

PSYCHOLOGY

Do You Think in a Rut?

Psychologist Offers Three Simple Rules for Thinking Successfully and for Avoiding a Mental Treadmill

By MARJORIE VAN DE WATER

MANY a night's sleep has been lost when a man has been driven to thought. Perhaps it is a mortgage falling due, or a rent bill that must be paid, or a decision that must be made about leaving one job for another, how to make peace after a quarrel, or how to win out against a competitor in a business deal.

Some emergency in life has tumbled a man-sized problem into your lap. Your future depends upon a satisfactory solution. You are compelled to think. Then what do you do?

Need for Action Felt

The chances are that the urgent feeling of a need for action makes you unconsciously get up and begin to pace restlessly back and forth. The effort to induce thought brings perspiration to your forehead. You smoke or take a drink of dark strong coffee. The solution does not appear.

Over and over you say to yourself, "I must find the way out of this!" That gets you nowhere. You were already aware of the need for a solution. That does not produce it.

Over and over you repeat to yourself the various ways in which you have met similar situations in the past. That is no good. You have tried them all either actually or in your mind and you know perfectly well that they won't work. They are worn out. They do not fit the present situation. And yet you keep going over them again and again, considering and discarding and considering again.

The night wears on and you find yourself going around and around in circles. Your bedroom slippers are wearing a pathway on the carpet. You observe that you have been half-consciously stepping on certain flowers or squares in the design each time as you come round. Much the same thing is going on in your mind—an endless treadmill.

Some people never are able to find the way out of this endless circle of recurring wrong answers to the problem. Those who do very likely give up the task first. They go to sleep, or they go

outdoors and get a complete change of scene. They take their minds off the problem entirely.

Then, when they come back to it, it may be with a fresh approach. With this fresh perspective, the old ways of meeting the situation do not occur to the mind. Instead, some entirely new plan is considered, and it may be that it is one that will work. So the solution seems to come to the mind readymade as though in a flash of inspiration.

Some say that this is due to the working of the unconscious mind during sleep. Others feel that it is an answer to the earnest prayers they have said upon retiring. Some call this flash insight and hold that it is the natural result of all the preceding toil with trial-and-error taking up and discarding of wrong answers. But some psychologists say that it is merely a matter of getting the human thinking apparatus really down to original work at last.

Most people think in a rut. Far from being an original creative process, their mental exercise is a mechanical repetition of a treadmill routine in a pathway dictated by habit, by tradition, and by more or less fixed attitudes. This Prof. Samuel W. Fernberger has concluded from years of first-hand observation of students of his psychology classes in the act of thinking.

"What Dogs Do"

As a demonstration of the way habit and preconceived ideas restrict thought, Prof. Fernberger points to a simple crossword puzzle consisting of 16 squares. Reading across, the 4 four-letter words indicate, "What dogs do, what cats do, what lions do, and what humans do." Reading down they are respectively "Insects, organs of vision, vex and comfort." Prof. Fernberger guarantees that it holds rare difficulty for the crossword puzzle fan. If you are one of those persons who still work out the daily puzzle, you will not find this one so simple as it looks. Try it before you read the next paragraph.

Did you get the solution? If not, just rid yourself of the habit dictated notion that you must find a different word for

each of the four rows across. Probably the word "bite" was one of the first that occurred to you. See how neatly it fits all four requirements. Write them all in, and then see what you have reading down. You will find that you have Bs, Is, Ts, and Es, which fill the bill for all the downward requirements.

Not fair? No, but that is true of so many of life's problems, in the sense that they demand entirely new attitudes and a freedom from the past for their proper solution.

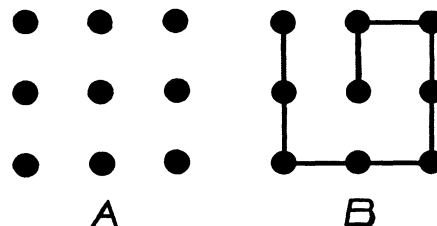
The dot puzzle provides another example of how iron-bound the average person's thinking is by preconceived ideas. Perhaps you would like to try it.

