Book Reviews

Biorhythm: A Personal Science. By Bernard Gittelson. Warner Books, New York, 1977. Paperback, $2.95.

Reviewed by James Randi

We are told, in the introduction to this book, that George Thommen (to whom the book is dedicated) appeared on the Long John Nebel radio show on WOR in New York in November of 1960 to warn of a possible critical day for actor Clark Gable on the sixteenth of that month. Gable had suffered a heart attack six days earlier and was hospitalized. On the sixteenth, Gable succumbed to a second heart attack, and Thommen had created a sensation. The prediction was said to have been made by the "science" of biorhythms.

My personal experience with Thommen some years later was somewhat less sensational. I inherited the interview show from Nebel when he moved to another station, and Thommen was among my first guests. I took the opportunity of asking him for a personal biorhythm chart, and one for my secretary as well. He obliged us both, and they arrived with our names on the neat covers. Since I'd already been through the investigation of this "science" and had read Martin Gardner's discussion of Wilhelm Fliess and his numerology nonsense, I was less interested in how well it worked for me than I was in an experiment that I planned.

Sure enough, several listeners called in asking for information on how to obtain a personal chart. I selected one lady who was willing to cooperate in a test, and she agreed to accept a free chart in return for a report at the end of two months on how successful the chart seemed to be. She promised to keep a day-by-day diary and to rate the chart for aptness. The results were quite interesting.

At the end of the two months, she called in to tell me that I should take this matter very seriously, since the chart had been "at least 90 percent accurate" in her case. I expressed interest in these results and told her I wanted to check the identification on the folder to be sure that she had received the correct chart. To our mutual astonishment, we discovered that she'd been sent *my* chart, not the one intended for her, and I blamed the whole thing on my secretary. In actuality, I knew very well that she had my chart, but I didn't let on. I promised to send her the correct chart to check against her diary. The very next day, she called in to report that *this* one was *even more accurate*, if that were possible! We were both thrilled, until we checked further, and I announced that—by mistake, of course—

she had received *my secretary's* chart. There was a short pause, then a snort, and the lady hung up on me. I could hardly blame her. She had been taken in by the after-the-fact rationalization of the data, as have so many thousands who have followed the undulating curves and erratic reasoning necessary to make the facts fit the theory.

Says Gittelson in his Notes: "Biorhythm does not always work, but very few things do." True. The point is, does it work at all? And if so, any less from random charting than from the methods used? (See also "Biorhythms: Investigations of a Pseudoscience," by William Sims Bainbridge, in the Spring/Summer 1978 SKEPTICAL INQUIRER.)

This book provides many answers to this question. In general, it adds little to the other publications that have crowded bookshelves since Thommen brought biorhythm to this country. The author spends much time on discussions of such long-studied phenomena as "circadian rhythm." Such a natural cyclic rhythm occurs in plants and animals every 24 hours, whether the subject is in a position to "know" of the rising and setting of the sun or not. Thus a plant contained in a completely artificial environment tends to react to the natural world outside and its diurnal rhythm. In step with other pseudosciences, biorhythm borrows respectability from recognized and demonstrable phenomena.

Eventually, we are brought to a discussion of Fliess' and his preoccupation with numbers and cycles. The point we must direct ourselves to is whether this book has any proof at all about whether biorhythm actually works. Gittelson gives us much information on this question. It turns out that he uses many of the rationalizations that astrologers use, and in much the same way.

