

QUARTERLY CONFERENCE
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Executive Officers of State Institutions
WITH THE
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By special arrangement, the quarterly meeting of the executive officers of state institutions with the State Board of Control, was held in the Senate Chamber, in the State Capitol, an address being given by David Starr Jordan, president of Leland Stanford University, on the subject of "Eugenics."

Dr. Jordan: Ladies and Gentlemen: The word "Eugenics," as you know, is not an old one. It was framed by Francis Galton some years ago to cover the science of being well-born, and comes from two Greek words having that meaning. It is not only the science of being well-born, but it is also the art of being well-born, for every science, when it has its material gathered together, works itself over into an art. The science of being well-born is the gathering together of all forms of knowledge that bear on the question of good parentage, of childhood among good men and women.

The purpose of the study of Eugenics is to know the kind of ancestors we should pick for the next generation. We know that all sorts of physical, mental and moral defects are transmitted with fatal precision. We know that quality is more likely to be inherited than quantity. We know what it is to be well-born, and to be well-born should be the heredity of every child. But the art is somewhat difficult to practice on ourselves, because we are, by the time we know anything of the science, already past any application of it to ourselves. However, we feel that, with the accumulation of knowledge, society will know some things that are well worth contributing; that the general substantiation of truth with regard to these matters will become popular knowledge; and that a great deal of good will be accomplished. When the things which we are going to meet before very long come up, such knowledge will be a very great help to us.

Along with this term "Eugenics" is a still later word, "Euthenics," which comes from the Greek, meaning "being well brought up." Eugenics and Euthenics correspond to what Galton called "Nature and Nurture." They are constantly being brought into contrast. We say that such and such things are the result of nature; such and such things are the result of nurture; such and such things "run in the blood" or are "bred in the bone," while other things come from the way in which we have been brought up.

There is some discussion as to which is the more powerful, nature or nurture. Nurture can never give an individual what does not lie in his nature. He can never get anything that does not have at least the possibilities inherent in his original makeup. On the other hand, Nature is wholly dependent on nurture to secure her final results. With adequate nurture each man becomes what it is in him to become. Nurture will take the son of a tramp and make him a gentleman, or just as good as a gentleman—"something equally good," as the druggists say when they substitute some article for the one asked for. The force of the individual man is increased by training. The trained man is placed in a class relatively higher than the one in which he would belong on the score of heredity alone.

We find that a difference in the usefulness of individuals may be made by a change in nurture. The nurture of the street is bad, and a great many who might have been made good are spoiled in that way. On the other hand, a great many young men and women who might be worth something are ruined by wealth, because it is impossible to build up a sound character without effort's being put into it somewhere. Had there been a change in their surroundings, the results would have been different.

Now, matters of nurture belong to Euthenics. Everything that refers to the growth of the individual, from the time of conception on, belongs to Euthenics. Everything that goes with the original outfit belongs to Eugenics. The difference between these two—the terms are very confusing to the ordinary mind—is shown in an old Danish proverb: "Es schadet Nichts in einem Entenhof geboren zu sein wenn man in einem Schwanenei gelegen ist." (No harm to be born in a duck-yard if one has been laid in a swan-egg.) You can't keep a swan down by having it born in a duck-yard. The difference between a swan-yard and a duck-yard is not so very great. You can't keep a man with good heredity down if you have only a moderate difference in his surroundings, for good stock is not the product of good surroundings alone.

"At birth, the gate of gifts is closed," so Emerson tells us. But the mere fact of birth has no significance from the standpoint of Eugenics. It is at the moment of the blending of the two germ cells (male and female) that the "gate of gifts" is closed. In the instant of conception the gifts of life are granted. Nothing more comes of itself. Henceforth one must expect nothing new. All he can do is to make some part of the heritage he has received from his father and mother better and stronger by proper training. In this he has a lifelong task. Every man is full of struggling impulses, and the work of Euthenics is to take the best of these and make the most of them, and to obliterate and cover up the others.