Nine dots are arranged in the form of a square. The problem is to join these nine dots with a series of continuous straight lines without taking your pencil from the paper. It is easy to connect the 9 dots in the form of a square with a series of 5 straight lines. But can you do it with only four lines?

Match-Stick Mathematics

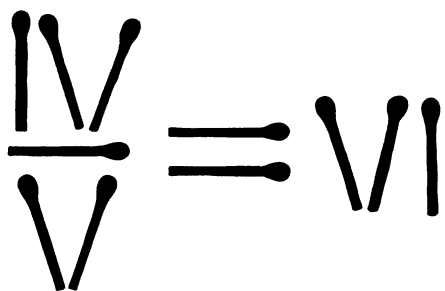
Here is another to be worked with match sticks. Lay them out so that they form the problem four divided by five equals six, with the numbers written in Roman numerals. The idea is then to move just one match in such a way that a true mathematical equation is produced. The match is not to be taken away—just moved from one place to another.

The answers for these problems are given elsewhere in this issue. In each case the solution depends upon ridding yourself of your original notion. With the dots, if you had trouble with the problem it was probably because you were trying to stay within the square with your lines. The wording of the



BEATABLE

It is easy to string the nine dots on five continuous straight lines. But can you do it with four?



THIS ISN'T TRUE

But you can resolve this mathematical absurdity and procure a balanced equation by changing the position of one match.

problem suggested this to you although a second reading will show you that nowhere is this requirement stated. Let your pencil go beyond the limits of the square and you will have much less difficulty.

With the match problem, you were probably trying to change the numbers. If you rid your mind of this intention the problem changes. Try moving the match so as to change the mathematical symbols, and see how easy the solution becomes.

Racial Predilections

The British psychologist, Prof. F. C. Bartlett, not long ago performed some ingenious experiments with memory. He found that an individual's race, habits, and social background strongly affected the way in which he would remember. One of Prof. Bartlett's tests consisted of a chain affair something like the old-fashioned game of gossip. A story was read to one person and he was asked to write it out from memory. Then the second person was given, not the original version but the first subject's transcription. And so it went throughout the chain. The final version bore little resemblance to the original, but the changes made depended upon the character of the group contributing to them. With Indian students, the revision was in an entirely different direction from what it was when the chain was circulated among English students.

Prof. Bartlett also found that when a person tries to memorize a scene or object briefly glimpsed, he forms a vague general impression of it and then tends to fill in details that his mind tells him belong to that impression. One person, for example, looked at a photograph and jumped to the conclusion it was a portrait of a typical "Tommy Atkins." Later that person "remembered" a bushy mustache and other details not present in the original photograph but which are

customarily a part of the cartoon versions of the typical British soldier. Thus do your education and your attitudes affect your memory.

In similar fashion they affect your thinking. Given the same problem and the same set of facts, the college professor is likely to arrive at a different conclusion from that of the business man. The Republican's solution will differ from that of the New Dealer. The artist's will differ from the plumber's.

By the same token, different individuals who have been brought up together with similar background and habits of thought are likely to arrive at very similar solutions to their problems.

When you find yourself confronted with a problem that refuses mastery by your ordinary lines of thought, that is when you need to shake yourself loose

from them—to tackle the matter from an entirely new viewpoint. If you haven't enough imagination to do that, it will help to get another person to analyze the problem for you. Sometimes just a word or two from another will be enough to suggest the new attitude to you and place the solution within your grasp.

