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HIS INFLUENCE ON CHARLES DARWIN

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ROBERT BAKEWELL (1725—1795) PIONEER ANIMAL BREEDER AND HIS INFLUENCE ON CHARLES DARWIN

ROBERT BAKEWELL (1725—1795) PRŮKOPNÍK VE ŠLECHTĚNÍ ZVÍŘAT A JEHO VLIV NA CHARLESE DARWINA

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A critical review of literature relating to Robert Bakewell, pioneer animal breeder, and the influence of agricultural selection practice on Charles Darwin.

Robert Bakewell, a tenant farmer of Dishley in Leicestershire, lived at a time in English history when the population was increasing rapidly. It was also a period of rising affluence when a growing number of consumers could afford food of high quality and were no longer content to eat tough meat from old animals, slaughtered only when they had served a useful purpose in other ways. The changing situation encouraged advances towards greater agricultural efficiency — the so-called agricultural revolution. Bakewell was in the forefront of this revolution and his achievements and his influence were such that even within his own lifetime he was considered one of its major heroes.

He began to pay particular attention to the improvement of livestock at about the age of twenty-two (Pawson, 1957, p. 18). His father, also a farmer, encouraged Robert's interest (Pitt, 1809, p. 217), allowing him to leave the farm at intervals, on journeys of exploration to study farming methods and make observations on livestock around the country, later supplemented by visits to Ireland and Holland (Pawson, p. 15).

In 1760 Bakewell, at the age of thirty-five, took over his father's farm, which he held on lease throughout his life. He soon showed himself to be a man of varied talents. He was an exponent of grassland irrigation, increasing by more than three times the yield of hay from his meadows. (Bakewell Letters in Pawson, p. 113.)* Marshall (1790) wrote "Mr. Bakewell is, in truth, a master in the art; and Dishley, at present, a school in which it might be studied with singular advantage." (Marshall, 1790, p. 286-287). Bakewell

*] All quotations from the Bakewell Letters are given here with modern spelling and punctuation.

was also renowned for his cabbages and he either developed or propagated a new large variety (Marshall, pp. 260-261; Bakewell Letters in Pawson, p. 133) especially suited to the fattening of sheep and cattle. He was very interested in the use of water as a means of transport and cut canals across his farm to carry crops and manure (Bakewell Letters in Pawson, pp. 151-152). He had ideas on road making (Young, 1932, p. 329) and he was also something of an expert on farm machinery, inventing among other things a new design of plough (Young, pp. 308-309). Among those to whom he supplied farm machinery was "that great and good man General Washington." (Bakewell Letters in Pawson, p. 107.)

But above all, Bakewell was an animal breeder, and by all accounts, the very best of his time. In the words of Marshall (p. 295) he was "long and most deservedly considered the principal promoter of the art of breeding." Young (1791, p. 302) refers to "the celebrated livestock of this Prince of Breeders". It can be said that Marshall and Young were the leading contemporary writers on agricultural practice. Undoubtedly Bakewell had an enormous influence on the improvement of farm stock in Britain, and throughout the world. At one time he was concerned with pigs and horses as well as cows and sheep although it was with the latter two species that he was most successful and exerted the greatest influence on other breeders.

Many local breeds of cattle were to be found in Britain in the eighteenth century. These differed in appearance and in various qualities, such as milk yield and the ability to pull a plough. Even before Bakewell's time there had been attempts, often successful in a limited way, to improve local breeds. But these soon faded into insignificance compared with Bakewell's achievements. It was not that earlier breeders (Gresley, Tate, Welby, Webster) had failed but that because Bakewell was moving so quickly in a systematic attempt to breed for commercially important qualities, it appeared, by contrast that others had been standing still. Thus it could be written shortly after Bakewell's death: "it may be truly said, without partiality, that he has done more than any other man who had lived before him. He may be considered almost as a creator of a new breed of animals, so generally and so justly admired." (Pitt, p. 217).

Bakewell envisaged a new kind of animal to satisfy the increasing demand for good cheap meat, a beast which would grow quickly on the minimum of food, giving tender meat and plenty of fat, then in demand (Pawson, pp. 50-51). He achieved this very rapidly by selective breeding. The cattle he produced had smaller bones, were more thickly fleshed on the most valuable parts and were described as "barrel-shaped" and straight backed, in contrast to the more lanky, large boned cattle common in his day. The improved cattle seemed like a new breed and were known as the "New Longhorns" or "Dishley" cattle. Combined with other developments, Bakewell's breeding success made possible a year round supply of fresh meat and the replacement of the salted meat hitherto eaten in the winter (Pawson, p. 8).

