

Books

Biofeedback: In the Beginning Was Alpha

BY ROBERT KIRSCH

● There has been no lack of publicity on biofeedback research. The laboratories were invaded by television film crews and reporters, newspaper and magazine writers. The settings were ideal for the visual media: brain-wave recordings, sound and colored-light displays and even tiny trains or racing cars which could be hooked up and energized at will by the subject's alpha waves.

Adventurous scientists began an exciting new program of experimentation, genuinely enthusiastic about the possibilities of a technology which not only measured externally feeling and thought but allowed individuals to sense signals of their internal body activities and thus, eventually, control them. The subjective response, that most difficult and mysterious part of cognition, brought into the laboratory an apparent answer to one of the oldest imperatives of philosophy: Know thyself.

The possibilities stirred imaginations. There could be applications in psychology, medicine, education, even in art, literature and religion. Biofeedback seemed somehow connected with the cultural ferment of the moment: the interest in Eastern disciplines of physiologic self-discipline, the rising interest in awareness and perception, in mind-expanding drugs. In the beginning, it appeared, was the Alpha.

Responsible researchers were concerned. They wanted both to keep open the possibilities of daring and imaginative research and to keep the public informed. The question was: How could they communicate the breadth and potential of the new breakthroughs without triggering the inevitable fad-panacea-disillusionment pattern, so much a part of these times?

No easy answers. Particularly because the research itself rested on the premise that the individual retains control that is, to use a much older terminology, an exercise of free will rather than external authority or reward-and-punishment conditioning.

Hard on Their Heels

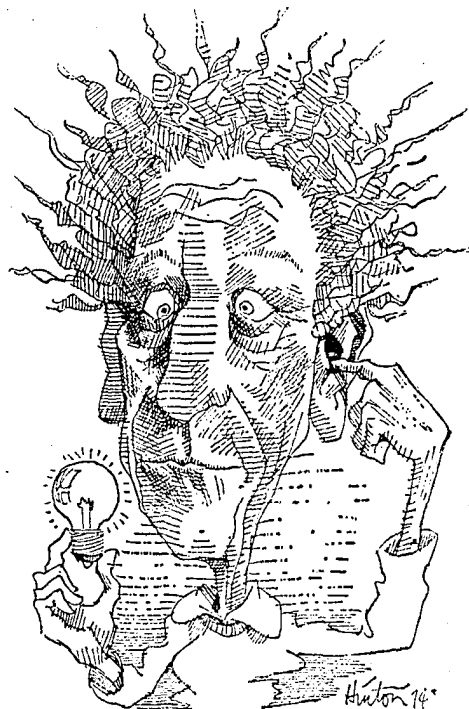
With exposure in the media, believers followed, and hard on their heels, exploiters, shamans, gurus, companies selling black boxes for instant salvation. Even the Department of Defense became interested, quick to see the possibilities of "psyching up" fighting men. Then came the reaction of conventional scientists in their several disciplines, quick to defend against what seemed a threat.

Dr. Barbara Brown, a pioneer in the field and chief of experimental psychology at the Veterans Administration Hospital, Sepulveda, has written a brilliant book on the new developments in "New Mind, New Body, Bio-Feedback: New Directions for the Mind" (Harper & Row: \$9.95; illustrated), with an introduction by Hugh Downs.

The work is as refreshing in its presentation as in the information it imparts. It is not rare to find a research scientist who writes lucidly, more rare to find one who writes with enthusiasm and passion, less rare to find one who is cautious and skeptical, but most rare to find one who combines all these traits with humor and an authentic voice. She writes with candor and breadth of knowledge, with wisdom and imagination.

And it is a good thing, for at the base of this study—as in the field of biofeedback itself—the crucial issue is communication: not only between scientists and lay people, not only verbal, written, postural, facial or behavioral communication, but communication between man and himself, between man and his inner being.

In this sense, the book is about language extensions, provided by a technology which, though simple in principle, opens a communications area of challenging complexity. It started unexpectedly, like most breakthroughs, with the accident of Luigi Galvani's discovery that the energy of electricity in



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the leg nerves of headless frogs could flow in instant and measurable current. The waves produced by the brain, by the skin, by muscles and nerves, were studied gradually by other scientists, improving techniques for recording both input and output.

