

The Principles of Humane Experimental Technique

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CHAPTER 4

THE SOURCES, INCIDENCE, AND REMOVAL OF INHUMANITY

The three chief principles stated...

The Removal of Inhumanity: The Three R's

We turn now to consideration of the ways in which inhumanity can be and is being diminished or removed. These ways can be discussed under the three broad headings of Replacement, Reduction, and Refinement (Russell, 1957a; cf. also Hume, 1957; Medawar, 1957). An earlier attempt to classify the subject (Russell, 1955) dispensed, like the Mock Turtle, with the advantages of alliteration; but the three modes now considered have conveniently been referred to as the three R's of humane technique (Russell, 1957a).

Replacement means the substitution for conscious living higher animals of insentient material. Reduction means reduction in the numbers of animals used to obtain information of a given amount and precision. Refinement means any decrease in the incidence or severity of inhumane procedures applied to those animals which still have to be used.

There are clearly areas of overlap between these categories. Consider the use of animal tissue cultures in virology (Sanders, 1957). In a fundamental sense, we are here replacing animals by insentient material, and the method has been classified as replacement for the present purpose. But since one animal may be used to provide many cultures, each providing more information than a single whole animal used directly, we might legitimately speak of reduction. Finally, the animal used as the source for the cultures may be painlessly killed, instead of being exposed to the risk of a virus disease; so we might also label the procedure as a refinement.¹

Despite such overlaps, and the fact that the humane experimenter will often employ more than one mode, the threefold division is useful as a means of bringing order into

the subject. In any given instance, it is not hard to decide where the emphasis should be laid. The three modes will, therefore, be considered in turn in the second part of the book.

1 There is another instance of overlap, which may be mentioned here for completeness, since we shall not discuss it in detail in this book. This is the use of such recording methods as the filming of experiments. Science depends on the repeatability of observations, but the more objectively these are recorded the less repetition is necessary in practice. Even in research, therefore, the film is liable to diminish overt experiment. In teaching it is still more important. Teaching consists (for our purposes) of demonstration and class-work. The demonstration of relatively inhumane experiments may be largely or wholly replaced by the use of filmed experiments. (Since the student cannot actually practice the technique in such cases, he or she loses little or nothing.) The use of such films is strictly a case of reduction--the animals used to make the film now deputize, once and for all, for all other animals that might subsequently have been used. But once the film is made, it is obviously a case of replacement. The listing and distribution of films and filmstrips for demonstration may be an important mode of humane progress in teaching. Much research is currently carried out on the didactic function of visual instruction methods (cf. e.g. Laner, 1954). Television, too, might be pressed into service here.