OBSERVATIONS

ON THE

BREEDING AND FORM

OF

DOMESTIC ANIMALS.

BY THE LATE

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SURGEON.

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ON THE

FORM OF ANIMALS.

THE form of domestic animals has been greatly improved, by selecting, with much care, the best-formed for breeding; but the theory of improvement has not been so well understood, that rules could be laid down for directing the practice. There is one point particularly, respecting which, the opinions of breeders have much varied; which is, whether crossing the breed be essential to improvement.

It is the intention of this Tract, to ascertain in what instances crossing is proper, and in what prejudicial; and the principles upon which the propriety of it depends.

It has been generally supposed, that the breed of animals is improved by the largest males. This opinion has done considerable mischief, and would have done more injury, if it had not been counteracted by the desire of selecting animals of the best form and proportions, which are rarely to be met with in those of the largest size.

Experience has proved, that crossing has only succeeded, in an eminent degree, in those in-

stances in which the females were larger than in the usual proportion of females to males; and that it has generally failed when the males were disproportionally large.

The external form of domestic animals has been much studied, and the proportions are well ascertained. But the external form is an indication only of internal structure. The principles of improving it must therefore be founded on a knowledge of the structure and use of internal parts.

The lungs are of the first importance. It is on their size and soundness that the strength and health of an animal principally depends. The power of converting food into nourishment, is in proportion to their size. An animal with large lungs, is capable of converting a given quantity of food into more nourishment than one with smaller lungs; and therefore has a greater aptitude to fatten.

The Chest.

The external indications of the size of the lungs, are, the form and size of the chest; the form of which should approach to the figure of a cone, having its apex situated between the shoulders, and its base towards the loins.

The capacity of the chest depends on its form, more than on the extent of its circumference; for, where the girth is equal in two animals, one may have much larger lungs than the other. A circle

contains more than an ellipsis of equal circumference; and in proportion as the ellipsis deviates from the circle, it contains less. A deep chest, therefore, is not capacious, unless it is proportionally broad.

The Pelvis.

The pelvis, is the cavity formed by the junction of the haunch-bones with the bone of the rump. It is essential that this cavity should be large in the female, that she may be enabled to bring forth her young with less difficulty. When this cavity is small, the life of the mother, and her offspring, is endangered.

The size of the pelvis is chiefly indicated by the width of the hips, and the breadth of the twist, which is, the space between the thighs.

The breadth of the loins is always in proportion to that of the chest and pelvis.

The Head.

The head should be small, by which the birth is facilitated. Its smallness affords other advantages, and generally indicates that the animal is of a good breed.

Horns are useless to domestic animals, and they are often a cause of accidents. It is not difficult to breed animals without them.

The breeders of horned cattle, and horned sheep, sustain a loss more extensive than they may con-

ceive; for it is not the horns alone, but also much more bone in the skulls of such animals, to support their horns, for which the butcher pays nothing; and, besides this, there is an additional quantity of ligament and muscle in the neck, which is of small value.

The skull of a ram with its horns, weighed five times more than another skull which was hornless. Both these skulls were taken from sheep of the same age, each being four years old. The great difference in weight, depended chiefly on the horns; for the lower jaws were nearly equal—one weighing seven ounces, and the other six ounces and three quarters; which proves that the natural size of the head was nearly the same in both, independent of the horns, and the thickness of the bone which supports them.

In a horned animal, the skull is extremely thick. In a hornless animal, it is much thinner; especially in that part where the horns usually grow.

To those who have not reflected on the subject, it may appear of little consequence whether sheep and cattle have horns; but, on a very moderate calculation, it would be found, that the loss in farming-stock, and also in the diminution of animal food, is very considerable, from the production of horns and their appendages. A mode of breeding which would prevent the production of these, would afford a considerable profit, in an increase of meat, and wool, and other valuable parts.

The length of the neck should be proportioned to the height of the animal, that it may collect its food with ease.

The Muscles.

The muscles, and tendons, which are their appendages, should be large; by which an animal is enabled to travel with greater facility.

The Bones.

The strength of an animal does not depend on the size of the bones, but on that of the muscles. Many animals with large bones are weak, their muscles being small.

Animals that were imperfectly nourished during growth, have their bones disproportionately large. If such deficiency of nourishment originated from a constitutional defect, which is the most frequent cause, they remain weak during life. Large bones, therefore, generally indicate an imperfection in the organs of nutrition.

On the Improvement of Form.

To obtain the most approved form, two modes of breeding have been practised; one, by the selection of individuals of the same family, called, breeding in-and-in; the other, by selecting males and females from different varieties of the same species, which is called, crossing the breed.

When a particular variety approaches perfection

in form, breeding in-and in may be the better practice; especially for those who are not well acquainted with the principles on which improvement depends.

When the male is much larger than the female, the offspring is generally of an imperfect form. If the female be proportionally larger than the male, the offspring is of an improved form. For instance, if a well-formed large ram be put to ewes proportionally smaller, the lambs will not be so well-shaped as their parents; but if a small ram be put to larger ewes, the lambs will be of an improved form.

The proper method of improving the form of animals, consists in selecting a well-formed female, proportionally larger than the male. The improvement depends on this principle; that the power of the female to supply her offspring with nourishment, is in proportion to her size, and to the power of nourishing herself from the excellence of her constitution.

The size of the fœtus is generally in proportion to that of the male parent; and, therefore, when the female parent is disproportionately small, the quantity of nourishment is deficient, and her offspring has all the disproportions of a starveling. But when the female, from her size and good constitution, is more than adequate to the nourishment of a fœtus of a smaller male than herself, the growth must be proportionately greater. The larger

female has also a greater quantity of milk, and her offspring is more abundantly supplied with nourishment after birth.

