NEUROBICS™

THE ULTIMATE CHALLENGE

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by
Ocean Isle Software

USER'S GUIDE

OCEAN ISLE *Software*

**Neurobics is designed for
the IBM PC, XT, AT, PS/2, or compatible equipment
running DOS 2.11 or greater operating system;
the Apple II plus, IIe, IIc, or IIGS.**

LIMITED WARRANTY

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Table of Contents

WELCOME TO THE WORLD OF NEUROBICS

Welcome to the exciting world of **Neurobics**, the computer game that challenges players of all ages! Step into a world where you can master the power of your mind, where each level can expand your mental genius. Selectable playing levels provide stimulation to develop your mental fitness, or relaxation to reduce mental fatigue.

Neurobics is a new generation of computerized games that reach a new height of challenge and intrigue. Unlike any other computer game you have ever played, **Neurobics** will take you to a world that tests your limits of mental fitness. The **Neurobics** 6-Pack includes six different non-repetitive puzzles, with something for everyone in your family. Each challenge can be set to varying levels of complexity. **Neurobics** could even challenge Einstein! Winning depends on your ability to improve your memory, concentration, and problem solving capabilities.

Each game has been designed to give you hours of entertainment while exercising and improving your mental capabilities. **Neurobics** moves computer games into the 21st Century, preparing you for a world where success depends on razor sharp decision making and tough mental endurance. Get ready for the 21st Century with exercises that recognize the value of mental workouts, with fun and challenges that will push you to your limit. Since mental fitness is a relatively new concept, Ocean Isle Software has provided you with a brief outline of the various types of reasoning and brain functions. This information, contained in the chapter "The **Neurobics Concept**," is interesting to read and will help you understand the value of **Neurobics.**

Neurobics exercises both the deductive and intuitive thought processes as well as the interaction between them. The key to exercising all the different types of memory processes involved in playing **Neurobics**, is short term memory. To get the maximum improvement in your short term memory retention, concentration, and problem solving skills; <u>do not use a pencil and paper while playing</u> **Neurobics**. Of course, if you find a particularly vexing problem, feel free to write it down for solving later on. When playing **Neurobics**, do not exercise the muscles in your fingers. Use your head!

<u>Try to visualize as much as possible</u>. Don't just memorize a sequence of numbers—try to form a mental image of that sequence. This will make the manipulations that you are required to make much easier. In other words, try to involve your whole brain in the play of the games.

Good luck, and have fun in the exciting world of **Neurobics!**

IBM
GETTING STARTED

Please note: All user typed commands are followed by the Enter Key.

Hard Disk Installation

To install **Neurobics** on a hard disk:
1. Insert **Neurobics** Disk-1 into Drive-A.
2. Type the following:
   A:
   INSTALLH C:

Neurobics will prompt you for additional information required to install the program on your hard disk.

Floppy Disk Installation

We recommend that you make a back-up copy of the master disks. To do this, perform the following steps:

1. Insert a blank floppy diskette in Drive-A.
2. Type the following:
   FORMAT B: (Formatting Drive B is desirable, even if you
            have only one drive. The system will prompt you
            to insert a new diskette in the other drive.)

BE CAREFUL! FORMATTING WILL DESTROY ALL INFORMATION ON THE DISK. BE ESPECIALLY CAREFUL THAT YOU FORMAT DRIVE B. NOTHING IS MORE DISASTROUS THAN FORMATTING YOUR HARD DISK.

Copy files from the master disk-1 to one of the newly formatted diskettes using the following procedure:

3. Place your DOS system disk in Drive-A

4. If you have one drive, type DISKCOPY and press ENTER. If you have two drives, type DISKCOPY A: B: and press ENTER.

5. Follow the onscreen prompts to copy the disk.

Repeat the above procedure to backup files from the master disk-2.

NOTE: If a high density or 3½" diskettes are available, all files from both master disks can be copied onto a single diskette. This is desirable for optimum operation.

To complete floppy disk installation:

6. Insert Disk-1 in Drive A.

7. Type the following:
   A:
   INSTALL

Neurobics will prompt you for additional information required to install the program.

Playing Neurobics on IBM

On a hard disk:
Type:
CD \ NEU
NEU

On a two-drive system:
Insert Disk-1 (Game Disk) in Drive A
Insert Disk-2 (Picture Disk) in Drive B
Type:
A:
NEU

On a one-drive system (with Graphics Images):
Insert Disk-1 in Drive
Type:
A:
NEU

You will be prompted to insert disks as follows:
Drive A / Disk-1 (Game Disk)
Drive B / Disk-2 (Picture Disk)

On a one-drive system (No Graphics):
Insert Disk-1 (Game Disk) in Drive
Type:
B:
NEU

If this is your first time playing **Neurobics,** you will be asked to answer a few simple questions regarding your system configuration.