The accuracy of contemporary illustrations of the improved cattle is in some doubt but those given in figs. 3 and 4 are perhaps the closest it is possible to get. These engravings by Garrard are taken from W. Youatt (1834, pp. 196-197). In the hope of moving closer to what the animals really looked like, these figures have been reinterpreted by a modern artist*) used to looking at bodies from a functional point of view. He has produced the sketches in figs. 5 and 6 on which are indicated [by arrows] the main features of Bakewell's cattle, as described by John Lawrence: "sound tight cylindrical carcass, wide on the hips, but very little prominence in the huckle (hip) bones; straight back, well filled behind shoulders; neck long and fine without any superfluous skin or dewlap, horns long, taper downwards and of a deep yellowish colour; head fine and smooth. The barrel form, gradually tapering towards the ends, was the model, as in sheep" (Pawson, p. 53).

His original breeding stock was of north English origin and had long horns. He started with a male and two females, the bull being purchased from a farmer in Westmorland, the cows coming from a Midland farmer, Webster of Canley, whose cattle were descended from earlier imports from the north and were reputed to be the best available. "To these and their progeny he confined himself." (Youatt, p. 192).

His success in improving the stock seems to have rested on one basic principle: to choose the characters he wanted to change, for instance, a particular muscle or bone, and to breed for those animals which possessed the desired features (Bakewell Letters in Pawson, p. 107). "You can't eat bone" said Bakewell (Pawson, p. 50), so he set about reducing it.

This seems very obvious but it did not seem so to people in Bakewell's day. There were several reasons for this. Firstly his contemporaries did not see as clearly as Bakewell, the relationship between form and certain propensities (Marshall, p. 299), (e. g. rate of fattening). Secondly, they probably did not believe that such propensities could be inherited. Thirdly, they were not prepared to ignore "fancy points" (e. g. colour) which distinguished their local breeds and in which there was much local pride; but which Bakewell considered quite correctly to be of no account, viewing the animal as a marketable commodity (Culley, 1807, pp. 6-8). Finally, they were not willing to inbreed, which Bakewell considered quite essential (Culley, pp. 8-10 and Marshall, p. 300) going so far as to mate fathers with daughters and mothers with sons (Pawson, p. 54).

Some breeders of race horses (Marshall, p. 300), game cocks (Culley, p. 10) and dogs (Culley, p. 10 and Pawson, p. 9) shared Bakewell's willingness to inbreed, but his predecessors in sheep and cattle breeding did not. To discover the strength of their objection we may quote from Bakewell's friend and pupil George Culley: "The great obstacle to the impro-

*) Mr. Richard Neave, Department of Medical Illustration, Royal Infirmary, Manchester M13 9WL, England.

vement of domestic animals seems to have arisen from a common and prevailing idea amongst breeders that no bulls should be used in the same stock for more than three years, and no tup*) more than two. Otherwise the breed will be too near akin." "Some have imbibed the prejudice so far as to think it irreligious". (Culley, pp. 9-10)**)

Youatt (1834, pp. 191-192) writes "Improvement had hitherto been attempted to be produced by selecting females from the native stock of the country, and crossing them with males of an alien breed. Mr. Bakewell's good sense led him to imagine that the object might be better accomplished by uniting the superior branches of the same breed, than by any mixture of foreign ones." "As his stock increased, he was enabled to avoid the injurious and enervating consequences of breeding too closely 'in and in'. The breed was the same but he could interpose a remove or two, between members of the same family. He could improve all the excellencies of the breed without the danger of deterioration; and the rapidity of the improvement which he effected was only equalled by its extent."

The improved Longhorn cattle were a sensation and soon other breeders were following Bakewell's methods and improving various of the other British breeds. This led eventually to some of the newer varieties, particularly the improved Shorthorn, becoming preferred to the Longhorn. Despite the obvious improvements in the Longhorn there were some disadvantages, notably in milk production which had deteriorated under selection and which rendered these cattle unsatisfactory for general use. In fact the value of Bakewell's principles for cattle breeding long outlasted the popularity of the breed on which he practised them.

The improved Shorthorn, the most successful breed of cattle in the nineteenth century, owed much to Bakewell indirectly. Four of the major shorthorn breeders, Charles Colling, Robert Colling (Whittaker, 1925, quoted by Pawson, p. 57), Coke of Norfolk (Stirling, 1908, quoted by Pawson, p. 44) and George Culley (London, 1844, p. 1210) took instruction directly from Bakewell. It is recorded that when Coke questioned Bakewell about his cattle, the answer was "'Mr. Coke, give me your hand and I will guide it.' Bakewell thereupon took Coke's hand in his own and passing it over the cattle, taught him how to judge the formation of the beast's flesh, its inclination to feeding, and whether it possessed the proper qualities for fattening." (Stirling, 1908, quoted by Pawson, p. 44).

