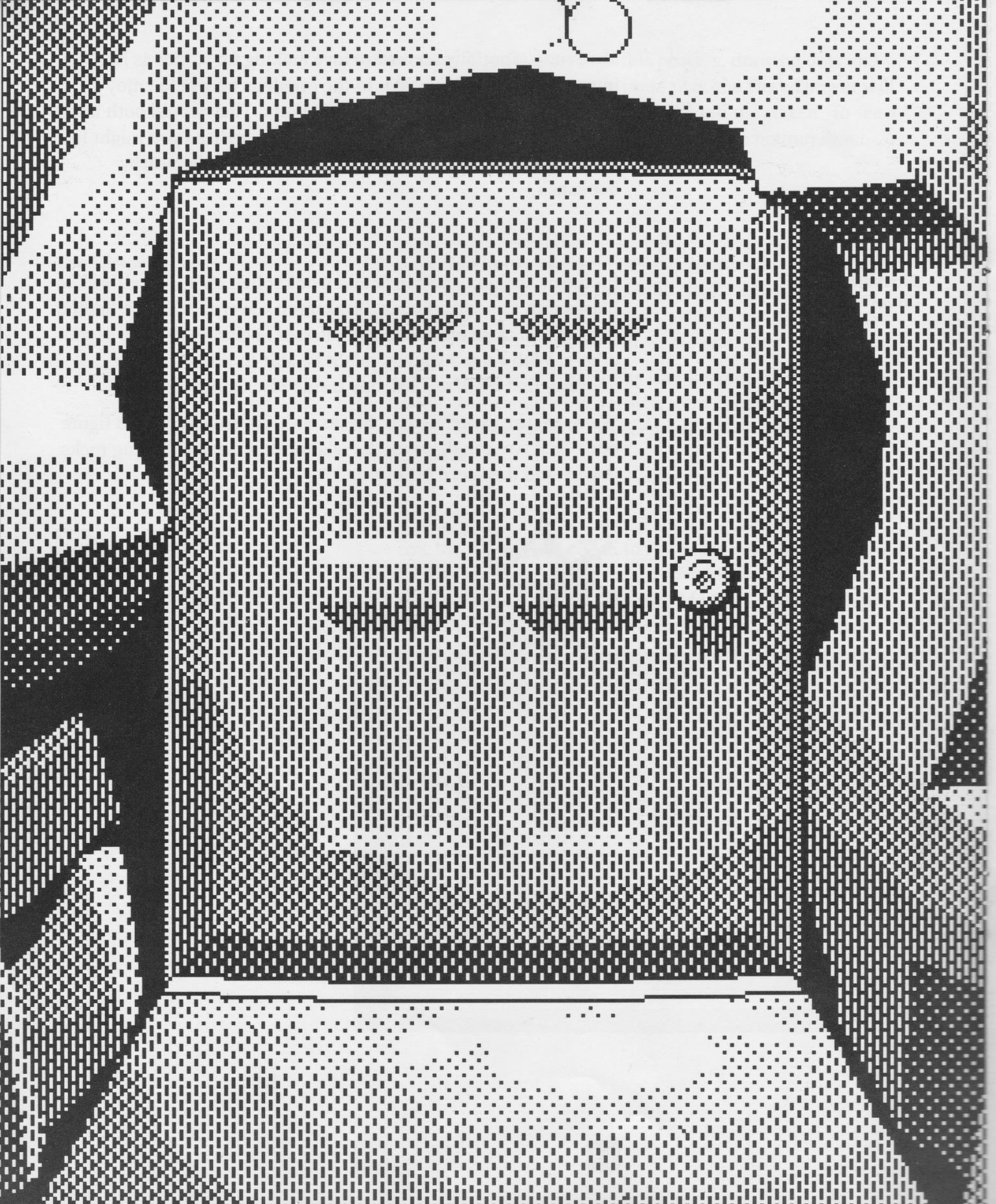


Mr. Seudo especially seemed to love making up stories as he interacted with his painting. In the evenings he would enjoy sharing his stories with Professor Spelunx. They would both laugh out loud. You could try the same thing. Or perhaps you might like to write your stories down in the diary that's on the nearby bookshelf.

Blacksmith Caverns...

Professor Spelunx and Mr. Seudo would often escape to Blacksmith Caverns to relax. Blacksmith Caverns is a large natural cave area in close proximity to Professor Spelunx's and Mr. Seudo's offices. With some luck you might be able to find the secret doorway that leads to a balcony inside Blacksmith Caverns.

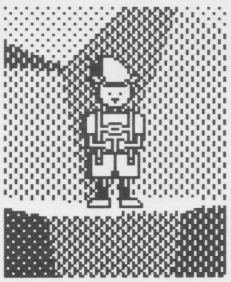
We've left the experiment in Blacksmith Caverns for you to figure out. See if you can discover the relationship between falling rocks, gravity and the speed of sound.



SPELUNX-TUMNUS ROOM

Mr. Seudo named this room after an odd little character from *The Chronicles of Narnia*, a series of fantasy books for children. Mr. Seudo spent a lot of time in this room.

Yodel Toasters



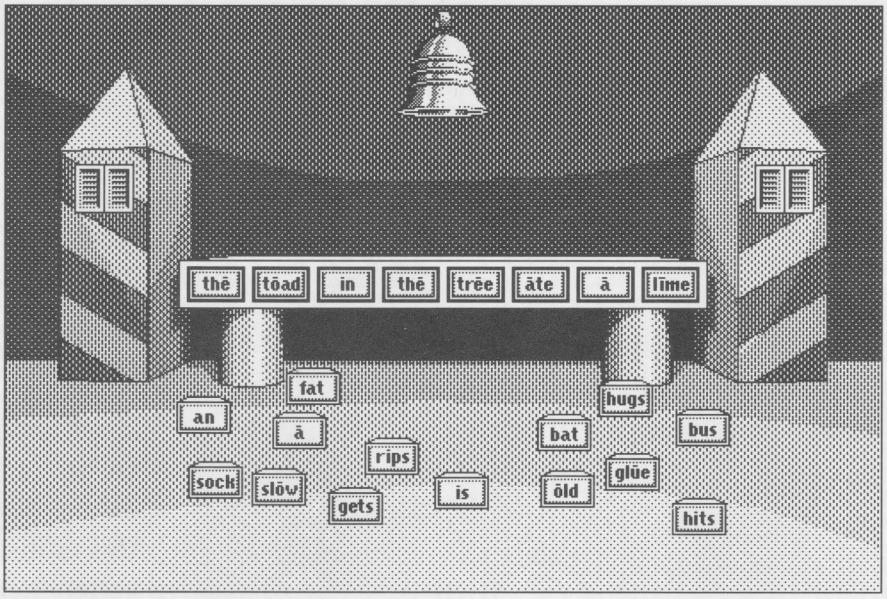
Yodel Toasters is a legendary sport reaching far back into the depths of Spelunx history! As a matter of fact, Professor Spelunx built this miniature version of Yodel Toasters to commemorate the historic game that was played on a real cliff (with real toasters) in the Yoyon mountains so many years ago. If you'd like to learn more about the historical event, you can read *The History of Spelunx* in the Spelunx-Nemo room. If you just want to play this game, then read on...

