PART THREE

PIGS

CHAPTER 10

PIGS AND THE AUSTRALIAN PIG INDUSTRY

Introduction

10.1 The pig is a monogastric omnivorous mammal which resembles man in its nutritional requirements, there being many similarities between the anatomy and physiology of the digestive systems of the two species. To satisfy both the nutritional needs of the animal and the desire of the producer to offer feeds of acceptable cost in relation to the level of production demanded requires the manipulation of a range of feedstuffs.[1]

10.2 In the wild pigs feed on a wide range of plants, small animals and insects. Rations fed to domestic and especially intensively housed pigs are usually a mixture of feedstuffs, combined to provide the pig's requirements of energy, fibre (roughage), protein, vitamins and minerals. Cereals usually provide most of the energy, and about half the protein, while additional protein must be supplied from high-protein sources such as meat or fish products, or legumes.[2]

10.3 Pigs have poor eyesight, but highly developed senses of smell, taste and touch. The tactile, highly sensitive snout is essential for rooting behaviour. Outdoor pigs maintain this habit, and it is common practice to ring the upper edge of the snout so as to limit the damage done by rooting. The pattern is maintained in intensively housed pigs, which will persist in nosing the surface of concrete pens. Outdoor pigs can spend many hours per day exploring their environment, food-seeking and eating. Unchecked they will despoil crops and grass paddocks in their soil-turning search for food. Indoor pigs spend a relatively short time eating and have little opportunity for exploratory behaviour.[3]

10.4 The argument advanced by those opposing intensive housing of pigs is that pigs have a complex repetoire of behaviour much of which is prevented by intensive farming. They refute the claim that the modern pig no longer has the same instincts as its ancestors due to domestication and genetic changes.[4]

10.5 The Australian Federation for the Welfare of Animals (AFWA) contends that all forms of life adapt to their environment. This happens because each individual animal changes its behaviour to avoid noxious stimuli. If this is insufficient, physiological changes (e.g. altered hormone levels and other coping mechanisms) come into play. All such changes impose some metabolic cost on the animal, yet it may cope successfully with the environment. To the extent that coping is unsuccessful, the animal's health and production characters such as growth and particularly reproduction will suffer. This means that farmers have a commercial interest in keeping animals in environments in which they cope well. Furthermore, in those environments in which animals cannot cope some will die while others have low reproduction. This triggers the process of genetic adaptation which is the basis of evolution. In every environment, in time, the animals that predominate will be those whose genes allow them to cope best, expressed by giving these animals the highest overall reproduction (the technical term is reproductive fitness) possible in the environment.[5]

10.6 AFWA argues that it follows that animals that do not show evidence of impaired health such as wounds, or other clinical signs, and which are reproducing well, are unlikely to be suffering, even if their environment is different from what our prejudices suggest that it should be. Small spaces are not a problem if animals are well adapted to small spaces. (Our internal parasites do not suffer by being confined inside us). Welfare problems typically arise where animals adapted to one kind of environment are displaced to a different kind of

environment as is likely to be the case for animals captured in the wild and brought to old-fashioned accommodation in zoos. Animals may find it difficult to adapt to a continually changing environment, and thus their welfare cannot be guaranteed.[6]

Pig Breeds in Australia

10.7 The efficient production of lean meat is a major objective of pig breeders and producers. Both production traits can influence 'meatiness'. Production traits include growth rate, feed conversion efficiency and carcass quality. Reproduction traits are conception rate, litter size, piglet survival and piglet growth.[7]

10.8 Pigs of an unspecified breed were brought to Australia by the First Fleet. In the 1820s pedigreed pigs were imported from England, but it was not until 1911 that the first Australian Stud Pig Herd Book was published. Their names reflect the English origin of most Australian breeds of pigs: Berkshire, Tamworth, Wessex Saddleback, and Large White. Landrace, a Danish breed, is a more recent introduction. This breed, white like the Large White, quickly gained popularity because bacon factories prefer white-haired pig carcasses and also because of the breed's superior efficiency in converting feed to meat. These two breeds are now the most numerous.

