Chapter 2
British Animal Behaviour Studies in the Twentieth Century: Some Interdisciplinary Perspectives

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An understanding of our relationship with animals, and of the uncertain boundary between our dependence on them and our exploitation of them, demands an awareness of the historical extent of the purposes of our interaction. An examination of this past relationship provides a context for a better assessment of the present-day importance many of us place on animals as other beings who ultimately have independent interests and a discreet power over our own human behaviour: they have become agents who affect the quality of our own lives. Our study, knowledge and manipulation of animal behaviour lie at the centre of the human–animal relationship, as demonstrated by the variety of situations in which attempts have been made to acquire a better understanding of animal behaviour in order to secure human interests. From the standpoint of the historian, this variety demands much interdisciplinary analysis concentrating on the late-nineteenth and the twentieth centuries. In this chapter, some British examples will be discussed in relation to developments in the United States, where scientific studies of animal behaviour soon stole the lead from Britain at the beginning of the last century.

The interdisciplinary potential of the historical study of British comparative (animal) psychology and ethology straddles many aspects of the arts and sciences; and the same is true of studies of animal behaviour that have been undertaken on a less scientific basis. It is perhaps surprising to find that a relatively new and ostensibly narrow research area (the history of studies of animal behaviour) has links with so many centres of thought and activity beyond its immediate academic boundaries. The history of comparative psychology and other studies of animal behaviour (pure and applied) in Britain offers interdisciplinary links with institutional, professional, ethical, recreational, literary and military histories. We will identify some of these links, most of which continue to offer opportunities for research across disciplines and subject areas. In doing so, we may perhaps also be able to understand the extent to which our attitudes to non-human animals have altered since the dissemination of Darwinian evolutionary theory.

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Some of the special themes discussed here were identified during the preparation of a doctoral dissertation on the historical development of comparative psychology in Britain since the late nineteenth century (Wilson, 1999). It soon became clear that comparative psychology could serve as a representative vehicle for an investigation of such interdisciplinary themes, many of which were also applicable to aspects of general science history; and that this investigation would be particularly dependent on an examination of a range of primary sources which revealed influences on the progress of the discipline itself. Because the development of comparative psychology as an academic specialism was significantly affected by certain pioneering figures, in order to illuminate these thematic areas it was necessary to locate and analyse personal and departmental papers in institutions and organizations whose staff had made a historic contribution to the subject and had influenced the environment in which it evolved. These sources, mainly within British universities' archives and the National Archives (formerly the Public Record Office), were subsequently able to throw light on associated areas, such as national and institutional support for science; the role of "markets" which encouraged professionalization; the efforts of women in the early twentieth century to establish a foothold in scientific research; experimental military applications of novel ideas (including a strange alliance between science and the performing arts, Wilson, 2001b); international cooperation both in research programmes and in theoretical debates (especially concerning learning theory); the emerging concept of ethical cost, and interest in the human–animal relationship; and the nature and effect on scientific activity of public opinion, pressure groups and the media.

New Contexts of Understanding

The scientific study of animal behaviour had first been made possible by the original theoretical frameworks of Darwin (1872) who proposed that the instincts, emotions and intelligence of non-human animals differed from those of man only in degree and not in kind. Darwin's evolutionary theories are popularly associated with the explanation of the development of physical characteristics in animals (human and non-human) reflecting the influence of heredity and the environment. During the nineteenth century, his demonstration of human kinship with the animal world through the apes provoked controversy. Assumptions about human uniqueness and the religious beliefs that humans were separate and entirely different from the rest of creation were brought into question. But Darwin's work was significant not just for its attempt to explain the evolution of those physical attributes in all animals that made them fit and able to compete and survive in their environments; he also suggested that behaviour had evolved, and that in this evolution there were again links between humans and other animals.

There soon followed, as a result, some pioneering experimental work in Britain by Douglas Spalding, John Lubbock, George Romanes, Conwy Lloyd Morgan and Leonard Hobhouse, and at the end of the nineteenth century it seemed as though there was a domestic tradition of comparative psychology in the making. This

"anecdotal" phase predominated in Britain before more procedurally exact scientific enquiries shifted via Lloyd Morgan and Hobhouse to the United States of America, leaving a lull in Britain. The work that was carried out was described as anecdotal because it was not subject to the controls of laboratory method. However, it represented the first attempts to find behavioural links between human and non-human animals, to learn more of the effect on this behaviour of the relationship between heredity and the pressures of the environment, and even to show that animal behaviour could serve as examples for the development of human society. This was indeed pioneering work, and as a consequence we have become much more ready to attribute qualities of loyalty, affection and even altruism to non-human animals (see, for example, Hamilton, 1964). Over the years since the late nineteenth century, therefore, our developing knowledge of the behaviour of animals has led to an awareness of their interests and of the importance of our relationship with them. However, in the meantime, human self-interest has continued to pull in the other direction, and very often we restrict our generosity to our pets. A paradox lies in the fact that the more we know of animals, the more we can also exploit them for economic or medical reasons. Our relationship with them is, therefore, characterized by another Darwinian theory, that of competition and fitness for survival in species—a theory that leaves little room for morality or sympathy. That is why we continue to restrict most of our generosity to animals we are close to, such as pets, or, to a lesser extent, to threatened animals brought into our living rooms by those television documentaries that remind us of their interests.

