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Abstract

Outlined are the efforts of the Animal Welfare Institute (AWI) for the last twenty-five years to end abuses to animals in high school biology programs. After concluding that the AWI's two brief rules prohibiting painful experimentation were not well understood by students even after years of effort, the AWI adopted the rules of the Canadian science fairs, which are similar to the Westinghouse Talent Search in that they simply prohibit experimentation on vertebrate animals. The presentation includes reference to the AWI manual, "Humane Biology Projects."

Development of Scientific Thinking and Observation

Close observation of animals by scientists of genius have contributed enormously to the changing view of the relationship of our species to the others. We are beginning to wonder whether our capability to do massive harm may be the major distinction between man and what used to be commonly known as "the brutes."

Henri Fabre, Charles Darwin, Karl Von Frisch, Konrad Lorenz, Niko Tinbergen, Jane Goodall, George Schaller, Iain Douglas-Hamilton, Dian Fossey, to name a few inspired field naturalists, have changed our concepts, while the Gardners, Roger Fouts, and Francine Patterson, who have pioneered in communications with the great apes, have shown us what is possible through painstaking research in understanding the thinking of some of our fellow inhabitants of the earth. Rachel Carson (1977) wrote:

> *I like to define biology as the history of the earth and all its life—past, present, and future. To understand biology is to understand that all life is linked to the earth from which it came; it is to understand the stream of life, flowing out of the dim past into the uncertain future, is in reality a unified force, though composed of an infinite number and variety of separate lives. The essence of life is lived in freedom. Any concept of biology is not only sterile and profitless, it is distorted and untrue if it puts its primary focus on unnatural conditions rather than on those vast forces not of man's making, that shape and channel the nature and direction of life.*
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> *To the extent that it is ever necessary to put certain questions to nature by placing unnatural restraints upon living creatures or by subjecting them to unnatural conditions or to changes in their bodily structure, this is a task for the mature scientist. It is essential that the beginning student should first become*

acquainted with the true meaning of his subject through observing the lives of creatures in their true relation to each other and to their environment. To begin by asking him to observe artificial conditions is to create in his mind distorted conceptions and to thwart the development of his natural emotional response to the mysteries of the life stream of which he is a part. Only as a child's awareness and reverence for the wholeness of life are developed can his humanity to his own kind reach its full development.

These words appear in the preface of *Humane Biology Projects* (Animal Welfare Institute, 1977). In the body of this publication are numerous examples of projects and teaching suggestions which encourage development of scientific thinking and rigorous observation, always respecting the feelings of animals if they are involved. This manual has been through numerous printings and one revision since it first appeared in 1960 and has been welcomed consistently and increasingly by teachers. There can be no doubt that attitudes have changed in that period from an attempt to have children imitate animal experimenters in a superficial manner to the present serious attempt to teach principles of ecology and to encourage young people to analyze and understand the environment as a whole.

Development of Research Capabilities in Schools

Callousness and cruelty toward animals seems to be an expectation of the naive mind in laboratory studies involving animals. It would appear that a higher proportion of children's experiments inflict suffering on animals than experiments by qualified scientists publishing in established journals. The children's experiments provide no cures for diseases or other useful advances; they simply cause pain and distress and set young minds off with a basic misconception of the meaning of research, a head start in insensitivity and an assumption that the strong may, with impunity, impose suffering and death on the weak.

An interesting comparison of projects from California (all humane) and from other states (often inhumane) was prepared by Dr. F. Barbara Orlans (1978) when the International Science and Engineering Fair was held in California, a state which prohibits painful experiments by untrained youths. The success of the California law in halting cruelty shows how valuable this state statute is. Massachusetts passed a similar law in 1979. The attempt to repeal an existing Illinois law prohibiting animal experiments by high school students has thus far failed.

It is our experience that it is necessary to be specific in standards or regulations on this subject, whether they be in the form of law or of voluntary agreements, as in the case of the rules for Canadian science fairs. The Animal Welfare Institute (AWI) has worked to end cruel experiments by untrained youths for more than twenty years. We began by distributing two brief rules. Large numbers were requested by teachers, and their wide distribution by mail and at science teachers' conventions doubtless did some good. However, my confidence in their effect was considerably shaken when I saw them prominently displayed at a local science fair in front of an animal experiment which plainly violated them. Dr. Harry Rowsell had similar difficulties in making plain English understood. (See Rowsell, "High School Science Fairs . . . The Canadian Experience.")

The Westinghouse Science Talent Search was the first to recognize that the most effective way to prevent untrained young people from undertaking projects wholly

unsuitable, because of the infliction of severe pain on animals, was to limit animal studies to pure observation of wildlife or domestic animals.

It was after a horrific project in which a young girl blinded sparrows and starved them to death that Westinghouse examined this and other projects undertaken because a young student aspired to win a prize. The company made the wise decision to prevent any cruel projects in the future.

Since Westinghouse made its rules crystal clear, no cruel experiments have been conducted by young people seeking to win these distinguished prizes. Because of the California law, no cruel experiments by California students were shown at the International Science and Engineering Fair when it was held in Orange County in 1978. The Canadian science fair rules, initiated through the leadership of Dr. Harry Rowsell, have been successful in heading off pain infliction on animals by untrained youths. The AWI has adopted these Canadian rules because the evidence shows them to be the best. They appear in the introductory pages of *Humane Biology Projects* (Animal Welfare Institute, 1977). We recommend their adoption by all teachers and others associated with science fairs.

In making this recommendation, I want to emphasize that there is nothing antiscientific about it. The great biological discoveries of the future may well depend on a major increase in our understanding of other life forms and the feats of which they are capable. By encouraging development of sharp observation among future research workers, we encourage this capability. Such capabilities are no less desirable in the laboratory than in the field. Respect for rigorous standards in the acquisition of knowledge is more readily acquired when crude surgical or other invasive animal experiments are not allowed to create an illusion of scientific reality for lazy minds.

The importance of developing the ability to observe animals behaving naturally was startlingly documented in a recent article, "Dr. Guthrie and *Felis domesticus* or: tripping over the cat" (Moore and Stuttard, 1979). The authors showed that completely erroneous conclusions had been reached over a period of years because it had not occurred to scientists who were using operant conditioning techniques to consider that their feline subjects might be greeting them as they entered the room. Moore and Stuttard (1979) wrote:

When Guthrie and Horton set out to study the stereotypy of learned behavior, they chose to observe at close range the reactions of individual animals while rewarding them for contact with the vertical sensor rod. In retrospect, their methods were self-defeating. (i) They failed to consider the animals' species-typical repertoires. (ii) Both experimenters and as many as eight guests sat in front of the glass-fronted chamber, unconcealed by any blind. (iii) Each trial began with the animal's reintroduction into this setting, making "greetings" especially probable. (iv) The vertical rod, intended as a netural response sensor, provided an almost ideal target for redirected rubbing. Thus, efficiently if inadvertently, the experimenters arranged to evoke the species-typical reactions which they, and many others, failed to recognize and which were construed as evidence for particular learning mechanisms.

This interesting paper underlines the importance of a more friendly approach toward animals rather than holding them, as it were, at arm's length, referring to them by number rather than by name or by some other individualized method. In other words, true science should move toward becoming truly humane.

We have the opportunity in the training of young future scientists to encourage them in paths of sympathy and consideration for fellow animals. We should avoid developing a harsh and unfeeling attitude, both for the benefit of animals and for the benefit of the young people and their intellectual and emotional development.

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SESSION III

High School Science Fairs: Evaluation Of Live Animal Experimentation

CHAIRMAN: ANDREW N. ROWAN