10.9 Commercial pig-raisers generally cross the breeds to obtain hybrid vigour for quicker growth. From the early 1980s, with quarantine clearances being given for the import of boars and pig semen from Northern Ireland, New Zealand, and Canada, the Hampshire, Yorkshire, and Duroc breeds have been imported, and can be expected to play an increasing role in cross-breeding programmes.[8]

10.10 Black skinned pigs such as the Berkshire thrived under Australian conditions when pigs were run extensively. However with the introduction of intensive housing the Berkshire declined in importance because of its inability to grow more quickly under these conditions. With the advent of the intensive housing system in Australia the Landrace, a white skinned pig first introduced into Australia in 1958, became very popular in cross breeding programs with the large white breed.[9]

10.11 The Large White and Landrace breeds are now the most popular breeds in Australia with most intensively housed herds containing a large proportion of Large White blood. The most popular cross is that between a Large White and a Landrace, (both white skinned pigs) as the maternal line in commercial herds. A third breed such as a Duroc or Hampshire - a red skinned pig is used as the terminal sire.[10]

Adaptation to Modern Husbandry Systems

10.12 The general view in the industry is that pigs have adapted to modern methods. Over the 30 year period that intensive production has been operating culling and selective breeding have removed those not able to adapt and do well. Pigs have virtually adapted to the situation.[11] Summarising this point, and production advances, Dr Blackshaw representing the Australian Pig Industry Policy Council, stated in evidence:

> There are various ways we have done this. First of all, there is our nutrition requirement. There has been a lot of research in the past years on pig nutrition. We have raised our levels of requirements. We know exactly what pigs need at each of their stages, whether they are a lactating sow, a growing pig or even a little piglet. We know the sorts of things they need so our responses in the nutritional area have improved greatly. Secondly, we have very good breeding programs, and we have selected over the last 20 years domestic pigs which do extremely well in our situations. We have chosen pigs - and you noticed them yesterday - that look healthy and

> do very well in the situations we now have for them. That has been extremely important in the Australian industry. We are continually looking at bringing in new genetic material to improve our pig production. Probably a very important thing we have done is to look at the areas of animal behaviour. This has become an important area of research. It is very integrally mixed with the physiology of the animal. We have been looking at the physiology of the animal and the animal behaviour measures of our animals and we understand more and more their behavioural needs so that we can design piggeries to fit in with those needs.[12]

10.13 Pigs are considered to be highly intelligent animals with a capacity, as humans do, to adapt to situations that might otherwise be called stressful in terms of human assessment.[13] They are social animals and, like other animals, have complex behavioural repetoire to meet the demands of their environment. In their natural conditions their responses are complex, variable and goal corrected.[14]

The Behaviour of Free Ranging Pigs

10.14 The arguments for close confinement in intensive systems are largely based on the natural behaviour of pigs - that is aggression and bullying causing unacceptable stress to the animals.

10.15 ANZFAS refutes this, citing research evidence in its discussion of the behaviour of free ranging pigs. ANZFAS cites studies in support of its view that not only do pigs suffer in intensive systems but many of the problems for management of the systems are due to the fact that they are confronted with insoluble or nearly insoluble problems or with situations having unpredictable outcomes.[15]

10.16 Evidence based on a study in Scotland where the behaviour of commercially bred pigs were released into a semi-natural enclosure and observed for several years by researchers at Edinburgh University has been presented to highlight ANZFAS' thesis:

- that there is no significant difference between the behaviour of commercially bred pigs and observations that have been made of wild feral pigs[16];

- the fact that confined animals do not show certain behaviours because the system prevents them from doing so does not mean that they do not have the instincts to perform these behaviours[17]; and

- intensive systems do not allow sufficient space for interactions generally and for the regulation of aggression through avoidance behaviour.[18]

10.17 ANZFAS believes that the scientific evidence provided by Wood-Gush and others refutes the genetic evolution and animal adaptive arguments presented by proponents of intensive farming and argues that any consideration of welfare of pigs in confinement systems must acknowledge that:

1) Free ranging pigs are active animals. They spend a lot of time rooting, they collect material for the communal nest, and they move from nesting and feeding sites for dunging.

