

If a more scientific proof that men are not all born alike is demanded, it can be obtained by a study of identical twins. The great likeness often existing between twins is not to be explained by a likeness between their past surroundings. This we know to be the case because twins who were separated soon after birth, and who lived very different lives, have often remained extraordinarily alike. The only satisfactory explanation which can be given of the great similarity between identical twins is that they sprang from one and the same germ. Whatever small differences there are between what are called identical twins may, no doubt, be explained by differences in their past surroundings. But ordinary brothers are exposed to nearly the same differences in surroundings as are twins. Brothers who are not twins cannot, therefore, differ from each other much more than do twins *because* of the effects of their past surroundings. To whatever extent ordinary brothers differ more than twins, to that extent some other explanation has to be found for these extra differences between them. And no explanation can be suggested for these differences except that they are due to the differences which existed between the germs from which the brothers sprang. We thus get a rough measure of those differences existing amongst the members of any one family which can be traced back to their originating germs; differences which may be called hereditary differences.

Here a point may be mentioned which has puzzled many persons. How is it possible for persons belonging to the *same* family to show *hereditary* differences? If brothers do differ widely, does not this prove that heredity counts for little? Now the qualities of both a father and a mother are to some extent, as it were, passed on to and then carried by the germ out of which their son originated. But the son will pass on more of his father's qualities and less of his mother's to one grandchild than to another. The grandchildren will in consequence differ amongst themselves. And this they will do although the whole of their qualities may have been derived without change

CHAPTER IV

Hereditary Qualities

IN the last chapter it was said that men are not all born alike. It was declared that the germs from which we spring differ one from the other, with the result that as grown men we also differ amongst ourselves. But what proof is there that any of the differences between us can thus be explained? May not all our differences be the result of the differences in the surroundings to which we have been exposed?

All will agree that we can do nothing to stop a man having red hair or blue eyes if, when born, that seems to be his fate. Such peculiarities as these evidently depend on something which was in existence when the man possessing them was born. And this is equally true of many other bodily qualities. Men are certainly not all born alike as far as their bodies are concerned.

Men also differ amongst themselves at birth as regards their minds, or rather as to what their minds will become; though this is not so easily proved. In this matter we can, however, appeal to common sense. Let anyone look back at his school-days, and he will readily admit that some of his school-fellows could beat him not only in strength of body, but in strength of mind also. And it is evident to us now that the superiority of the minds of some of our young companions had little if anything to do with any superiority in their surroundings. As to some other boys, we know equally well that we should never have behaved as badly as they did under any circumstances. Our common sense tells us that some of the differences that we noted between our schoolboy friends depended on something which was not affected by external conditions.

from their grandparents. Hereditary qualities, when transmitted to another generation, remain unchanged; though they may be sorted out differently. Somewhat the same bodily and mental qualities will often keep cropping out in successive generations, and yet members of the same family will differ considerably amongst themselves. Fact and theory hang together perfectly.

The fact that each hereditary quality of any individual is passed on to some but not to all of his descendants shows its results in the following way also. We have seen that we cannot foretell what will be the qualities of a man before he is born. But if we know the qualities of his near relations we can tell a good deal about what his qualities will *probably* be. This means that, though we should make many bad shots, we should be generally far nearer the truth than if we went by chance.

Perhaps a single example may make this point clearer. Let a thousand fathers be selected, all four inches above the average height of the nation as a whole. Now, we cannot know what will be the height of any one of the sons of these fathers. We do know, however, with considerable accuracy that if a large number of these sons were to be measured, they would prove to be *on the average* two inches above the average height of the nation, or about half the excess of their parents. And this is true of most or all other qualities that can be measured. This being the case, when a farmer is breeding cattle, he is often disappointed in regard to particular beasts. He never doubts, however, that by care in breeding he will raise the qualities of his stocks to some extent. And this is equally true as regards the breeding of men.

We have seen that the sons of fathers selected on account of their height, though tall, will not be as tall as their fathers. This fact is known as the regression to the mean. Now, this regression does not continue beyond a certain point. It does not destroy the benefits arising from selection in breeding. If a number of tall sons and daughters of a selected group of parents were to be kept as a caste

apart, the height of their descendants would not continue to diminish as the generations succeeded each other. Thus it is true that, when a selection of exceptionally good stock is made for breeding purposes, the next generation will not come quite up to that high level. But this does not prevent it from its being also true that selection in breeding always produces some good results on the stock taken as a whole, in spite of this partial regression to the mean.