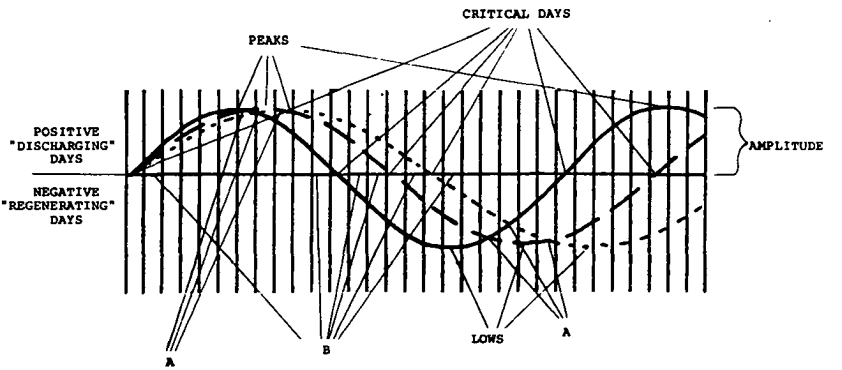

FIGURE 1. A supposed biorhythm curve. The solid line represents the "masculine" or physical cycle of 23 days. The dashed line is the "feminine" or emotional cycle of 28 days. And the dotted line is the intellectual or learning cycle of 33 days. Supposedly critical days occur where any curve crosses the zero line. Where two curves cross the line, it is a "double-critical" day. Where the curve is above the zero line, it is said to be positive, or "discharging." That factor is thus strong if above the line, weak if below. "Half-periodic" days occur before and after "critical" days (marked "B"). This sample shows the first month of a human life, presuming the person is born at 12 noon on the first of the month. Each vertical column is a day of the month, starting at the left.

It seems that biorhythm does not compel, it only impels, as our astrologers say of *their* "science." Thus any deviation in the agreement between fact and theory is forgivable. But Gittelson is quite aware of this fault in reasoning, and says so. He also gives us ample proof that *any* analysis is congruent with the theory. For example, examine these quotations from the book for the many "outs" and excuses that we may employ to fit fact to theory and vice versa:

> Regarding the first requirement—the ability of biorhythm to predict behavior—there is a real problem of interpretation. The three great rhythms are interdependent. None of them is so strong that it overwhelms the other two; they always act in concert to affect us. True, on critical days there is a good chance that the rhythm or rhythms showing temporary instability will dominate, but never completely. On an emotionally critical day, for example, it sometimes happens that the strength of the physical and intellectual rhythms neutralizes any threat. This is even more likely on non-critical, or mixed, days which are the ones which occur most often. If all three rhythms are in the low (or recharging) phase, you are not likely to perform at your peak. But exactly how far below your best you will in fact perform remains an area of controversy and uncertain interpretation. (p. 49)

Regarding forecasts of performance in sports: "Benthaus . . . believes that a player's class will always show—that a first class player at a biorhythmic lowpoint will always prevail over a second class player at a biorhythmic peak." (p. 103) So we have an excellent excuse for failure of a performance to agree with a prediction of the chart.

"If biorhythm does *not* seem to work for you, you may be one of those rare individuals who are 'arhythmic' and do not respond fully to internal cycles." (p. 128) And we have been informed that, on top of all this, people who are "arhythmic" may pop back into rhythm at any time!

"Gunthard [says] some people are 'rhythmists' and some are 'non-rhythmists'; or, to put it another way, some people appear to be more sensitive to biorhythms than others . . . is it simply that some people develop different ways of dealing with biorhythms, and that some of these methods effectively mask biorhythmic effects? Or is it that the strength of biorhythms—the amplitude of the sine-waves used to represent the curves—varies in different individuals, and also for the same individual at different times?" (p. 131)

"Some biorhythm research has shown heightened vulnerability to accidents and disease not just on the critical days, but also on the half-periodic days that immediately precede and follow each critical day." (p. 132) So now we have *three times as many* critical days as we did before! How convenient. Gittelson says that there are 20 percent of the days in a year that are "critical," that is, when a curve crosses the "zero" line. (My calculations show 22 percent, but I'll give him 2 percent. Now we have a possible 60 percent (or 66 percent) and the year looks pretty ominous!