2) Pigs are social animals. They live in small, stable groups with strong bonds between individuals. In such groups sequences of behaviour have evolved to limit aggressive encounters.

3) Pregnant sows have a strong nesting instinct. They become extremely active prior to farrowing, when they seek an isolated and sheltered nesting site and collect material for a nest.[19]

10.18 Dr Judith Blackshaw stated in evidence that aggression occurs in any group of pigs whether they are in or out of a shed. A lot of aggression occurs during feeding time. Feeding stalls cuts this down although unless they are individual or isolated they will still bite each other, especially on the vulvas.

10.19 She argued that:

> ... if pigs are in an intensive piggery, properly husbanded, someone looking after them properly, you have much more chance of making sure their welfare is optimum than if you have them running out in a paddock. Inside the shed you can keep an eye on them; you can keep an eye on their aggressive tendencies towards each other. You do not have the problem of worms - external and internal parasites - that you have in a paddock, and you can individually feed them to their requirements, which you cannot do in a paddock. If you have a sow that for some reason is slightly thin you can give her a little more food if she is in her individual little area. You can examine them every morning and every evening more easily - by just walking behind them you can check that their vulvas are clean and that they are not up to parturition, not up to having their young. In a paddock it is extremely difficult to check the animals individually.[20]

Trend to Specialisation

10.20 All schemes for growing pigs aim to produce a lean carcass as efficiently as possible. Although the methods used depend on the resources available, they now usually involve housing with some level of environmental control, together with the opportunity to manipulate feed intake.

10.21 There are currently some 8,000 commercial pig producers operating in Australia. In March 1988 there were some 2.7 million pigs of which approximately 350,000 were breeding sows. It is estimated that of these production units less than 1 per cent produce approximately 45 per cent of all pigs.[21]

10.22 Table 10.1 provides details of pig numbers by State over a six year period to 1987.

Table 10.1: Pig Numbers
('000)

31 March	NSW	Vic	QLD	SA	WA	Tas	Aust. (incl. NT ACT)
1983	794	387	551	405	300	51	2,490
1984	799	404	556	417	300	48	2,527
1985	814	410	563	402	274	47	2,512
1986	798	432	585	414	278	45	2,553
1987	830	432	579	422	295	46	2,611
1988	853	437	617	441	307	48	2,706
1989	855	423	611	450	285	45	2,671

SOURCE: ABS Year Book Australia 1989, p.424.

10.23 In 1949, when pig raising was primarily a secondary consideration for dairy farmers, there were some 59,500 holdings producing pigs. Over 65 per cent of these ran 20 pigs or less and there were only 60 holdings with over 500 pigs.[22]

10.24 The Australian pig industry prior to 1960, developed as a sideline to the primary dairy and cereal growing industries. The enterprises were small (dairy herds were small), and where there was dependence on availability of spoiled grain, production fluctuated wildly, both as to quantity and quality.[23]

10.25 1960 was a watershed year for the industry. The technology necessary for commercial viability of intensive production was available. The rapidly expanding Australian population with increasing diversity of ethnic origins, meant that demand for pork increased rapidly. The dairy industry was evolving away from butter production (with available separated milk) to whole milk, so that pig production had to be based on cereal diets.[24]

10.26 Systematic production technology was pioneered by workers such as D.M. Smith, D.P. Henry, and J.M. Holder and large-scale production units began to be established from 1962-63 onwards. Economies of scale were established in units of at least 300 sows and progeny. Further, corporate enterprises, who wished to integrate either their commercial stock feed or meat processing units with pig production units to stabilise both quantity and quality of supply, entered the business. These forces ensured that:

- the numbers of farms (farmers) producing pigs declined;
- the units producing pigs became larger.[25]