Pioneers of Interpretation

The first British investigator to employ experimental techniques to investigate animal behaviour was Douglas Spalding, a Scottish slater who became interested in Darwinian implications of mental continuity between animals and man. He set out to examine the relationship between instinct and the environment as factors affecting the behaviour of newly born animals such as chicks and piglets. In a short series of experiments conducted in the early 1870s, he established the existence of inborn or instinctive behaviour. His experiments were not carried out in any laboratory, but his careful measures to cause temporary sensory deprivation in his subjects until several hours after birth provided convincing scientific evidence (Spalding, 1872, 1873). Like the later field-oriented ethologists, he believed it important to study animals in as natural conditions as possible in order to achieve reliable results. His own view had been that instinct and learning were closely linked, instinct guiding learning rather than suppressing it (Gray, 1967). He also developed materialist interpretations of human and animal behaviour, leading to the idea of "conscious automatism", when the organism interacts as if automatically with its environment, and when the mind does not direct the body: consciousness accompanies but does not cause behaviour. Such a materialistic psychology did not catch hold in England, but helped to prepare the ground for John Watson's behaviourism in the new century (Gray, 1968).

Darwin claimed that he relied especially on the opinions of another British investigator of the late nineteenth century, John Lubbock, politician and banker, whose analysis and explanation of insect societies, as in his *Ants, bees, and wasps* (1882), was set before the public so that lessons might be learned from insects about social organization, and so that the achievement of science in gleaning this information could be properly acknowledged (Fig. 2.1).[1] George Romanes also published accounts of animal behaviour that were often popular or anecdotal (G.J. Romanes, 1878, 1882, 1883, 1885; E.G. Romanes, 1896), but the rigour of his scientific work has lately been re-assessed, and Darwin had bequeathed much of his unpublished writing on animal behaviour to him, some of this material on instinct being incorporated into Romanes's *Mental Evolution in Animals* (1883) (Gottlieb, 1979, p. 149). From 1884, Lloyd Morgan engaged Romanes in a controversy centred on the possibility of a comparative science of psychology and the definition of instinct (Gray, 1963).

As one of T. H. Huxley's disciples, Lloyd Morgan was a strong advocate of an evolutionary approach in comparative psychology, and later in retirement set out a doctrine of the emergent evolution of consciousness (1923).[2] Of his many experiments, most have been described as informal studies of animals in natural surroundings outside the laboratory, but he recognized the limitations of anecdotes (Dewsbury, 1984, p. 315). He had stressed the need for the precise operational definition of terms and for the replication of experiments, and later asked: "Did one get out of the animal mind aught else than that which one put into it?" (1930, p. 248). He established some universal terminology that remains current, including "trial and error", "reinforcement" and "inhibition." Notwithstanding Spalding's contribution, he has been described as the real founder of experimental animal psychology (Thorpe, 1956), and his Canon, later to be excessively applied by the American Behaviourists, required the judicious application of a law of parsimony in experiment and observation: "In no case may we interpret an action as the outcome of the exercise of a higher psychical faculty, if it can be interpreted as the

[1] He was nevertheless "aware of the collectivist ideological uses of social insects", and "employed 'disinterested' experimentation to cast doubts upon the utopian depictions of co-operative, altruistic communities of ants and bees" (Clark, 1997).

[2] Lloyd Morgan's desk became a forum for most of those involved in psychological research with animals in Britain until the 1930s. All types of investigators as well as some foreign workers corresponded with him. New publications were exchanged and admired, and points of disagreement discussed. The following correspondence is preserved in the Bristol University History Collection (as referenced). Charles Sherrington wrote in 1901 in appreciation of his newly received copy of *Animal Behaviour* (DM 612); and much later both he (in 1923) and, via his wife, an infirm Henry Head (in 1929) expressed great interest in Lloyd Morgan's published studies of "emergent evolution" (DM 128/346 and DM 128/415). In 1913, Margaret Washburn referred to Lloyd Morgan's criticisms of her *The Animal Mind*, to her misgivings about Watsonian behaviourism and to her appreciation of Lloyd Morgan's *Instinct and Experience* (DM 128/290). Much further correspondence on each other's work took place between Lloyd Morgan and C. S. Myers, E. B. Poulton (Hope Professor of Zoology at Oxford), William McDougall, J. A. Thomson and others (DM 128/various numbers and DM 612). Lloyd Morgan remained at the centre of a network of correspondence on matters concerning animal behaviour long after he ceased his own experiments.

Fig. 2.1 A cartoon of 19 August 1882 satirizing John Lubbock and his work with insects. Reproduced with permission of Punch Ltd, www.punch.co.uk

outcome of one which stands lower in the psychological scale" (Lloyd Morgan, 1894, p. 53). In other words, we should not offer elaborate explanations of animal behaviour or of the mental attributes of animals if simple ones are equally valid. Dewsbury (1984, p. 188) notes that the Canon has often been misinterpreted. It was not written in an effort to eliminate the attribution of consciousness to nonhuman animals but rather to counteract casual anthropomorphism in comparative psychology. Since its enunciation, continues Dewsbury, many scientists have acknowledged that rampant application of it can lead to a denial of the existence of complex processes where complex processes exist. Lloyd Morgan himself found this problem in Edward Thorndike's puzzle-box experiments with cats.