What we have been discussing may be described as the laws of natural inheritance or of heredity. More and more is being found out about these laws, this being the result of breeding experiments and statistical enquiries. The way in which germs unite has also been watched under the microscope, and the conclusions arrived at by experiments in breeding have thus been confirmed in a wonderful way. The impression left on the minds of students of science is that natural inheritance always proceeds in a perfectly orderly and regular way. What has happened in the past will happen again in the future under the same circumstances. The laws of heredity can be relied on with complete confidence.

From all this we know for certain that the natural qualities of parents will reappear amongst their descendants to such an extent as to enable us to foretell in no small degree the characteristics of the coming generation. This is true of mental and bodily qualities, and of good and bad qualities. Is it not, therefore, worse than folly to allow parents with bad natural qualities to have more children than those who are better endowed? Eugenics seeks to lessen this folly in the future.

Of course, the germ from which any one of us originated cannot be changed. It is impossible to go back on the past. But if the hereditary qualities of every one now living may be said to be dependent on a germ which is unalterable, is not that rather a hopeless outlook? This question certainly needs an answer. Our heredity can best be compared to a fixed anchor, to which we are tied by a cable. But the cable which ties us to this fixed point

is elastic. By further efforts, or by being placed in better surroundings, our lot can always be improved somewhat. In all circumstances the cable tying us to our hereditary anchor can be stretched a bit more by pulling harder. This is so, although it would be practically impossible to go on lengthening it for ever. In the same way, we vaguely know that, as regards all things that we are striving for, there is a limit beyond which we cannot expect to go. Yet this practically unattainable limit to our hopes should not and does not fill us with despair.

If we look to future generations, however, another story has to be told. If an improvement in the breed of the race comes to be made, this will be as if those who come after us will find their anchors of heredity cast further in advance. Such an improvement in natural qualities would mean that our successors would have a better start in life. They would be able to do as well as we have done with less exertion. With efforts equal to those which we have made, their lives would be more profitable than ours. The cables attached to their fixed anchors would not drag them back to the same extent. With no more trouble than we have taken, they would be superior to us in mind and body. That these results in the future can actually be obtained by reforms adopted to-day is the hope held out to us by eugenics. Is not this an inspiring hope?

CHAPTER V

Eugenic Methods

IT has been suggested in a previous chapter that man is a domestic animal, and that, even as regards human affairs, something can be learnt from the farmer because of his knowledge about breeding. On reading this, some may hold up their hands in dismay, and without further thought condemn any imitation of the methods of the stockyard.

First of all it may be noted that some stockyard methods are certainly not to be despised. If you inspect any good establishment you will find that the animals are well housed; that they are fed with suitable food in quantities neither too small nor too great; and that they are carefully guarded against infection. Should not we be glad if the same could be said about our slums?

Then, again, another useful practical lesson has often been impressed on the minds of those who have had the management of large stock farms in the Dominions. Experience has made them clearly realize the "madness" of going on breeding more animals when the ranch is already fully stocked, and when the surplus stock cannot be readily disposed of. This is a stockyard lesson which may well be remembered when considering at what point our own islands should be held to be over-populated.

In another direction also we may well imitate the farmer's frame of mind. When the question before him is how to stock his farm in the future, as a matter of course he looks to breed above all things. When taking thought as to the animals he already possesses, he concentrates his mind on their surroundings and their training. No doubt he considers how best to spend his money. But the point is that it never even occurs to him not to attend to both breed and

surroundings. In human affairs the need for attending to the immediate wants of our fellow citizens has constantly been made an excuse for altogether neglecting the consideration of the breed of future generations. In this matter the farmer can teach us the invaluable lesson that we should always strive to advance in both directions. The farmer hopes that he will come to possess well-trained horses of good breed. We ought to have similar hopes in regard to the citizens who will constitute our nation in the future.

It is, of course, easy to push this comparison between man and domestic animals too far. The farmer will no doubt train his horse as well as he can. But in doing so he is only improving that one horse. When we educate our children, on the other hand, we know, or we ought to know, that we are benefiting not only them but also all who come in contact with them, including their children. This is because learning is passed on from one to another by word of mouth and by books. It is true that nearly all such accumulated learning—or, in other words, civilization—has at times been destroyed by wars and internal strife, this being especially likely to happen if the breed has been previously deteriorating for some time. This is what occurred when the greatest period of learning and luxury in ancient Rome was followed by the Dark Ages. And in this danger we can find a strong argument in favour of attending to breed as well as to surroundings. Improvements in breed cannot be wiped out all at once in any way. This is because such improvements take place in the very nature of man himself, and are passed on to future generations by an infallible natural process. And, as we saw in the last chapter, the effect of improvements in breed would be to make the men who will come after us rise to higher levels than those which we have been able to reach in like circumstances.