Normally, the sign-on screen will be displayed followed by request that you enter your name. Your name is used by **Neurobics** to keep track of your game parameters and past performance.

If your name is not on file, you will be asked if it should be entered on file. If you are a new player, type Y. If you make a mistake, type N; you will be asked to re-enter your name.

After you enter your name, the Main Menu will appear. You are then prompted to select a game, display a graph of your previous results, or change user oriented parameters. If a game is selected, **Neurobics** will load the game and you can begin playing. After exiting a game, you return to the Main Menu and are again prompted to select one of the three choices described above.

Playing Neurobics on IBM (continued)

The Graph option displays a menu from which you can select a graph of your past performance in any of the scoring **Neurobics** games. Each graph shows the results of your past 64 plays of a particular game. Graphs can be displayed for either the GAME SCORE or ADJUSTED SCORE (see below). Each graph entry also depicts the level of play for the game.

Scoring

Neurobics uses two methods of scoring, GAME SCORE and ADJUSTED SCORE.

The GAME SCORE represents the score (from 1 to 10) that was achieved during a play of the game. This score is determined differently for each game, but in general is based on the number of moves and number of misses.

The ADJUSTED SCORE is the GAME SCORE factored by a degree of difficulty. The more difficult the problem, the higher the degree of difficulty. This is similar to the adjustments made to scores in a diving competition. The ADJUSTED SCORE attempts to show improvement as you advance to higher levels of play. However, you are the best judge of your improvement.

Standard Key Utilization on IBM

Although each game is different, the set-up and play has been made as consistent as possible. This is done by using the same keys for the same functions in each game.

Standard Key Usage:

H or F1	— Display game oriented Help Screen.
N or F2	— Start a Game.
O or F3	— Select the Option Menu. These options allow you to customize the exercise to your particular level of play.
F5	— Advance to Next Major Playing Level. Use this when determining the best level at which to start playing.
F6	— Advance to Next Playing Level.
F7	— Retreat to Previous Major Playing Level.
F8	— Retreat to Previous Playing Level.
G or F9	— Give up. Give-up causes the solution to the problem to be displayed. No scoring is done.
Q or F10	— Quit. Return to the Main Menu. Upon return, all exercise parameters are saved for the user. These parameters will be used next time the exercise is played.

The other keys used to play the **Neurobics** games are:

Arrow Keys	— For cursor movement
Space Bar	— For entry selection
Enter Key	— For entering solution

The function of these keys is shown on the bottom line of each game.

In addition to the Arrow Keys for cursor movement, normally, the Home Key, Page-Up Key, End Key, and Page-Down Key move the cursor in a diagonal direction. Also, the following keys can be used for cursor movement:

+ Key moves cursor forward one square.
– Key moves cursor backward one square.

Mouse Usage:

NOTE: You must install your mouse driver before running NEU.
    Left Button is the Enter Key.
    Right Button(s) is the Space Bar.
    Mouse movements are converted to Arrow Keys.

APPLE II
GETTING STARTED

Floppy Disk Back-up

We recommend that you make a back-up copy of the master disk. A back-up copy can be made by using a utility such as FastCopy on the Apple II System Disk. Please refer to the *Apple II System Disk User's Guide* for instructions. Both sides of the disk should be copied.

Playing Neurobics on Apple II

Insert **Neurobics** disk in drive 1 (Disk-1 label facing up), and turn the computer on.

The sign-on screen will be displayed followed by a request that you enter your name. Your name is used by **Neurobics** to keep track of your game parameters and past performance.

If your name is not on file, you will be asked if it should be entered on file. If you are a new player, type Y. If you make a mistake, type N; you will be asked to re-enter your name.

After you enter your name, Game Menu 1 will appear. You are then prompted to select a game, display a graph of your previous results, or display a second menu containing more games. If a game is selected, **Neurobics** will load the game and you can begin playing. After exiting a game, you return to the Game Menu and are again prompted to select one of the three choices described above.

The Graph option displays a menu from which you can select a graph of your past performance in any of the scoring **Neurobics** games. Each graph shows the results of your past 32 plays of a particular game. Graphs can be displayed for either the GAME SCORE or ADJUSTED SCORE (see below). Each graph entry also depicts the level of play for the game.