The experimental work described in Lloyd Morgan's *Habit and Instinct* (1896) illustrated his theory of imitation and also approached the problem of habit formation and learning in birds by "trial and error." His studies were an important contribution in the application of laboratory methods to the behaviour of higher

vertebrates. This work was explained in the spring of 1896 in his Lowell Lectures at Harvard University. The lectures, and a further series at other places in the United States soon afterwards, have been credited with triggering the outburst of American work that followed (Warden, 1928). Linus Kline began similar work on the chick at Clark University in 1897, and Willard Small introduced the rat-maze there in 1899, but already by the autumn of 1896 Thorndike had begun his work on instinct and habit formation in the chick at Harvard. The strong influence of British theory, as evolved by this time, and the sudden American capture of the lead in the new work that resulted from it are especially represented in the pioneering experiments of Thorndike. Lloyd Morgan's lectures directly influenced Thorndike in his initiation of animal experimentation, and also led him to form his "connectionist" theory, which he later retained in the face of Behaviourism. He set out to develop the theories of Lloyd Morgan by subjecting them to systematic laboratory experiments that would yield quantitative results, and he thereby changed the standards for studies of animal behaviour (Boakes, 1984, p. 181; Mackenzie, 1977, pp. 68–80).

Just as Thorndike's work had been inspired by Lloyd Morgan, so its publication in 1898 encouraged a reciprocal phase of experimental activity in Britain carried out by the last investigator of this early series of influential British comparative psychologists. L. T. Hobhouse believed that the design of Thorndike's experiment did not permit the animals to display their full imitative and problem-solving capacities, or their capacity to learn quickly, since their state of agitation and natural histories had not been taken into account (Hobhouse, 1915, pp. 176–185, 236). He found it especially easy to criticize Thorndike's work because the latter's procedure and findings were so well recorded. His experimental design was better than Thorndike's (Weiskrantz, 1985), but his arrangement of methods, procedure, analysis and recording failed to match the new rigorous scientific standards of the American (Boakes, 1984, pp. 181–182), whose work is often considered to mark the beginning of controlled animal experimentation in psychology (Singer, 1981, p. 268). Hobhouse studied perceptual learning in cats, dogs and monkeys, and he incorporated his findings into an evolutionary theoretical structure that was both parsimonious and comprehensive (Mackenzie, 1977, p. 72); his analysis was, according to Gottlieb (1979, p. 162), "the most comprehensive theoretical exposition of the evolution of learning of its time." He identified what the later ethologists termed "releasing stimuli" as the mechanism of instinct. Organisms themselves were not passive or mechanical, but active, assertive, plastic and self-determining, while remaining subject to general requirements of homeostasis. Hobhouse accepted perceptual (rather than merely imitative) learning in animals, which Thorndike's "law of effect" had rejected; and he also identified the principle of stimulus generalization and learning sets (Hearnshaw, 1966). He presented an extraordinary variety of problems to a wide range of animals, including an otter and an elephant, and influenced both Robert Yerkes (an American who untypically developed his investigations outside mainstream behaviourism) and the Gestalt psychologist Wolfgang Koehler in the creation of discrimination apparatus and tasks for chimpanzees (Hearnshaw, 1964, p. 103). Much of the material in *Mind in Evolution* (1901) touched on issues that would later be widely considered in the study of animal behaviour, such as the

possible purposive nature of animal activity as well as the animal's ability to experience (later Gestalt-type) perceptual relationships (Boakes, 1984, pp. 182–184). Dewsbury notes of him: "Hobhouse proposed that apes and monkeys have a near-human capacity for mastering concrete perceptual relationships", which he called "practical judgment"; and he proposed that "the capacity for reasoning can be seen even in Thorndike's own data—as in the sudden improvements... in the learning curves of individual animals". He also originated the tasks of box-stacking and raking-in of food and other objects with sticks and ropes (Dewsbury, 1984, p. 303).

In common with other students of animal behaviour in Britain at the turn of the century, Hobhouse supplemented his book-writing with articles in the popular press. He contributed a series called "The diversions of a psychologist" to *The Pilot* in which, apart from frequent references to his *Mind in Evolution*, he warns of the unreliability of anecdotal evidence but describes experiments that readers can try for themselves (1902). In these articles, Hobhouse analyses his own work and that of Thorndike, and refers to his studies in learning and imitation carried out at home with his cat and dog, and to his comparison of different species' abilities through work with circus and zoo animals such as elephant, rhesus monkey and chimpanzee, by arrangement with Messrs Jennison, proprietors of the Belle Vue Gardens in Manchester. Although Hobhouse's short-lived experimental work represented the most highly developed phase of British comparative psychology and inspired several later foreign workers, his influence in Britain had no material effect, and he was not remembered for his animal work once the First World War had got under way and he had turned to sociology at the London School of Economics.

A Change in Direction, and the Role of "Markets"

In spite of this British activity, very little experimental comparative psychology survived in Britain immediately beyond the turn of the century (Wilson, 2001a). The lead was then lost to the United States where, following earlier British influence largely through Lloyd Morgan, new, procedurally precise, laboratory-based experimental investigations began with Edward Thorndike, Willard Small, John Watson and others, but soon led to a neglect of the role of evolutionary theories in favour of the experimental study of short-term, observable learning behaviour, mainly in the rat and under various artificial environmental conditions. Thorndike began to encourage the belief that, in the words of Jenkins (1979, p. 183), "an intensive experimental analysis of the effects of reward and punishment in a few species could yield the laws for a general psychology of learning. In this way he contributed to the virtual disappearance for many years of the evolutionary comparative framework." O'Donnell (1985, p. 165) notes that "the need to find an experimental basis for an educational psychology underwritten by the genetic viewpoint led paradoxically to an abandonment of that viewpoint." In this way, the expected influence of individuals' inherited characteristics (their "nature") on learning behaviour was supplanted by a belief in the exclusive role of external environmental influences: learning was attributed only to the effect of experience, which could be controlled and quantified,