But Bakewell was by no means dogmatic about his methods. In a letter to Culley he wrote "I would recommend to you and to others who have adopted my opinions to pursue it with unremitting zeal as far as shall be consistent with prudence and common sense, *always open to conviction when anything better is advanced.*" (Bakewell Letters in Pawson, p. 109).*)

*) tup = ram.

***) my italics.

*) my italics.

Bakewell's achievements with sheep were even more successful than those with cattle. Not only did he revolutionize the approach to sheep breeding (leading ultimately through other hands to the improvement of all the major breeds) but his own particular product, the "Dishley" or "New Leicester" sheep was very successful in its own right and is bred even to this day.

Using the same methods as those he applied to cattle, Bakewell bred the Dishley sheep for quick maturing, to give a high yield in proportion to the body weight of tender meat with a high fat content. "My people want fat mutton and I give it to them" said Bakewell (Pawson, p. 50). The improvements were made by selection in what would nowadays be termed a "high plane nutritional environment" (Kerridge, 1967, pp. 323-324; Marshall, pp. 397-398 and Hammond, 1960, p. 322). The sheep he produced (fig. 7) were "distinguished from other long-woolled breeds, by their fine lively eyes, clean heads, straight broad flat backs, round (barrel-like) bodies, very fine small bones, thin pelts and an inclination to make fat at an early age (Culley, p. 105). The main features are indicated (by arrows) in fig 8, which is a reinterpretation of the unlikely representation of a Dishley ram in fig. 7.

The new sheep fattened in two years (Culley, p. 106) instead of the three or four years previously required (Kerridge, p. 324; Pawson, p. 62) and they even fattened well on poor food (Housman, 1894, quoted by Pawson, p. 79). Although the sheep were known as the "New Leicesters", this was a misnomer, as pointed out by Bakewell himself in a letter to Culley (Bakewell Letters in Pawson, p. 121) clearly his foundation stock were not restricted to sheep from Leicestershire. In fact the origin of the "New Leicester" breed is still in doubt although Pawson (1957), after reviewing all the evidence, concludes that "the foundation stock were probably Longwooled sheep of the Midland counties" (Pawson, p. 60).

One of Bakewell's major advances in breeding technique, perfected with his sheep, was the introduction of progeny testing (Pawson, pp. 91-92). He achieved this by hiring his rams rather than selling them, and thus mating them to as many ewes as possible, not only in his own locality but in other parts of the country as well. He was then able to judge the effectiveness of his rams with different mates and in different environments, and then to buy back those lambs he wanted. He was not the first breeder to hire rams, but he was the first to make systematic use of this procedure, and he popularised it against much initial opposition (Pawson, p. 69).

Bakewell carried out investigations on his sheep (Bakewell Letters in Pawson, p. 106) which went well beyond anything he had done with cattle (Pitt, p. 218). He kept tethered sheep of different kinds on different foods, weighing both animals and food every week until slaughtering, to see the effect of nutrition (Bakewell Letters in Pawson, p. 106). In some of these experiments he was assisted by visitors staying on his farm. When Arthur

Young visited Bakewell in 1785, he noted that one experiment was under the supervision of a young Russian. The results were chalked on slates and later transferred to Bakewell's permanent records (now unfortunately lost).*)

Bakewell had many visitors, a substantial number coming from the Continent of Europe (Pawson, p. 41). His hospitality was renowned. "The Dishley estate was more than a farm. It rapidly became an institution of higher learning. Many earnest young men were attracted to Bakewell and came to stay and work with him solely for the experience to be gained." (Foley, 1952, quoted by Pawson, p. 41). Bakewell turned his hall into a museum in which joints preserved in brine and skeletons were used to demonstrate the effects of heredity and nutrition (Housman, 1894, quoted by Pawson, p. 42). Visitors would go away astonished at what they had seen. A Frenchman, Count Francois de la Rochefoucauld, who visited Bakewell in 1783, (Bakewell Letters in Pawson, p. 171) described him as "one of the most remarkable men to meet in the whole country." (Rochefoucauld, 1784, quoted by Pawson, p. 39). All agree on Bakewell's influence. It extended well beyond the British Isles and it was felt by people living long after he died. Nor was it confined to his fellow farmers; even the great Charles Darwin (1809-1882) came under his spell.

Darwin's interest in Bakewell lay in the variation revealed by his technique of selection (Darwin, 1868, Vol. 1, p. 92, pp. 99-100). The great changes wrought by human selection within a few generations encouraged Darwin to speculate on what might be achieved by natural selection over the enormous spread of geological time. He wrote in his essay of 1844 "Let this work of selection, on the one hand, and death on the other, go on for a thousand generations, who would pretend to affirm it would produce no effect, when we remember what in a few years Bakewell effected on cattle and Western on sheep, by this identical principle of selection." (Darwin, 1844, p. 119.)

