
BACKGROUND BOOKS

THE BRAIN

When Lord Byron bemoaned "the petrifications of a plodding brain," he was unaware that his own brain was about twice the average size. This discovery, made after the poet's death in 1824, delighted those who believed intelligence to be a function of brain size. The idea seemed to make sense.

Unfortunately, writes biologist Steven Rose in **The Conscious Brain** (Knopf, 1973, cloth; Vintage, 1976, paper), most of the "sensible" ideas about the human brain have turned out to be wrong. In this case, Rose notes, "when a correction is made for body size, then the brains of all humans are closely matched in weight and structure, Einstein's or Lenin's with that of . . . a 'simpleton.'"

Rose's book is one of the best overall introductions to the subject. He traces man's concepts of the brain from the "hydraulic system" envisioned by René Descartes in the 17th century to our own preoccupation with the innards of computers.

It is still impossible to explain, he writes, just how "two fistfuls of pink-gray tissue, wrinkled like a walnut, [can] store more information than all the libraries of the world."

Two fine supplements to Rose's book—each profusely illustrated—are Keith Oatley's **Brain Mechanism and Mind** (Dutton, 1972, cloth & paper) and Colin Blakemore's **The Mechanics of Mind** (Cambridge, 1977, cloth & paper).

More adventurous readers may wish to sample Gordon Rattray Taylor's **The Natural History of the Mind** (Dutton, 1979, cloth; Penguin, 1981, paper). Reading Taylor is like

hearing one of the late John Coltrane's tenor saxophone solos: We are led up, down, around, and all over the place, but in the end one likes having made the effort.

One of the tragedies of brain research is that much of what we know is a consequence of injury or disease. As Howard Gardner observes in **The Shattered Mind** (Knopf, 1975, cloth; Vintage 1976, paper), what no doctor may do out of curiosity—"selectively destroy brain tissue"—is done every day by fate. The results are revealing, sometimes baffling. What is one to make of a person who can interpret "DIX" as the Roman numerals for "509" but is unable to pronounce the letters as a word—as "Dicks"?

"Holism" in the neurosciences—a conviction that the brain must be studied as an integrated whole, rather than as merely the sum of its "mechanical parts"—is eloquently defended by Russian neurophysiologist Aleksandr Romanovich Luria in **The Working Brain** (Basic, 1973, cloth & paper). He deftly covers rather esoteric subject matter in straightforward prose, without ever a trace of condescension.

Luria's brilliant and prolific disciple was Karl Pribram, whose **Languages of the Brain** (Prentice-Hall, 1971, cloth; Wadsworth, 1977, paper) is recognized as a modern classic. Pribram ponders neurological experiments that over the years have confounded brain researchers, developing along the way his notion of the brain as a hologram.

What is the relationship between mind and brain? **Consciousness and the Brain** (Plenum, 1976), edited by

Gorden Globus, Grover Maxwell, and Irvin Savodnik, offers no definitive answers, although the speculative essays in this collection are eminently readable. The most valuable philosophical investigation of mind and brain is still Gilbert Ryle's **The Concept of Mind** (Barnes & Noble, 1949, 1975).

Ryle's target was the old Cartesian notion of "duality"—a conception of mind and body as different in their very natures. Ryle so demolished this view that none dared again propose a dualistic theory of the brain until John C. Eccles came along.

Rarely does a Nobel laureate in medicine set out his ideas in a text intended for undergraduates, but Sir John did just that in **The Understanding of the Brain** (McGraw-Hill, 1973; 2nd ed., 1976, paper only). Eccles explains with precision and elegance how nerve cells communicate with one another, though his dualist convictions force him into some tricky intellectual acrobatics.

The recent enthusiasm for computer simulations of the human brain is effectively challenged in **Computer Power and Human Reason** (W. H. Freeman, 1976, cloth & paper). Author Joseph Weizenbaum concedes the apparent "plausibility" of viewing man as a "sophisticated machine" but adds that, scientifically, the notion is simplistic.

Morally, Weizenbaum contends, this notion constitutes a "slow-acting poison." "What," he asks, "could it mean to speak of risk, courage, trust, endurance, and overcoming when one speaks of machines?" And what would a "deterministic" concept of the brain do to our belief

in "moral responsibility"?

The relevance of physics to the brain sciences may not be immediately apparent to the general reader. But physics has a great deal to tell us, and a good place to discover why is in Richard L. Gregory's **Mind in Science: A History of Explanations in Psychology and Physics** (Cambridge, 1981). In this lucid, colorful, and demanding book, Gregory, a neuropsychologist, ranges widely, from Babylonian myth to relativity theory, from the nature of light to the nurture of intelligence.

We live in two worlds, Gregory explains, a world that we see and perceive, and an underworld that we do not see but can *also* (with ingenuity) perceive: the everyday world of color, hardness, "reality" versus the lately discovered world of atoms and quantum mechanics. Do these worlds know each other? How?

"Brains," writes Gregory, "construct predictive hypotheses of aspects of the world which are generally useful for survival. [Most brain hypotheses] are largely at variance with the realities of physics. Our perceptual and conceptual hypotheses float free, even from things that seem most immediately sensed and known, to create and journey into realms of fantasy, myth, poetry, and illusion. Sometimes the fantasy traveler returns to bring gifts back to our world."

Some of these gifts of knowledge are unwelcome, unfriendly, disturbing; others are joyous, benign, enlightening. What, one wonders, would our reaction be if one gift someday turned out to be a knowledge of its own origin?