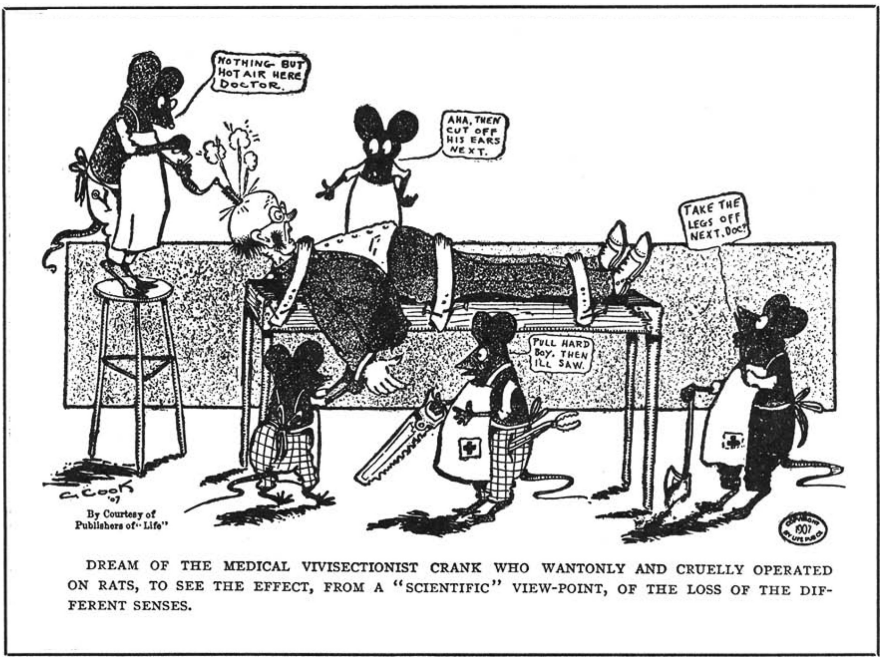

Fig. 2.2 A cartoon attributed to *Life*, aimed at the work of John Watson and published in the *Journal of Zoophily*, 1907, 16 (6), 65. The author has endeavoured to trace the copyright holder of this cartoon. If he has unwittingly infringed copyright, please contact him

and "nurture" eclipsed "nature." The experimental study of instinct became unfashionable, and the discursive approach of the earlier British anecdotalists was frowned upon as the American workers set about the task of creating a hard, objective science free of those nineteenth-century embellishments so characteristic also of much general Victorian culture (Fig. 2.2).[3]

It was not long before American development of animal psychology within the laboratory, especially under Watson and then B. F. Skinner, resulted in a new movement, Behaviourism, which set out to explain all human and animal activity as learned and exclusively dependent on environmental influences, being, therefore, controllable and predictable. Although this materialistic interpretation of behaviour had no time for subjectivity, intuition, instinct or spiritual feeling, it acquired for itself, ironically, almost religious status, and perhaps it was able to make headway because new American society was so cosmopolitan and was not hidebound with innate conservative outlooks. It is perhaps less significant that comparative psychology failed to develop in Britain than that it succeeded in developing in the

[3]Rollin (1989, pp. 67–68) observes: "One can indeed find elements of this reductionistic, 'no frills' philosophy throughout European culture. By the end of the nineteenth century, art, architecture, design, music, and literature had become extremely extravagant. . .. Much early twentieth-century culture can be seen as an attempt to eliminate or trim away that excess."

United States, where the new science was employed to serve objectivist theories favoured by what was essentially a new, cosmopolitan and more materialistic society willing to consider scientific contributions to social development and control, as within establishment educational provision or in child-rearing. Meanwhile Pavlov's conditioning work with his dogs continued after the Russian Revolution, when he was accepted as someone whose findings might fit well with contemporary political ideology concerning the education, control and "shaping" of another new and even more materialistic society. In America and Russia new markets for experimental psychology therefore grew rapidly in the first decades of the last century, but not in Britain, which was less open to such bold new social applications of scientific theory.

Not much happened in Britain until after the Second World War, but in the meantime, among limited numbers of laboratory workers in animal psychology, the key part in keeping a British grasp on the subject was played by women, including E. M. Smith (who later married Frederic Bartlett, first Professor of Experimental Psychology at Cambridge) at the Cambridge Psychological Laboratory, and Victoria Hazlitt, on the staff of Beatrice Edgell at Bedford College for Women (Valentine, 2006). A reason for this is suggested in Wilson (2003), where it is proposed that because in Britain at the time there was a preponderance of female workers in experimental animal psychology, this novel activity might have been regarded by them as a route into the scientific world from which women had been excluded.

As for the original, overall loss of lead by Britain, experimental work in comparative psychology came to depend on markets such as the educational establishment in the United States (Danziger, 1987; Wilson, 2002b), but no market appeared in Britain until the time of the Second World War. Moreover, other nations like France, Germany and the United States were more generally inclined than Britain to support scientific research and application.[4] The only earlier attempt scientifically to apply understanding of animal behaviour consisted of the efforts of the Admiralty's Board of Invention and Research to train sea lions and gulls to detect submarines, as a desperate, top-secret measure to counter the U-boat threat in 1916 and 1917 (Allen, 1917; Wilson, 2001b, 2006). This was not an encouraging experience for the official authorities, resulting in failure, and did nothing to convince the armed services that civilian science of this kind was indispensable to them. In any case, a marine biologist and music-hall trainer were in charge of the sea lion programme, not a psychologist; and advice on the use of gulls was entrusted to a naturalist. As far as can be established, no British comparative psychologist was consulted, although at the same time it was thought appropriate to invite an American naval surgeon to attend some of the trials, after the United States had entered the war in April 1917 and established a naval headquarters in Britain.[5]

[4]See, for example, "Report by Professor Sir Ernest Rutherford FRS and Commander Cyprian Bridge RN, on Visit to the USA in company with French Scientific Mission, May 19th to July 9th, 1917." BIR 28208/17. Public Record Office ADM 293/10.