Darwin notes that "breeders habitually speak of an animal's organisation as something plastic, which they can model almost as they please" (Darwin, 1872, pp. 22-23). This opinion reflected Bakewell's in his more optimistic moments. He was reported as saying "You can get beasts to weigh where you want them to weigh, i. e. in roasting places and not in boiling places" (Pawson, p. 50) although on another occasion he was less sanguine about his achievements when he wrote to Culley, "the sheep I sent is not without some places I would wish better but know not how to alter them." (Bakewell Letters in Pawson, p. 122.)

Variation between domestic animals led Darwin to reject the widely-held contemporary opinion that members of a species differed only in superficial, "non-essential", characters. For a full discussion of this typological concept

*) The evidence of Arthur Young, quoted by Pawson, p. 88.

of the species and Darwin's reaction to it, see Mayr (1972). According to this point of view, variation in domestic animals could be explained only on the basis that different varieties were descended from "primordially distinct" species or from crosses between such species. Darwin seriously questioned this as a general rule while admitting that it might be true in some cases. Referring to British cattle, he wrote "A large part of the difference, no doubt, may be due to descent from primordially distinct species; but we may feel sure that there has been, in addition, a considerable amount of variation (Darwin, 1868, Vol. 1, pp. 86-87). The earliest reference to Darwin's having considered this problem is in a letter written to A. R. Wallace in 1857 (Murray, London 1887, Vol. II, pp. 95-96) in which Darwin states. "I rather doubt the truth of the now very prevalent doctrine of all our domestic animals having descended from several wild stocks; although I do not doubt that it is true in some cases."

Support for Darwin's point of view came from the new breeds, particularly those which had been produced by selection from within a single variety, without crossing. In his "sketch" of 1842, Darwin remarks "Remember how soon Bakewell on the same principle altered cattle and Western, sheep-carefully, avoiding a cross with any breed." Darwin, 1842, p. 48.) Darwin was particularly impressed with Bakewell's improved Longhorn cattle. He quotes (Darwin, 1868, Vol. 1, p. 92) Marshall's description of a bull called "Shakespeare", as "a striking specimen of what naturalists term accidental varieties. Though bred in the manner that has been mentioned he scarcely inherits a single point of the Longhorned breed; his horns excepted." (Marshall, Vol. 1, p. 322.)*

Darwin's conclusions from Bakewell's experiments on sheep are more ambiguous and seem to reflect an uncertainty (shared today) about the origin of Bakewell's foundation stock. In 1868 he wrote "What methodical selection has effected for our animals is sufficiently proved, So greatly were the sheep belonging to some of the earlier breeders such as Bakewell and Lord Western, changed, that many persons could not be persuaded that they had not been crossed. (Darwin, 1868, Vol. 2, p. 198). This suggests that he believed the "New Leicester" sheep had been bred directly from a single variety with no outcrossing. Yet earlier in the same book he had written "So

*) Darwin obtained this quotation from Youatt (p. 193), where the passage from Marshall is given in full. Youatt's books were Darwin's main source of information on farm animals. In a letter to T. H. Huxley dated Nov. 27, 1859 (Further unpublished letters of Charles Darwin edited by Sir Gavin de Beer, *Annals of Science*, 1958, Vol. 14, pp. 83-115) Darwin writes "About breeding, I know of no one book. I did not think well of Lowe" (*The Breeds of Domestic Animals of the British Isles*, David Low, 1842) "But I can name none better. Youatt I look at as a far better and more practical authority; but then his views and facts are scattered through three or four thick volumes. I have picked up most by reading really numberless special treatises and all agricultural and horticultural journals; but it is the work of long years. The difficulty is to know what to trust."

with our British sheep: almost all the races, except the Southdown, have been largely crossed; 'this, in fact, has been the history of our principal breeds'*) [Darwin, 1868, Vol. 1, p. 95.] There is no doubt that Darwin considered the "New Leicester" sheep as a principal breed. So we can see that Bakewell's sheep provided Darwin with a less certain example, than did his cattle, of the power of natural selection within a single breed.

Darwin clearly understood the continuous nature of the variation with which the breeder worked and the difficulties which this implied for him. He wrote "If selection consisted merely in separating some very distinct variety and breeding from it, the principle would be so obvious as hardly to be worth notice; but its importance consists in the great effect produced by the accumulation in one direction, during successive generations, of differences absolutely inappreciable to the uneducated eye." "Not one man in a thousand has accuracy of eye and judgement sufficient to become an eminent breeder." [Darwin, 1872, p. 23].