Yodel Toasters is simple. To start the game, click on the little yodeler man at the top of the cliff. Now move the mouse back and forth. You should see a little toaster at the bottom of the cliff that moves back and forth in relation to your mouse movements. Get ready, because the man at the top of the cliff is about to drop his toast. Your objective is to catch the toast with your toaster and bounce it back up to him as soon as possible.

Be careful. If you bounce the toast too many times it will start to burn, and soon there will be no toast left to bounce. There are some other little rules and surprises, but we think you'll be able to figure those out for yourself. Toast away!

Singing Sentences

Sitting in a parent's lap looking through books is probably the best place to learn how wonderful reading can be. But Professor Spelunx's Singing Sentences activity is also a great place to begin experimenting with words and sentences! And like most other activities in the Spelunx caves... Singing Sentences is just plain fun.

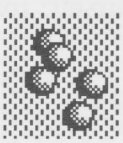


To create a sentence, drag any of the word blocks up to the little slots in the block holder. Drag them into a real sentence, like "A frog ate the fat tree." Or put them in an order that doesn't make any sense, like "Ate frog a the tree fat." Either way, something fun will happen when you ring the bell.

The Lizard Terrarium

Professor Spelunx always loved observing animals, and Mr. Seudo always enjoyed having pets. So they created the terrarium in the Spelunx-Tumnus room. This terrarium simulates a simplified version of the ecological conditions necessary to keep a lizard healthy and happy... or not so happy. You can change, influence, or even introduce new elements into the lizard's environment, and the lizard's behavior and health will change accordingly.

Food

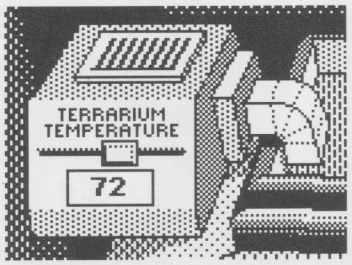


This is the most vital element of the lizard's ecosystem. And it's up to you to introduce this element, in varying amounts, into the terrarium. Just pick up a food pellet off the table and drop it into the bowl. The lizard will

slither out of his house, eat the food, and retreat back into the safety of his shelter.

If the lizard is exceptionally skinny looking, he's probably hungry and will want more than one piece of food. Go ahead and drop more food pellets into the bowl and watch the lizard grow bigger and bigger. At some point he won't want any more food, in which case some other scavenger will probably get it.

Temperature



Temperature is the other element of the lizard's ecosystem that you can control. Since lizards are cold-blooded animals, the most obvious effect this will have on the lizard's metabolism is the speed at which he walks. In other words, the hotter you turn up the terrarium temperature, the faster the lizard will move. Likewise, if the terrarium temperature has been turned down low, the lizard will move slowly.

But metabolism involves other processes in the lizard's body besides speed of movement, like how fast he digests his food. This means that if the terrarium is hot, the lizard will get hungry in a shorter interval of time. Likewise, if the terrarium is cold, then the lizard will be able to go for long periods of time without requiring food. If the temperature is extremely cold, the lizard will go into a sort of hibernation phase and will not even stir to come out of his shelter.

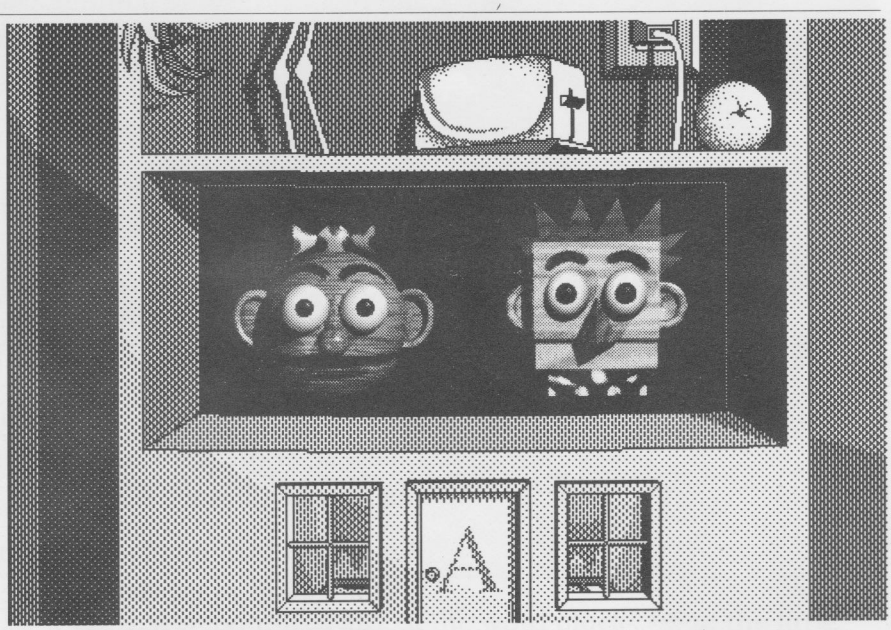
By the way, the lizard works on a "real-time" basis. This means that the lizard will get hungry even while your computer is turned off!

You should know that your own actions can have enormous effect on the organisms that inhabit planet earth. Some of these effects are positive and some are negative. Professor Spelunx designed this simple terrarium to give Mr. Seudo a proper introduction to concepts of cause-and-effect in any ecosystem.

X-RAY Machine

Mr. Seudo saw the advertisements for X-RAY glasses in the back of a comic book and thought it would be fun to have a pair! Well, Professor Spelunx invented an X-RAY machine that (unlike those phony X-ray glasses) really works.

The Pinehead Puppets



Puppet shows were always a favorite of Mr. Seudo's. Professor Spelunx and Mr. Seudo would spend time together taking turns giving puppet shows to each other. Professor Spelunx decided that it would be good if they could control the puppets from the front of the stage, rather than from behind it. That way, they could both give the show and enjoy the show at the same time.