Biofeedback itself, then, has been known for years. It is "the feedback of information to the person whose biology it is." Feedback is an expression developed in engineering to define control systems, systems which operate by their ability to detect changes in the environment of their operation, to make internal responses, both optimal and continuously appropriate to the demands of the environment. The most common example is the thermostat.

The human body is a vast biological feedback system, operating much of the time without conscious awareness. Sense receptors give the brain feedback on the environment. Biofeedback technology transforms internal signals such as blood pressure, muscle changes and skin-surface changes into externalized information which can be sensed, perceived and acted upon. Biofeedback training suggests that this information can be utilized, just as externally directed behavior can, to control internal functions. The new information, it is suggested, can be used as information in the learning process, for purposes of directing inner physiologic activity.

Thus, the evidence from biofeedback laboratories that subjects can lower their blood pressure at will, can affect their heart rate, can produce changes in the muscles and skin, is of basic importance. Dr. Brown acknowledges that "unwise or indiscriminate use of mind-emotion procedures can be quite as dangerous as the use of drugs . . . The critical and quite new element that biofeedback brings to medical and psychologic therapeutics is the capacity to manipulate one's own body (and mind) by one's own mind. The implication of this newly discovered capacity are enormous. The uses are obvious, but the misuses are not obvious at all."

Her purpose in this book is to describe the bio-

logical bases of feedback for each of the body systems, to discuss the experimental knowledge available, to indicate what yet needs to be done and, finally, to speculate on the near and distant future of biofeedback research and training. Appendices discuss some further—and not the least interesting aspects of the new research tool—questions, of public availability of devices, clinical use and research, an excellent section on learning theory and a discussion of placebo effects. A substantial bibliography of research articles is also provided.

It is a work so crowded with information and so stimulating that it is impossible to pursue all the paths of possible commentary. For me, the interest is not so much in the apparent therapeutic aspects nor even biofeedback's novelty and implications for the future. It may sound incredibly antiquarian to suggest that an equally important aspect touched upon in these pages would be to examine and perhaps validate the findings of other disciplines and approaches which employ fantasy and introspection, channel and transmute emotion, provide in imagery and metaphor and sound the subjective and individual expression which is at the base of music, art, philosophy, literature and religion.

I am not speaking of the faddist tendency to regard biofeedback training as a form of "instant Zen," which is handled in these pages with the exacting resistance to fads and facile answers which is characteristic of Dr. Brown. She is hospitable to new ideas but that doesn't mean that she is uncritical. Perhaps more important in the end (and this is completely compatible with her enthusiasm for biofeedback as an instrument) is that it may light up those ideas and theories, that lore and understanding, which we, in our arrogant pursuit of the novel, have slighted or thrown away.

Thus, will, the perfectibility of man, the unity of mind and body, intuition, the primitive ways of knowing, the entire sweep of Eastern religious practices, the creative processes, the theories of cognition, consciousness, the subconscious, meditation, reading, the response to abstract symbols, are touched upon. Communication is not only within the present; it must deal with the past as well and in conjecture and extrapolation with the future.

A Metaphor for Unity

Of the potential of this research I am convinced. Of Dr. Brown's purpose, I can be certain. Surely what she seeks to illuminate in these pages is that the body-mind unity and harmony is not only an essential exploration but a metaphor for the broader unity of knowledge, "when all experiential knowledge fits together."

What is most refreshing is Dr. Brown's own personality which lights up these pages. There is the joy in her work, the questing, curious, synergistic and, not paradoxically, poetic quality of an exploring intellect. She can argue, analyze, explain and even on occasion demolish. But there is an essential generosity even in the most vigorous moments of attack. Her deeper purpose is to find the truths of other ways of knowing, the common goal.

Communication is still the essence. Alpha waves and the other groups of frequencies given off by brain and other organs need close and intense reading. Perhaps the best value of biofeedback is that it increases the language and vocabulary of human feeling, emotions and intellect. Its implications for learning and increased self-awareness as well as empathy are profound.

The enthusiasm is not messianic or prophetic, though there are elements of both. "I am still filled with awe and wonder when I record human brain waves in my laboratory." That awe and wonder can be experienced on every page of this book. It is an antidote to cult and fad, an inspiring account of a humanistic science in action.