Scoring

Neurobics uses two methods of scoring, GAME SCORE and ADJUSTED SCORE.

The GAME SCORE represents the score (from 1 to 10) that was achieved during a play of the game. This score is determined differently for each game, but in general is based on the number of moves and number of misses.

The ADJUSTED SCORE is the GAME SCORE factored by a degree of difficulty. The more difficult the problem, the higher the degree of difficulty. This is similar to the adjustments made to scores in a diving competition. The ADJUSTED SCORE attempts to show improvement as you advance to higher levels of play. However, you are the best judge of your improvement.

7

Standard Key Utilization on Apple II

Although each game is different, the set-up and play has been made as consistent as possible. This is done by using the same keys for the same functions in each game.

Standard Key Usage:

H or Shift-1	Display game oriented Help Screen.
N or Shift-2	Start a Game.
O or Shift-3	Select the Option Menu. These options allow you to customize the exercise to your particular level of play.
Shift-5	Advance to Next Major Playing Level. Use this when determining the best level at which to start playing.
Shift-6	Advance to Next Playing Level.
Shift-7	Retreat to Previous Major Playing Level.
Shift-8	Retreat to Previous Playing Level.
G or Shift-9	Give up. Give-up causes the solution to the problem to be displayed. No scoring is done.
Q or Shift-0	Quit. Return to the Game Menu. Upon return, all exercise parameters are saved for the user. These parameters will be used next time the exercise is played.

The other keys used to play the **Neurobics** games are:

Arrow Keys	—For cursor movement
Space Bar	—For entry selection
Return Key	—For entering solution

The function of these keys is shown on the bottom line of each game.

In addition to the Arrow Keys for cursor movement, normally, the following keys can be used:

A S W Z	—Move cursor left, right, up, or down.
< , > .	—Move cursor diagonally.
+ −	—Move cursor forward or backward one square.

THE NEUROBICS GAMES

An Overview

Neurobics consists of 6 separate games. They are:

- **Déjà Vu** —Match Symbols (similar to the card game "Concentration")
- **Milk** —Pour Milk into Bottles to Reach Specified Goal
- **Money Trail** —Follow Path of Counterfeit Money
- **Reservation System** —Assign Hotel Rooms to New Guests
- **Rain** —Place Pots to Catch Falling Rain Drops
- **TAK** —Move Squares to Form Pattern

Neurobics has been designed to stimulate your memory, not test what you already know. Every game presents you with a problem that can be solved using only the information that is on the screen in front of you, if you can remember at all. Each game is different every time you play it. What you learned last time won't help the next time, unless of course you find that you can remember more, deduce strategies faster, and in general think more clearly. No matter what benefits you derive, you will be entertained and have fun. Being able to effectively utilize your short term memory is the keys to success with **Neurobics.** The games force you to not only memorize data but to manipulate the data as well. Each of the games has been carefully selected so that the set provides a complete mental workout similar to an aerobic workout for the body.

Best of all, these games are fun! They're not boring IQ tests or learn-by-rote drills. They're fun for children and adults. Whatever level you play, you will be challenged and at the same time relaxed and refreshed.

The Warm-up

When you play **Neurobics** remember that it can also be a mental workout. In order to get the maximum benefit you should follow the same discipline that you would use in a physical workout. This means you should start the workout with a warm-up. What do we mean by a warm-up? Some form of relaxation exercise, such as sitting down in front of the computer and letting your mind go blank is a good start. Then slowly focus your concentration on some object in the room; a clock, for example. Continuing with the warm-up, start **Neurobics** by playing a few games at a lower level. TAK is a good game to warm up with. Switch levels gradually until you are at a level where you are fully challenged.

Déjà Vu

You see it here, you see it there. The computer puts the numbers everywhere. Can you remember where each number is and match it?

Match squares with the same contents, similar to the card game "Concentration."

Using the Arrow Keys, move the cursor to different squares to view the contents. If the square's contents match that of a previous square, use the Space Bar to TAG the square. Then move the cursor to the matching square and TAG it (again, by tapping the Space Bar). If the squares match, the contents of both squares will be shown. These squares will subsequently be depicted as filled.

Score is decreased by looking at the same square twice or attempting to tag mismatched contents.

Déjà Vu Options

Normal play uses letters or pairs of letters to match. By using the Option Menu, you can select from the following modes of play:
1. Match Letters
2. Match Numbers
3. Match Symbols (Greek letters, punctuation marks, etc.)*
4. Match Pairs of Letters
5. Match Two Values whose SUM equals Number of Squares. (The sum of any two squares must equal the total number of squares on the grid.)

