spends only about $2 million checking on the validity of promotional claims. The drug industry exerts tremendous pressure, both direct and indirect, on our health care system and on our government. Most of the drugs produce serious and often fatal side effects. While every "miracle" breakthrough occupies front page columns in daily newspapers, stories of litigation and deaths from drugs tested and approved as safe are buried on the last page with the want ads.

The so-called alternative therapies include homeopathy, herbalism, acupuncture, relaxation techniques, meditation, osteopathy, natural hygiene, massage, fasting, diet and many others. These approaches are all natural and based on years of human experience, and do not foster distressing side effects. They aim to treat the individual and not the identified and isolated symptoms. What a comparison these offer to the loss of hair, loss of sight, loss of movement, and other reactions typical of the drugs developed through the medium of animal experimentation.

Whatever the alternative, it will be directed at the promotion of health. The sooner these alternative approaches are incorporated into the body of medical training and literature, the better off we will be. It is no small indictment of orthodoxy that these "complementary" treatments and approaches have enjoyed growing and widespread popularity among disaffected individuals alienated from the current practices.

ALTERNATIVE RESEARCH TECHNIQUES

Although it is the technological alternatives which are most often considered in relation to animal experimentation, they are limited in one important respect: because they perpetuate the current system of medical care, they will not in themselves bring about the radical changes needed in the practice of medicine. They should not be down-played by the anti-vivisectionist, however, as they are important for reduction and replacement of animals in the laboratories of the world as the situation stands today.

A health care system founded on the notion of disease prevention rather than disease management would greatly reduce the need for today's highly cherished conventional treatments, by drastically curtailing the incidence of disease in humans. While we will no doubt still experience some illness and accidents, a system could be encouraged which would restrict the number of drugs available only to those that are essential rather than to permit the proliferation of thousands of hazardous and unnecessary medicaments. Such substances would be tested through the more sophisticated alternative means and then have their final evaluation in carefully controlled human trials.

For years, anti-vivisectionists have been forced into a defensive posture by the question, "But how would we survive, what would we do in the absence of animal experiments?" Armed with the right information, though, today's activist may easily counter with, "The question to be asked is how much longer can we survive while relying on a medical system which is forever using resources yet giving ever-diminishing returns and failing in its alleged aim of promoting health?"

Vivisection has enjoyed too much credit for supposed benefits to human health. Experiments on animals will never contribute significantly to human health advances, for they are undertaken in artificial conditions with artificially induced symptoms of disease, in apparent ignorance of the true causes of illness — the factors of environment, diet, psychology and public health policy which affect every individual. The dismantling of our medical industrial complex and the rechanneling of resources and funds to the study of the human condition in humans would lead to a glorious two-fold result: It would free millions of animals worldwide and also result in a dramatic improvement of human health.

(Ed. Note: This article was adapted by staff member Bernard Unti from *The Liberator*, September/October 1985, a publication of the British Union for the Abolition of Vivisection.)

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NONHUMAN ANIMALS IN PAINFUL OPHTHALMIC (EYE) RESEARCH

The Association for Research in Vision and Ophthalmology (ARVO) recently developed a Resolution on the Use of Animals in Research. As printed in its official publication, *Investigative Ophthalmology and Visual Science (IOVS)*, the Resolution reads as follows:

The Visual-Science community has long recognized a scientific and ethical responsibility to provide appropriately for the welfare of animals used for research and education in biology and medicine.[1]

The Association for Research in Vision and Ophthalmology strongly endorses the continued conservative and humane use of animals in vision research. The vast majority of the major advances made in this field over the past several decades have come from animal studies — advances that have saved or restored the vision of millions of people. The recent development of new animal models for human disease offers hope for those now suffering from currently incurable eye problems or for the thousands who will soon encounter unpreventable and untreatable diseases.

At the same time, ARVO applauds the efforts of those who seek alternatives to animals for certain types of research. However, animal research will of necessity continue to be of vital importance in the struggle against human blindness.[2]

The NIH and several major biomedical research societies have been working together to insure the adequate care and humane treatment of laboratory animals. Therefore, ARVO directs its Government and Public Relations Committee to work with the National Eye Institute, other NIH components concerned with the use of animals in research, and other biomedical research societies in formulating policies and procedures in this area to assure that recognition of the essentiality of the continued humane use of animals in research is included in any federal, state, or local legislation or university edicts on this subject.

References

1. ***US Department of Health, Education and Welfare: Guide for the Care and Use of Laboratory Animals. NIH Publication No. 80-23, p 1.***
2. ***Adapted from the 1983 Report of the National Advisory Eye Council, Vision Research — A National Plan: 1983-1987. NIH Publication No. 83-2470, p 85.***

Using animals is considered appropriate when there is the perception that human comfort or life are at stake. There is no mention of ethical concerns about this use and its only defense seems to be based on the assumption that one's actions are justified by the benefits gained. Moreover, the word "humane" is used three times but is never defined.

As stated in the Instructions for Authors of articles in IOVS, investigators utilizing animals must adhere to the above Resolution and a statement to this effect must be part of the Materials and Methods section of a manuscript. After reading a few of the articles with such a statement, and then reading the Resolution, I found that I gained no further insight into how the animals were treated in terms of welfare and general husbandry. Moreover, it became clear that the word humane did not appear to be appropriately used. Humane, according to *Webster's New World Dictionary*, is defined as "having what are considered the best qualities of mankind; kind, tender, merciful, sympathetic, etc."

Whereas the perceived importance of a study is an important factor to consider, the main issue is whether the treatment of the animals can be considered humane. Placing value on a piece of work is extremely difficult. Much, if not most, of the biomedical research done in the past has had little to no relevance to human health. Unfortunately, the nature of the work often was not predictive.

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RESEARCH IN REVIEW: IS DISSECTION NECESSARY?

by Bill DeRosa

Many science educators believe that dissection is a necessary part of the pre-college biology experience. These educators argue that dissection is a valuable motivational tool and helps to reinforce anatomy and physiology facts and concepts. Others, however, point to the negative effects of dissection: the astronomical waste of animal life; the psychological trauma dissection can cause to some students; and the creation in students of callous attitudes toward animals. Many also contend that dissection is educationally unsound because it leads to an overemphasis on the rote memorization of body parts. It is argued that students (especially the majority who will not go on to a science related field) derive greater benefit from study that emphasizes the living animal: the relationship between its structures and their function, and the relationship between the animal and its environment.

Recently Michael J. Leib, a biology teacher and researcher at the National College of Education in Chicago, attempted to determine if there was, in fact, any appreciable educational value to dissection at the pre-college level. Specifically, Leib's study, "Dissection: A Valuable Motivational Tool, or a Trauma to the High School Student?" was designed to determine whether dissection results in improved biology test scores, and whether diagrams and/or models can be substituted for dissection without resulting in lower test scores.

Leib's sample consisted of two high school biology classes from a school in the far south side of Chicago. One class, arbitrarily designated as the control group, received instruction from the traditional biology curriculum dealing with the worm phylum. This instruction included such materials as text books, diagrams of anatomy, an earthworm model, live worms obtained from a bait shop, and a preserved specimen which control group students dissected. The other class, designated as the experimental group, received the same instruction, except they did not dissect the preserved earthworm specimen. Both groups were then given a 35 item teacher-made test dealing with anatomical identification and functions of structures.

The test results indicated that there was no significant differ-

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