It is worth remarking here that Bakewell considered his hands more useful than his eyes for judging stock (Stirling quoted by Pawson, p. 44; Bakewell Letters in Pawson, p. 113 and Pawson, p. 51). Bakewell's friend and pupil, G. Culley, was of the same opinion, pointing out that this was a copy of the butcher's technique (Culley, pp. 13-15). But the principle is the same.

Darwin's understanding of the continuous nature of variation and his rejection of the prevailing typological approach to species led him towards the concept of the population. Ernst Mayr (1972) writes: It was this concept that made the concept of natural selection possible. Because it is such a novel concept, its acceptance has been slow... " Yet, Bakewell, from his own commercial point of view, appeared to have been well aware of the significance of the population, as opposed to the individual. He considered that a breed should be judged as a whole rather than by the best individual members of that breed. In a conversation with Young he is quoted as saying "the merit of a breed cannot be supposed to depend on a few individuals of singular beauty: it is the larger number that must stamp their character on the whole mass: if the breed, by means of that greater number, is not to be able to establish itself, most assuredly it cannot be established by a few specimens" (Young, p. 293). By "established itself" Bakewell implies the establishing of its commercial reputation, in competition with other breeds.

It is quite possible that Darwin read this passage, which appeared in an article published in a prominent agricultural journal, although he does not quote it. But whether Darwin read it or not, it seems unlikely that he could have escaped being influenced by the attitude towards breeding stock which this passage reflects and which inspired Bakewell's successors. Darwin claimed to have read "all agricultural and horticultural journals" (see Darwin, 1872, p. 23), but we do not know how far back he went. Thus Mayr (1971) writes:

*) Quotation from an article by Spooner W. G. (1862) on cross-breeding J. Roy. Agric. Soc., Vol. xx pt. ii.

"The entire method of the breeder is based on the recognition of the uniqueness of every individual which results in the differences between them and makes selection possible. The breeders then were perhaps the first to establish the basis for population thinking."

We have it on Darwin's own admission, that the breeders of animals and plants were among the earlier influences on the development of his ideas (Darwin, 1872, p. 3). In a letter to his cousin William Fox, written in 1838, Darwin thanks Fox for answering some questions about the crossing of animals, and goes on "It is my prime hobby, and I really think some day I shall be able to do something in that most intricate subject species and varieties." (Darwin, 1902, p. 148.) By 1844 his ideas were taking a firmer shape. This is revealed in two letters he wrote to Sir Joseph Hooker (Darwin, 1902, pp. 173-174). He states he is already planning "a very presumptuous work" and he is seeking to understand what are species. In this he is influenced by the Galapagos fauna and by the South American fossil mammals. But he has also been collecting relevant information by reading "heaps of agricultural and horticultural books." He says he is almost convinced that species are not immutable and that allied species have descended from a common stock but, he insists, not by means of any process suggested so far by others, including Lamarck. He claims he has found an alternative explanation, viz. "the simple way by which species become exquisitely adapted to various ends." He dismisses alternative ideas: "I believe all these absurd views arise from no one having, as far as I know,*) approached the subject on the side of variation under domestication, and having studied all that is known about domestication." Later, (1856) he re-acknowledges his debt to the breeders in a letter to Asa Gray, when he writes "my notions about how species change are derived from long continued study of the works of ... agriculturalists and horticulturalists... (Darwin, 1887, Vol. II, p. 79). And it is worth noting that Darwin modestly considered this to be the only original concept in the "Origin of Species." In 1860 he wrote to the Rev. Baden Powell "The only novelty in my work is the attempt to explain how species become modified." (de Beer, 1960.)

As well as his references to Bakewell and the Dishley cattle and sheep, Darwin mentions a number of other breeders of farm animals by name. He writes in particular concerning the work of the Colling brothers and Fowler on cattle, and of Western and Ellman on sheep. He refers to Ellman's work on the Southdown as "...perhaps the most striking instance" (of methodical

*) Evidently Darwin was not aware of the unpublished writings of James Hutton, the eminent 18th century geologist. In his book *Principles of Agriculture* which remained unfinished at his death in 1797. Hutton wrote: "in the infinite variation of the breed, that form best adapted to the exercise of the instinctive arts by which the species is to live, will be the most certainly continued in the propagation of this animal, and will be tending more and more to perfect itself by the natural variation which is continuously taking place" [E. Bailey (1960) Charles Lyall F. R. S. (1797-1875) *Notes and Records of the Royal Society*, Vol., 14 (i), 126-127].

selection in sheep), (Darwin, 1868, Vol. I, p. 100); he is under no doubt that the Shorthorn is the most successful breed of cattle, and that Bakewell's Longhorn variety is in decline.

