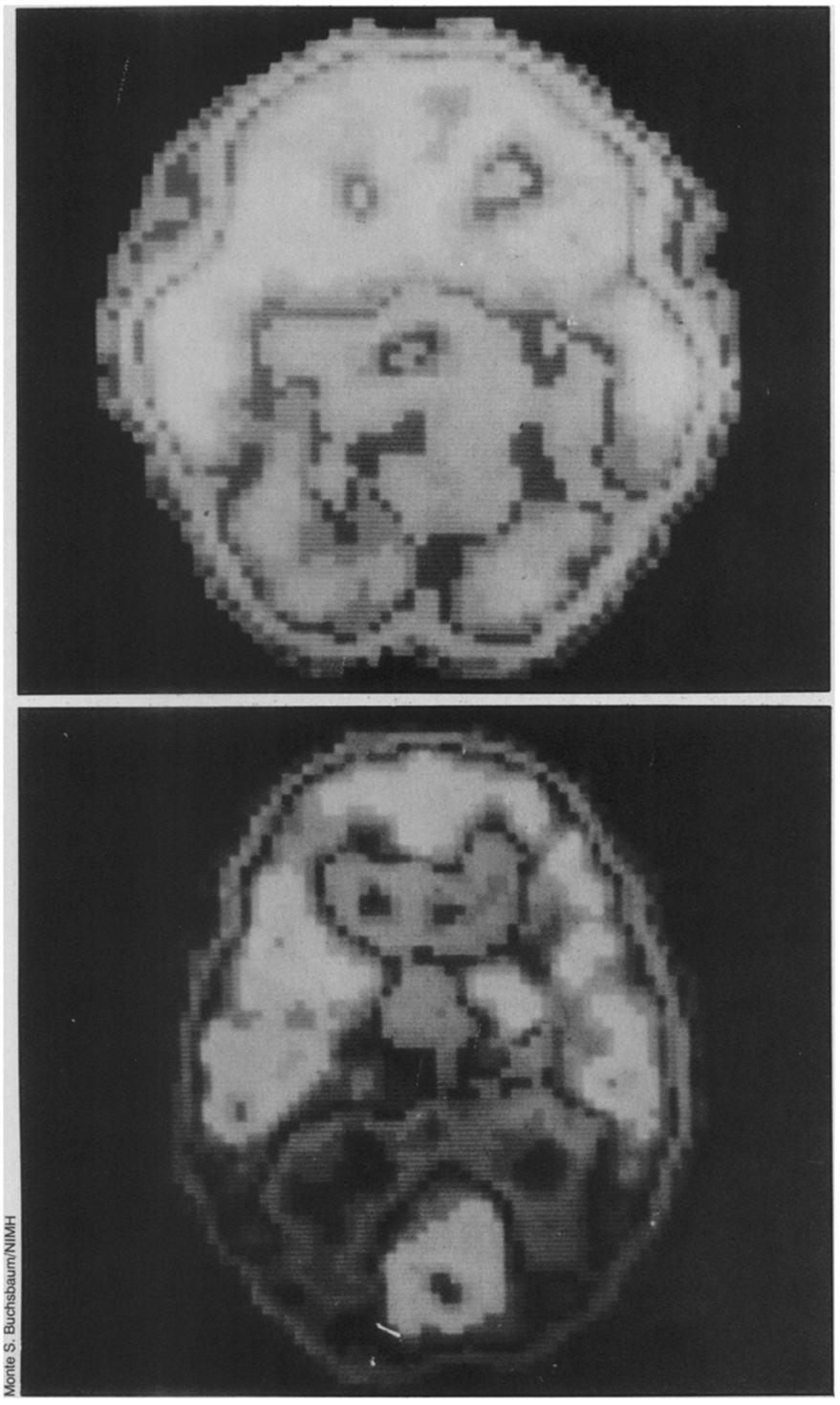
PSYCHIATRY FOR THE 80's

An overview of the field reveals a growing reliance on biology and the neurosciences and suggests a new image for tomorrow's psychiatrist

