

What the scientist has to say

Arthur Kornberg

Storm Over Biology: Essays on Science, Sentiment, and Public Policy. By Bernard D. Davis. Prometheus, Buffalo, New York: 1986. Pp.324. \$22.95.

SCIENTISTS make poor politicians. They have been self-selected for their interest in things rather than people, and they are generally neither literary nor articulate. They form societies to communicate with one another about their arcane findings but, with some exceptions, they are distinguished from most other professional groups by their social isolation and political innocence.

Were the responsibility of scientists limited to progress in such areas as chess or hieroglyphics, their ineptitude in worldly matters might be tolerated with whimsical affection. But the affairs of government and business, our everyday lives and future depend crucially on science and its technological applications. Must we then rely solely on salesmen, actors and lawyers to make the difficult decisions that require informed judgement about scientific questions? What are we to do?

To compound the problem, the media seem to be entranced by the pronouncements of those who lack scientific knowledge and of a few scientists who have ideological biases and crave publicity. The brushfire controversies over drugs, toxic wastes and genetic engineering have coalesced into wider conflagrations of hostility to all technological, scientific and intellectual effort. Legitimate concern about biological warfare has turned into all-out warfare against biology.

Fortunately there are a few informed and responsible scientists who speak out and write clearly on issues involving biology and society. One such is Bernard D. Davis. In *Storm Over Biology* he has collected together 44 essays and shorter pieces on "science, sentiment and public policy". All but one of these have appeared in print in the past ten years, many in obscure places. Trained as a physician, now a scientist with a distinguished record of administration and of research in biochemistry and microbiology, Davis has intimate knowledge of the difficult issues that he has chosen to confront.

Among the matters that get attention are sociobiology, affirmative action in medical schools and genetic engineering. The common theme underlying all of these topics is the need to build on reality and protect science from politicization by the left or the right. In particular, on the perennial debate over biological versus

social determinism ("nature versus nurture"), Davis makes cogent arguments for rigorous studies of human genetics and behaviour against wailings by political ideologues about the potential abuses of new knowledge.

In his discussions of the applications of recombinant DNA technology, Davis speaks from broad experience in microbial physiology, genetics and evolution. Recognizing the legitimacy of concern about the hazards of genetic engineering, he offers convincing arguments for the improbability of the scenarios that have most alarmed the public. He further argues for caution in genetic intervention in man, and for recognizing the limits to the possibilities for such intervention. Against specious attacks by Jeremy Rifkin, recently abetted by the editorial board of *The New York Times*, he takes a bold stand for both truth and reason.

A particularly moving, previously unpublished piece deals with the history of the response to his pleas for balance between affirmative action and maintaining academic standards in medical schools. Davis — a child of immigrants, a witness to anti-Semitism, a perennial

fighter for liberal causes and the first department chairman in the history of Harvard University to appoint a black to tenure — cannot be accused of insensitivity to the need for social justice. Yet his editorial in the *New England Journal of Medicine*, arguing for reasonable stretching in increasing the opportunities for minority candidates, was presented by the news media as a racist attack, and he was vilified by many colleagues at Harvard Medical School in the hysterical atmosphere that swept through academic faculties during the late 1960s and early 1970s.

I sometimes wished for the dashes of humour that lace Davis's lectures, but the issues in these essays are really serious business. In his foreword, Edward Shils suggests that scientists generally underestimate the depth of the current anti-science movement, and he makes it clear why this important set of statements by Davis will reward the attention of the general public as well as scientists. □

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Sigmund meets Charles

John R. Durant

The Problem of Altruism: Freudian-Darwinian Solutions. By C. R. Badcock. Basil Blackwell: 1986. Pp. 206. £14.95, \$24.95.

BOTH natural and social scientists regard Freud's psychoanalytic theories as a somewhat baroque construction of over-elaborate and largely untestable speculations. *The Problem of Altruism* is dedicated to the task of restoring them to their rightful place in the scientific sun. Christopher Badcock is a social scientist who regards conventional social theories of all sorts as hopelessly inadequate to their task. These theories, he argues, being committed to various forms of "holism" and "cultural determinism", are all involved in the futile attempt to explain one social phenomenon in terms of another. What is needed instead, he suggests, is a reconstruction of sociological theory on more reductionist and individualist foundations, and he attempts to lay these foundations by combining psychoanalysis with darwinian social theory, or human sociobiology.

At first sight, this seems a most unpromising strategy. Not only does human sociobiology have a reputation of its own for over-elaboration and untestability, but also it appears to be quite distinct in its

approach to the explanation of behaviour. Where freudian theory deals with psychological entities such as the conscious, the pre-conscious and the unconscious minds, and with psychological processes such as projection, regression and repression, darwinian social theory deals with biological entities such as genotypes and phenotypes, and with biological processes such as kin selection and reciprocal altruism. Where is the room for marriage between these two?

Badcock's central argument is that the place where psychoanalysis and sociobiology meet is in the field of "dynamic psychology". For example, the American sociobiologist Robert Trivers has analysed the relationship between parents and their offspring in terms of psychological conflict; and he has debated the possible adaptive advantages of the unconscious mind. In each case, a recent sociobiological analysis appears to mirror an older, psychoanalytic view. Modern darwinists, Badcock suggests, are busy rediscovering and vindicating Freud.