But he fully acknowledges Bakewell's pioneer work and influence on other breeders, referring to him in one place as "the famous Bakewell" (Darwin, 1868, Vol. II, p. 30), a title he accords to none of Bakewell's rivals or successors. In another place he lists eight "well known names" (Darwin, 1868, Vol. II, p. 194) associated with the breeding of cattle, sheep and pigs. Of the eight, three only (Bakewell, Colling and Ellman) were active in the eighteenth century and Bakewell was the senior by 25 years. Moreover, despite the march of progress since the eighteenth century, the work of Bakewell was still highly relevant to Darwin's thesis. This is evident not only from the manner of his references to Bakewell but also from the frequency with which he refers to him, compared with other breeders of sheep and cattle.

When Darwin writes of "...that skill and perseverance shown by the men who have left an enduring monument of their success on the present state of domesticated animals..." (Darwin, 1868, Vol. II, p. 4) we can be certain that he had Robert Bakewell very much in the forefront of his mind.

ACKNOWLEDGEMENTS

I should like to acknowledge the fact that my interest in Robert Bakewell was stimulated by a letter from Dr. V. Orel (Moravian Museum, Brno) mentioning his investigation of the influence of the animal breeders on Mendel. It was at his suggestion that I have looked at the influence of Bakewell on Charles Darwin. May I say with what pleasure I have done this and express my sincere thanks to Dr. Orel for suggesting this most interesting line of research to me.

I owe a special debt of gratitude to Mr. Richard Neave for his reinterpretations of contemporary illustrations of Bakewell's sheep and cattle, as well as to Dr. R. Ollershaw, Director of the Department of Medical Illustration, Royal Infirmary, Manchester, who gave permission for these sketches to be published. Permission to use the portrait of Bakewell was kindly given by Prof. H. C. Pawson.

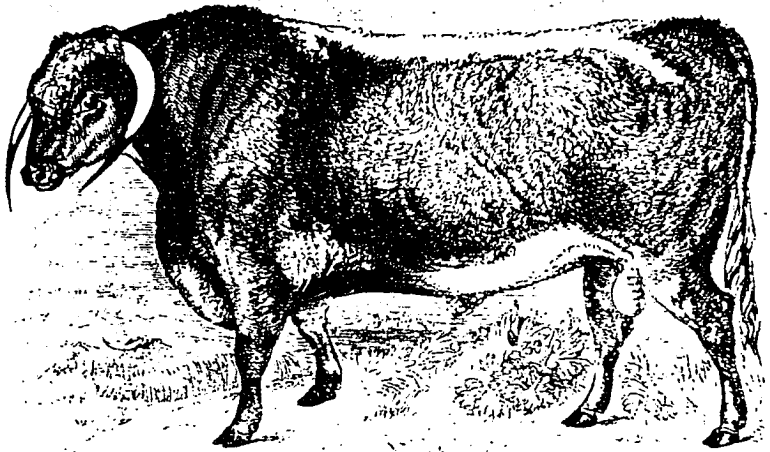
Finally may I thank my wife Mrs. Valerie E. Wood and my colleague Mr. Alastair Whitelaw for helpful comments on the manuscript and Mrs. Joan Gatehouse for undertaking to type it.

Fig. 1. Robert Bakewell, 1725—1795.



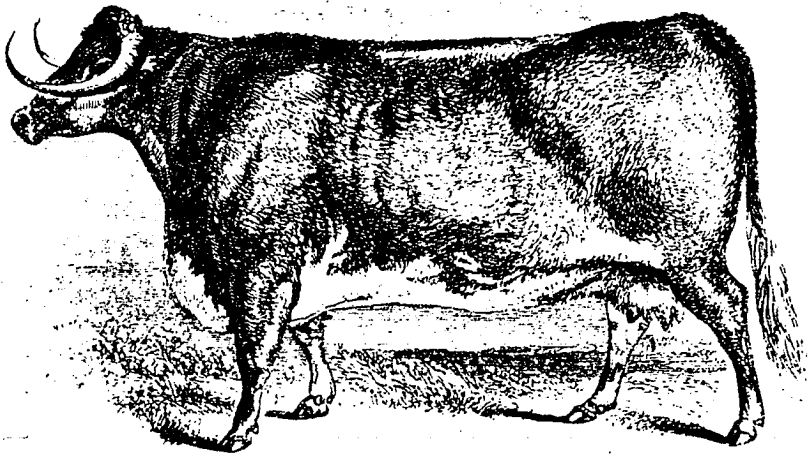
Fig. 2. Charles Darwin, 1809—1882





[*New Leicester Bull.*]

Fig. 3. The Dishley or New Leicester Bull, a contemporary picture.



[*New Leicester Cow.*]

Fig. 4. The Dishley or New Leicester Cow, a contemporary picture.