BY ROBERT J. TROTTER



Monte S. Buchsbaum/NIMH

Can the scanner replace the couch? The two scans show differences between normal (top) and schizophrenic brains. Both subjects received radioactively labeled glucose while at rest in a darkened room. The areas of the brain that were working took up the glucose that was later detected by the scanner. In the normal brain the frontal lobes (top of scan) are turned on — as indicated by lighter color — and the visual area at the rear of the brain is turned off, or inactive. In the schizophrenic brain the frontal area is turned off and the visual and auditory (left) areas are turned on. The patient was having both visual and auditory hallucinations at the time the glucose was administered, and the PET *scan (usually in color) gives objective evidence of this subjective phenomenon.*

Can psychiatry put itself on the couch and solve its own identity crisis? It already has, if the mood at the recent meeting of the American Psychiatric Association is any indication. More than 8,000 psychiatrists came to New Orleans, and it seemed obvious that the legacy of Freud — the myth of psychoanalysis — is being abandoned for the potential precision of biology, as Freud predicted it would. The talk at the meeting was not of psychodynamic theory and Oedipal complexes but of psychopharmacology and brain chemicals. Strict diagnostic techniques and procedures are being combined with increasingly sophisticated and selective drug treatments to bring about more effective therapies. CAT scans, PET scans and a growing knowledge of what APA president-elect Daniel X. Freedman calls "the alphabet of the brain" are helping researchers define the links between biology and behavior. With this boom in drug therapy, biology and the brain sciences and a return to the medical model, the leaders of the APA are optimistic and confident that psychiatry's identity crisis has been terminated. A review of recent developments in the field of psychiatry, offered by Herbert Pardes, Director of the National Institute of Mental Health, suggests that this optimism is well founded.

Pardes opened with a discussion of clinical therapeutics and the new psychopharmacology. Psychiatric treatment, he says, used to mean institutionalization, various kinds of shock treatment, psychoanalysis for a small portion of the population and a few other treatments. Now the psychiatric armamentarium includes a broad range of highly effective psychoactive agents. One reason for the effectiveness of these drugs, explains Pardes, is the increasing insistance on controlled studies to demonstrate the effectiveness of treatment. In 1978, for instance, the Congressional Office of Technology Assessment found that only 10 to 15 percent of nonpsychiatric treatments had been formally demonstrated to be effective. "A comparable figure for the proportion of psychiatric treatments in general," says Pardes, "is closer to 40 percent, owing to the fact that many psychiatric treatments were introduced at a point when the

need for more rigorous evaluation of the treatments had become better known in the society generally."

The development of lithium therapy for the treatment of manic-depressive illness is one of the brightest spots in the recent history of psychopharmacology. But lithium helps only about 70 percent of those treated. Therefore, says Pardes, the development of more effective treatments includes the development of alternatives. An example is carbamazepine, a drug that is producing beneficial results in patients who do not respond to lithium (SN: 5/27/78, p. 344).

Is psychiatry just drugs, or is analysis worthwhile? Freud hasn't faded from the scene completely, and there are studies to suggest the general effectiveness of various psychotherapies (see, for instance, *The Benefits of Psychiatric Therapies* by Smith, Glass and Miller, Johns Hopkins University Press, 1981). Other studies suggest that psychological therapies can be especially helpful when used in combination with psychopharmacological therapies — for instance, in treating certain types of depression, schizophrenia and addiction.

Today's psychiatric therapeutics, says Pardes, include a wide range of options, a greater use of combinations of treatments, greater specificity of treatments and settings for patients and increasing studies and data relevant in evaluating the nature and impact of therapeutics in the field of psychiatry.

Studies of physical and behavioral interactions should lead to even better therapeutics. Eric Kandel of Columbia University, for instance, is seeking to understand how psychopharmacological intervention works "at the level of individual nerve cells and their synaptic connections." Kandel has found, in studies of the marine snail, that learning affects the biology of the brain (see his article in the NEW ENGLAND JOURNAL OF MEDICINE, Vol. 301, No. 19). He has shown, for instance, that habituation (one of the simplest forms of learning — a decrease in response due to repeated stimulation) can cause synapses to become less effective functionally — less transmitter is released, probably because of a prolonged decrease in calcium influx. Kandel also has found that sensitization (the opposite of habituation) can reverse the depressed behavior of synapses and restore their effectiveness. These experiments suggest that the complex pathways of the brain appear to be interrupted not by disease but by experience. Then, they are restored by experience. Kandel goes on to suggest that all psychological disturbances reflect specific alterations in the neuronal and synaptic function.

