# OTHER SIERRA DISCOVERY SERIES GAMES

Alphabet Blocks Pre-readers and up

Castle of Dr. Brain Ages 12 and up

EcoQuest: The Search for Cetus Ages 10 and up

EcoQuest: The Lost Secret of the Rainforest Ages 10 and up

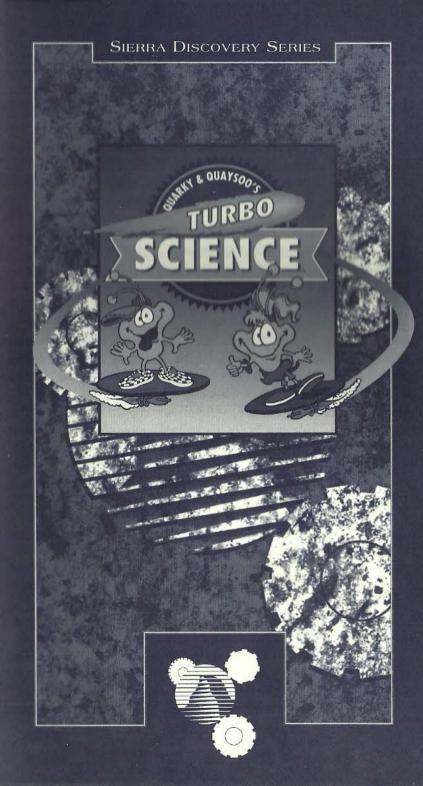
> Mixed Up Fairy Tales Ages 7 and up

Mixed Up Mother Goose Pre-readers and up

Quarky and Quaysoo's Turbo Science Ages 9 through 14

> Twisty History Ages 8 and up





# ABOUT SIERRA DISCOVERY SERIES:

The goal of the Sierra Discovery Series is to create the ideal learning environment. A time and place where learning can be fun. Several important things happen when your child plays a Sierra Discovery Series Game.

First, as kids get involved in the game's story line and solve its puzzles and problems, they develop mental skills like logic and problem-solving that are crucial to success in the school, work, and life.

Second, each Sierra Discovery Series game introduces your child to one or more academic subjects—like math, history, or science—in an entertaining, enjoyable context. Besides teaching facts, the games stimulate curiosity about these subjects and encourage your child to explore them in other games, books, and activities.

Finally, Sierra Discovery Series games make your child comfortable with the world of computers. As they play, kids quickly see they're the ones who cause and control their computer's actions. This can go a long way toward motivating young learners and creating a lifelong friendship between them and computers.

ierra Discovery Series games are an innovative, rewarding way you n help your child learn. We hope you'll try them all.

Welcome to Turbo Science—a unique educational science race based on fun, thorough research, and solid learning principles. This booklet will discuss our research effort and national trends in science education. It will explain the different levels of learning built into the questions and experiments of the game. It will show you how your family can enhance the educational experience of Turbo Science competition. As for the fun ... well, watch your child play Turbo Science and we hope you'll agree that this part is already covered.

### RESEARCH

Before beginning formal design of Turbo Science, we asked a lot of questions and talked to a number of renowned national and regional experts on science education. We consulted with awardwinning science teachers, educators trained in learning theory, and with kids in our target age group of 9-to-14 year olds. We read everything we could get our hands on concerning science education—publications ranging from the Project 2061 Report, prepared for the American Association for the Advancement of Science, to the latest articles in national magazines on growing global economic pressure for upgrading American educational standards. Turbo Science is the result of all our talking, listening, and learning.

## **TRENDS**

Everyone we spoke with gave us important things to think about regarding the future of science education. Here are some of the major shifts and trends which have effected the design of Turbo Science:

- Over time, science education (all education) will become largely computer-based, interactive, and individualized for each student.
- In the future, learning will emphasize 'understanding by doing' and NOT 'memorization of a body of facts'.
- Over the next decade (and beyond), children will be asked to integrate branches of science (ie.chemistry, physics, biology, etc.) as well as various branches of mathematics.
- Children, whose parents participate in the process of learning, learn faster and with a higher degree of understanding.