10.27 There are no official statistics available for the proportion of pigs produced annually in Australia from intensive, semi-extensive or extensive production systems.[26] The Australian Veterinary Association has estimated that there are probably less than 2 per cent of herds operated extensively, 15 - 20 per cent of herds kept semi-extensively (pregnant sow paddocks) and the balance, some 80 per cent of herds totally intensive.[27]

10.28 The Australian Pig Industry Policy Council explains the growth of intensive pig production as follows. Since the 1950s, major changes have taken place in the way the dairy industry in Australia is structured and operates. There has been a dramatic decline in the production of manufacturing milk and a relative growth in whole milk production. This, combined with a growth in demand for skim milk for human consumption has left little skim milk available at economic prices for pig production.[28]

10.29 This trend also coincided with changed consumer demands and the development of economic pressures for pig producers to improve productivity and quality of production. At the same time, there have been major changes in the health, housing and husbandry of pigs. For instance, improved housing, nutrition and husbandry practices, coupled with more sophisticated production

techniques and changes in consumer demands have led to major changes in the way pigs are produced in Australia - changes resulting in substantial improvement in the welfare of individual animals.[29]

10.30 According to the Australian Pig Industry Policy Council there has been a steady decline in the number of piggeries and a significant growth in the size of commercial piggeries.

> In short, the industry has become more intensive. It has become more technologically advanced, more productive and considerably more efficient and responsive to consumer needs.[30]

10.31 Animal Liberation (NSW Branch) submitted to this Committee that when pig farming became more than a sideline to the dairy industry and became established as an industry in its own right, there were seemingly compelling arguments for adopting intensive production methods, and many farmers took their lead from the example by the already flourishing poultry industry.[31]

> Substantial capital investments seemed justified by the promise of closer animal and environmental control, by opportunities for increased profits through greater 'efficiency' of production, and by allowing an increased scale of production.[32]

10.32 Expressing concern about the physical and behavioural deprivations suffered by pigs housed in "highly mechanised total-confinement systems",[33] Animal Liberation (NSW Branch) argued that "if it could suddenly be proven that the most humane methods of animal husbandry also happened to be the most profitable ones, the change-over would be immediate.[34]

10.33 The following figures give an indication of changes which have occurred in the industry over the past thirty years.[35]

Table 10.2: Pigs and Holdings with Pigs

Year Ending 31 March	Pigs ('000)	Holdings	Average per holding
1960	1,424	49,537	29
1970	2,398	39,498	61
1980	2,518	19,279	131
1985	2,512	11,159	225
1986*	2,550	9,087	276
1987	2,640	8,523	306
1988	2,697	7,966	339

Care needs to be taken in analysing trends over time in respect of "holdings" and "average per holdings", in the light of the decision by the Australian Bureau of Statistics in 1986/87 to exclude from the census collection, pig establishments with an "estimated value of agricultural operations" of less than $20,000 (cf $2,500 previously).

SOURCE: Australian Pig Industry Policy Council Submission, Evidence, p. S8793.

10.34 Bill Kirsop, New South Wales Department of Agriculture and Fisheries stated in evidence that 30 years ago most pigs were running outside or were in semi-intensive shed situations. Now 95 per cent of growers would house their animals in intensive sheds. The usual history of participation in the industry is that producers start with 30 sows, and they then decide to increase to 100 or 150 sows. To do that they just multiply the number of sheds in which they keep the sows or the growers.[36]

10.35 According to the Department of Agriculuture and Fisheries' Agfacts (1987) profitability still has the greatest influence on housing design and dictates whether the pigs are raised intensively in sheds, or less intensively in sheds and paddocks.[37]