To produce the most perfect-formed animal, abundant nourishment is necessary, from the earliest period of its existence until its growth is complete.

It has been observed, in the beginning of this Tract, that the power to prepare the greatest quantity of nourishment, from a given quantity of food, depends principally on the magnitude of the lungs, to which the organs of digestion are subservient.

To obtain animals with large lungs, crossing is the most expeditious method; because well-formed females may be selected from a variety of a large size, to be put to a well-formed male of a variety that is rather smaller.

By such a method of crossing, the lungs and heart become proportionately larger, in consequence of a peculiarity in the circulation of the fœtus, which causes a larger proportion of the blood, under such circumstances, to be distributed to the lungs than to the other parts of the body; and as the shape and size of the chest depend upon that of the lungs, hence arises the remarkably large chest, which is produced by crossing with females that are larger than the males.

The practice according to this principle of improvement, however, ought to be limited; for it may be carried to such an extent, that the bulk of

the body might be so disproportioned to the size of the limbs, as to prevent the animal from moving with sufficient facility.

In animals where activity is required, this practice should not be extended so far as in those which are intended for the food of man.

On the Character of Animals.

By character in animals is here meant, those external appearances by which the varieties of the same species are distinguished.

The characters of both parents are observed in their offspring; but that of the male more frequently predominates. This may be illustrated in the breeding of horned animals; among which, there are many varieties of sheep, and some of cattle, that are hornless.

If a hornless ram be put to horned ewes, almost all the lambs will be hornless; partaking of the character of the male more than of the female parent.

In some counties, as Norfolk, Wiltshire, and Dorsetshire, most of the sheep have horns. In Norfolk the horns may be got rid of, by crossing with Ryeland rams; which would also improve the form of the chest, and the quality of the wool. In Wiltshire and Dorsetshire, the same improvement might be made, by crossing the sheep with South Down rams.

An offspring without horns might be obtained

from the Devonshire cattle, by crossing with horn-less bulls of the Galloway breed; which would also improve the form of the chest—in which the Devonshire cattle are often deficient.

Examples of the good Effects of Crossing the Breed.

The great improvement of the breed of horses in England, arose from crossing with those diminutive stallions, Barbs and Arabians; and the introduction of Flanders mares into this country, was the source of improvement in the breed of cart-horses.

The form of the swine has also been greatly improved, by crossing with the small Chinese boar.

Examples of the bad Effects of Crossing the Breed.

When it became the fashion in London to drive large bay horses, the farmers in Yorkshire put their mares to much larger stallions than usual, and thus did infinite mischief to their breed, by producing a race of small-chested, long-legged, large-boned, worthless animals.

A similar project was adopted in Normandy, to enlarge the breed of horses there, by the use of stallions from Holstein; and, in consequence, the best breed of horses in France would have been spoiled, had not the farmers discovered their mis-

take in time, by observing the offspring much inferior in form to that of the native stallions.

Some graziers in the Isle of Sheppey, conceived that they could improve their sheep by large Lincolnshire rams; the produce of which, however, was much inferior in the shape of the carcass, and the quality of the wool; and their flocks were greatly injured by this attempt to improve them.

Attempts to improve the native animals of a country, by any plan of crossing, should be made with the greatest caution; for, by a mistaken practice, extensively pursued, irreparable mischief may be done.

In any country where a particular race of animals has continued for centuries, it may be presumed that their constitution is adapted to the food and climate.

The pliancy of the animal economy is such, as that an animal will gradually accommodate itself to great vicissitudes in climate, and alterations in food, and, by degrees, undergo great changes in constitution; but these changes can be effected only by degrees, and may often require a great number of successive generations for their accomplishment.

It may be proper to improve the form of a native race, but at the same time it may be very injudicious to attempt to enlarge their size.

The size of animals is commonly adapted to the soil which they inhabit. Where produce is nutri-

tive and abundant, the animals are large, having grown proportionally to the quantity of food which, for generations, they have been accustomed to obtain. Where the produce is scanty, the animals are small, being proportioned to the quantity of food which they were able to procure. Of these contrasts, the sheep of Lincolnshire and of Wales are examples. The sheep of Lincolnshire would starve on the mountains of Wales.

Crossing the breed of animals, may be attended with bad effects in various ways; and that even, when adopted in the beginning, on a good principle; for instance, suppose some larger ewes than those of the native breed, were taken to the mountains of Wales, and put to the rams of that conntry; if these foreign ewes were fed in proportion to their size, their lambs would be of an improved form, and larger in size than the native animals; but the males produced by this cross, though of a good form, would be disproportionate in size to the native ewes; and, therefore, if permitted to mix with them, would be productive of a starveling, ill-formed progeny. Thus a cross, which at first was an improvement, would, by giving occasion to a contrary cross, ultimately prejudice the breed.

The general mistake in crossing, has arisen from an attempt to increase the size of a native race of animals; being a fruitless effort to counteract the laws of Nature.

The Arabian horses are, in general, the most perfect in the world; which probably has arisen from great care in selection, and also from being unmixed with any variety of the same species; the males therefore have never been disproportioned in size to the females.

The native horses of India are small, but well-proportioned, and good of their kind. With the intention of increasing their size, the India Company have adopted a plan of sending large stallions to India. If these stallions should be extensively used, a disproportioned race must be the result, and a valuable breed of horses may be irretrievably spoiled.

From theory, from practice, and from extensive observation, which is more to be depended on than either, it is reasonable to form this

Conclusion:

It is wrong to enlarge a native breed of animals; for in proportion to their increase of size, they become worse in form, less hardy, and more liable to disease.

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