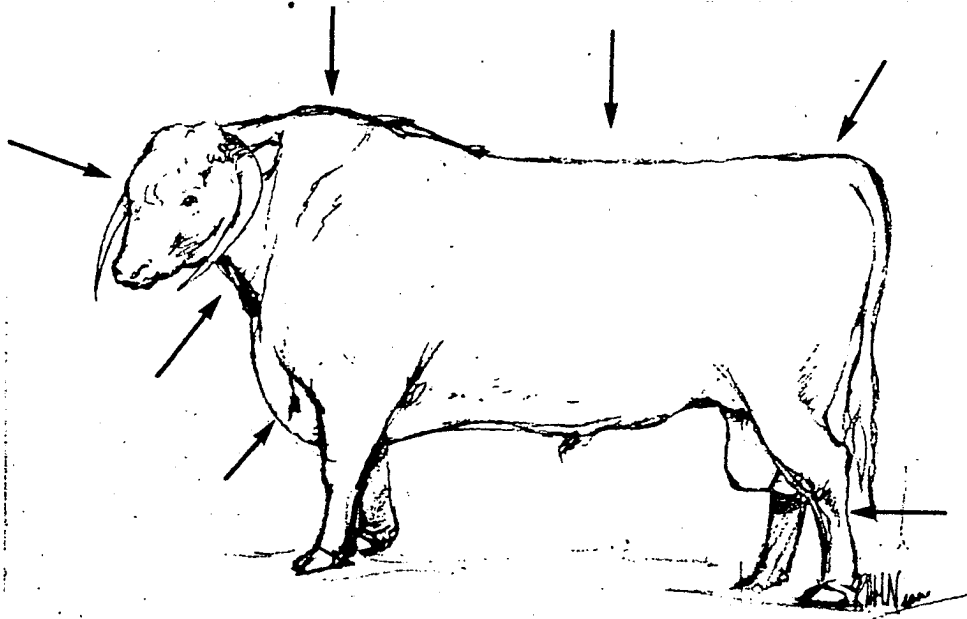


Fig. 6. The Dishley or New Leicester Cow, a modern interpretation.

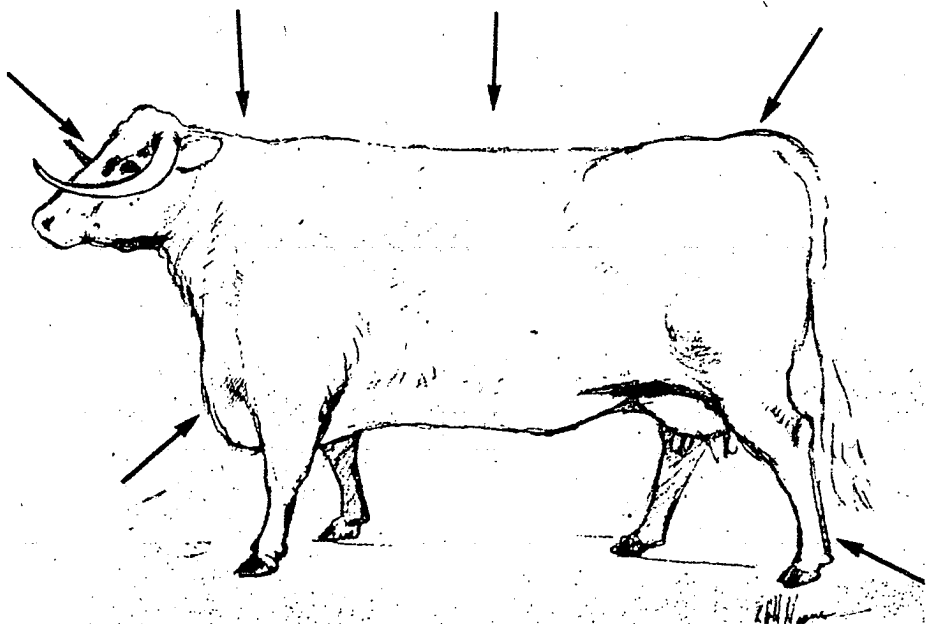


Fig. 5. The Dishley or New Leicester Bull, a modern interpretation.