[5]The Admiralty's use a little later of Cambridge University staff for hydrophone personnel selection and training, staff who were themselves responsible for overseeing animal work in

Pure and Applied Research After the Second World War

Soon after the close of hostilities in the Second World War, there was a sudden and spectacular change in the way scientific studies of animal behaviour were undertaken in Britain. A recognition of the importance of international links and cooperation began to emerge. The Dutch ethologist Nikolaas Tinbergen had written to the British ornithologist David Lack in 1940: "There are so few really serious students of animal behaviour and yet there is so much to do. When the war is over, it will be highly necessary to reconstruct international cooperation in our science as soon as possible" (Tinbergen, 1940). Of course, having taken up a lectureship at Oxford in 1949, Tinbergen later shared the Nobel Prize with Konrad Lorenz and Karl von Frisch in 1973, so illustrating the international status of the subject by then. The thoroughgoing establishment of ethology in Britain after the war was based on the earlier work of E. S. Russell and Julian Huxley, but was then greatly assisted by W. H. Thorpe as well as by Tinbergen's arrival in Oxford. Field-oriented ethology came to represent the zoological study of animal behaviour both for its own sake and as a possible means of interpreting human behaviour, while laboratory-based, often invasive, animal psychology began to serve rather more as an applied science (or even technique) assisting related, primary research programmes in pharmacology, psychiatry and agriculture: these represented the new markets which had so far been lacking. For example, Hans Eysenck at the Maudsley Hospital used strains of rats developed for their differing emotionality to serve as human models in his psychiatric research (Gwynne Jones, 1969), while in 1946 Glaxo had sponsored Michael Chance's work at Birmingham University on the effects of drugs on rodent behaviour. British laboratories after the Second World War were used as much for applied animal psychology as for that American-style comparative psychology which had never, in any case, been fully accepted as an adequate substitute in Britain for evolution-based research.

The relationship between ethology and animal psychology was sometimes competitive and difficult, especially concerning disagreements over the validity of research methodologies, but a reconciliation took place as some, like Thorpe and Tinbergen, began to combine field and laboratory-based research. Cambridge University's Sub-Department of Animal Behaviour, established at Madingley in 1950, encouraged this. After the war, certain key figures of the academic establishment, whose interests dictated the nature of research programmes, had changed. For example, the highly influential Frederic Bartlett had not shared those interests of his wife as mentioned above, and did little to encourage animal psychology at Cambridge before the war. Then Oliver Zangwill took over in 1952 and transformed research priorities so that they included much more experimental animal work.

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the Cambridge Psychological Laboratory, demonstrates that a sufficient network existed for the employment of animal psychologists, had that been preferred. But the application of psychological expertise did not extend into this area, and in another, concerned with the identification, acceptance and treatment of what later came to be known as "shell shock", the psychologists' analysis was resisted.

The war itself had inevitably encouraged applied science, and studies of animal behaviour provided both economic and military advantages in such areas as the development of pest control and camouflage. Opportunities were taken much more seriously then than they had been at the time of the First World War. In this way, Solly Zuckerman (1988, pp. 150–153) was asked from 1948 to 1956 to study the capacity of dogs to be trained reliably to detect buried explosives in non-metallic casings, as they did buried bones, and his findings were found to be of use much later, in the aftermath of the Falklands War in the 1980s. During these post-war developments, new societies appeared, accompanied by new journals: the Experimental Psychology Society (EPS) and the Association for the Study of Animal Behaviour (ASAB, founded just before the war as an institute). These soon largely replaced the limited academic involvement in animal behaviour of the British Psychological Society (BPS). There was growing collaboration among psychologists, ethologists, zoologists, physiologists and neuroendocrinologists, and some came to think that psychology was becoming entirely dependent on neurophysiology, as others later wondered whether it was not mortally threatened by sociobiology. In the 1960s, British behaviour genetics contributed to forthcoming sociobiological theories and discussions of biological altruism (Hamilton, 1964), with the ironic consequence that in a period of highly sophisticated, objective and complex scientific analysis, non-scientific philosophical commentary on psychological interests and the old questions about the moral basis of the human–animal relationship began to reappear.

The Emerging Ethical Dimension

The expansion in British higher education in the 1960s following the Robbins Report (1963) was an encouragement for all aspects of behaviour study and psychology.[6] From the 1950s, public interest in animal behaviour had also grown, assisted by a range of popular or explanatory works as from Tinbergen and Desmond Morris, and also from P. L. Broadhurst (1963), who at the time foresaw a point in the future when whole crops might be harvested by ape labour and when industry might employ pigeon pilots and chimpanzee engine-drivers.[7] But expanding television coverage, notably through the work of David Attenborough, led to better public understanding of the lives and interests of animals in their natural environment. This resulted in greater respect and sympathy for their prospects in the threatening

[6]L. C. Robbins (later Baron Robbins of Clare Market) was Chairman of the Committee on Higher Education (1961–1964), which was partly responsible for the major expansion and reforms of British university education in the 1960s.