No part of Euthenics, so far as we know, is ever inherited. If by nurture you make a child a great deal better than he was by nature, you have done nothing more than give his best qualities the best opportunity, but when it comes to heredity in the next generation, no part of his surroundings is inherited. The child is free-born. Whatever experiences we may have in life, all we can pass over to our children is possibilities, and we can't destroy these by any action that we may take. In heredity there can be no natural or necessary tendency downward or upward.

Nature repeats, and that is all. It is not what parents actually are, but what they might have been, which determines the course of inheritance. From the actual parents actual qualities are received, the traits of the man or woman as they might have been, without regard, so far as we know, to the degree in which these qualities have been actually developed. We can't make any of them greater in our children by working them hard, or make them less by neglecting them.

Where the mother is ill or the father is alcoholic, the child, who depends on its parents for its early vitality, may start in with a poor momentum, or may show defects in the nervous system or in balance of qualities, but such conditions, affecting not the germ plasm but general vitality, are not hereditary. Nothing that happens to the life of a person affects the heredity of the children, although it may affect their momentum. It is not true that a man who has lived a temperate life, then takes to drink, is indicting the perils of alcoholism on his children. There is no truth in the idea that taking up a certain line of action is by that very fact likely to carry inheritance. In a general way one-fourth of the favorable traits of an individual come from his father; one-fourth from the mother.

We find from a study of the germ cell itself that it is a cell of the body in many respects similar to other cells, but in its growth it is capable of repeating the whole organism from which it came, which of course the other cells cannot do. A slice of potato will grow into a new potato plant, but a slice of dog will not develop into a new dog. The germ cell is made up of protoplasm, a structure of gelatinous ribbons and flecks of form. In connection with this structure all known phenomena of life are shown.

Inside the germ cell is a small cellule called the nucleus. Here lies the determination of what the coming individual shall be. The nucleus is a complicated arrangement of loops and bands, the material of which these are made being called chromatin, in which in some way or other the elements of heredity are contained. The units of chromatin we call chromosomes. In the fertilized egg the mixed chromatin of two cells which have been fused into one may be said to contain the architect's plan of the coming individual. Just how the color of the eyes, the shade of the hair, the shape of the nose, the stature, and all such things, are involved in the chromosomes, nobody knows. If we could take a hen's egg and insert the nucleus of a horse's egg—for horses lay eggs as well as hens, though not so frequently—we should hatch out a horse. I shouldn't advise you to attempt this, because you would have a bad egg before the experiment had gone very far, but if you could make it work, you could hatch out horses, or whales, or chickens, or quails, from any kind of an egg. It has been made to work out with certain sea urchins.

When the germ cells are ripe and ready to be united, the chromatin has been divided and subdivided until but half the usual amount remains in each, but when united they form a perfect cell. Each parent exerts the same force of heredity. Half the characteristics come from each, but in each half it would appear that about one-half is lost or rendered unrecognizable by other variation or contradictory blending; hence one-fourth of the traits are taken directly from the father and one-fourth from the mother. If the male cell carried all the qualities of the father

and the female cell all the qualities of the mother, then you would have the resultant individual with two groups of qualities, twice as many as the father and the mother had. By the time he had gone through five or six generations, he would have so many qualities he couldn't stand.

The father has no more influence than the mother, and the mother no more than the father. Each contributes chromosomes which will lay the plan of growth of the individual, and these half-plans are brought together to form the whole plan. This whole plan may harmonize or it may not. It is possible to bring in from one side elements that are very divergent from those on the other side. It is possible that the father and the mother may be almost alike, so that the elements may be almost alike.

Or the father and the mother may be very different. The father may be very tall, and he may be very slow in his movements; he may have certain kinds of gifts. The mother may be very short, and she may be very lively; she may have certain other kinds of gifts different from those of the father. When they come together, we are usually surprised that the children do not have the gifts of either parent. When you cross a Greyhound and a St. Bernard or a St. Bernard and a wolf, you get from such a cross a dog that is neither the one nor the other. Nearly all the people that we meet in society are comparable to crosses between St. Bernards and wolves, or something quite divergent. You never find men that seek wives almost like themselves. In some parts of the country and in some other countries cousins marry, endeavoring to get people of just their type. Then their type is reproduced, whether desirable or not. In a general way you get a greater possibility from the crossing of people that show good traits, but not any particularly definite ones. You get out of these wholesome, sound people. You get healthy people of distinction where the combination happens to work out just right.