"Wallerstein and Roberts . . . found that the *direction* in which a rhythm was moving could be as important—and perhaps more important—than whether the rhythm was above or below the zero line." (See Figure 1 for the latitude this gives us in interpretation!) And: "Several researchers who have dealt with ac-

cidents and biorhythm have suspected that days when two rhythms cross each other while going in opposite directions—regardless of whether they cross in the positive or negative phases—are potentially dangerous days." (p. 135) (Again, see Figure 1, points labeled "A.")

I think we have pretty potent indications in this selection of interpretations to show that we can make the theory fit *anything*. At this point in the evolution of this "science," it is time to throw out the theory; such convoluted efforts to rationalize are ludicrous.

The author spends several pages of his book to claim that major industries in the United States have used biorhythm, or at least have looked into it. He says that Proctor & Gamble experimented with it but adds that they deny both the experiment and its successful results. He tells us that United Airlines, Allegheny, Continental, Pan American, and Trans World Airlines have explored the biorhythm theory and that they all disavow their experiments or interest. But United has done much more than that. As reported in the Spring/Summer 1978 SKEPTICAL INQUIRER, United's *Executive Air Travel Report* (published well before this edition of Gittelson's book) says officially that researchers found no correlation between negative phases of any or all biorhythm cycles and an increased number of aircraft accidents. Furthermore, no cycle—physical, emotional or learning—could be assigned a role in causing accidents.

And the book tells us that "United . . . pilots have not yet received charts"! Some 4,000 did, in this study!

Gittelson himself quotes some damning opinions about biorhythm. Dr.

Your Biorhythms BY BERNARD GITTELSON

BIORHYTHMS FOR JULY 15, 1978

PHYSICAL
Critical: 6, 17, 28, 40, 52, 63, 75 ....Limit exercise
Highs: 7-16, 30-39, 53-62 .....Your body can take it
Lows: 1-5, 18-29, 41-51, 64-74 .....This is a sluggish day

EMOTIONAL
Critical: 14, 26, 42, 56, 70, 84 .....Watch out, don't blowup
Highs: 15-27, 43-55, 71-83 .....You are in good spirits
Lows: 1-13, 28-41, 57-69, 86 .....Don't snap at people

INTELLECTUAL
Critical: 5, 21, 38, 54, 71, 87 .....Critical judgment off
Highs: 6-20, 39-53, 72-86 .....An alert day for you
Lows: 1-4, 22-37, 55-70, 88-85 .....Think before you act

Isaac Asimov's *permanent numbers are 5, 13, 26*

Figure your numbers here —
For your own *permanent* biorhythm number for the Physical (P), Emotional (E), and Intellectual (I) cycles, just follow these steps:

		P	E	I
STEP 1.	YEAR OF BIRTH			
STEP 2.	A-B MONTH OF BIRTH			
STEP 3.	DAY OF BIRTH			
	TOTALS			

YOUR PERMANENT NUMBERS

Step 1 — Year of birth. Read down the left hand column to find the last number in the year of your birth then go across to the appropriate decade. For instance, if you were born in 1947, your number for Physical would be 21, Emotional 17, Intellectual 19. Note whether your numbers are preceded by an A or B; this will be used for Step 2.

	1910-19			1920-29			1930-39			1940-49			1950-59			1960-69			1970-79		
	P	E	I	P	E	I	P	E	I	P	E	I	P	E	I	P	E	I	P	E	I
0	A8	27	2	B3	11	24	A22	24	16	B17	8	3	A13	21	28	B8	5	15	A4	18	5
1	A6	0	4	A1	13	27	A19	25	18	A18	10	6	A10	22	28	A6	7	18	A1	19	7
2	B2	1	6	A21	14	28	B16	26	19	A12	11	8	B7	23	30	A3	8	20	B21	20	9
3	A0	3	9	A18	15	31	A14	0	21	A6	12	10	A5	25	0	A0	9	22	A19	22	12
4	A20	4	11	B15	16	0	A11	1	23	B6	13	12	A2	26	2	B20	10	24	A16	23	14
5	A17	5	13	A13	18	3	A8	2	26	A4	15	15	A23	27	4	A18	12	27	A13	24	16
6	B14	6	15	A10	19	5	B5	3	27	A1	16	17	B19	0	6	A15	13	29	B10	26	18
7	A12	8	18	A7	20	7	A3	5	30	A23	17	19	A17	2	9	A12	14	31	A8	27	21
8	A9	9	20	B4	21	8	A0	6	32	B18	18	21	A14	3	11	B9	16	0	A6	0	23
9	A6	10	22	A2	23	12	A20	7	1	A16	20	24	A11	4	13	A7	17	2			