[7]Meanwhile, in the United States, attempts had been made during the Second World War to train pigeons to guide missiles: “The pigeon—an organism—is essentially an extremely reliable instrument, rugged in construction, simple and economical to obtain, and easily conditioned to be entirely predictable in behaviour [and which could] be made into a machine, from all practical points of view” (B.F. Skinner cited by Capshew, 1993, pp. 850–851).

conditions of the modern world, and at the same time contributed to the growing concern about the human–animal relationship.

The 1970s saw the re-establishment of the role of evolution in the interpretation of behaviour by extending and modifying Darwin's theories, making the gene, rather than the individual organism, the unit of evolution in studies of social behaviour. The renewed evolutionary emphasis of animal behaviour studies of the 1970s that coincided with a revival of interests in the moral aspects of the human–animal relationship was set against the background of the environmental ethics of the 1960s and 1970s in Westernized societies, and the tendency to question the establishment and conservative viewpoints. It came to be argued that if an animal were psychologically like us, there might be more scientific reason to experiment, but less moral justification to do so (Fox, 1981). It was, therefore, not possible to avoid anthropomorphism altogether, and some aspects of it were recognized as acceptable. Ethical considerations arose as a consequence of the acceptance of the legitimacy of comparability, a consequence with, therefore, a scientific basis rather than one resulting only from philosophical arguments, or from emotive and subjective traditions of common-sense morality (Wilson, 2002a). As British public interest in these matters, insofar as they threatened psychological work, grew for the first time (Wilson, 2004), the specialist societies undertook some overt self-regulation.[8] Psychologists had, in fact, come to work within the spirit of the 1876 Cruelty to Animals Act, although it was intended to regulate vivisection and not experimentation, and was therefore often inappropriate for animal psychology.

Lloyd Morgan had referred sympathetically to the cat "victims" of "utter hunger" of Thorndike's [too] "strained and straitened" puzzle-box experiments (1900, pp. 147 and 151). Nevertheless, concern and discussion about experimental psychology and the treatment of its animals had received little attention before the 1970s: there had been no public involvement, because the limited experimental psychological experimentation with animals was not readily associated with the long-standing physiological vivisection that attracted public concern. But after the Second World War, as the Universities Federation for Animal Welfare decided to begin to turn its attention to animals and experimentation, some links with psychological work were created for it through Frederic Bartlett at Cambridge and through the ASAB (Hume, 1959). Julian Huxley and W. H. Thorpe also developed a special interest in the humane treatment of farm animals, when knowledge of the behaviour of animals kept in artificial environments could most readily be applied by people like them (Thorpe, 1927–1984). In the 1970s, experimental animal psychology became a new, special and, perhaps, a rather soft target for those members of the public, philosophers and indeed psychologists (especially, it turned out, clinical psychologists) who espoused the newly expressed concepts of animal rights. Heated correspondence began in the *Bulletin of the British Psychological Society* from late 1975. The BPS set up a working party in 1977 to investigate the nature of animal work in

[8]This involved the issue of guidelines for the use of animals in research to members and correspondents of the ASAB (1981 and 1986), BPS (1985) and EPS (1986).

psychology in Britain, and a Psychobiological Section was soon established to represent the interests of animal researchers. Not long after, the controlling legislation was revised in the form of the Animals (Scientific Procedures) Act of 1986, but the tensions caused by some aspects of animal research both within psychology and in its public relations have not disappeared.

The Scientific Milieu and Beyond

An examination of the history of animal behaviour studies in Britain, whether those based in the field, the laboratory or another professional environment, provides fertile ground for research into associated areas. A general approach to the subject might at first attempt to produce an "internal" account of its academic development as a new subject that led, in due course, to the creation of university departments and the inauguration of specialist societies and journals; then, secondly, one might study the development of its applied form within society, resulting much later in professional recognition and consultation,[9] as it responded to newly available markets. Such investigations would soon reveal a historic lack of government and institutional support (representing "external" influences), not just for this evolving discipline, but also for those other, longer-established ones which were competing for funds at the same time, such as physics and biology. The evolution of the modern study of comparative psychology therefore invites a linked assessment of general twentieth-century science policy in Britain (as also related to the state of the nation's social traditions and contemporary outlooks), right up to the publication of the Robbins Report on British higher education provision in 1963.

Endeavour in this scientific area became internationalized and more cooperative after the Second World War, especially in the study of ethology within Western societies. Although experimental psychology had succeeded in shaking itself free from association with philosophy and philosophers at the end of the nineteenth century (in order to strengthen its claim to be a new and independent science), ironically in Britain, philosophical and ethical debates (now about principles, methods and procedures) began to take the stage once more in the 1970s, in paradoxical contrast with the highly objective methods which laboratory psychology was using routinely by that time; these debates were very soon accompanied by concerted responses from pressure groups. There is a wide field of research connected with the history and tactics of these groups, their objectives, the basis of their concerns, their programmes of action and the nature of their publications and communications with the public (e.g., Ryder, 2000).