By simply clicking on the puppets you can make them open their mouths. Try your hand at making them talk this way.

If you're running under System 6.0.7 or greater and have a built-in Macintosh microphone or another sound input device (such as MacRecorder), the puppets will mimic your own mouth movement automatically! Just sit back and start talking and watch one of the puppets move his or her mouth as you talk. To make the other puppet mimic you, click on it.

If you're using the Macintosh microphone, you don't need to hold the microphone up to your mouth. Keep the microphone in a convenient place beside the computer and it will "hear" your voice at an appropriate level.

If you have an audio digitizer (such as the MacRecorder), you may have to adjust the input volume on the digitizer to an appropriate level. Otherwise, the microphone may pick up too much ambient noise, or not enough noise to make the puppets' mouths move at all.

You can get more information about using sound input devices in the Getting Started section (page 6.)

The Criss Ants

Ants are curious creatures. These two ants from the Criss Butte section of Yoyon Isle are some very good specimens. Collected by Professor Spelunx during one of his many expeditions, these ants are not exceptionally smart but they do manage to find food and get it back into a hole. One of the ants is slightly more intelligent than the other; it's up to you to decide which is which. Mr. Seudo named the ants Bart and Annie, but since ants aren't smart enough to even know they have names, feel free to type in whatever names you would prefer.

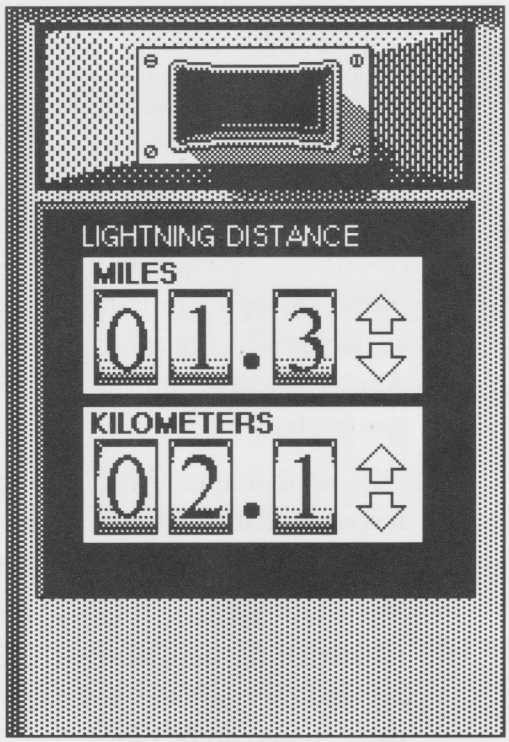
Like normal ants, if you attempt to touch these ants they'll respond accordingly. You can even try to "herd" an ant around in the dirt, forcing him to go where you want him to go.

There are three other items in the ants' environment. There are rocks that the ants can't pass, there is food that the ants will pick up, and there are ant holes where the ants take their food. Any of these items can be dragged around in the ants' environment, and left wherever you'd like to leave them.

One of Mr. Seudo's favorite ant activities was to let an ant get comfortable going back and forth from the food to the hole, and then drop some rocks in the way, and see if the ant could figure out how to get around the rocks.

Yoyon Isle is a tiny island in a far away ocean. Spelunx cave is situated on a mountain peak in the middle of the Island.

Professor Spelunx wanted to do some experiments with lightning, but he was frustrated because storms rarely passed over the island, and no storms meant no lightning. He finally decided to create a machine that would create lightning on command. The result was the Lightning Maker, a baffling machine full of Spelunx magic.



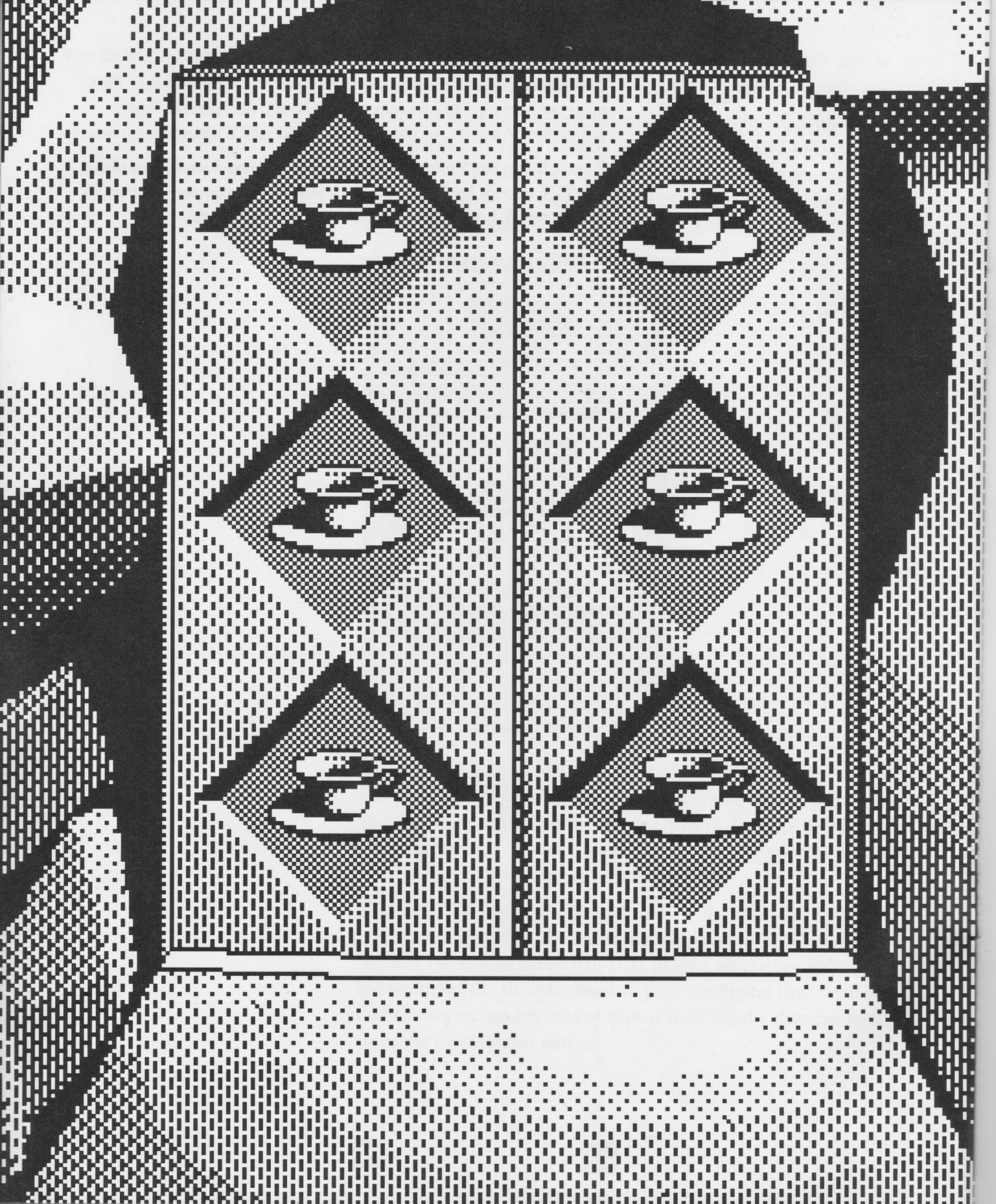
The Lightning Maker has one controller... the distance controller. Click the up arrow to *increase* the distance between Spelunx cave and the lightning. Click the down arrow to *decrease* the distance between Spelunx cave and the lightning. When you've chosen a good distance, look through the periscope.