Step 2 — Month of birth. Find the corresponding numbers for the month you were born. If your month is February, and your year numbers were preceded by a B, your month numbers would be 6 for Physical, 3 for Emotional and 31 for Intellectual. Enter your own numbers in the figure chart for Step 2.

	Jan.			Feb.			March			April			May			June			July			Aug.			Sept.			Oct.			Nov.			Dec.		
	P	E	I	P	E	I	P	E	I	P	E	I	P	E	I	P	E	I	P	E	I	P	E	I	P	E	I	P	E	I	P	E	I	P	E	I
A	0	0	0	3	3	31	3	3	29	6	6	26	8	8	24	11	11	21	13	13	19	16	16	16	18	19	13	21	21	10	24	24	7	26	26	4
B	0	0	0	3	3	31	4	4	27	7	7	25	9	9	22	12	12	20	14	14	17	17	17	15	19	20	12	22	22	9	25	25	6	27	27	3

Step 3 — Day of birth. Enter your day of birth three times in the figure chart, once each for Physical (P), Emotional (E) and Intellectual (I).

Add the three columns to derive your *permanent* biorhythm numbers for your Physical, Emotional and Intellectual cycles. Now you can refer to today's biorhythm readings.

FIGURE 2. Universal Press Syndicate has started distributing a daily biorhythm column by Gittelson to newspapers. An irony of this one is that it features the biorhythm "permanent numbers" (left center) of CSICP member Isaac Asimov.

Franz Halberg, of the University of Minnesota Medical School: "[George Thommen] is talking of immutable, fixed rhythms . . . As to any similarity with my own work, it's like Smith and Schmidt. We have only the name in common." Dr. John Hastings of Harvard: "This is not a serious subject being studied by serious scientists." Professor Colin Pittendrigh, Stanford University: "I consider this stuff an utter, unadulterated fraud." The National Institutes of Mental Health classes biorhythm as "a mythology." Yet Douglas Kelly, of the National Safety Council, says: "When chemistry was at the state where biorhythm is today, it was called alchemy. But alchemy became chemistry, and within 50 years research may do the same for biorhythm." Nonsense. Alchemy was dedicated to a search for the Philosophers' Stone, which was to change base metals into gold. It was never found, and peripheral facts that were discovered during the search were later incorporated into the true science of chemistry. The only future for biorhythms is to become an abandoned quest, and the case histories of poor logic and research that remain from its wreckage will be incorporated into abnormal psychology.

In summation, Bernard Gittelson has indeed covered the subject, and in doing so has provided us with good material with which to pursue a study of the matter. The evidence is all there in sufficient quantity for us to judge the validity of biorhythm theory. He quotes much of the bad press (though not all, or the book would be much thicker) and gives us a good sampling of the "outs" used to explain away failures.

Gittelson's book quotes Robert W. Bailey, of Bell Labs, in Piscataway, New Jersey, as saying, "If there's something to it, I haven't found it yet." It then points out that Bailey's work is "still in its early stages," and has "covered fewer than 300 employees." When interviewed by phone, Bailey was aghast at the reference.

Bailey, who works with the Human Technology Division of Bell Labs, told me that "many thousands of individuals" were charted by biorhythm and that "an intensive investigation" was carried out four years ago—well before this book was published. "It became very clear to us," he says, "that after having translations made of the original Fliess/Swoboda writings on the subject, it turned out to be a system of pure guesswork based on numerology. We looked at it as carefully as anyone has, and we found not one reliable fact in it."