Mode 5** is a little more difficult because it requires you to match values whose sum equals the number of squares. For example, if you are playing on a board with 8 squares and you see the squares with 3 and 5 then you have a match.

Déjà Vu exercises right side memory and encourages mental flexibility.

*Available only on IBM.
**Mode 4 on Apple.
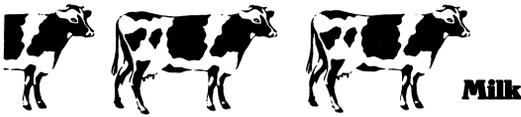
You've just finished milking the cows and a customer wishes to get a specified amount of milk. Since your milk dispenser is on the blink, you will have to use your three different size milk jugs to extract the quantity of milk that your customer desires.

Pour milk from one jug to another using the least number of pours to reach the specified GOAL. (On easier exercises, STEP indicates the minimum number of pours needed to complete the problems.)

Milk is poured from one jug to another by pressing the number of the source jug (1, 2, or 3), then pressing the number of the destination jug. For example, pressing 3 followed by 1, pours milk from jug-3 to jug-1.

If the wrong source jug number is pressed, press the jug number again to cancel the move.

The total capacity of each jug is shown under the jug.

Press the Enter Key* when you believe one of the jugs contains the specified goal.

For example, if the Goal is 20 oz. and the jugs are 28, 23, and 3. The moves are 1 → 2 and 2 → 3; leaving 20 oz. (the Goal) in jug-2.

Milk Options

Under normal operation, Milk uses the current sub-level to determine the mode of play:

Sub-level 0 — Practice   — Milk capacities are shown.
Sub-level 1 — Easy   — Capacities are not shown.
Sub-level 2 — Medium   — Number of steps is not shown.
Sub-level 3 — Hard   — Milk jugs contents are not shown.

By using the Option Menu, you can select from the following modes of play:

Maximum number of steps per problem (3..99)
Maximum amount of milk per problem (20..99)
Mode of play Hard/Medium/Easy/Practice

In Milk the goal is to not only remember the amounts but to perform a series of mental calculations to determine the correct sequence of steps.

*Return Key on Apple.

Money Trail

Someone in your bank is passing counterfeit money. If you can remember who you saw passing the bad money, you can find the counterfeiter.

View and piece together the facts of the trail of counterfeit money to determine who the counterfeiter is (who STARTED the trail) and who the bank teller is (who ENDED the trail).

View and remember money movement by using the Arrow Keys and/or Space Bar. After viewing the facts and solving the puzzle, press the Enter Key* to report your answer(s) regarding the money trail. If you are right, your score is displayed. If you are wrong, review the facts and try another answer.

Money Trail uses the following notation:

A → B

means, A passed the money to B.

For example:

Sample Facts	Reorder Money Trail
A → B	E → C
E → C	C → A
B → D	A → B
C → A	B → D
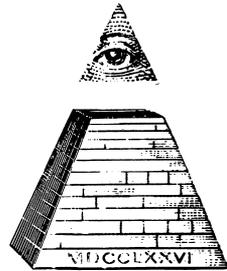
After reordering the Sample Facts, see right hand column above. You can see that E started the trail and is therefore the counterfeiter and that D is at the end of the trail and is therefore the bank teller.

Money Trail Options

Normal operation uses letters to represent suspects. Money Trail also selects who you should be tracking: the Counterfeiter, the Bank Teller, or Both.

Search for — Counterfeiter/Teller/Both/Random
Method to represent Suspect — Letters/Numbers
If Letters, Numbers of Letters to Use — (1/2/3)

In Money Trail you are attempting to build a sequence in your memory. Whenever you view a new window, you must insert that piece of data into the sequence. This is exercising two aspects of your memory:

Memory size — How much you can remember.

Agility — Manipulating what is already in memory.

*Return Key on Apple.

Rain

It's raining, it's pouring . . . if you catch all the drops your computer won't get wet. As you become more skillful and you reach higher levels of play, your computer is only safe if your memory improves.

View and remember the sequence of falling rain drops. Then position POT(s) to catch the drops as they fall.

Press 'N' to start the game and the drops will begin falling. After the selected number of drops have fallen, press number keys to align pots to catch the next drop.

NOTE: Pots can only be placed after the last drop has fallen. Scoring is based on number of correct pot placements.

Rain Options

Normal play varies the number of drops, the number of steps, and the direction of the drops for solving (forward or backward).