There is a poem by Goethe which has become a classic in the study of heredity:

"Stature from father and the mood
Stern views of life compelling;
From mother I take the joyous heart
And the love of story-telling.

"Great-grandsire's passion was the fair,
What if I still reveal it?
Great-granddam's, pomp and gold and show,
And in my bones I feel it.

"Of all the various elements
That make up this complexity,
What is there left when all is done,
To call originality?"

There is nothing left to call originality except the combination which could never have been hit before and which could never be hit again.

Goethe was tall and broad of stature, an inheritance from his father—"Vom Vater hab' ich die Statur." From his father he also took his "mood stern views of life compelling." From his mother he took her delightful

friendliness and "love of story-telling." He inherited his grandfather's love of fair women and his grandmother's taste for pomp and show. He might have gone on, if he had cared to, through something like ten thousand of these different elements, for Nature takes just as much pains to reproduce the color of an eye, or the length of a nose, or the shape of a toe-nail, as she does to reproduce the power of story-telling.

If one can analyze his father's character and his mother's character, he will find that, on the average, one-fourth of his traits are taken directly from his father and one-fourth from his mother. A great many children take some trait from their grandfather or their grandmother, or certain dominant traits appear in one generation and are recessive (not appearing) in the next, reappearing in their children. Certain qualities pass over one generation and reappear in another. Recessive qualities are just as truly inherited as dominant ones. For illustration: The beard appears in the father and passes over in the daughter, but the daughter is just as likely to carry to her children the type of the father's beard as the sons are to carry theirs. Because these qualities are latent, they are none the less real. We may have in a family a black sheep. The son of that black sheep may be all right; the dominance of evil may pass away. We may find in a bad family some that are very good.

To the characters received from the parents, we must add the latent influence of grandparents, great grandparents, great-great-grandparents, and great-great-great-grandparents. Each grandparent has 1/4 the potency in heredity that the father or the mother has; the great-grandparent, 1/16; the great-great-grandparent, 1/64; the great-great-great-grandparent, 1/256; and so on, multiplying by four right along. If you add all these fractions together, you will find, when you get them all in, that they will just make an individual. You can see that if the parents could transmit all the qualities of each one on each side, you would have a tremendous accumulation of qualities. Whatever power created these germ cells, took great care to look after that particular thing.

Another thing Nature took great care to look after was that when these chromosomes were divided they should be split from end to end. Each nucleus keeps its bit of all that was in the old nucleus. Nature never divides these chromosomes quite equally. That is the reason why no two individuals are exactly like each other, not even a brother and a sister. They are almost alike; never quite. The matter is a great deal more complicated than I have made it, and the farther you go into this thing, the more complex it becomes.

We have found out that there is a pretty definite array of characters that are recessive and characters that are dominant. In all cross-breeding, the existence of such dominant and recessive characters has been recognized as a common phenomenon. The inheritance of recessive characters explains why an individual may "take after" a grandparent rather than a direct parent.

The friar Mendel, of Brunn in Austria, made many experiments in crossing peas which differed from each other in some one of several different characters selected by him. For instance, he would cross a pea which was green with one bright yellow. It was found that a certain per

cent would have green peas and a certain per cent yellow peas, but by crossing them again there were twice as many green as yellow pods, and so on. The trait which prevailed was called the dominant character and the other the recessive character.

I have heard it said that there can't be anything in heredity because the father who is great usually has a son who is not great. Naturally we are anxious to see the son of a great artist or a great sculptor a great artist or a great sculptor, also, and are disappointed when he is not. Instead of choosing the qualities which made the father great, Nature may have selected the shape of his hand for one thing, the color of his eyes for another, and passed on a series of things that to us seem to be of no particular consequence. The sons of great men have more often averaged great than the sons of other men, and sometimes the combination is so perfect as to give the very best of the father's qualities and to join them with the very best of the mother's qualities. Quite as likely are you to get the worst of the mother's qualities joined with the worst of the father's.