Of course, studies of animal behaviour have not been confined to the academic environment. An earlier modern example of the role of pressure groups and the

[9]For example, following pressure from its membership, a leading ethologist, Patrick Bateson, was commissioned by the British landowning conservation charity, the National Trust, to assess the suffering occasioned by hunting stags with hounds on its land, so that Trust policy could be informed and decided upon (Bateson, 1997).

media in focussing and sustaining attention on the application and exploitation of knowledge of animal behaviour for the purposes of commercial entertainment is represented by the performing animals controversy in Britain, which came to a head in the early 1920s with the appointment of a parliamentary Select Committee of inquiry. Perhaps it was inevitable that the scale of public and press interest guaranteed the interest of politicians, and soon the trade began to organize its defences through its professional associations and specialist journals. The controversy concerned the use of animals in the circus, fairground, music hall or vaudeville, and, later, in film. The Select Committee's brief was "to inquire into the conditions under which performing animals are trained and exhibited, and to consider whether legislation is desirable to prohibit or regulate such training and exhibition, and, if so, what lines such legislation should follow" (United Kingdom Parliament, 1921). The findings of the Select Committee were published as reports, proceedings and extensive minutes of evidence (United Kingdom Parliament, 1921 and 1922), and were the basis of the Performing Animals (Regulation) Act, passed in 1925. An examination of the controversy lends itself to an interdisciplinary analysis also of the associated history of specialist pressure groups, the press, trade organizations and politics (Wilson, 2008, 2009a) (Fig. 2.3). During the arguments around this issue

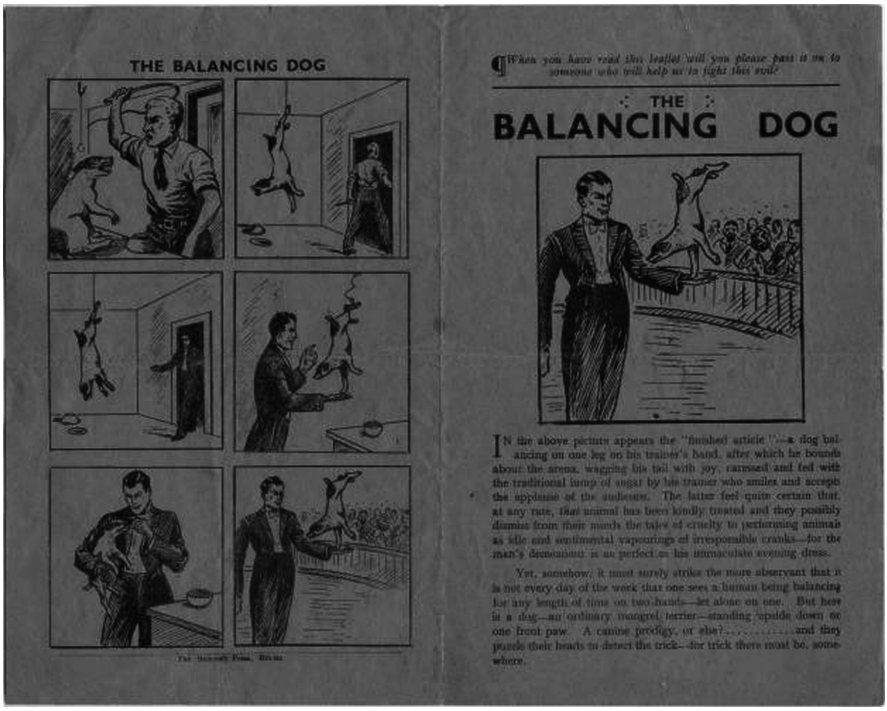
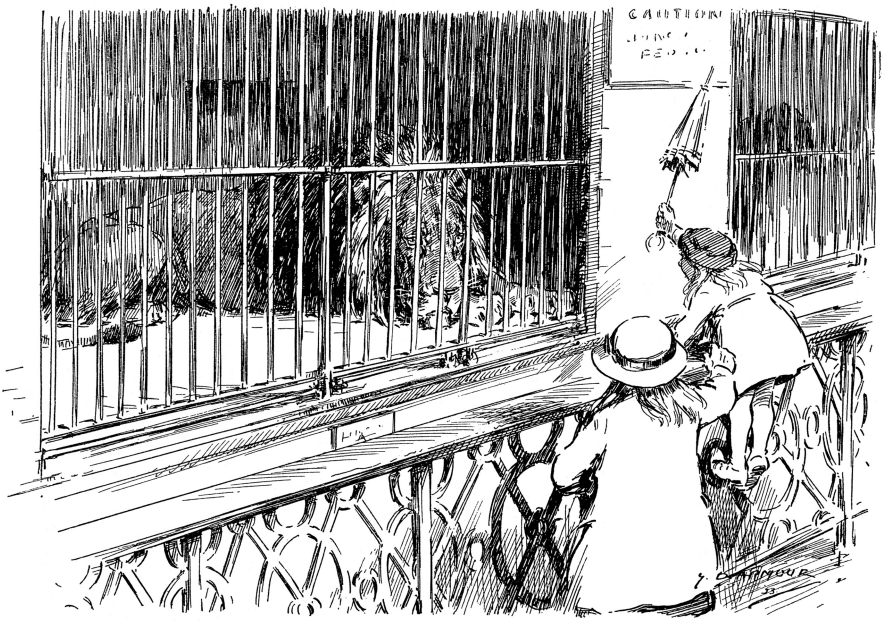


Fig. 2.3 Part of a pamphlet circulated in the 1930s by the Performing Animals' Defence League, showing the alleged methods of a trainer and his assistant. © National Fairground Archive, University of Sheffield Library

after the First World War, there was even evidence of the use of tactical racial prejudice. British trainers told the Select Committee that any previous shortcomings in the treatment of performing animals were attributable to the methods of German trainers, referred to as the "alien enemy" and now boycotted by the Variety Artistes' Federation so that they could not appear in Britain in the early 1920s. Nevertheless, before the war they had been praised as the most effective trainers (Wilson, 2009b).