These and other examples of the link between body and mind lead Pardes to agree with the call for a new model of medicine — a model that recognizes the inherent relationships between psychological, biological and social processes and that includes psychiatry as one of its important components.

Another development that should help secure psychiatry's position as a medical and biological science is the application of Positron Emission Tomography to brain research (SN: 11/18/78, p. 340). The PET scanner allows researchers to see not only the structure but the amount of function in different parts of the brain. Already it has identified areas of the brain that become hyperactive during epileptic convulsions. And there are preliminary data indicating that the PET scanner can detect hyperactivity in the visual or auditory cortex of a schizophrenic patient experiencing a hallucination. "Imagine the possibilities for following somebody in treatment to determine effects on functioning of various parts of the brain by various kinds of psychiatric treatment," says Pardes. "Imagine the possibilities for correlating clinical phenomenology and different constellations of brain activity."

Louis Sokoloff and his colleagues at the National Institutes of Health devised the method that allows the PET scanner to display the living brain at work: The working cells take up a radioactively labeled form of glucose that the scanner detects (SN: 1/31/81, p. 76). Now the same researchers are working with methods that allow them to use the PET scanner to detect protein synthesis in the brain, and other researchers are looking at protein synthesis in relationship to seizures and brain tumors. So the PET scanner, says Pardes, "has opened up a tremendous new vista for all sorts of research relevant to psychiatric and neuropsychiatric conditions."

Other techniques are being devised for repairing brain damage. Researchers at NIMH already have reported the successful transplant of brain tissue from one rat to another (SN: 5/12/79, p. 308). The transplanted tissue not only "took" but ameliorated the symptoms caused by the lesion. This offered exciting possibilities, says Pardes, but raised one important question: Where would one get the brain tissue to transplant? The NIMH researchers now have an answer to that question — an autotransplant. They successfully transplanted central nervous tissue from a rat's adrenal gland to its brain, and the adrenal gland tissue took up the functioning of the brain tissue it replaced (SN: 12/27/80, p. 389). The possible applications for this type of technique are "startling," says Pardes.

Brain transplants and other techniques eventually may lead to cures, but an ounce of prevention might prove to be an even more effective strategy. And the prevention of mental disorders — based on an understanding of their causes—is another area of psychiatric research that is making progress. Michael Rutter of the Institute of Psychiatry in London, for example, has identified six major social variables that are correlated with the development of psychiatric disorders in children and adolescents. The variables include low social status, severe marital discord, overcrowding or large family size, paternal criminality, maternal psychiatric disorders and admission into the care of local authorities. If a child has one of these factors, the likelihood of developing a psychiatric disorder is not increased. But if one has two of the factors risk is increased fourfold, and if one has three or more it is increased tenfold.

This and similar work is aimed at predicting the situations that put people at risk. Work by Norman Garmezy of the University of Minnesota is aimed at identifying factors that enable certain children and adolescents to avoid the risks. Garmezy is studying four groups of children: those who have parents with an emotional disorder, children with congenital heart defects, children with physical handicaps and children whose families have stressful life events. From these groups Garmezy hopes to identify "risk-resistant" children and examine the strategies and coping methods they use to avoid what for many others might lead to psychiatric disorders.

The research mentioned by Pardes can be fascinating as pure science and can be humanistically valuable in terms of the good it might bring to patients, their families and society. But in today's budget-minded world, other factors have to be considered. Pardes concluded by offering "specific examples which can be understood by people who look at things quantitatively or economically...."

The most dramatic example is lithium: Lithium therapy has saved something in the neighborhood of $2.88 billion on direct mental health costs and $1.28 billion in productivity over the past ten years (see Reifman and Wyatt in the April, 1980, ARCHIVES OF GENERAL PSYCHIATRY). The dollar figures were calculated by comparing the cost of lithium therapy with the cost of the usual kind of service a manic-depressive patient would have received in previous years. Pardes notes that this savings of more than $4 billion is more than all the money spent on NIMH research during its entire existence.

This kind of cost-benefit analysis, along with psychiatry's move toward biology, hard science and the medical model, is contributing to psychiatry's new image and may help ensure that psychiatry and NIMH continue to exist. Psychiatry still has its detractors and its problems, but as Pardes says, "If you have something that other people respect, and if you make sure that they know about it, the overwhelming likelihood is that you will be assured an appropriate and continuing role in the programs of society." □