Pig Terminology

10.36 The terms used to describe pigs at their various development stages are as follows:

- **Gilt:** a female pig after puberty and before farrowing;
- **Sow:** a female pig after farrowing;
- **Farrowing sow:** a sow between the perinatal period and weaning the piglets;
- **Dry sow:** a sow between weaning her piglets and the perinatal period;
- **Boar:** a male pig after puberty, intended for breeding purposes;
- **Barrow:** a castrated male;
- **Piglet:** a pig from birth to weaning;
- **Weaner:** a pig from weaning to the age of 10 weeks;
- **Rearing pig:** a pig from ten weeks to slaughter or service;
  - Growers (10 - 16 weeks)
  - Porkers (16 weeks - approx. 50 - 55 kilograms)
  - Finishers (17 - 24 weeks)
  - Baconers (24 weeks - approx. 85 - 95 kilograms)

Marketing

10.37 Most pigs were once auctioned in saleyards to butchers or processors who sold the meat as pork, bacon, or smallgoods, but from about the mid-1970s, with the wide-spread adoption of carcass classification, pigs have been increasingly sold directly to abattoirs or processors on the basis of prices related to grading systems nominated by processors. In 1983, Australia's first computer pig sales by description were held, with buyers in country centres and Sydney bidding on sale lots by pressing a button on a handset - a form of auction selling.[38]

10.38 Pigs were traditionally sold as porkers (weighting 25 to 40 kilograms dead-weight) or baconers (45 to 80 kilograms), or heavy pigs (more than 80 kilograms). However, the last decade has seen a steady rise in slaughter weights, because of the trend to bigger carcasses for the fresh-pork trade, and the increasing quantities of pigmeat used for canning or curing. Many butchers have adopted newer cutting techniques that provide a larger range

of more interesting cuts from larger carcasses (up to 70 kilograms) than the traditional porker. These cuts are usually referred to as "new value pork". In the early 1980s, the industry, through the pork promotion committee, was spending about $2 million a year on promotion of pigmeats, using money raised by a slaughter levy.[39]

Government Support Services

10.39 As outlined in Chapter 2 primary industry/agriculture departments around Australia provide assistance to pig producers in a variety of ways. Departmental advisory programs encapsulate many of the management and breeding practices which have an effect on the productivity of the farmer and the well-being of the animals. They cover most aspects of nutrition, environment, reproductive management, growth rate monitoring and genetic improvement. Direct support to the industry is provided through district livestock officers located at strategic places through the areas where pigs are farmed. They undertake typical advisory services like on-farm demonstrations, liaison with service industries, the conduct of field days and meetings and a considerable amount of face to face interaction with producers.[40]

10.40 District officers also provide economic marketing and classification of stock for sale advice and keep producers abreast of research and technological advances in the industry.[41]

10.41 The NSW Department of Agriculture and Fisheries advised in evidence that in New South Wales most producers are owner operators. A small number of piggeries are very large (something like 1 to 3 per cent of herds have more than 200 sows) and produce 40 per cent of the product. A large group of producers are in the median field of 50 to 200 sows. The Department support for the industry is with the median group; the large producers tending to employ their own support staff either through employment or consultation. As the small producers tend to move in and out of the industry there is little opportunity to influence this group.[42]

Economic Pressures

10.42 Economic constraints on the pig farmer were highlighted in evidence given by representatives of the New South Wales Department of Agriculture and Fisheries. Providing some 'ballpark' figures as examples Mr Badham stated that:

> A 65 kilo baconer at the moment is worth something around $140. Of that $140, there would probably be about $75 worth of feed, $20 worth of labour, $15 worth of other things like electricity, veterinary costs: giving a total of $110. That means you have a margin of about $30. That $30 then has to provide you with the return on your investment, or the money with which you are going to pay interest on the capital that you have borrowed. If you are looking at an initial cost of around $3,000 per sow, and you have borrowed that money at, for ease of figures, let us say 20 per cent, you are paying $600 per annum in interest on that. That therefore means that the interest bill has to be defrayed across the product of that sow. The number of piglets surviving to market then becomes quite important in terms of profitability or lack thereof. If you have a good manager who can, say, produce 20 piglets per sow per year, then on these sorts of ballpark figures, he will make a profit. But if you have a relatively lower level of management, where you only net 15 piglets per annum, on these sorts of figures you are making a loss.
>
> On that basis, there would be a number of people out there at the moment who are still in pigs only because they either have high equity in their property, or they are using buildings that are now very old and have been totally depreciated. In terms of the survival of a new piggery coming into the industry now, survival of piglets born is an integral component of the profitability of the industry. On that basis, if you are going to put up a new shed that would increase the cost per sow by using the management technique that was going to allow more space, then you have to be very careful about how you did your figures on your expected returns.[43]