Number of steps per problem (3..99)

Number of drops per step (1..5)

Select drop speed (0 = Step by Step; 1 = Slow; 9 = Fast)

Select solve speed (0 = Step by Step; 1 = Slow; 9 = Fast)

Floor Numbers (Variable/Fixed/Hidden)

Solve Direction (Forward/Backward)

Using the number of steps per problem parameter, you can vary the length of the sequence. With the drops per step parameter, the size of each element in the sequence can be varied from a single drop up to five drops falling at one step.

The drop and solve speed parameters are for your convenience. Too slow and the game can be somewhat annoying, too fast and it becomes more a test of hand eye coordination than memory and mental agility. So set these parameters as you see fit.

Variable floor numbers provide a variation on the normal play of the game. Hidden floor numbers provide a real challenge. You must use pattern recognition to convert a drop location to a number while memorizing the numeric sequence.

The solve direction-backwards option challenges you to reverse the sequence that you have just memorized.

In Rain you are again forced to remember a sequence and, in the backwards mode, to manipulate that sequence in memory.

Reservation System

You are the night manager at a hotel and your room reservation system just went down (just can't trust those computers). Your job is to assign new guests to empty rooms, being watchful not to assign a room already occupied. The desk clerk is also assigning rooms, so make sure you remember which rooms are assigned by the clerk.

Keep a mental picture of filled rooms in the hotel. Use Arrow Keys to move the cursor to a vacant room and press the Space Bar to assign a room to the new guest.

Points are deducted when you attempt to fill a room that is already occupied.

Reservation System Options

Normal operation uses a blank room map. This focuses your concentration on remembering the grid in total. By using the Option Menu, you can select from the following modes of play:

    Blank Room Map (Normal Mode of Play)
    Letter or Numbers for Room Identifiers

The key point to Reservation System is that it is entirely visual. You must memorize the entire board and the room locations, and modify that image as each new room is assigned.

TAK

The object of TAK is to rearrange a board full of squares with numbers.

Use the Arrow Keys to move squares around until the numbers are in numeric order. Let's assume that the lower right square is empty. If you press the down Arrow Key, the square above the empty one will move down. If you press the right Arrow Key, the square to the left of the empty one will move right.

For mouse play,* move cursor to desired square and click any button. TAK will move squares to make an empty hole at current square, if possible.

Sounds a little complicated but it's very easy in practice. When you have the numbers arranged in order starting at the top and reading from left to right you have "won."

Unlike the other games, TAK is not scored. The object of TAK is to promote mental flexibility. The strategies involved in solving a TAK board can take many different twists. By not scoring TAK, you are free to explore the different ways in which different sequences of operation can lead to the same result. As a subtle twist, once you have solved a TAK game, see if you can remember the original sequence and reorder the board using the reverse sequence. The variety of moves is endless. In the other games, an interruption or lapse in concentration will destroy your short term memory of the board. Not so with TAK. TAK is the only game where you are not required to keep your attention fully focused at all times.

*Available only on IBM.
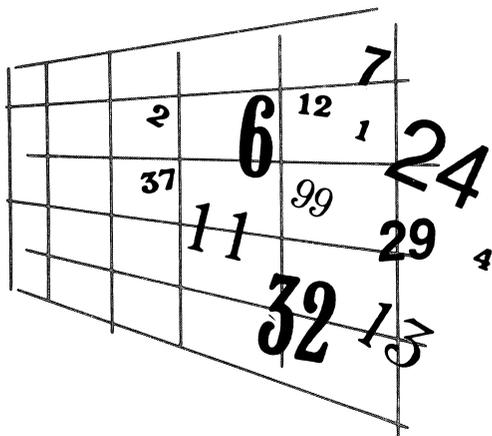
THE NEUROBICS CONCEPT

An Introduction

You are probably familiar with the fictional detective Sherlock Holmes. You will recall that he had amazing powers of observation and deduction. With apologies to his creator, Sir Arthur Conan Doyle, we have made up the following scene in order to highlight key features of the **Neurobics** games.

Sherlock Holmes and his assistant, Dr. Watson, have entered a room in a boarding house in London. Dr. Watson immediately declares, "Well Holmes, no one is here. Let's go." To which Holmes replies, "A few moments, Watson." After looking around, the great detective declares that the former occupant was a tall heavyset man of discerning taste, with a sweet tooth, who smoked a pipe, was well traveled, walked with a limp, and used a cane.