The movement of heredity, taking the great masses of people, is somewhat analogous to the movement of a river, which it is said purifies itself as it flows. I am told that this is true of the Illinois river, but it doesn't look the part. However, we can assume that typhoid and other germs there, having nothing to feed upon, are destroyed as it flows along, and that in that sense the river purifies itself. That is merely an illustration, but there is no doubt that the stream of heredity tends to purify itself as it goes on. If you could follow a body of people long enough, you would find that here and there those who do not behave themselves are stricken down. They are stricken down if they use alcoholic liquors to excess. If they have this, that, or the other bad habit, you will see them gradually worked out and the stronger ones passing on. There are plenty of accidents, but, broadly speaking, it is the stronger, the more intelligent, the more virtuous, that tend to survive, and in the long run they tend to people the earth.

We have both the goodness and the severity of God. The severity of God strikes out all those that can't keep step, that can't come into line. "The way of the transgressor is hard," and in the cases where this does not seem to be true they are but partial transgressors. If you transgress enough and long enough, you will make a failure of it. The operations of the fool-killer furnish an illustration. If you could take a thousand people and see what foolish things they do and what the fool-killer does to them, you would see that the great bulk of people that drop out fail through some fault of their own, although of course good people fall out sometimes. So the movement tends to purify itself. So we have in the long run the survival of the latest.

If you want to prove that, look over your ancestral roll. In ordinary life you won't find among your ancestors a single alcoholic person, a single perverted person, a single one of those persons that represent the line of transgression. When I was in the University of Adelaide a while ago, one of the students asked a professor this question: "Why is it that the Bible says the wicked are punished to the third and fourth generation?"

Why not the seventh or eighth?" To which the professor replied, "Because there isn't any seventh or eighth generation." You will not find among your ancestors a single person who perished in infancy. They all were competent enough to come at least some distance into mature life and to maintain themselves for that time. While it is true that a great many strong, fine persons perish in infancy, the average that perish is somewhat below the normal type.

Indiscriminate charity has been a fruitful cause of the survival of the unfit. It has been said that charity produces half the misery she tries to relieve, and that she can never relieve half the misery she creates. Unwise Charity is responsible for half the pauperism of the world. The poor have been known to make themselves miserable that they might receive the aid of charity; to put vitriol on the eyes of their children and cause great sores to grow on their legs, in order that they might be objects of charity. That kind of charity simply perpetuated the less desirable kind, allowed them to reproduce their own type, when in the natural condition of things they wouldn't last for any period. It is the duty of true charity to remove the causes of weakness and suffering. It is equally her duty to see that weakness and suffering are not needlessly perpetuated. Startling results may follow from the selective breeding and preservation of paupers.

Thirty years ago I became interested in the cretin, a type of idiot found in various places in the Alpine regions, all of whom had great goitres, a disease of the thyroid gland. With their silly smile and distorted faces, they represent a very peculiar type of idiot. I haven't happened to see any in this country just like them. In the valley of Aosta, in northern Italy, the goitrous cretin was for centuries an object of charity, and had not only been cared for but been allowed to breed. I believe the theory existed that their children had souls and that in another world the veil which had clouded their minds in this world would be removed. Anyway, whatever the theory was, they were allowed to marry for a very long time. I visited Aosta in 1881, in 1883, and in 1900, and each time I saw the cretins on the street everywhere. At different times I got photographs of these people, who were perfectly hideous, representing the most repulsive type of idiots that we know. They had no character, no mind, no force. While not allowed to marry healthy people, the cretin had been allowed to mate with the cretin, the goitre with the goitre, the result being that idiocy was multiplied and intensified.

The severe military selection which ruled in Switzerland, Savoy and Lombardy for many generations took the strongest and healthiest peasants to the wars, and left the idiot and goitrous to carry on the affairs of life at home. To bear a goitre was to be exempt from military service. It is said that when iodine lozenges were given to the Children of Savoy in the hope of preventing the enlarging and degeneration of the thyroid gland, mothers would take this remedy away from the boys, preferring the goitre to military service.