A further effect of the performing animals controversy was to draw attention to a related problem which thereafter received growing attention: the close confinement of animals in unnatural conditions. Concern about this aspect of the human treatment of non-human animals entered debates about the cruelty of intensive "factory farming" and of the standards of many zoos and laboratories, and it remains a predominant argument of critics (Fig. 2.4). Such concerns can be placed in wider discussions about agricultural production and policies, the role of zoos in education and species preservation, and the use of animals for scientific research. For example, as secretary of the Zoological Society of London from 1935, Julian Huxley had become concerned by the cramped conditions and boredom of the animals at the London Zoo, but after the Second World War, close confinement was systematically extended to agricultural processes so that food production could be industrialized. By 1977, 45 million birds were kept in battery cages. In a later review of the



Elder Sister. "Don't frighten the poor animal. It isn't fair."

Fig. 2.4 A cartoon of 9 May 1923, when the confinement of animals and the symbolism of the British lion had come under public scrutiny as a result of the performing animals controversy. Reproduced with permission of Punch Ltd, www.punch.co.uk

publication of the Royal Society for the Prevention of Cruelty to Animals symposium on animal rights (Patterson & Ryder, 1979), the ethologist William Thorpe complained:

> I am. . . convinced of the cruelty of "factory farming". Sir Julian Huxley was right in saying when he and others wrote to *The Times* concerning the new and disgracefully feeble "Codes of Practice", issued in 1968 by the then Minister of Agriculture, "It is obvious to us that behavioural distress to animals has been completely ignored. Yet it is the frustration of activities natural to the animal which may well be the worst form of cruelty" (Thorpe, 1927–1984).

Knowledge and Responsibility

Throughout the history of the developments in comparative psychology, ethology and applied studies of animal behaviour in Britain since the late nineteenth century, other special, related areas for research have therefore suggested themselves. These include the role of women in furthering their academic standing by sustaining such subjects in times of uncertainty at the beginning of the twentieth century; the comparative development of learning theory and educational policies at home and abroad; the opportunities presented by special potential markets like defence research in times of national emergency; and the significance of the use made by other disciplines of behavioural work to serve their own primary purposes, as in the pharmaceutical industry and in agriculture. Then there is the opportunity to study the roles of politicians and of various types of media in educating and focussing public interest and opinion on controversial and emotive aspects, both of scientific activity and the commercial exploitation of the understanding of animal behaviour. This leads to consideration of ethical questions in the human–animal relationship, enhanced by our improved knowledge of animals and their behaviour, knowledge which is only quite recent.

Until well into the Industrial Revolution, the natural environment was often regarded as an inconvenience to be feared, challenged and overcome, and within that environment the status of animals was closely related to the degree to which they could be exploited. Early improvements in communications through road and rail ushered in a different view of a now-less-threatening natural environment, and, alongside romantic reactions to industrialization, it became subject to changing views in nineteenth-century society. This confident society, relatively secure and comfortable in its technological achievement, could now afford to reflect on its impact on nature and animals as well as on itself. The parallel interest in educational and moral improvement gave rise to social reforms and also to new organizations concerned with animal welfare and, shortly afterwards, with conservation. Many of these organizations were supported by the emergent middle classes of the nineteenth century, and on their letterheads they gave their activities social respectability by listing aristocrats as patrons—today, celebrities often fulfil this role. This change of outlook in the nineteenth century was characteristic, mainly, of the Western world, and took place as religious and doctrinal influences continued to be questioned as a result of the effects of the Enlightenment of the previous century. But we must

remember that changes in human–animal relationships have varied around the world according to geographical and cultural contexts, and continue also to be affected by economic conditions. Human poverty relegates animal interests, but where there is wealth, greed and human self-indulgence, these interests can also be set back.

For less than 150 years, and especially as global communications have developed, the size of Earth has effectively reduced, and concern for the interests of the pet has in the meantime extended—at least in enlightened nations—to those of all animals, as experience of our relationship with them has become more easily shared. In that time, we have finally come to confront and articulate the problems of our exploitation of animals of every kind, of the extent of our attachment to them, of our effect on their well-being, and of the loss (literal and moral) that would result from continued neglect of their separate interests as cohabiters of our world. In promoting these ideas, the animal rights movement has not hesitated to draw analogies between the situation of, for example, laboratory animals and the inhumane and tyrannical treatment of large numbers of helpless human victims in the concentration camps, or between the treatment of the vulnerable animal and the vulnerability of the child or the mentally impaired. The "might is right" assumption and the biblical assertion of human dominion have also come under increasing scrutiny as the public is asked to consider, as in the light of our policies concerning laboratory animals, its expectations in the event (not now so incredible) of links with a more powerful and equally exploitative alien civilization.

An understanding of the psychology of the human–animal bond can only be enhanced by a better understanding of animal behaviour. Some of the historic attempts to achieve this understanding have been dealt with here, although the purposes of such understanding have been various, at first with limited involvement of society at large. However, within the past 50 years, an enthusiastic general public has been brought into this area of interest, especially through the televised natural history documentary. Public attitudes to animals and the natural environment have changed dramatically in line with the communications revolution of the twentieth century. Because most of us now feel confident, rightly or wrongly, that we can interpret behaviour as a result of our own experience and imagination (psychology and behaviour analysis are less forbidding to the lay person than, say, physics or chemistry), and because we remain in close personal contact at least with domesticated animals, interest in the human–animal bond is increasing apace. That is a good thing and it may even be crucial to our human destiny. Nature in the present century is more vulnerable than ever, and because we are a part of nature we agree that we share that vulnerability, especially if we accept the idea that the Earth survives as a kind of organism in its own right (Lovelock, 1979). Our relationship with animals is the most visible and emotive example of that vulnerability.

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