Now press the big round button. When you do this, two things will take place. First, the lightning will flash in the distance. Second, the digital timer will start ticking off the seconds. When the sound of the thunder reaches you, the digital timer will stop and show you the amount of time it took for the thunder to travel from the lightning to you.

Lab Notes

The calculated speed of sound at 80° F (26.67° C) in air is about 778.5 miles per hour (or 1252.8 kilometers per hour.) The speed of light is 670,616,629.4 miles per hour (or 1,079,252,848.8 kilometers per hour.)

If the lightning hits 5 miles (about 8 kilometers) away it would take about .000027 seconds for the light to reach your eye. By comparison it would take about 23.1 seconds for the sound to reach your ears.



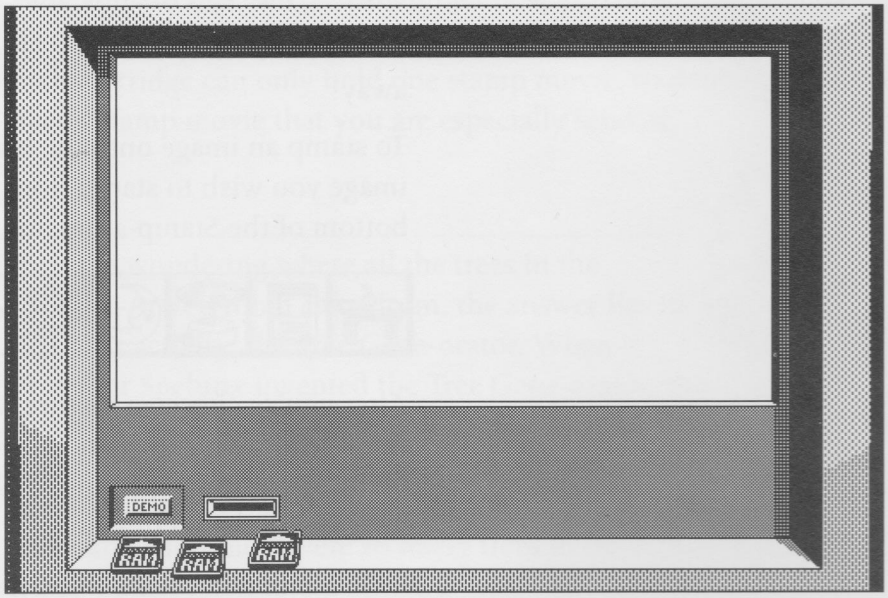
SPELUNX-ARWEN ROOM

Arwen was the beautiful elven princess who married Aragorn in *The Lord of the Rings*. This room is named after her. Mr. Seudo always dreamed about living in a fantasy land like Middle Earth.

Stamp-animator

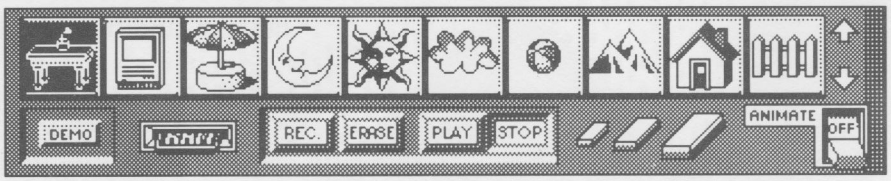
Since the Spelunx kingdom has no televisions or movie theaters, Professor Spelunx and Mr. Seudo used the Stamp-animator to create their own home-made movies. This activity is similar to the Desk Drawer in the Spelunx-Nemo room. With this machine, however the main tools for creating a picture are pre-drawn "stamps." You can combine and manipulate these stamps into complex mosaics and scenes, or you can create stamp animations.

The first time you arrive at the Stamp-animator it should look like this:



To see an example of what kind of stamping and animating the Stamp-animator is capable of, press the demo button. You can wait until the stamp movie is finished, or you can stop the sequence by clicking on something else.

You'll notice several little "cartridges" sitting on the ground beside the Stamp-animator. These are battery-powered RAM (random access memory) cartridges and you'll use these to store the stamp sequences you create using the Stamp-animator. Just like the Desk Drawer in the Nemo room, simply pick up a cartridge and shove it into the slot on the Stamp-animator. After you plug in a RAM cartridge, the Stamp-animator will reveal a control panel that looks something like this:



The Stamp-animator works like a tape recorder except that it records pictures instead of sounds. Press the play button, and the stamp movie that was previously stored on this cartridge should begin to appear. You can wait for this stamp movie to finish, or you can stop the movie by pressing the stop button.

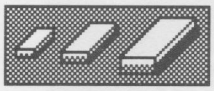
Each RAM cartridge contains one stamp movie. To record a new stamp movie on a RAM cartridge, you should first erase the existing movie. Press the erase button.

Now you're ready to record. Press the record button and stamp away!

To stamp an image onto the blank picture area, first choose the image you wish to stamp from the line of picture tiles at the bottom of the Stamp-animator.

After you've chosen a picture tile, you can position the picture onto the drawing area and click the mouse again to stamp the picture. Continue clicking to place more stamps of the same image onto the picture area.

Of course you can also create complex pictures by stamping a variety of pictures. Scroll through the picture tiles using the small arrows to view all the possible stamps that you can use in your picture.