We don't know what causes the goitre, but we do know that while it is not hereditary, so far as known, the susceptibility to it certainly is. Whatever causes the weakness of the thyroid gland will be inherited. This susceptibility filled the Alpine regions with goitre and Aosta with

cretins. It used to be said of Aosta that she was famous for her mountains and infamous for her idiots.

I went to Aosta two years ago in order to get some photographs of the cretin and to study this peculiar little people further. I first asked the proprietor of the hotel about the cretins, and to my surprise he didn't know the meaning of the word. I was obliged to ask a great many persons before I could find one who had even heard of them. Someone finally said that he thought I might find some if I would go to the Asylum for the Aged Poor. I went and learned that twenty years before that—the very-year I was last there, at which time I had suggested that the only way to get rid of the cretin was to place these unfortunate creatures in an asylum where they would be well taken care of but not allowed to leave any descendants—they did that very thing, on their own initiative of course, not mine. They built a large asylum, to which all the cretins and most of the goitrous of that region were removed, the men being placed on one side and the women on the other. The asylum was put in charge of Sister Lucia. I found but one cretin left, a woman about four feet high, with the manners and intelligence of a degenerate pug dog—pug dogs are degenerate. This woman was very affectionate—she tried to snuffle my fingers just as a dog does—but there was no mental capacity. On the other side there were three others, half cretins, illegitimate children of cretin women. I asked the Sister what had become of all the cretins, and she said, "Il n'y en a plus," (They don't come any more.) I visited the orphan asylum where there were a great many boys and girls, all of whom I found to be bright and alert, without a touch of goitre or cretinism. I went to the railway station to inspect the beggars who are allowed to stand there in rows, but not one showed cretin qualities. They had at one stroke put an end to cretinism.

At one stroke we could put an end to feeble-mindedness if we would devise some way of caring for feeble-minded children and seeing to it that each one was the last of his race. We couldn't put an absolute end to it because in every heredity there once in a while develops what you call the "withered branch." Once in a while the very worst qualities of the mother and the very worst qualities of the father are brought together, and you get a combination which is very undesirable. If we could simply prevent those whose heredity is impossible from breeding, we should practically put an end to feeble-mindedness. It is necessary to have some little care and judgment in picking out those whose heredity is impossible, for there are many cases where people in a general way decide one's heredity is bad where nothing of the kind is true.

I notice by the papers that in the Eugenics Congress at London there was a discussion of the question whether one would rather be the son of a robust burglar or a tuberculous bishop. As thus stated, the question cannot be answered. One would wish to know, in the first place, what kind of stock the mother came from, for the qualities of the father control only one-fourth of the peculiarities of the offspring; the mother, the same; and the grandparents and earlier ancestors account for the rest. Then, again, one would wish to know whether the burglar was a criminal by inheritance from a weak and vicious stock, or whether he was the victim of bad education, of lack of training, and of a false theory

as to the ownership of property. Burglars sometimes have good heredity. There are some conditions of life that might turn you and me into burglars, or cause us to take to the road as highwaymen. You want to get a pretty good history of the burglar and find out what it was that caused him to rob. If he were perverted solely by his early bringing up, as, for instance, falling when an orphan child into the hands of a professional thief, this fact would in no wise affect his descendants, although it might prevent him from marrying into a high-grade family. Of course burglars as a whole are not robust ordinarily. The tendency to become criminal goes with defects. Bishops, in my experience, are not often tuberculous. They are men chosen for executive capacity; are generally fat, but sometimes thin and wiry.

Tuberculosis is not inherited. Physicians speak of it as though it were to be got only through infection, which in their sense is true. You can't get tuberculosis except by infection, but in the world in which we live everybody has a chance of infection. The germs are around us everywhere, and are likely to attack those of weak and non-resistant tissues, and these qualities of non-resistance are inherited. If we could clean up our country or our world, we could eliminate the germs of tuberculosis, but now they lurk in every car, in every hotel, in every place where bodies of people gather. The most of our people are immune, some wholly, some partially, and in different degrees. To be subject to tuberculous attacks is not to condemn a man. Many of the wisest and best men of our time have been among those non-immune. To live a short but wholly noble life may be better for one's self and better for the community than a life of robust uselessness.

