

Behavior Reinforcement

I recognize, commend, and support B. F. Skinner's goal of a society run without punishment. But I cannot agree that his methods are inherently non-punitive, as claimed in his letter of 6 September (p. 813). It may seem that training a pigeon by giving it food to eat is a nice, nonpunitive method of behavior control, but that is not all there is to the procedure. Before operant conditioning is demonstrated, the body weight of the pigeon is (according to standard procedure) first reduced to 80 percent of the weight of the pigeon when it was feeding freely; this is accomplished by the obvious method—starvation. To describe the situation in terms that Skinner apparently rejects, the bird has to be damned hungry before it will, in order to obtain its pittance of grain, run in figure eights, play Ping-Pong, or peck so long and furiously that it wears its beak down to a grotesque stub.

The general rule is that there must be a significant deficiency of x before x becomes an effective reinforcer. This means that deprivation is part and parcel of reward. How hard will anyone work at an unrewarding task for something that is already freely available? How much would you have to pay a millionaire to mow your lawn?

In order to control behavior by Skinner's methods, a person must either have the power to create shortages of reinforcers, or arrange to be the one who fills an existing need (the *only* one, of course, if his efforts are not to be subverted by others who desire to see other behavior). In either case, he must not respond to knowing of another's need by simply helping to fill it out of compassion. He must not, that is, if he wants to take advantage of another person's needs in order to control that person's behavior.

When I put it this way, operant conditioning doesn't sound so much like a scientific procedure designed for the good of mankind. It sounds a little more like what I think it is—a new way of describing a velvet glove without calling attention to the iron fist that shapes it. There is no way to separate reward from punishment, or punishment from reward; they are simply different ways to describe the onset or the relief of the same thing—pain. A person cannot evade responsibility for his role in the continuation of another's pain just by picking his words carefully. Nor can he

evade responsibility for choosing his own goals by saying that scientific principles demand that he do so. He is still the one who weighs those principles against the multitude of other equally and often much more important considerations that make up the totality of human experience.

WILLIAM T. POWERS
1138 Whitfield Road,
Northbrook, Illinois 60062

Powers evidently lives in that grim Aristotelian world in which one strives, not for pleasure, but for the absence of pain. His facts are quite wrong. A pigeon need not be "damned hungry" to respond at a very high rate for hours, as a millionaire need not be short of money to spend hours of intense concentration at the roulette table. It is not the level of deprivation but the contingencies of reinforcement that count.

As for behavior modification, anyone who looks into the average classroom, or home for the retardate, or hospital for the psychotic, or training school for the juvenile delinquent, or, for that matter, the average family will discover a generous supply of reinforcers waiting to be arranged in effective contingencies. He will not have to "punish" anyone before setting to work. And one should look at the uses which have been made of contingency management before trying to assess its place among the "more important considerations that make up the totality of human experience."

B. F. SKINNER
Department of Psychology and Social
Relations, Harvard University,
Cambridge, Massachusetts 02138

India's Nuclear Test

It is perhaps difficult for a Western mind to analyze and appreciate quickly and fully the implications of the underground nuclear test carried out by India on 18 May at Pokhran in the Rajasthan desert. This explosion has stirred world opinion and has brought India reactions ranging from approbation and sympathy to dissent and denouncement, as reported by Robert Gillette (*News and Comment*, 7 June, p. 1053). With regard to India's capacity to produce plutonium, certain facts must be understood. At present the only source of plutonium not subject to bipartite or international controls of end use is the plutonium produced from the nuclear reactor "Cirus" at Trombay. When built

with Canadian assistance in 1961, this reactor was subject to the "safeguard agreements." However, by the mid-1960's, India had developed its own uranium fuel fabrication technology and started using indigenously produced uranium in the reactor. According to India's Atomic Energy Commission, this procedure circumvents the restrictive arrangement for plutonium. Estimates indicate that Cirus could not have yielded—from the time of its inception—more than 100 kilograms of plutonium. From this, about 20 kg was used for the plutonium fueled "Purnima" (the "zero-energy" fast reactor with a plutonium core) which has been operating at Trombay since May 1972. Some 15 kg of this plutonium was used for the Rajasthan nuclear detonation. India is also setting up a second separation plant at Tarapur to extract plutonium from the used fuel rods from the Tarapur and Rajasthan nuclear power stations. When completed, this plant will yield every year 227 kg of plutonium, the end use of which, however, will be subject to international control. On the other hand, plutonium which will be produced from the Kalpakkam and Narora plants, now under construction, will not be subject to any international controls. Together these nuclear plants will produce 260 kg of plutonium per year. All this plutonium is intended for purposes which will have no military applications, but will be used purely for civilian purposes, such as enhancement of power, large excavation projects, mining works, and oil exploration.

Gillette states at the end of his report that from "the Canadian point of view, it has begun to look like a case of technological charity gone sour." However, Canadian Senator Sydney Buckwold appears to have readily accepted the Indian declaration that its underground nuclear test was meant exclusively for peaceful purposes. At the 20th annual conference of the Commonwealth Parliamentary Association held in Colombo, Ceylon, on 7 September, Senator Buckwold said he was convinced that India did not use Canadian nuclear material for conducting the test in a clandestine manner and that he would, on his return to Canada, try to convince the Canadians of India's laudable motives. It is time that the Western world understands that India's work and efforts are in the sphere of peaceful applications of nuclear energy.

S. K. GHASWALA
Edena, 97, M. Karve Road,
Bombay 20, India