When pressed by Dr. Watson as to how he could possibly know all that, Holmes would have probably replied; "Elementary, my dear Watson." When questioned further, he might have explained that he observed dust on the lower shelves while the upper ones were clean, indicating that only the higher shelves had been used. Continuing, he would point out that there were obvious scuff marks on the floor from the rubber tip of a cane, marks that could only have been made by a heavier person. He might also have noted a lighter area on the floor, indicating that it had until quite recently been covered by a rug, probably oriental. He might have further explained that in the waste basket there was a torn ticket stub for the train from Paris, along with some wrappers for a particularly expensive chocolate. There was also a faint but distinct odor of pipe tobacco in the room and the particular brand of tobacco was very expensive and only available in Istanbul.

In our little sketch, Sherlock Holmes combined observation and analysis to deduce information regarding the room and its former occupant. With a keen eye for details, he noted the various clues present in the room and sorted through them, selecting only the most relevant to use in his deduction. The same clues were also available to Dr. Watson, but he either ignored them or passed them off as trivial. The only fact he observed was that the room was empty. Holmes saw many facts. His first step was observation or, if you prefer, data acquisition. Having gathered the data, he then proceeded to analyse it, synthesize a hypothesis, and finally amaze Watson with his deductive powers. He broke down his observations into individual facts (analysis), sorting and combining them (synthesis) to form a hypothesis. We call the entire process deductive reasoning.

There was also a phase which you probably didn't even notice, because we did it for you. Upon entering the room, Holmes and Watson would have been deluged with observations. The size of the room, the furniture present, etc. We filtered out only those facts that were relevant for our little scene. Often problems are difficult to solve not because there is so little to go on, but because we are overwhelmed with data. The first task of analysis is to sort through the facts available, breaking them down into their components, sorting them, and discarding those that are not relevant. Where does this process occur? Predominantly in SHORT TERM MEMORY. Facts enter short term memory and are either recognized as significant or quickly forgotten. As we shall see, exercising short term memory can be an important aspect of a whole brain workout.

What about inductive reasoning or intuition? When you solve a problem by induction, you do not follow the above process. You use only observation; the solution to the problem seems immediately apparent without the intervening steps of analysis followed by synthesis, etc.

"Flash of insight" is a term sometimes used to describe the intuitive solution process. You may be trying to solve a difficult problem by deduction without success when suddenly the answer comes to you from out of nowhere. This often happens when you have put the task aside and are working on something else completely unrelated. Einstein is reported to have said that the greatest sources of inspiration for him were the 3b's. Not Bach, Beethoven, and Brahams; but rather the bed, bath, and breakfast. He often saw brilliant solutions to complex problems while shaving and very often cut himself in the process.

Induction seems to be very far removed from the process we call deductive reasoning. Deduction seems mathematical, best suited to scientific or engineering problem solving. Induction seems to be related to creativity. Psychologists tell us that intuition is related to, but not identical with, creativity. Remember Einstein shaving? Inductive reasoning seems equally at home in the laboratory or in the lavatory.

Left Brain — Right Brain Thinking

According to psychologists the left side of the brain is where analysis occurs. When you see $1 + 1$ you probably immediately think of 2. The left side of the brain works with symbols. It is able to associate the pattern 1 with a symbol which represents the quantity one. The pattern + is associated with a symbol for addition, hence the deduction that $1 + 1$ should be solved. This is the left side of your brain at work. If you could isolate the pattern $1 + 1$ in the right side of the brain, something entirely different would occur. When you look at the pattern $1 + 1$, it is the right side of the brain which records it. The left side makes the associations with the symbols for one and addition to form the result. If the right side was thinking about it, it would probably concern itself with the spatial relationships between the individual symbols or with that type of relationship.

What about $1 + 1 + 1$? You probably are thinking 3. But there is more to it. Did you add up three ones or did you first get $1 + 1 = 2$, followed by $2 + 1$. Using parentheses you could say $1 + 1 + 1$ was $(1 + 1) + 1$ or $1 + (1 + 1)$. From this you could deduce the associate law of arithmetic. Or did you induce it? Perhaps the right side noticed that it didn't matter which order the numbers were added in and induced the associative law. In analysing a problem as a part of deduction we often miss a greater truth. In this case, the associative law. In order to arrive at the associative law we had to view the problem from a slightly different perspective—a perspective more related to creativity than arithmetic.

We have identified two distinctly different modes of thought and associated them with the different lobes of the brain. The left side of the brain is characterized as the region where ANALYSIS occurs, i.e., a problem is broken down into its component parts. For a visual image, this means that each component is identified and replaced by a SYMBOL. However, the right side appears able to process and store the ENTIRE IMAGE.