Surely advocates of biorhythm cannot summon up the old excuse that parapsychologists are fond of—that scientists are unwilling to look at the evidence they present. Here we have a definitive, proper, and well-documented investigation into not only the roots of this so-called science, but its performance as well.

It simply does not work. •

True, False, or In Between: An Elective Course in Logical Thinking. By Donald A. Hiatt. Ginn and Company (Xerox), Lexington, Mass., 1975. 140 pp. Paperback, $2.50.

Reviewed by Lee Nisbet

A number of educators, especially high-school teachers, have expressed concern over the naive fascination of their students with the "paranormal." Most of these educators have requested bibliographies containing titles of "debunking" books. I wish to suggest here a complementary but distinctive approach to the problem of student credulousness.

Telling people that their beliefs are false and showing them *why* their beliefs are false generally are ineffective forms of persuasion. As an educator I have learned that students must fight the battle themselves if they are to learn anything lasting and worthwhile.

Teaching reasoning skills, the skills of applied deductive and inductive reasoning, is an extremely effective way of getting a student to confront his own beliefs.

Knowing how to reason and refusing to do so is a much more difficult position to maintain than simply not knowing how to think effectively. In the latter case you are simply an ignoramus, but in the former you are definitely a fool. Interestingly enough, students generally perceive this truth much more clearly and quickly than adults, ignorant or otherwise. *True, False, or In Between*, by Donald A. Hiatt, can contribute much toward creating the dilemma of having to choose between being the thinker or the fool.

The book teaches the student, on a step-by-step basis, how to evaluate whether evidence offered to substantiate conclusions actually does so and how to evaluate the truth of assertions that are offered as evidence.

The book has a number of features to recommend it. Hiatt's explanations of the meaning of logical terms and the procedures of analysis and evaluation are for the most part clear. Most important, however, is a multitude of easily understood examples of reasoning, invalid and valid, sound and unsound, which he uses to illustrate a point or to serve as an object of analysis. Especially effective is his use of advertisements for well-known products, which serve as splendid examples of deceptive devices to influence behavior. Many exercises in the book are especially instructive and interesting because they take the form of games that students can play using index cards or playing cards. There are even simple experiments to perform in the section on causal analysis. If the student has successfully worked through the five chapters covering arguments, assertions, evidence and its evaluation, inductive arguments, analogies, causal reasoning, deductive reasoning (categorical, hypothetical, and disjunctive syllogisms), and fallacies, a formidable arsenal of skills and insights will have been gained.

I believe the chances that significant learning will take place may well be high. Hiatt's use of interesting and familiar examples to illustrate and to analyze not only teaches reasoning skills but gives a student a sense of the relevance of

logical thinking and, more important, an awareness of its *power.* Adolescents love mastery. To be able to challenge the thinking of both their peers and the adult world with their new-found tools has to be exciting. The student now understands Bacon's aphorism "knowledge is power." What adolescent ever wants to be fooled or put down? Adolescents want to be on top. The use value of knowledge hence becomes abundantly clear.

The creative teacher can then select a variety of examples from the uncountable sources that bombard us with claims of "paranormal" phenomena. The students can now evaluate the claims themselves. What a dilemma they will find themselves in. To accept the unsupported or the unsound is to reject the very skills and power they have gained. No longer ignorant, but cursed with knowledge, they must now choose between playing the truth-teller or the fool. They must confront themselves. I recommend Hiatt's book to any high-school teacher wanting to give a course, or part of a course, dealing with claims of "paranormal" phenomena. •

Correction

In Richard de Mille's review of *Extrasensory Ecology* in our Spring/Summer 1978 issue, a phrase describing the submission of terror-entranced householders to bewitching thieves of ancient Mexico (p. 111) should have read "an institutionalized hypnosis" (not "hypothesis").