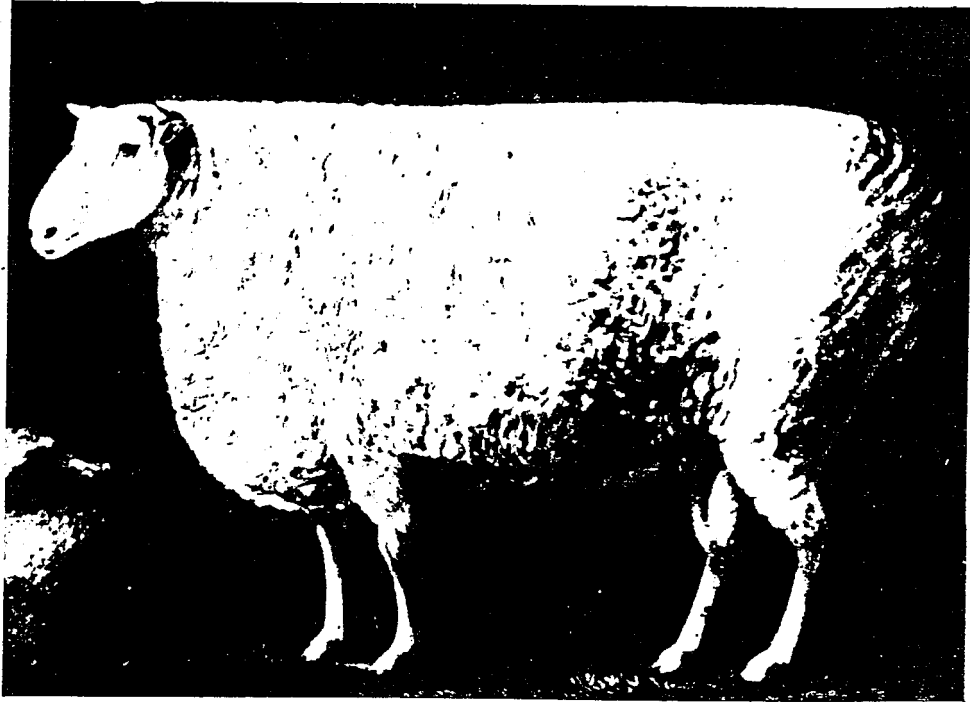


Fig. 7. The Dishley or New Leicester Ram, a contemporary picture.

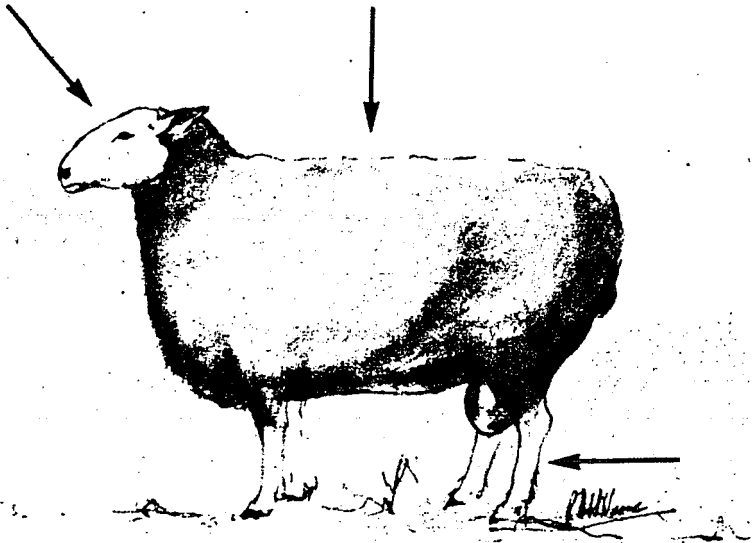


Fig. 8. The Dishley or New Leicester Ram, a modern interpretation.

Ve své době Robert Bakewell (1725—1795) proslul mimořádnými úspěchy ve šlechtění skotu a ovcí. Narodil se v Dishley v hrabství Leicestershire v roce 1725 a již ve svých dvaceti letech se začal zabývat šlechtěním skotu a ovcí selekčními metodami. Na rozdíl od všeobecné praxe v křížení zvířat, Bakewell začal cílevědomě připravit zvířata příbuzensky.

I když tuto metodu využívali někteří chovatelé již dříve, zejména v chovu koní, přece nejvýraznějších úspěchů dosáhl Bakewell, který ji rozpracoval jako selekční metodu. Vyšlechtil nové plemeno skotu a nové plemeno ovcí. Jeho leicesterské ovce jsou v Anglii chovány dosud.

Bakewell nechtěl své selekční metody zveřejnit. V roce 1770 ho navštívil A. Young, který pak Bakewellovy úspěchy popsal v různých časopisech a tyto se pak dostaly ve známost v Anglii a pronikly také na kontinent.

Charles Darwin se podrobně zabýval praxí selekce hospodářských zvířat a výsledky Bakewella a dalších šlechtitelů na něj měly velký vliv. O samotném Bakewellovi se Darwin zmiňuje jen na několika místech, která jsou uváděna. Už v roce 1844 Darwin psal, že Bakewellovy úspěchy považuje za důkaz přirozené selekce.

Autor v této studii podrobně shrnuje málo přístupné, původní literární údaje o Bakewellově selekční praxi a poukazuje na souvislost díla Roberta Bakewella a pozdějších chovatelů zvířat s názory Charlese Darwina.

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