Supposedly, artists can draw because they can "see" better. They do see better but it's not with their eyes—it's with their brains. Drawing a realistic likeness of a scene involves being able to reproduce key elements from the entire scene as they relate to one another. The left side analytical process breaks down each component separately and replaces it with a symbolic association. That is, the left brain analyzes the face into symbols for hair, eyes, nose, mouth, etc. When faced with reconstructing the picture, the left brain will draw a symbolic head of hair with two eye symbols, a symbol for a nose, and a symbol for a mouth. These symbols will not look anything like the real eyes, nose, etc. of the person whose portrait is being drawn. If we ask our left side artist to draw portraits of several different people, they will probably all

18

look alike. This is because he or she will use the same eye, nose, and mouth symbols for each person. The visual artist, adept at right side thinking, is able to manipulate the actual images in his or her brain. Why? Because, in current psychological terms, he or she is thinking with the right side of his or her brain.

Many introductory art courses are now utilizing right side exercises to teach people how to draw. The method is to present the brain with a series of problems which are baffling to the left side and predominantly visual in nature. In so doing, the right side is allowed to become dominant. Whether or not these methods will produce another Picasso is not known, but they have been very successful in teaching adults to draw. **Neurobics includes games which are designed to stimulate both sides of the brain in order to exercise the whole mind.**

What does this have to do with the non-artist who does not have any inclination to take up art? Remember Einstein shaving? When a person shaves, he is dealing with special relationships. Very insignificant relationships to the world in general, yes, but temporarily of extreme importance, since a miscalculation can result in a nasty cut. The spatial calculations are too complex for the left brain. Shaving is a right side activity. This activity, which is so impossibly complex for the left side, is child's play for the right. The right side is capable of far more complex tasks. It is because of the right side's dominance that Einstein was able to have the brilliant flashes of insight while shaving.

The right side of the brain approaches problems in a non-analytical way. This alternative mode of thinking (which allows us to solve complex problems in a manner which is so different from our conventional thought) is commonly called "flash of insight."

If we appear to be slighting the left lobe of the brain and left mode of thinking, it is unintentional. What we are emphasizing is the necessity to use the whole brain.

Mental Fitness and Sports

Sports present an intriguing aspect of mental fitness. "Psyched Out" is a term that is often used with regard to sports. We usually think of it as referring to a lack of confidence. But an athlete who is psyched out is, among other things, probably playing with the left side of his or her brain. Consider the motions in a good golf swing. You address the ball, start your backswing, keep your right arm straight, maintain the proper rotation in the hips, don't forget to keep your eye on the ball, etc. You can analyze a good golf swing with your left brain, but the motions are too complex and happen too rapidly for the left brain to actually control the process during your swing.

Professional golfers often describe a good shot in the following way. They first VISUALIZE the shot they need to hit. They CONCENTRATE on that imaginary shot until it's firmly implanted in their mind, then they step up to the ball and swing. Very often they hit a perfect shot. Why? Because they are playing with the right side of their brain.

Will **Neurobics** help you become a better athlete? Well, there is also the question of the hand, eye, and muscle coordination, not to mention that most elusive quality, talent. Also, in many sports strength and sheer physical size are important. There is no doubt, however, that mental fitness goes hand in hand with physical fitness in achieving peak performance in sports.

Short Term Memory

The preceding paragraphs suggest that the mental abilities necessary for fields as diverse as physics, mathematics, the arts, and sports are related. **Neurobics** has been designed to exercise the analytic and the creative parts of the brain. In so doing, **Neurobics** exercises another key aspect of mental fitness, short term memory.

What is short term memory? According to some psychologists, it is like the central processing unit (CPU) of a computer. Like in a CPU, a limited number of elements can be simultaneously stored. The elements referred to can be as simple as a single digit or a telephone number of seven single digits, or more complex chunks of information such as graphics images in the pieces of a puzzle. For most people, seven elements are the limit of short term memory. Also like a computer, we need to periodically refresh our short term memory. The limit for most people is fifteen seconds. If a memory item is not referred to within fifteen seconds, then it is often forgotten.

Of course we can remember things for greater than fifteen seconds. There is also long term memory. But it is short term memory which most interests us with **Neurobics**. Every day we input thousands of facts and impressions. These facts are held briefly in short term memory, then either forgotten or transferred to long term memory. As new data enters short term memory, older data must be either transferred or lost. It is reasonable to assume that the greater our short term memory abilities, the better able we are to deal with the complexities of everyday problems.