Suppose your problem is the familiar one of a payment coming due on your automobile with no cash on hand to meet it. Unexpected illness in your family has drained your bank account of the funds you had reserved for this purpose. You consider borrowing at the bank, but that is not desirable because it might affect your credit in connection with a loan you want to make later for your business. In addition, the matter of the required en- (Turn to Page 236)

CHEMISTRY

New Research Casts Doubt on Discovery of Element No. 87

THE MARCH of scientific research, continually seeking truth above all else, has reopened the question of the discovery of chemical element 87. Reporting in the technical magazine of the American Physical Society, *The Physical Review*, F. R. Hirsch, Jr., of Cornell University, presents new evidence which may indicate that the announcement by Prof. Jacob Papish and Eugene Wainer in 1931 regarding the discovery of the element was unfounded.

Prof. Jacob Papish and Eugene Wainer of Cornell's chemistry department, in that year announced their discovery of this element by using X-ray analysis. In the method X-rays from a target supposedly containing element 87 were reflected by a crystal of calcite and the resulting spectral lines fitted into positions predicted for the then unknown element.

Now, F. R. Hirsch, Jr., also of Cornell, has performed essentially the same experiment and used the identical calcite crystal which was a basic part of Prof. Papish's apparatus.

He finds that the supposed characteristic X-ray lines of element 87 are really produced by the surface irregularities of the crystal itself. Mr. Hirsch has been able to obtain the crucial and important lines when a plain copper target was substituted for the sample in which he was trying to detect element 87.

By a technique called "rocking the crystal" Mr. Hirsch was able also to make the key lines vanish, which proves that the effect was due to the peculiarities of the crystal.

Of course, experiments by one investigator alone do not settle the matter conclusively but if the work is repeated with the same results by an independent and competent research scientist, the whole question of the discovery of element 87 will again be thrown open.

In this connection it is recalled that the X-ray detection of element 87 by Prof. Papish and Mr. Wainer came at a time when Prof. Fred Allison and Dr. E. J. Murphy at Alabama Polytechnic Institute were claiming the discovery by the magneto-optic method.

To many workers in science, at least, the Allison-Murphy method has remained "questionable", as Mr. Hirsch expresses it in his current report to the *Physical Review*. Thus, the Cornell chemists with their X-ray technique seemed to have the inside track on claims to the discovery. Now, however, as scientist Hirsch puts it: "The search for element 87 is still open."

Science News Letter, April 10, 1937

In Switzerland, fossil walnut trees have been found that grew around lake-dwellings on Swiss lakes in the New Stone Age 7000 B.C.

From Page 231

dorsement might cause you embarrassment with the only person you know who is in a position to do this for you. You cannot borrow from a friend for similar reasons. You do not wish to go to a small loan broker because of high rates of interest. You cannot ask for an advance from the firm, because you have already done that to meet the sickness expenses. And so it goes. The problem seems baffling.

The advice of psychologists in such a situation is to get away from the problem temporarily. Go to sleep, or play a set of tennis. Then analyze the tentative solutions you have been considering. You will find that they all center around borrowing money to meet the situation. None of them will work out. It seems impossible to borrow money to make the payment.

Don't Think of Borrowing

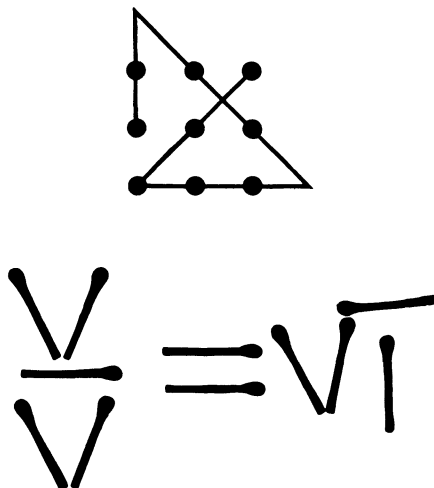
The next step is to push all thought of borrowing from your mind. As soon as you can do that, you will find a rush of new ideas coming in to fill the vacuum thus formed. There are other ways of raising money besides borrowing. You can cash in on some of your securities. You can sell the family Chippendale. You can trade in the car on a cheaper one or maybe even sell it outright.