10.43 In response to a question about industry interest in welfare and whether it is due to pressure from animal welfare pressure outside the industry, Mr Brechin, Pig Industry Policy Council representative expressed the view that it is a combination of both:

> ... The reason that a number of people have left the industry - and it has been a significant number in the last 10 or 15 years - is because of the competition within the industry, and the investment that has to go on to achieve the level of return that is required to make a living. The second point is that there is a heavy welfare consciousness that you have to respond to, to sustain that sort of level; so it is an interaction of things that has brought us to this present point.[44]

10.44 In discussing the climatic impact on pigs Dr Cutler highlighted the comparative difference in growth rate between intensive and extensively raised pigs and the economic implication for growers. He put the view that if an animal was grown outside, then in wintertime there would probably be minimal differences in growth rate, but feed consumption would be substantially higher, in excess of 20 per cent higher, to maintain the same growth, just because the animal would be eating to keep warm. In summertime though, there would be as much as a 25 per cent growth penalty, simply because of the impact of high temperatures on the animal.[45]

10.45 The industry is concerned about the cost implications of reform of the present system and also of negative welfare implications. Outlawing systems which confine pigs to sheds for the whole of their lives would result in higher cost to the consumer for the end product. DARA's view is that this would have an effect on the size of the industry and have a negative welfare impact.

> ... Assuming that consumers want cheap, high quality meat, it becomes more expensive to competitors for pig meat and that has implications for the industry as a whole.[46]

> ... we have come from a mud bath, into clean, decent ways of housing the animals. We cannot go back to what we have come from, simply from a welfare point of view ...[47]

Community Concerns

10.46 The majority of community concerns and public criticism of pig husbandry practices in Australia can be classified under the following headings:

- **Housing** (including stall, flooring, bedding, tethering, stocking densities, climate, facility for 'social interaction', general environment).

- **Care and attention** (including individual treatment and capacity to 'observe' individual animal needs, personal involvement, frequency and/or intensity of attention).

- **Drugs, feed additives and 'unnatural' foods** (including chemical contamination, force feeding, 'unnatural' growth promotion, antibiotics, vaccinations, potential for 'poisoning').

- **Husbandry practices** (including teeth clipping, tail docking, castration, branding).

- **Transport and handling** (including trucking/transport conditions, loading and unloading management and procedures, 'prodders', yarding).

- **Slaughtering and handling at abattoirs** (including pre-slaughter treatment, handling and accommodation, stunning, sticking).

- **Corporate ownership** (including over-riding profit motive and total productivity orientation).[48]

Australian Agreed Standards

10.47 The Model Code of Practice for the Welfare of the Pig identifies the basic needs of pigs as:

- readily accessible food and water to maintain health and vigour;
- freedom of movement to stand, stretch and lie down;
- light during the daylight hours;
- visual contact with other pigs;
- accommodation which provides protection from the weather and which neither harms nor causes distress; and
- rapid identification and treatment of vice, injury and diseases.[49]

10.48 Standards for housing (as to allocation of space per pig, ventilation rates, requirements for water, safety precautions etc.) and husbandry practices are outlined to meet these needs.[50] A copy of the Model Code of Practice for the Welfare of Animals - 1. The Pig is at Appendix 8.

10.49 Other Codes of Practice containing provisions of importance to the pig industry include:

- Model Code of Practice for the Welfare of Animals: No. 3 - Road Transport of Livestock;
- Model Code of Practice for the Welfare of Animals: No. 4 - Rail Transport of Livestock;
- Model Code of Practice for the Welfare of Animals: No. 5 - Air Transport of Livestock;

- Model Code of Practice for the Welfare of Animals: No. 6 - Livestock and Poultry at Slaughtering Establishments (Abattoirs, Slaughter Houses and Knackeries);

- Model Code of Practice for the Welfare of Animals: No. 7 - Animals at Saleyards; and

- Model Code of Practice for the Welfare of Animals: No. 8 - Sea Transport of Livestock.