There are also three different sizes of erasers for getting rid of areas you have already stamped. The erasers work just like blank stamps and are recorded along with the rest of your movie.

When you're finished with your masterpiece stamp art, press stop. Now press play and watch the Stamp-animator re-stamp your creation.

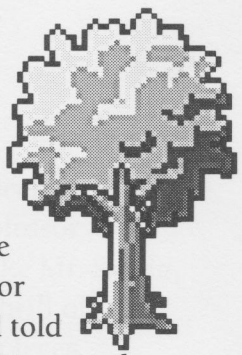
Animating Stamps...

You may have noticed the Animate switch on the Stamp-animator. With the Animate switch on, stamping a picture into the drawing area automatically erases the last position of that picture. That sounds confusing, but it allows you to create the effect of moving pictures across the screen. Try it with the airplane and you'll see how it works.

You can turn the Animate button on and off right in the middle of recording. So you can stamp some pictures on the screen and then animate around them.

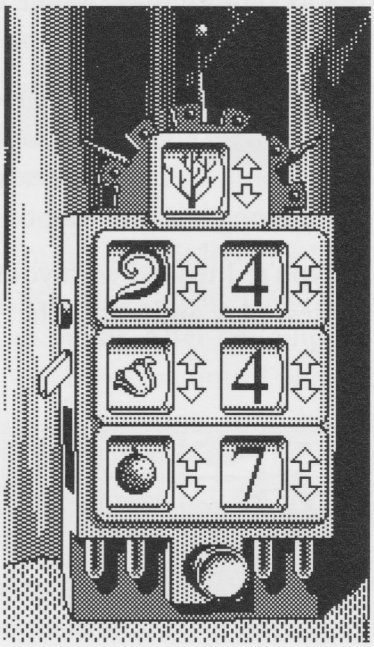
When you're ready to create a different stamp movie, unplug the RAM cartridge and replace it with another one. Remember that each cartridge can only hold one stamp movie, so don't record over a stamp movie that you are especially fond of.

The Tree Gene-orator



If you're wondering where all the trees in the Spelunx-Arwen room came from, the answer lies in this next activity: the Tree Gene-orator. When Professor Spelunx invented the Tree Gene-orator, the Arwen room was flat and void of vegetation. Professor Spelunx gave the Tree Gene-orator to Mr. Seudo and told him to plant some seeds. Well, Mr. Seudo got just a bit carried away, and soon there were so many trees in the Arwen room that it was transformed into a virtual forest!

Mr. Seudo hasn't planted any seeds for awhile, but now you can! Here's how:



First things first... let's make a seed. You simply pick the attributes of your finished seed and the Tree Gene-orator does the rest of the work. Choose what type of branch structure you'd like your tree to have. Now choose what type of leaf and how many leaves you'd like. Next, choose what kind of fruit you'd like on your tree, and how much fruit you'd like. Finally, choose a flower and how many flowers to grow. Now press the big round button at the bottom of the Tree Gene-orator and wait while the machine chugs away, splicing genes and combining all the attributes you've selected into a single seed.

But the real fun starts once the seed is planted. The plant will start to grow, sprouting the specific attributes which you set. But don't expect to see the plant mature instantly; real plants take years to grow, but Professor Spelunx managed to speed these seeds up quite a bit. Go wander elsewhere in Spelunx, close Spelunx, or even shut down your computer! When you come back to your plant later, it will be bigger.

If you'd like to plant another plant before the first one grows to full size, feel free. But be forewarned that only one seed can grow in the planting pot at a time; the Tree Gene-orator will have to get rid of any plant life that currently exists before it plants the new seed.

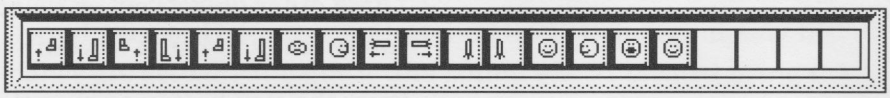
Programmable Polka Machine

Professor Spelunx prefers to think of the Programmable Polka Machine as an icon-based instructional programming environment. Mr. Seudo thinks it's a delightful toy. They're both right.

There are two components to the Programmable Polka Machine: the Polka Dancer, and the Polka Musician. Let's talk about the Polka Dancer first...

The Polka Dancer

On both sides of the dancing man are rows of small tiles that represent specific dancing instructions for the Polka Dancer. One tile might represent movement of the right leg. Another tile might represent spinning of the head. To make the dancing man follow these instructions, you have to drag the tiles down into the dance chart at the bottom of the screen. The dance chart, filled with instruction tiles, will look something like this:



Once you have some tiles placed into a line on the dance chart, you're ready to make the dancing man do his little polka. Press the dance button and watch the Polka Dancer follow your dance program!

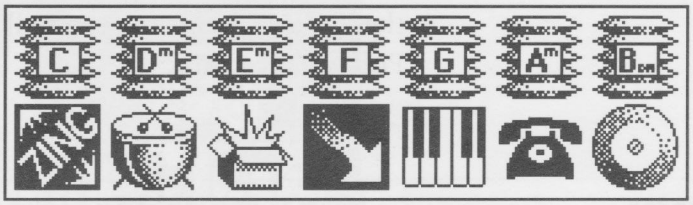
Press the *stop* button to make him stop his dance.

Now you can add more tiles to your dance chart, take away tiles from the dance chart, or move tiles around within the dance chart. Create the perfect dance. Impress your friends. Be the life of the party!

The Polka Musician

The Polka Musician is the second component of the Programmable Polka Machine. Most people, and especially most children, don't know how to play an instrument. Professor Spelunx created the Polka Musician so that people like Mr. Seudo, who don't have musical skills, could appreciate the thrill of putting chords together and creating musical masterpieces.

The Polka Musician works a lot like the Polka Dancer. There are two rows of icons at the top of the Polka Musician. The top half of them are "accordions" and the bottom half are a multitude of other instruments and objects.



Each accordion represents specific chords from a musical scale. These chords are written in small letters on the front of the accordions: C, Dm, Em, F, G, Am, and Bdim. You can create a "song" by dragging the accordion chords down into the empty *chord chart* at the bottom of the Polka Musician. Drag down as many chords as you like. You can also drag down the other objects (like the drum and the bell) into any positions on the chord chart. These other objects act as *sound effects*. Press the *play* button when you're ready to listen to your song!

Press the *stop* button to stop the music.

