

The Principles of Humane Experimental Technique

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CHAPTER 3

THE ECOLOGY OF EXPERIMENTAL ANIMALS

We may infer that our domestic animals were originally chosen... because they were useful...

The rat and mouse... have been transported by man to many parts of the world...

Monitoring Animal Experimentation

The ideas of cybernetics, and especially that of feedback control, have impressed themselves on society in many ways, of which factory automation is only one. Self-monitoring, or self-awareness, is one of the central components of human individual intelligence (Halstead, 1947; Russell and Russell, 1957, and in press). The notion has been grasped at the sociological level. In industry and commerce it is becoming a routine measure for any large organization to devote considerable staff and expense to the monitoring of its own activities (cf. Meier, 1956). We are, therefore, disposed to expect a large and comprehensive literature of sources on the subject of animal experimentation (cf. Russell, in press, a). For it seems reasonable to suppose that science itself must adopt the principle of informative feedback, and animal experimentation in this country alone is an industry running to millions in commercial terms.

It is therefore surprising to discover the relative dearth of this sort of information, and the extreme recency of what there is of it. The Home Office returns give total figures annually, and total returns for cats, dogs, and the numerical insignificant equidae (horses, ponies, etc.). They give little detailed information about the use of animals or their distribution to laboratories. Moreover, experimenters often err on the side of caution in making their returns, one experiment on one animal being returned as one unit. Since many animals are used for repeated experimentation, the Home Office figures must overestimate the number of animals used annually. The D.S.I.R. Handbooks of Research in the Universities (1952, 1954-5, 1956) give useful qualitative (but no quantitative) information about research in most university laboratories. The Annual Reports of the Ministry of Health "On the State of the Public Health" provide

some information on public health and pathology laboratories, most of it qualitative or inferential from our present viewpoint. The Royal Society has initiated an admirable series of lectures on large research and pharmaceutical laboratories (e.g. F.S. Russell, 1947; Kellaway, 1948; Harington, 1949; Marston, 1950; Sexton, 1955; Macrae, 1957; de Burgh Daly, 1957). Specially useful here are the flow charts showing the temporal and logical patterns of experimentation. These lectures, and the publications of the big pharmaceutical firms, afford interesting pictures of work in these institutions, but with little numerical detail. In fine, we are left thus far with one quantitative but indiscriminate source, and several discrete but mainly qualitative sources.

The reason for this gap lies in the organization of animal experiment. It is not carried out by a single large institution, or even anything comparable to an industrial group, but by a heterogeneous assortment of bodies with different aims, methods, and affiliations. The natural answer to such a situation would be the creation of some central body in touch with all these and capable of adopting a unified view of their problems (Lane-Petter, 1953b; Russell, in press, a, b). And this is exactly the course that improvement has taken. For, happily, the situation is beginning to improve.

In 1945 the first survey of laboratory animal usage was undertaken. It was made by the standing committee of a conference sponsored by many scientific organizations, which reported to the Agricultural Research Council, the Medical Research Council, and the Ministry of Supply. Their (unpublished) results were based on limited samples and embodied a certain amount of informed guesswork, not all of which was later justified. They did, however, establish some striking facts--and for the first time. Soon afterwards (1947), the Laboratory Animals Bureau was set up by the M.R.C. Its main concerns are with the procurement and husbandry of laboratory animals, but it has also made the first serious and systematic investigation of their utilization. With the publication of this study, we enter upon a new phase of informed planning. The bureau was first directed by (later Professor) R.E. Glover; its present director is W. Lane-Petter. We shall consider at this point its contribution to our knowledge of animal usage.

At the beginning of 1953, the bureau conducted a systematic survey of most animal-using laboratories in this country, who were sent a number of questions about their procurement and usage of animals during the previous year. Therefore, 1952 is our *annus mirabilis*, and will be taken as a reference point throughout this chapter. Preliminary findings based on a previous sample survey by the bureau and on the first analysis of the 1952 data were published in 1953 (Lane-Petter, 1953b). This first account was remarkably prescient, for all its conclusions were amply confirmed in the first full report on the larger survey. This report appeared in 1955 (Lane-Petter et al, 1955), and constitutes to date our major and almost our only detailed source. It contains a wealth of information on animal utilization as well as animal procurement;

the latter subject, however, was the chief interest of the authors, and guided their choice of tabulation and analysis. Through the great courtesy of Lane-Petters, one of us (W.M.S.R.) was given access to the records on which this paper was based. It was therefore possible to perform a thorough reanalysis of the data from the usage point of view, and the results form an important part of the present book. In most cases, this second analysis provides more detailed information about similar topics from our present point of view, and it shows substantial gross agreement with the results of Lane-Petter and his associates. We shall therefore deal with their paper first in a cursory way, dwelling on points not brought out in the second analysis. Reference will usually be made to tables in the bureau paper dealing with the same aspects as our own.