10.50 According to the Australian Veterinary Association the Codes of Practice for the Welfare of the Pig have been criticised by some outside the industry concerned with the pig's welfare on the grounds that the current practices within the industry have been merely legitimised.[51] These issues are discussed in the following chapters.

ENDNOTES

1. I.J. Lean, 'Pigs' in Management and Welfare of Farm Animals. The UFAW Handbook, Third Edition, 1988, UK, p. 148.

2. New South Wales Department of Agriculture, AGFACTS, Agdex 440/60, 1985, p. 1.

3. I.J. Lean, op. cit., p. 147.

4. Evidence, Australian and New Zealand Federation of Animal Societies, p. S8860.

5. Evidence, Australian Federation for the Welfare of Animals, pp. S8933-8934.

6. ibid.

7. New South Wales Department of Agriculture, AGFACTS, Agdex 440/30, 1984, p. 1.

8. The Australian Encyclopaedia, Fourth Edition, 1983, pp. 50-51.

9. New South Wales Department of Agriculture, AGFACTS, Agdex 440/37, 1987, p. A4.3.10.

10. ibid., p. A4.3.8 and 9.

11. Evidence, Dr J. Blackshaw, University of Queensland, pp. 6853-6854.

12. Evidence, Australian Pig Industry Policy Council, p. 9417.

13. Evidence, Australian Veterinary Association, pp. 9562-9563.

14. Stolbar, Baker and Woodgush, 1983, cited in Evidence, Australian and New Zealand Federation of Animal Societies, p. S8860.

15. Evidence, Australian and New Zealand Federation of Animal Societies, p. S8860-1.

16. Evidence, Australian and New Zealand Federation of Animal Societies, p. S8860.

17. ibid., p. S8824.

18. ibid., p. S8860.

19. ibid.

20. Evidence, Dr J. Blackshaw, University of Queensland, pp. 6839-6842.

21. Evidence, Australian Pig Industry Policy Council, p. S8791, Australian Veterinary Association, p. S9020.

22. Evidence, Australian Pig Industry Policy Council, p. S8792. These figures come from a national survey published by the Victorian Department of Agriculture in 1949.

23. Evidence, Australian Veterinary Association, p. S9023.

24. ibid.

25. ibid.

26. ibid., p. S9025.

27. ibid., p. S9026.

28. Evidence, Australian Pig Industry Policy Council, p. S8792.

29. ibid.

30. ibid.

31. Evidence, Animal Liberation (NSW Branch), submission April 1984 p.3

32. ibid.

33. ibid., p.4

34. ibid., p. 3

35. Evidence, Australian Pig Industry Policy Council, p. S8793.

36. Evidence, New South Wales Department of Agriculture, pp. 9231-9232.

37. New South Wales Department of Agriculture, AGFACTS, Agdex 440/720, 1987, p. 1.

38. The Australian Encyclopaedia, Fourth Edition, 1983, pp. 51-52.

39. ibid., p. 52.

40. Evidence, New South Wales Department of Agriculture and Fisheries, p. 9230.

41. ibid.

42. ibid.

43. ibid., pp. 9251-9252.

44. Evidence, Australian Pig Industry Policy Council, p. 9441.

45. Evidence, Victorian Department of Agricultural and Rural Affairs, p. 9402.

46. ibid., p. 9401.

47. ibid.

48. Evidence, Australian Pig Industry Policy Council, p. 8804.

49. Model Code of Practice for the Welfare of Animals. 1. The Pig, Issued by the Australian Bureau of Animal Health, 1983, p. 2.

50. ibid., pp. 3-16.

51. Evidence, Australian Veterinary Association, p. S9027.