capable of revealing most of the significant structures that can be resolved by a modern light microscope.

After Hooke and Leeuwenhoek, the compound microscope increased in popularity as a "drawing-room" instrument, presumably because of its impressive appearance and greater ease of use; Ford describes the progress of the simple microscope in the form of the cheap flea-glass, the more versatile compass microscope, and the screw-barrel and later designs. A simple microscope is little more

Art of the instrument-maker — an elaborately decorated simple microscope produced in Paris, c. 1720.

than a device to hold a specimen and a lens in suitable relationship one to the other, its design naturally influenced by the nature of the specimen to be examined. Around the middle of the eighteenth century the "aquatic" microscope was designed, arranged to stand on a table, with a movable lens to enable it to scan sensitive creatures such as *Hydra* without disturbance. Linnaeus owned one of these, and a similar though superior example was used by the Scottish botanist Robert Brown in 1827 when he discovered "active molecules" (now known as Brownian movement), and a few years later when he described the nucleus and cytoplasmic streaming in the plant cell. Darwin took a microscope of this kind on the *Beagle* expedition in 1831, on Brown's advice, and wrote of his purchase of another in 1848. An essentially similar instrument is still available as a "dissecting microscope".

The simple microscope has not been well documented previously. Brian Ford's book is a clearly written non-technical account of the instruments, the lenses, their performance and use, illustrated with historical anecdotes, quotations and drawings, and with a useful bibliography. It will interest anyone who uses a microscope and many others besides. □

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Psychiatry: beyond analysis

Anthony W. Clare

The Broken Brain: The Biological Revolution in Psychiatry.

By Nancy C. Andreasen.

Harper & Row: 1985. Pp.278. \$16.95, £12.95.

A COMMONLY expressed dictum, usually by psychiatrists, is that there has been a revolution in psychiatry. Back in 1966, the late Sir Aubrey Lewis of the Maudsley Hospital wryly noted the common and invigorating habit of psychiatrists to rejoice "that they live in an age of rapid and impressive advance". Advances there have surely been but whether any of them warrants the description "revolutionary" is highly questionable.

Just after the Second World War, the new antipsychotic phenothiazines and the tricyclic antidepressants were hailed by psychiatrists such as William Sargant in Britain and Nathan Kline in the United States as the harbingers of a revolution in physical treatment which would empty the mental hospitals and re-establish psychiatry within the mainstream of general medicine. Even before the introduction of these drugs, however, the mental hospital population on both sides of the Atlantic had begun to fall and this trend too was acclaimed as reflecting a revolution in care. Much of its momentum derived from the realization that institutionalization of the chronic mentally ill could in many instances worsen the condition and add substantial secondary impairment. A vigorous new emphasis within psychiatry was born, social psychiatry, whose enthusiastic adherents emphasized the importance of energetic rehabilitation and rapid reintegration of the mentally ill within the general community. In the United States, the presidential involvement of John F. Kennedy gave the movement a particular momentum such that over a quarter of a century the mental hospital population has fallen by nearly 75 per cent (compared with the more pedestrian British decline of 25 per cent) and a whole chain of community mental health centres has been deployed across the continent.

The mid-1960s, a turbulent time within as well as outside psychiatry, witnessed the flowering and then the demise of arguably the most revolutionary idea of all, namely that mental illness does not actually exist but is a myth, a metaphor or merely an obfuscating and remarkably sticky label. The mentally ill were variously portrayed as outsiders, deviants and voyagers on a perilous journey of self-discovery and transcendentalism. Around the same time, the more prosaic yet more enduring advances in behavioural theory in turn yielded a series of promising techniques of be-

havioural treatment, including desensitization, operant conditioning and flooding, offering hope to sufferers of the most intractable of neurotic conditions such as phobic anxiety and obsessive compulsive disorder.

If one uses the term "revolution" in the sense of the undermining and overthrow of the established order, then none of these developments seriously threatened psychiatric orthodoxy. Psychotropic drugs, psychiatric rehabilitation, the development of community-based facilities, the application of behavioural techniques — each has been comfortably absorbed within the general mainstream of psychiatry. In the process, the original enthusiasm has been tempered by time and by bitter political experience. In the case of the much-vaunted community mental health centre programme, for example, professionals, politicians and the public appear deeply divided not about whether it was a good or a bad idea but about who precisely is responsible for the disaster that it has turned out to be. Its critics blame the haste, the ill-conceived design which has led to the warehousing of large numbers of chronically ill psychiatric patients in squalid and anti-therapeutic conditions within a community which clearly does not care, and the failure of its advocates to acknowledge the degree of disability manifested by those who are most seriously mentally ill. Its supporters attack the failure of Federal government to honour funding pledges made by its predecessors and the marked ideological shift in the way that Washington regards the concept of community welfare.