The Neurobics Workout

Neurobics is for the brain, as aerobics is for the body. Some definitions of mental fitness are as follows:

Mental Strength:	The ability to focus concentration to solve a difficult task.
Mental Flexibility:	The ability to switch from one mode of thought to another.
Mental Endurance:	The ability to keep concentration focused for a longer period.
Mental Coordination:	The ability to deal with several things at once.

To attain the maximum benefit of a mental fitness program, we must exercise both sides of the brain, as well as stimulate the interaction between them. The following is a brief description of the games in terms of their contributions to a mental workout.

Déjà Vu

Déjá Vu involves right side memory. It is useful not only in exercising this area but in allowing the right side to become more dominant. This will promote right side reasoning in other games such as Milk and Rain. This game exercises alternative mode thinking.

Milk

Milk primarily exercises deductive reasoning, but repeated play at more difficult levels of play seems to produce inductive solutions. Milk is a mental strength workout. This game also exercises use of basic math skills.

Money Trail

Money Trail is a series of short term memory exercises. It requires flexibility and coordination as individul items are viewed and added to a sequence.

Reservation System

Reservation System involves right side memory. Like Déjà Vu, it is useful not only in exercising this area but in allowing the right side to become more dominant. It will promote right side reasoning in other games such as Milk and Rain, and exercise alternative mode thinking.

Rain

Rain involves sequence memorization. This game exercises short term memory and may also require some right side involvement in the hidden version. Rain requires focused concentration, hence mental strength. Multiple drop play may require some degree of mental coordination.

TAK

TAK can be viewed as purely deductive, but since TAK is more relaxed than the other games, it is especially conducive to alternative mode thinking. TAK allows interruptions and defocusing of attention, and therefore is amenable to the search for alternatives.

We at Ocean Isle Software believe you will enjoy these games, but are most proud of the fact that these games may produce beneficial results for you, the user.

From all of us, HAVE FUN!

N E U R O B I C S

THE ULTIMATE CHALLENGE

Are you ready to take your mind to the limit, farther then its ever been before? Unlike any other computer game you have ever played, **Neurobics** will take you to a world that pits you against your own mind. A journey that offers more than pleasure; into a world that is the ULTIMATE CHALLENGE — a game that can't be beat.

Welcome to the exciting world of **Neurobics**. The computer game that challenges players of all ages. Where each level can expand your mental genius. Selectable playing levels provide stimulation to develop mental fitness or relaxation to reduce mental fatigue.

Neurobics is an advanced generation of computerized games that reach a new plateau of challenge and intrigue. **Neurobics** will take you to a world that tests the limits of your mental fitness. The **Neurobics** 6-Pack includes six different puzzles, with something for everyone in your family.

The Neurobics Challenge:

Rain. It's raining, it's pouring, and if you can catch all the drops, your computer won't get wet. As your skill improves and you reach for a higher level, your computer is safe only if your memory improves.

Déjà Vu. You see it here, you see it there. The computer puts the number anywhere. Can you remember where the number is and match it? Challenge the computer to match your mental capacity and exercise your memory as you increase the level of difficulty.

Money Trail. Someone in your bank is passing counterfeit money. If you can remember who you saw passing bad money, you can find the counterfeiter.
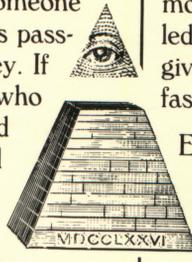
...and 3 more exciting challenges

Winning depends only on your ability to improve your memory, concentration, and problem solving skills.

Each challenge has been designed to give you hours of entertainment while exercising and improving your mental capabilities. **Neurobics** exercises both the deductive and intuitive thought process as well as the interaction between them.

With every challenge having over 25 levels of play and each play being different from the last, the more advanced levels of **Neurobics** could even challenge an Einstein.

We know that these games will give you hours of fun and enjoyment, but what we are most proud of is the knowledge that this product may give you an edge in today's fast paced world.

Exciting and challenging to use, **Neurobics** is the first in a growing family of products to enhance your mental capabilities from **Ocean Isle Software.**

For IBM PC/XT/AT, PS/2 or compatible with 256k and DOS 2.11 or greater.
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13422

OCEAN ISLE Software ™

"I am genuinely impressed by Ocean Isle's new software program. Neurobics represents a new catagory of entertainment/educational software that provides exercise for the brain." — **Dr. Joyce Brothers**