What has here been indicated is that certain useful lessons can be learnt from the farmer. But when we come to consider those methods which are generally associated

with the word "stockyard," we see that they must be repudiated altogether in human affairs. The farmer may kill off his inferior stock; whilst no one advocates putting both the unwanted kitten and the inferior baby into the tub in the backyard. To argue against such proceedings is a waste of time. Compulsory marriage is equally out of the question. It is true that both infanticide and the subjection of women have been common enough in many countries and in all ages; but they will never be reintroduced into civilized countries. A highly developed moral sense and great freedom of choice are two of the most precious attributes of man, and the necessity for preserving them rules out these stockyard methods.

The main lesson learnt from a study of domestic animals is, in fact, that the descendants of good stocks are always on the whole naturally superior to the descendants of inferior stocks. This is true of all animals, man included. And from this it follows that, in order to improve the breed of our race, we should now take such steps as would result in all who show any natural superiority producing a greater number of descendants than at present, whilst making all who are definitely inferior pass on their natural inferiority to as few as possible.

As regards the superior stocks, a reduction in the number of deaths amongst them would, of course, increase the number of their descendants. We may, however, be sure that efforts will continually be made in this direction. The special aim of eugenics is, therefore, to increase the size of the families of such stocks. As to the inferior types, we cannot, as we have seen, reduce the number of their descendants by the simple expedient of murder. All that can be done is to lessen the size of their families.

It has often been urged that our scientific knowledge is not now enough to make it right to take any practical steps in the directions above indicated. Certainly further knowledge should be sought in all directions. But we do know that human beings differ from one another at birth to a very considerable extent. We also know for certain

that all endowed with any natural superiority will pass on some of their good qualities to some of their descendants. We know that this is equally true of harmful qualities. And this knowledge is all that is needed to justify us in assuming that the lot of mankind in the future would be improved if steps were now to be taken which would result in a lowering of the birth-rate of all the naturally inferior types, and an increase in the birth-rate amongst the naturally superior. To introduce reforms having these effects is the aim of eugenics; provided that the moral attributes of man are always duly safeguarded.

It may be said that these islands are over-populated, and that consequently no steps should now be taken which would tend to increase the birth-rate of any section of the people; for that would tend to increase our already too great numbers. But there would be no increase in numbers if any increase in the descendants of the superior stocks was counter-balanced by an equal decrease in the inferior strains. In any case, to impose some immediate suffering as the result of over-population might well be justifiable if it would lead to an enduring improvement in the natural qualities of the race. It is by the adoption of eugenic reforms to-day that the reputation and happiness of our nation in the future can most certainly be promoted.

Moreover, all reforms involve some risk. To do nothing is, however, often the course which involves most risk. The world is never really standing still; and to leave things alone may be merely to drift on to unseen rocks ahead. The bogey of dangers in the path of progress is often raised by us from an unconscious desire to save ourselves the trouble of making up our minds and of beginning to move in new directions. If science points clearly to certain steps which could now be taken in order to benefit our nation in the future, do not let us fail to move in that direction out of a selfish regard for our own comfort. Eugenics calls upon us to include all future generations amongst our neighbours; that is amongst those for whom we ought to be prepared to sacrifice our own immediate interests.

CHAPTER VI

The Men we Want

IF our object is to try to improve the breed of man, should we not first of all decide on the kind of man most to be desired? To fix on all the qualities of the ideal man would probably do more harm than good, because to do so would be more likely to discourage than to encourage us in our efforts. Something must, however, be said on this subject.

We can at all events assert that there are many kinds of men that we do not want. These include the criminal, the insane, the imbecile, the feeble in mind, the diseased at birth, the deformed, the deaf, the blind, etc., etc. How to lessen their numbers will be considered in later chapters.

It has been suggested that, whilst getting rid of these extremely undesirable types, we should endeavour to create a group of supermen at the other end of the scale. If a few perfect individuals were to appear on earth, and if their perfection were to be acknowledged by all, this would be very good. These supermen would rule over us to our great contentment. This idea is, however, utterly impractical. The desire to dominate or lead other men is a very deeply-seated quality. It would be very difficult, and not altogether beneficial, to get rid of it. This being the case, any group of supermen appearing in our midst would probably bully or harass their fellow citizens, until the mob rose up and drove them from power or exterminated them. The creation of supermen is to be condemned because it would lead to either tyranny or rebellion.

Neither should our aim be to create various inferior castes of human beings, such as would be especially adapted to do the dirty work of the world without complaint. No doubt