Now you can add more chords or sound effects to your chord chart, take away chords or sound effects from the chord chart, or move chords and sound effects around within the chord chart. Click on the little man below any chord or sound effect in the chord chart to listen only to that specific chord.

If you've created a particularly hideous song and would like to erase it, press the erase button and start over.

To get started, here is a chord sequence you might want to enter and try to sing along with:

Twinkle, Twinkle Little Star

By the way, Mr. Seudo always enjoyed entering in chord sequences for well-known songs and then asking Professor Spelunx to try to guess the song. You might try the same thing with a friend.

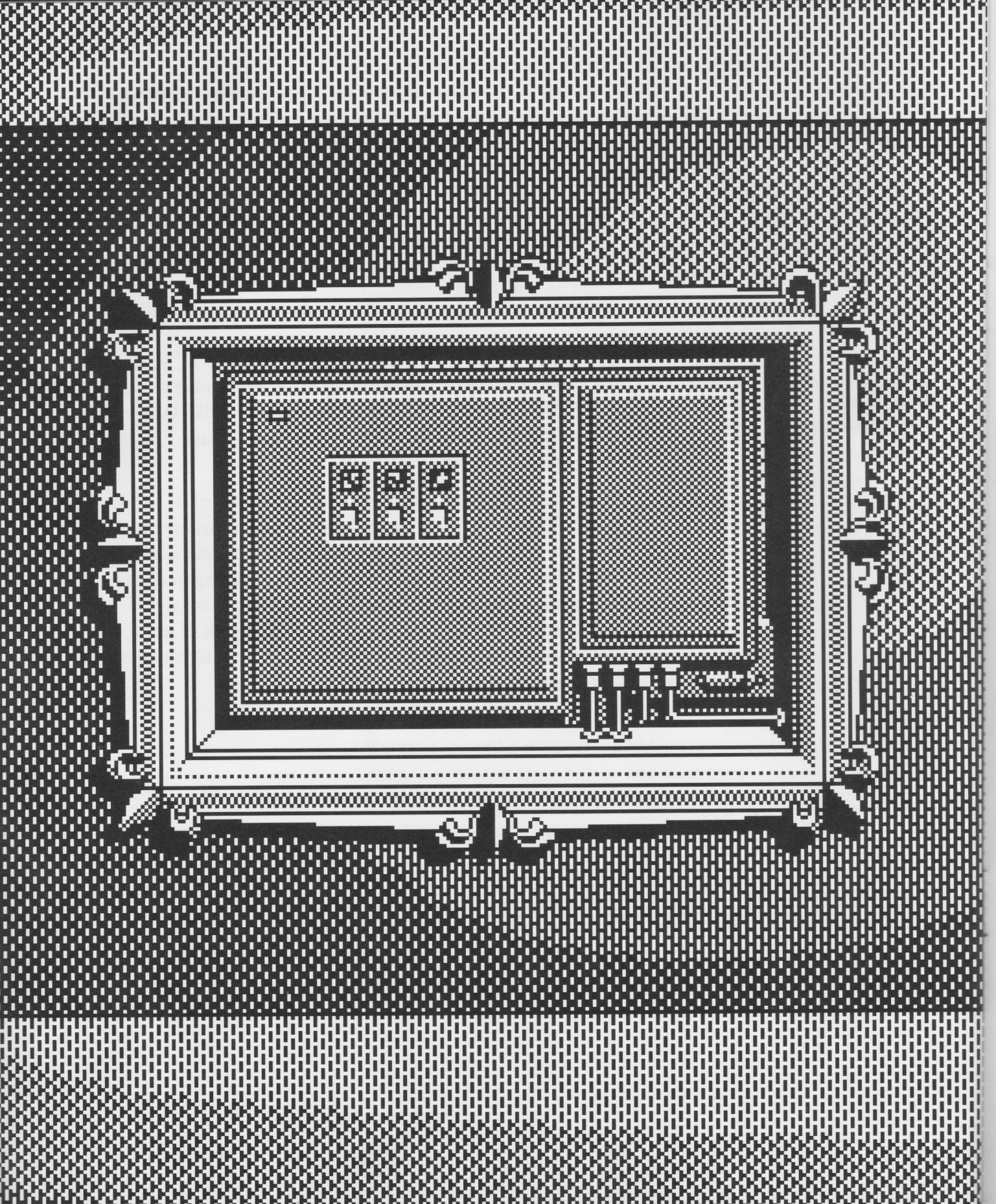
Lab Notes

The little "m" next to the letters on the chords stands for "minor," as in "A minor," or "D minor." If you listen closely to these minor chords, you'll notice they sound a bit more discordant (or some would say "eerie") than the major chords. Also, all the chords used for the Polka Musician (C, Dm, Em, F, G, Am, and Bdim) are the seven diatonic triads of the key of "C." Music that sounds "good" in our western culture is usually based on the harmony created by the seven diatonic triads of any key. If this confuses you at all, you're welcome to ignore it, forget you ever read this lab note, and go make beautiful music.

A Programmable, Multimedia Extravaganza!

The Polka Musician is fun in and of itself. And so is the Polka Dancer. But when the Polka Musician and the Polka Dancer are *combined*, you become the author of an audio/visual extravaganza!

When the Polka Dancer dances, he is accompanied by music and sound effects. The music and sound effects that accompany his dance are actually the music and sound effects created using the Polka Musician! This means that when you're programming a song with the Polka Musician, you're actually creating a "soundtrack" for the Polka Dancer. And with a bit of work, you should be able to synchronize certain sounds with corresponding dance movements.

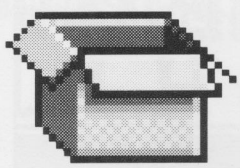


BUILDING SPELUNX

A Never-Ending Story...

When Professor Spelunx and Mr. Seudo set off into the Yoyon mountains to create their Cave Kingdom, they had no idea how large their kingdom would eventually grow. Things started simply enough with a rather interesting castle office, but somewhere along the line of creating more cave rooms, they realized that the Spelunx Kingdom had the potential to expand beyond all limits. While trying out different ideas for connecting new rooms of the cave, Professor Spelunx suddenly hit upon the idea of having variable designs for the connecting passages! After being fairly elated about this "good idea," it suddenly occurred to him that it would be really cool to be able to continue to add more rooms by simply building paths between the new rooms and the already existing Spelunx cave.

