Author Responds to Review

A review of my book, Alternatives to Pain in Experiments on Animals, recently appeared in your journal (Volume 2(3):159-161, 1981). I appreciate the reviewer's favorable comments and have benefited from several of his corrections, for instance that the Ames Test identifies mutagenic chemicals but not tumorigenic cells. I was also mistaken in saying that Chemie-Gruenenthal, the manufacturer of thalidomide, was acquitted when on trial for inadequate packaging of thalidomide. My three paragraphs overdramatized and over-condensed a complicated issue.

I should prefer to maintain "dignified silence" rather than to indulge in peevish rebuttal with your reviewer. The benefits are obvious. The woodchip litter condition is twice as clean as the bare-floor condition, even after 6 weeks of continuous use to itself, the litter condition is twice as economical since cleaning time is cut by almost 60%. Odor: The litter condition is less offensive, as judged by a smell-test, than the bare-floor condition, even after 6 weeks of continuous use to date, no harmful effects have emerged. The benefits are obvious.

Reference

Livestock Abuse in Trucks and Sale Yards

In my opinion, the number one animal welfare problem in the U.S. is the abuse of livestock during transportation and while they are passing through market facilities. The problem is greatest in the southeastern, south central, and southwestern regions of the country. Most of the abuses which occur are already outlawed under existing federal, state, and county anti-cruelty and humane laws. The problem is that the laws are not being enforced.

We have witnessed deliberate cruelty occurring on a regular basis in many livestock operations. Based on my extensive travels throughout the U.S., I estimate that 10 to 15% of livestock markets, feedlots, ranches, and slaughter plants are allowing gross cruelty to occur. These are not isolated incidents. Specific examples of abuses include kicking, beating, and spraying cattle with a hose in the face with a hose; hitting calves at a sale barn with boards; hitting cattle with nails in them; trucks with broken fences; slamming heavy overhead gates on the backs of cattle; overpowering hydraulic squeeze chutes. This resulted in rupturing the animal internally. Hydraulically compressed chutes are safe handling devices if used correctly (Grandin 1977, 1980a).

Physical abuse and poor husbandry practices cost the livestock industry money. Stopping these abuses would save the industry millions of dollars annually by reducing death losses, sickness, loss of weight gains and bruises. Why are these abuses allowed to continue? The livestock industry as a whole loses money. Each individual along the marketing chain simply passes the death losses, bruises and sickness to the next person in the chain (Grandin 1980b). The cattle industry as a whole loses money. Each individual along the chain collects his money, but he does not see the losses come directly out of his pocket. Losses are also tolerated for tax and other financial reasons.

Here are some typical examples of passed-on losses: A small rancher in the Southeast is not going to vaccinate, dehorn, castrate and prewean his young
We are interested in the survey indicated that 34 to 45% of the stock handlers unless they received a premium price in their barn. Feeding expensive feed. Trucking losses could be reduced by paying drivers bonuses for low death and injury losses. This works well for hog truck drivers.

In another survey (Grandin, 1981), producers who sold their cattle to the slaughter plant on a carcass basis had almost twice as many bruises compared to producers who sold their cattle on a carcass basis. The producer gets bruises deducted from his check when cattle are sold on a carcass basis. Observations also indicated that when the feedlot and the slaughter plant are owned by the same person, the handling of the livestock is better. The losses cannot be passed on in this situation.

Information Sought

The Institute for the Study of Animal Problems is seeking papers, anecdotal material, preliminary observations, unpublished research data and arguments on the following topics:

**Breeding of Wild Animals in Captivity** — We would like to examine ethical and practical issues, such as the type and degree of constraint which are or should be placed on breeding non-human primates for research, or the role of zoos as "genetic reservoirs" for endangered species.

**Cross-Cultural Comparisons of Human Attitudes Toward Animals** — We would like to collect ethnological and anthropological data on how people in subsistence economies interact with their domestic animals and with wildlife. For example, sub-Saharan Fulani tribesmen control their cattle through the use of touch, in contrast to, say, the Western roundup. How do such differences affect the character of the human/animal bond?

**Productivity as a Measure of Farm Animal Welfare** — We are interested in the question of how the economies of scale which govern modern intensive systems of animal farming affect evaluation of the individual animal's welfare. In addition, does individual productivity reflect individual welfare?

**Use of Animals in Psychological Research** — We encourage comments on and data illuminating the basic psychologist's paradox: If the human psyche is an important parameter in moral considerations, then the better the animal is at modelling the human psyche, the greater consideration it must be paid as an object of moral concern.

Please send all material to the Institute for the Study of Animal Problems, 2100 L St., NW, Washington, DC 20037. Attention: TTD.


Regulation of Biomedical Research

Andrew N. Rowan

The idea of abolishing or simplifying government regulations has a large following in Washington at the moment. As Reagan and his minions start to prune the growth of the past twenty years, we must hope that they are able to distinguish between the healthy growth which provides needed support and the unnecessary growth which strangles necessary initiatives. However, there is one area where we need more regulation rather than less, namely, biomedical research. In calling for more regulation in biomedical research, I do not mean the imposition of outside controls by allegedly ignorant and insensitive bureaucrats (although I think some outside control is unfortunately necessary), but rather the control which scientists themselves are meant to exercise over their work. I am calling for more attention to the regulation and control of experimental variables, such control being ever more important as the questions asked probe deeper and deeper into the subtle workings of biological systems.

In the 1940s, several researchers investigated environmental factors affecting various pharmacological parameters. Chen and colleagues (1943) demonstrated that the potency of insulin increased 40-fold from 20°-40°C, while the variance (square of the standard deviation) dropped over 4000-fold. Chance (1947) showed that the toxicity of an amphetamine varied according to the number of mice housed together, the toxicity for ten mice housed together being one tenth that for solitary animals. Others have followed the example set by these studies and have attempted to assess the effects of various environmental and stress-producing factors and their possible consequences for research (See News and Review).

In metabolic biochemistry, a warning was sounded by a group of German scientists for those who use in vivo metabolite levels to study regulatory mechanisms (Faupel et al., 1972). In an elegant study, the metabolite levels of rat liver were measured using the standard "freeze-clamping" technique in which tissue is frozen to −193°C virtually instantaneously by clamping between aluminum plates which are precooled in liquid nitrogen. However, with this technique, there is either an appreciable delay (greater than 10 seconds) in removing tissue from the killed animal, or the animal is anesthetized so that the tissue can be frozen in situ before the animal is killed. The possible effects of the delay, killing methods or anesthesia are usually ignored because of the problems of control. Faupel and his colleagues, using a simple double guillotine and rats that were in an unstressed state, showed that anesthetics, stress and violent killing techniques caused important variation in the levels of certain critical metabolites, such as adenosine monophosphate. By doing so, they called into question a great deal of earlier work and sounded a warning for anyone not taking these factors into account. Yet their study either is perceived to be an interesting curiosity or is ignored. The extra care which would be required is more than most researchers are willing to entertain, and they would probably argue that such extra control is not a requisite for the success of their particular research. According to a recent article in Science 80 (December, 1980), the circadian rhythm is also very important, as an animal's response to a particular stimulus or drug treatment varies in a regular manner according to the time of day. For example, an LD50 dose of phenobarbital will kill no rats at the most favorable period during the day, but all will die if dosed during the least favorable period. Chronobiologists (those studying the consequences of diurnal and other regular biological rhythms) maintain that the results of some previous research studies are dubious; that many toxicology studies, especially of behavioral toxicity, need to be redone and that the conduct of scientific research must include controls for these time-dependent changes in all future studies.

References