Some of these new ideas will need to be discarded, too. If they fail to meet the situation, banish them and waste no more time on them. Sooner or later if you keep on looking at the problem from entirely fresh angles the solution will come in a flash and the problem will vanish.

Three Simple Rules

Three simple rules for successful thinking are offered by Prof. Fernberger:

1. First look your problem over and discover where the difficulty lies. Then try to overcome this particular difficulty. If the attempted solution is not successful, get it completely out of your mind and seek some entirely new and different difficulty which the problem presents. In the automobile situation, at first the difficulty seems to be to borrow money to meet the payment. When no progress was made in meeting that difficulty, the new difficulty of selling something for enough to cover the payment was next considered. If that, too, failed the next step might be consideration of the difficulty of giving up the car without loss of money.



WEREN'T THEY EASY?

The puzzles presented on pages 230 and 231 are not difficult at all—provided you shake off the tendency to try to solve them by conventional methods

2. Do not stay in a rut and be a creature of habit. Keep your mind open for new problems, new difficulties and new solutions.

3. The solution pattern appears suddenly. You cannot force it. Be forever trying new combinations of past experience in new patterns and do not waste time on following up unsuccessful attempts.

It all sums up to the same thing, really, and that is: Free yourself of the endless circle of repeating useless ideas—get out of the rut—get off the treadmill—try something new. Think!

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Science News Letter, April 10, 1937

ICHTHYOLOGY

Eggs of Brook Trout Have Beauty of Pearls

See Front Cover

PEARLS are the gift of water; we prize their drop-round perfection of shape, their softly gleaming luster. Gift of water also are the round, lustrous, pearly globes shown on the front cover of this number of the SCIENCE NEWS LETTER. But they are living pearls; eggs of trout, that will presently be broken to release the promise of pleasure to sportsmen of the summers of the 1940's.

Science News Letter, April 10, 1937

Industrial hygiene is important to about 49 million persons in the United States.

PHARMACY

Famous Book on Drugs Passes Century Mark

CELEBRATING more than 100 years of continuous publication, there appears this year the centennial edition of a book unknown to most Americans but one which affects all of those who ever patronize a drug store for medicine.

This book is the U. S. Dispensatory. The book is really an encyclopedia of drugs used in the United States, Canada and Great Britain. Every pharmacist, medical student and chemist is well acquainted with it, and it is known in every country in the world.

The present edition is a huge volume, three inches thick, running to 1,894 pages and listing 28,000 titles. Preparation of this edition took 8 years and the editorial staff will now start work on the next edition, scheduled for publication 10 years from now.

A Decade's Progress

Dr. Horatio C. Wood, Jr., professor of pharmacology in both the University of Pennsylvania and the Philadelphia College of Pharmacy and Science, is editor-in-chief of the present volume, which is the twenty-second edition of the book that his great-uncle, George B. Wood, originated in 1833.

The tremendous advances in medicine in the past ten years can be seen by comparing the items in this edition of the Dispensatory with those in its immediate predecessor. Ten years ago insulin for diabetes and bismuth for syphilis were just coming into use. Viosterol and liver extract, household words today, were unknown.

Many New Listings

Other new items are Amytal-sodium, the modern narcotic or sleeping potion; Scarlet Fever Antitoxin; Halibut liver Oil; Orthocresyl Phosphate, the cause of "ginger Jake" paralysis; Plasmochin, the synthetic substitute for quinine for malaria; Diphtheria Toxoid; Dinitrophenol, potent but dangerous weight-reducing drug; and Dilaudid, synthetic morphine substitute.

Comparison of this centennial edition with the first edition of the Dispensatory shows that of the ten most important and frequently prescribed medicines today, only two were described in the first edition.

Science News Letter, April 10, 1937

Most of the deep troughs of the ocean are within the great earthquake belts.