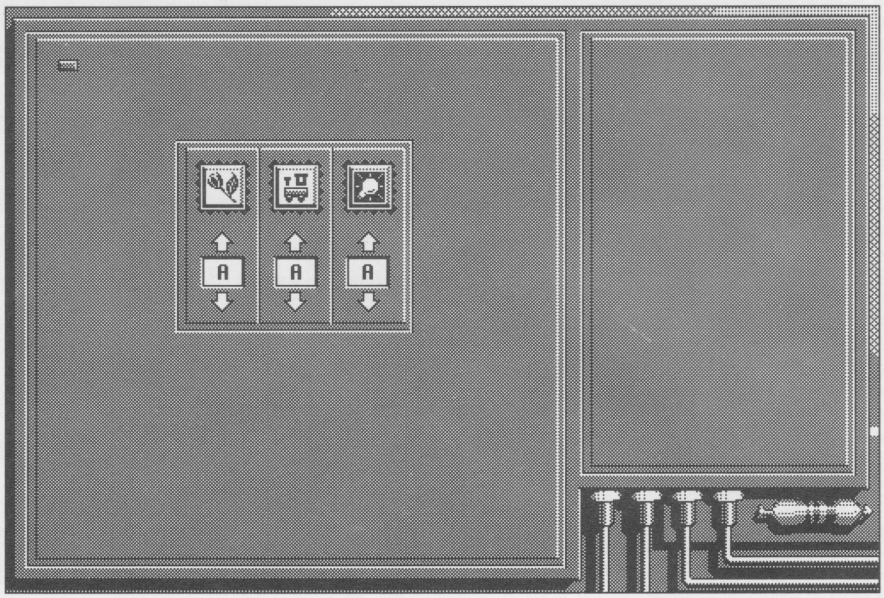
When Professor Spelunx thinks something is really cool, Mr. Seudo usually gets excited about it too. In this particular case, Mr. Seudo got right to work and created the *Spelunx Cave Builder.* This unbelievable combination of machinery, computers, heavy equipment, hydraulics, and more provided exactly what Professor Spelunx had wanted. If you decide to, you can ignore this feature of Spelunx and just explore the Caves of Mr. Seudo the way they exist now. But you'd probably insult Mr. Seudo and you'd definitely be missing out on a lot of fun! The Spelunx Cave Builder actually allows you to rearrange the entire layout of the Spelunx cave and add things like *warp rooms* and *locking hubs*. And, of course, the builder allows you to add additional Spelunx "Rooms," as they become available, to your personalized Spelunx cave, allowing for a virtually limitless cave!



The Spelunx Cave Builder is hidden and protected on a secret *mezzanine* layer of the elevator. The builder is hidden so that people who can't operate something as complex as your average cave builder won't have to bother with it. However, for anyone who *can* operate the builder, here's how you get there...

In the main Spelunx elevator there is a "lever" for moving the elevator from the top floor to the bottom floor (and vice versa). What is not immediately clear is that this same lever can be used to move the elevator to the middle floor (the *mezzanine* layer). Simply move the lever to the *center position*, halfway between up and down, and wait.

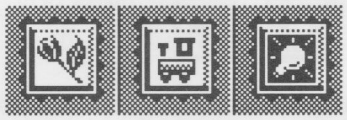
Soon the elevator door will slide open to reveal the Spelunx Cave Builder room.This is an empty room, except for a lovely picture hanging on the front wall. Click on this picture to reveal a hidden panel. Click on the panel to move closer for a better look.



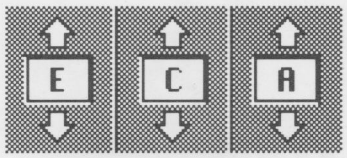
Aha, a combination lock of some sort! Yes, the Spelunx Builder area is protected. Only the new owner of the Spelunx Cave Kingdom can rearrange and build new cave layouts.To get into the Spelunx building section you must first enter the combination code. The correct combination code can be found using the Spelunx Builder Key which is attached to the back cover of this guide. You should find your key now; it looks something like this...

DON'T LOSE THIS KEY. While you might still be able to explore Spelunx without it, you would lose access to the builder.

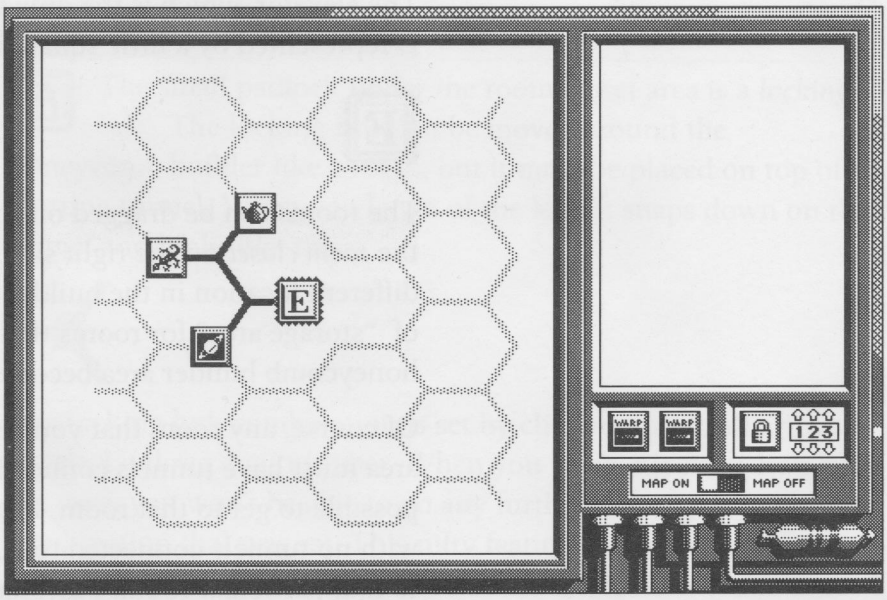
Each of the small pictures on the key has an associated letter. By entering the corresponding letters under each of the small pictures on the lock, the lock can be opened. For example: If the three pictures were...



You would enter the letters...



Once you've entered the correct combination, push the little rectangular button in the upper left-hand corner. The panel fades away, revealing the Spelunx Cave Builder. It looks something like this:



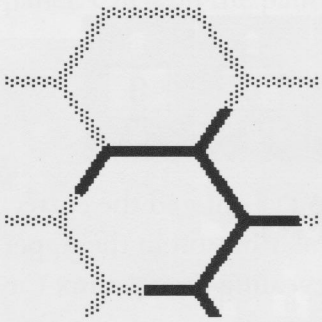
Building a Cave...