Unabashed, American psychiatrists are now acclaiming a new revolution. The author of *The Broken Brain*, a book revealingly subtitled *The Biological Revolution in Psychiatry*, is moved to declare with the enthusiasm of one who has witnessed the fall of some psychiatric Bastille, that "Psychiatry, like the prodigal son, has returned home to its place as a specialty within the field of medicine". For Nancy Andreasen, Professor of Psychiatry at Iowa College of Medicine, psychiatry is becoming increasingly scientific and biological in its orientation and medical science is now convinced that the serious forms of mental illness, such as schizophrenia and manic-depression, are due mainly to abnormalities in brain structure and chemistry.

British readers, familiar with the relatively close relationship between psychiatry and general medicine in this part of the world, may wonder what all the fuss is about and where the American prodigal son has been all these years. Yet the argument that in the United States at least there may indeed be a significant shift in psychiatric thinking, if not a revolution, does merit closer examination. There was a time, less than 25 years ago in fact, when it was difficult if not impossible to become the chairman of an American department of psychiatry unless one had undergone psychoanalytical train-

ing and a personal analysis. Up to quite recently, most major medical schools accepted psychoanalytically orientated psychotherapy as the foundation of psychiatric theory and practice, and in a number of them — most notably New York Medical College, Columbia, Pittsburgh, Tulane, Western Reserve and North Carolina — actual postgraduate psychoanalytical institutes were established. Not merely were most departmental heads psychoanalysts, so were most of the members of their departments, their psychiatric residents, their own personal psychotherapists, their wives and many of their government site visitors. In psychosomatic medicine, child and adolescent psychiatry, the psychotherapy of the neuroses, social casework, individual and group therapy, the impact and influence of psychoanalytic theory and practice were enormous.

Yet even at its zenith psychoanalysis was under fire. In 1959, two research psychiatrists, J. MacIver and F. Redlich, writing in the *Journal of the American Medical Association*, critically observed that "the hard truth is that we are expending enormous effort, time and money to train a highly specialized group of experts who will devote the bulk of their professional careers to a small group of highly selected patients". Several years later, a distinguished biologist, Seymour Kety, was appointed to head the psychiatric department at Johns Hopkins. Together with David Rosenthal and Paul Wender, he embarked on a programme of research which was to cast light on the chemical nature of synaptic transmission, develop a number of potent drugs capable of specific actions against many of the symptoms of severe mental illness, and provide new and substantial evidence of genetic factors operating in the aetiology of the major psychoses. Indeed one prominent psychoanalyst spoke prophetically at the time of Kety's appointment that it was calculated "to drive another nail into the coffin of analysis".

Despite these and related biological developments, however, American psychiatry clung on to its heavily analytical reputation until the past few years when suddenly it appears to be discarding it rapidly. Professor Andreasen expresses the widely held view that it is the exciting developments in neuroanatomy, neurochemistry, neuropathology, neuropharmacology, genetics and behavioural neurology which have not just undermined the pre-eminence of psychoanalysis but significantly eroded it. Her book, in a highly readable if occasionally simplistic fashion, emphasizes the manner in which such explanatory ideas as the catecholamine theory of depression and the dopamine theory of schizophrenia, while partial, flawed and even contradictory, have in their own way reminded a whole new generation of young psychiatrists of the possibilities and challenges inherent in the biological approach. Hemispheric localization, limbic system

function, GABA, positron-emission tomographic scanning, the dexamethasone suppression test, benzodiazepine receptors — the topics included and discussed, while in no way adding up to a coherent and plausible theory of brain dysfunction in psychiatric disease, illustrate the potential for research and the bewildering number of growing points.

In her enthusiasm for these developments, Andreasen, in common with many of the new biologists, ignores the lessons of recent history. The reverses suffered in turn by psychoanalysis and social psychiatry, each originally hailed as true revolutionary breakthroughs in the way we understand and treat mental illness, should not be ignored. If psychiatry in the United States has a fault it surely is its tendency to suffer from what Gore Vidal, in another capacity, has termed the peculiarly American affliction of "historical amnesia". At times, Professor Andreasen acknowledges the limitation of reducing all psychopathology to the level of abnormally firing neurones, all psychiatric disorder to the level of brain disease. On other occasions, her zeal gets the better of her and she commits precisely that error. Yet psychiatry has been here before, just over a century ago, but one will look in vain in the index for the names of Griesinger and Maudsley, Westphal and Meynert, men who also nourished the hope that one day severe psychopathology might be reduced to a matter of disturbed cerebral function.

The resurgence of biological enthusiasm doubtless owes much to the new and exciting plethora of scientific tools and techniques applicable to unravelling the complexity of brain function. It owes much too to the realization that psychoanalytic theory is sterile and psychoanalytic treatment is ineffective. But before participating in a single-minded and headlong rush to the brain, enthusiasts would do well to heed Kety's reminder that the language that we speak, the principles we value, the thoughts we think, the decisions that motivate our daily actions are to a greater extent a reflection of what we have learned than the result of how we are constituted. "The differences among us in respect of these qualities", he has recently written, "are not to be found in the structure or chemical composition of our brains but lie largely within the scope of the psychological and social sciences". If this is ignored, then crude biological reductionism is the result and the possibility that psychiatry might act as the bridge in medicine between the biological sciences on the one hand and the psychological and social sciences on the other hand evaporates. That is hardly a development worthy to be considered revolutionary. □

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