Badcock builds his case for the rehabilitation of Freud around the central theoretical problem of sociobiology, namely altruism. Sociobiologists admit only two major mechanisms for the evolution of behaviour which raises the reproductive fitness of another individual at the expense of that of the actor: reciprocity, and kin selection. Reciprocity, he suggests, may have become an important element in human social behaviour with the development of cooperative big-game hunting; and it may have led to the rapid evolution

of complex psychological mechanisms enabling individuals better to practise and detect cheating, including elaborate moral codes and the unconscious. Similarly, kin selection may have promoted the evolution of a basic psychological mechanism of identification; and once in place, this may have permitted the development of anything and everything from masochism to heroic self-sacrifice on the field of battle.

The strength of this freudian-darwinian approach to human behaviour lies in its recognition of the need for a cogent psychological theory to place between the abstract principles of biology, on the one hand, and the concrete realities of human society, on the other. Its weakness, however, lies in the sloppiness of the theoretical constructs that lie at the heart of darwinized psychoanalysis. Take, for example, the central notion of identification. Supposedly, our ancestors evolved a basic ability to identify with close kin in order that they should aid them in circumstances that would promote their own inclusive fitness. Well and good; but for such an ability to evolve, it is necessary that it should be highly discriminating; for much (indeed, most) helping behaviour is detrimental to inclusive fitness and could never evolve. What we need to know, then, is what kind of identification mechanism is being proposed. This we never learn. Instead, we are presented with an allegedly evolved genetic-psychological trait which is so indiscriminate that it leads people to behave altruistically towards virtually anyone and everyone. Under what circumstances could such a dangerous trait as this possibly evolve?

Psychoanalytic theory has always suffered from the problem that its central claims are insufficiently specified to permit the formulation of scientifically testable predictions. Recently, a certain genre of sociobiological literature has rediscovered the superficial appeal of equally vaguely-formulated hypotheses about the roots of human conduct. Having set out to combine the two enterprises, it is perhaps not surprising that Badcock has fallen victim to the trap of explaining both too little and too much. This is a pity, for the ideal of a powerful and a predictive evolutionary psychology is a worthy one. We know that Darwin's basic insights can be applied rigorously to behaviour in general. Perhaps at least some of Freud's ideas could be re-cast in such a way that they, too, could be applied rigorously to human conduct; but this has yet to be shown. In the meantime it has to be said that no genuine "freudian-darwinian solutions" are to hand. □

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Scrotum hokum

Walter Gratzer

The Monkey Gland Affair. By David Hamilton. *Chatto & Windus, London: 1986. Pp.155. £11.95.*

ACCORDING to Dr Johnson, a life protracted is protracted woe. In 1953 the good Pope Pius nevertheless journeyed to Switzerland to receive injections of testicular tissue at the hands of the egregious Dr Niehans. His bid for rejuvenation (though presumably not virility, by which it was generally measured) must have been accounted successful, for shortly afterwards the Mephistopheles in this Faustian contract was elevated to membership of the Pontifical Academy. This occurred two years after Serge Voronoff, in his day the most celebrated and successful exponent of testicle (or, as the euphemism of the time had it, monkey gland) implants, had died, discredited, despised and mocked by the society that had lionized him for two decades. Science does not eradicate human credulity, it merely shifts its focus.

The search for the secret of eternal youth has attracted not only crackpots and mountebanks, but also serious and sometimes even distinguished scientists, whose reason could be selectively suspended. The most illustrious of these was Metchnikoff, who was convinced that aging was caused by bacteria in the gut, which destroyed connective tissue. These, he held, could be driven out by abundant ingestion of yoghurt. Examples nearer to our own time include the view that antioxidants can arrest the processes of decline through the elimination of free radicals, and that lead clothing to exclude cosmic radiation will encompass the same end. None of these theories ever achieved much of a popular following; yet in the 1920s one

fancies, there must have been queues of rich, aging voluptuaries in the ante-rooms of "Doc" Brinkley's clinic in Kansas and at the Vienna "Vivarium", their trousers draped over their arms, braces dangling, impatiently awaiting their goat testis implants or unilateral vasectomies — which the learned Professor Steinach was able to assure them would result in the retention of sperm in the testis and thus suffusion of the system with youth and vitality. (This is curiously reminiscent of the principle upheld by the yogis, that the emission of sperm, which they equate with manly virtue, enfeebles the body, so that one must learn to aspirate it back after coition. Many Victorian moralists subscribed to the same opinions, but prescribed abstinence as a corrective.) Steinach treated women by the even less appealing method of X-irradiation of the ovaries.

David Hamilton, who is both a surgeon and a historian of medicine, has written a scholarly, absorbing and vivid account of the history of testicular implantation, which thrived in the first half of this century. For Hamilton, the most interesting figure amongst the *galère* of improbable characters that throng his pages is Voronoff, because he was sincere in his efforts, deluded rather than a charlatan, and within limits rational in his beliefs.

These limits were set by an unfathomed though common ignorance, verging on obscurantism, about the techniques of experimental design and evaluation. The same attitudes of mind are still with us, and they animate homeopathy, psychoanalysis and a range of other peripheral disciplines. The reasoning behind implantation therapy was not new, and amounted to little more than that the testis was the seat of fertility, therefore of youth. However the discovery of endocrine secretions encouraged the plausible hope that foreign testicular tissue might be the source of some benign active princi-



The Kansas quack — a feature about "Doc" Brinkley in the New York Evening Journal. Brinkley is shown holding the first "goat gland baby", born to one of the recipients of a goat testis implant.