Now it's time to define two simple terms... *Tunnels* and *Rooms*. *Tunnels* are the long stone passageways that connect the rooms. The *rooms* are the activity centers which are connected by the tunnels. Tunnels can be connected to create passages as winding

and complex as you would like. Rooms can be as small as a single cubicle or as large as an entire planet! *Spelunx and the Caves of Mr. Seudo* comes with three rooms: *Spelunx-Arwen, Spelunx-Nemo*, and *Spelunx-Tumnus*.

In the builder, rooms are represented by little square icons which look like this:

The tunnels are represented by a honeycomb-based pattern of black lines which looks like this:



The elevator, which is the only way to descend into Spelunx cave, is represented by a little square icon which looks like this:

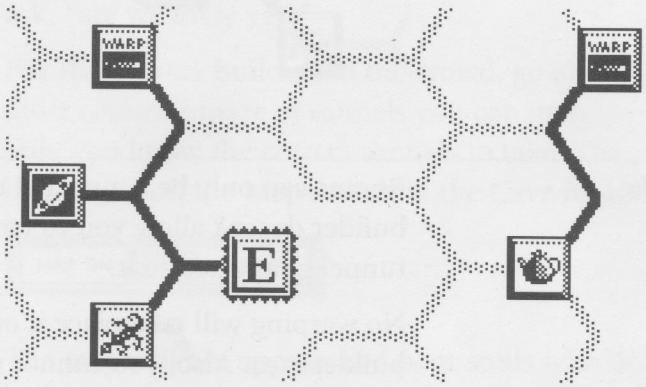
The rooms can be dragged off the honeycomb builder area, into the *room closet* on the right side. Or they can be dragged to a different location in the builder area. The room closet acts as a sort of "storage area" for rooms that you are not using. Rooms in the honeycomb builder area become active rooms.

Of course, any room that you've placed in the honeycomb builder area must have tunnels connecting it to the elevator so that it's possible to get to that room. If a room is placed in the builder area with no tunnels connected to it, then it will be impossible to walk to that particular room. Fortunately, you can easily add tunnels to connect any room to the rest of the Spelunx kingdom. Simply click on any point of the honeycomb to make a tunnel appear. Click again to make a tunnel disappear.

So have some fun. Move your tunnels and rooms around any way you like!

Warp Rooms

There are two *Warp rooms* under the room closet area. These special Warp rooms can be dragged to the Spelunx builder area in exactly the same way normal rooms are. When you place both of the Warp rooms in different places in the builder area, entering one of the Warp rooms causes you to end up at the other Warp room, wherever it is. In the example below, if you enter the Warp room on the left, you will end up in the Warp room on the right:

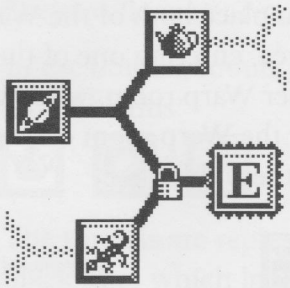


Locking Hubs

The small padlock under the room closet area is a *locking hub*. The locking hub can be moved around the honeycomb builder like a room, but it must be placed on top of an existing tunnel. When you let go of the lock it snaps down on the tunnel and looks like this…

The locking hub combination is set by clicking the small arrows to select a three digit number. When you reach a locking hub in the cave, you won't be able to go any further unless you enter the combination that was set. This nifty feature allows you to lock others out of "secret" rooms or areas like the *Spelunx-Nemo* room, where you might be keeping a private diary. Changing or retrieving a combination is as simple as returning to the builder, but of course you'll need the Spelunx key for that.

Only one locking hub is available, but it is possible to use that one lock to "guard" a whole series of rooms or even the entire cave. Here's a simple way you could lock the entire cave system.



Other Builder Info...

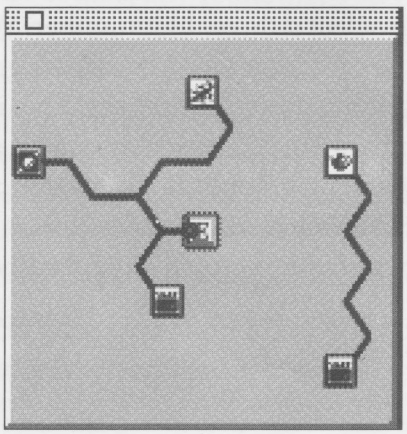
Rooms can only be connected to a single tunnel. The Spelunx builder doesn't allow you to have a room with more than one tunnel connected to it.

No warping will take place if only one Warp room is placed in the builder area. Also, you cannot warp to a Warp room that does not have a tunnel attached to it.

The Spelunx Map

When you are finished constructing the perfect cave layout, you can get into the elevator, and descend into your custom underground kingdom!

But if your cave is too complex, you might get lost in your myriad of twisting tunnels! That's why we've provided you with a handy-dandy *Spelunx map*. This map constantly shows your position (as a small blinking dot) in relation to the rest of the cave, as you wander through Spelunx.



You can move the map around the screen, or, if you don't think you need it, you can close it by clicking in the close box in the upper left hand corner of the map. Whenever you enter a room, the map disappears. But when you exit a room, the map reappears.

If you've never had much of a knack for reading maps, all the better. Using the Spelunx cave map will give you so much great practice at map reading you'll soon be choosing the best route for your summer vacation. Better yet, you may never again have to ask, "are we there yet?"

For those maze builders in the crowd, go ahead and build the most complex maze of tunnels you can imagine. So complex that only you know the correct tunnels to take. Then disable the map by turning off the Map switch in the Cave Builder.

The map will not appear, and poor souls who don't know the right path through your maze will be lost forever!

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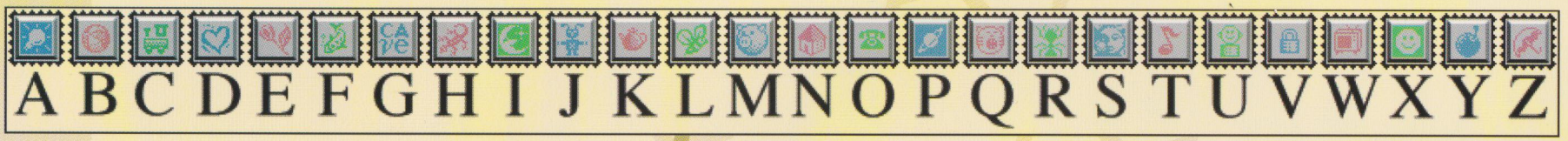
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