### LEVELS OF LEARNING

When you watch your child playing Turbo Science, it won't take long to figure out that at the 'upper' or 'surface' level of learning the game asks players to associate words with basic science ideas. But the longer you watch, we hope you'll begin to see other, deeper levels of learning which are also taking place. For example:

- ♦ Your child is organizing her or his own learning experience at his or her own rate.
- The game's interactive design asks kids to shift between reliance on their 'inner logic' and testing that 'logic' on people and areas in an external environment.
- ♦ Many game questions cannot be answered without using tools in the game's toolbox—which focuses children on objects to be understood rather than on already formed 'knowledge'.
- ♦ These same tools allow kids to collect and organize data—a fundamental step of scientific method.
- ♦ To answer many game questions, children must integrate math skills with physical science concepts.
- By seeing and comparing sizes, speeds, locations, and scores of other factors on game screens, kids begin to 'understand' basic science ideas (ie. mass, momentum, electric circuit)—as opposed to 'memorizing facts' about ideas.

# READING AND RESEARCH SKILLS

In our grown-up world, we often plan strategies or solve problems by investigating outside sources of information. Research is fundamental to succeeding at almost any endeavor. From the beginning, we wanted Turbo Science to have a research component—a component that would encourage both reading and investigation of science ideas. We also wanted this research component to be as much fun as the game.

When your child plays Turbo Science, he or she will answer some questions without difficulty. Other questions will make him or her go ... hmmm. If a child is stumped, they can CLICK on the game's book icon. An on screen box tells kids what page of Quarky & Quaysoo' Turbo Science Research Guide to consult for information leading to a correct answer.

This element of the game encourages a focused kind of reading. It helps kids begin to understand the value of research. And while

accomplishing these two goals, we also hope kids get a chuckle or two from our cartoons and silly science stories. (Please read the game's instruction manual to find out more about how this 'time out for research' effects game play and strategy.)

### COMPUTER LITERACY

We don't have to tell you how important the computer is, and will be, to the success of your child in school or beyond into her or his career. It's primary "knowing and doing" tool used by scientists, business people, educators, entrepreneurs, etc. When your child plays Turbo Science, our unique in-game tools teach kids to use the computer in a new way—as a machine which can measure and collect data about people and objects in an 'external' environment. This feature adds to your child's computer literacy.

# FAMILY RELATED TURBO SCIENCE ACTIVITIES

As we've already said, children learn more and faster when parents learn with them. Our mission has been to make a game that kids and families use. To enhance your child's Turbo Science experience, here are some family-oriented ideas we'd like you to consider:

- 1) Sit down and help your child learn to play the game. Especially for younger children, read the instruction booklet, questions, research clues, and Research Guide out loud.
- 2) Play the game with your child. Take turns operating the mouse and reading the Research Guide.
- 3) By using a stopwatch or coming up with informal rules of your own design, you can compete against your child in the game. Take turns racing a course at the same level of the game.
- 4) Again using a stopwatch or your own 'family rules', divide up mom, dad, brothers and sisters into teams. Play against each other on courses at the same level of the game.
- 5) As you're helping, or playing the game with, your child, talk about what ideas, not what words, the questions are getting at.
- 6) As you help, or play the game with, your child, work with them on balancing, and understanding the difference between, their 'instinct to guess', 'educated guessing', and 'research'.
- 7) Take turns reading the Research Guide with your child before bed or after dinner or after homework.

# ADDITIONAL ACTIVITIES...

Now that your child's interest in science has been stimulated by *Turbo Science*, why not encourage him or her to enjoy some of these other science activities?

 A wide selection of quality science books are available to introduce children to the wonders of scientific inquiry. Look for the following books at your local library or bookstore.

The Science Book
By Sara Stein

Workman Publishing

The Flying Circus of Physics

By Jearl Walker John Wiley & Sons

Machines and How They Work

By David Burnie Dorling Kindersley

The Science for Every Kid

By Janice Van Cleave John Wiley & Sons

How Science Works

By Judith Hahn Reader's Digest

- 2. Few kids will appreciate a lecture on the principles of motion, but simple experiments often can provide the same lessons and create a lasting impression. Help your child conduct science experiments using common household items.
- 3. Watch and discuss science-related television programming with your child. Newton's Apple, Discover, and Nova on public television can entertain and educate the entire family.
- 4. Newspapers frequently feature news items on weather data, developments in medical science, discoveries in space, and new inventions. Regularly read and discuss science news items with your child.
- 5. Take your child to a science museum, planetarium or aquarium.