

antimanic effects of lithium on depressed patients.

Antipsychotic agents such as chlorpromazine and reserpine are described in the treatment of mental illness. Depression is defined as deficiencies of certain neurotransmitters at brain synapses, thus the therapeutic significance of the reuptake-blocking action of the tricyclic antidepressants on norepinephrine and serotonin points to the involvement of more than one neurotransmitter affecting this condition.

Nicotine, which may have originated as a plant insecticide, works on its human consumer by releasing endorphins that the mind perceives with pleasure, and dopamine, which serves to reward the user with lowered anxiety and lessened irritation. Yet this drug wields addictive control on the brain, and nicotine withdrawal is considered to be a brain disease. Those arousing xanthine drugs found in coffee, tea, chocolate and cola are commonly known as caffeine, theophylline and theobromine, and provide mood elevations by triggering the release of norepinephrine in the brain. Angel dust or PCP was originally synthesized to serve as an anesthetic, but this chemical was found to induce schizophrenic-like psychoses and other adverse effects. Yet PCP is now being studied as the type of chemical that could help prevent the harmful consequences of stroke damage. Cocaine, heroin, amphetamines, marijuana and many other drugs are detailed along with their known action at synapses or with neuronal receptors, and the author emphasizes that these mind and brain altering drugs have limitless potential for both good and harm.

Through this series of essays the reader can easily and enjoyably follow the direction of research in the realm of neuropharmacology. While the author states, "Studies of neurotransmit-

ters and receptors reveal that events within the brain involve a chemical dialogue, a conversation in which chemicals talk to each other," the reader is impressed by how little we understand of this language. Restak tries to make sense of this chemical communication chatter that takes place in the brain and to construct a dictionary of meanings from the evidence we now have. Truly, we seem to have burst into the 'prozac' age of employing drugs to influence mood, creativity, behavior and attitude. First we must know how these chemicals work in the brain, how these molecules manipulate behavior, and perhaps most fundamentally how our own actions and interactions affect the natural productivity of such neurohormones and how the substrate cells react with them. This book shows how much still must be learned at the molecular level of the brain, but it points to some of the directions being followed in these pioneering ventures into chemical exploration of the brain.

This is an exciting topic that should appeal to a wide audience, from high school students to educators to interested novices.

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GENETIC ENGINEERING

An Introduction to Genetic Engineering (1st ed). By Desmond S.T. Nicholl. 1994. Cambridge University Press (40 W. 20th St., New York, NY 10011). 149 pp. Hardback \$39.95; paperback \$16.95.



This textbook is an easy-to-read, well-written, basic introduction to genetic engineering.

The text is a simple, logical and concise presentation of the What, How

and Why of genetic engineering. The author addresses the What of genetic engineering by providing a definition and a history including the basic molecular biology principles leading to the emergence of genetic engineering. The How of genetic engineering includes a discussion of the tools required as well as a variety of enabling technologies for using the tools successfully. The Why of genetic engineering addresses the use of genetic techniques to expand the database of molecular knowledge as well as the benefits, real and potential, to be derived from application of these techniques. In addition, the ethical scientific questions arising from the use of genetic engineering are addressed at relevant points throughout the book. The author stresses the importance of dialogue between scientists and regulators and the need for informative, persuasive communications between the scientist/regulator and the public.

The use of concept maps at the end of each chapter provides a concise summary of material presented in the chapter. These maps can be invaluable to students and to instructors in providing a cohesive introduction to material in the chapter as well as a comprehensive review of material contained in the chapter.

The concise nature of the book, the glossary and the provision of a limited number of texts for further reading result in a "student-friendly" introductory text for undergraduate students. This book will also be valuable as a review of genetic engineering basics for graduate students and medical students and as an introduction to genetic engineering for others interested in this emerging field.

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