I want to lay my emphasis on the vital importance of sanitation of the nation. It is not a question for schools of medicine. So long as you have schools of medicine, you have schools of quackery. Differing schools of medicine concern only the application of remedies to symptoms. True medicine should deal with causes and the remedy is a minor matter. And any system that deals only with symptoms is quackery. Any form of medicine that regards a drug as a cure for a disease is quackery, because, while there are drugs that will accomplish certain results, there is no truth in the idea that every disease has its curative drug. It is true, for instance, that malaria is cured by quinine, but it is cured simply because the little animal organisms which cause the disease are killed by the quinine in the blood. While quinine is not good for us, it is worse for the organism. We can stand it longer than they can.

I said just now that in matters of heredity, the kind, rather than the degree, is likely to be inherited. For instance, the son of a man six and a half feet tall is more likely to have the general makeup of that man than to have that particular height. The son of a man who has a strong memory is more likely to inherit a tendency in that direction than he is to inherit the degree; that is, kind is more likely to be inherited than degree.

In England, a long time ago, they developed the theory that in each family they could make one individual sound and perfect and a natural ruler. You know the working bees select one out of the different groups, build a cell around it, feed it on "royal jelly," and make a perfect queen out of it, while the working bees are sexless or imperfect females. So in

England their idea was to take the eldest son, give him all the property, feed him on "royal jelly," bring him up in fine clothes, have him dressed by servants until he was fifteen or twenty years old, have him taught all sorts of manners and made a perfect gentleman, while the younger sons would have more or less according to circumstances, and the daughters and daughters' sons would be obliged to shift for themselves. Samuel Johnson said very wisely that primogeniture is a very good thing "because it insures that there shall be only one fool in the family."

As this matter has worked itself out in England, the lord developed by the use of "royal jelly" has rarely been distinguished by perfection of manhood, but it has been a good thing for the people at large. In the first place the nobility was made up of the brave and the strong. By their courage and strength they led the army, became the rulers of the people, and chose the handsome women for their wives, while the commoner ones fell behind, showing that the general tendency of the early nobility was to be the finest type that the country had. On the Continent the noblemen were brought up in indolence and were supported by the common people, whereas in England the younger sons had to shift for themselves. Among the people at large this stronger blood became the dominant strain.

Studies of this kind show clearly that primogeniture is mainly responsible for the difference between Roundhead and Cavalier, between Royalist and Puritan. Roundheads and Puritans were descended from daughters and younger sons. On one of Cromwell's battle flags were these words: "Why should the eldest receive all and we nothing?" One of the daughters of some king marries a nobleman; a later scion of nobility is joined to some squire; some daughter of a squire is married to a farmer. And so their high blood would be brought into the blood of the common people. There was no difference between the higher and the lower except that the higher was brought up in idleness, brought up to believe themselves of a superior order, and the other classes had the germs of democracy. It is a curious thing that primogeniture should be the creator of the British democracy.

I have been interested in the study of the pedigrees of strong races. Of course in our Eugenics Association we are trying to get, as far as we can, pedigrees of the defectives, such as are shown on Dr. Roger's chart. A great deal of genealogical research was done by my brother-in-law, Mr. Edward J. Edwards, of Minneapolis, and particularly by Miss Sarah Louise Kimball, the professional genealogist, who made the chart that I have here.

By the ordinary process of computation you had two parents, four grandparents, eight great-grandparents, and so on, and your children are going to be still better accommodated. You have twice as many ancestors as your parents had. This is self-evident, and at the same time untrue, because your parents have counted the same ancestors many times apiece. By a thousand strains, for example, each of us leads back to Alfred the Great. If you go back to the time of William the Conqueror, you had 266,120,000 of ancestors, and if you go back to the time of King Alfred you had 4,257,920,000 of ancestors. A curious thing in this connection is that at the time of Alfred there weren't more than half a million people in England, and at the time of William the Conqueror not more than a hundred

thousand that left any descendants. Those 100,000 families have furnished you with 266,120,000 of ancestors. Now, what does that mean? It means that you have used some of them twice. There are 100,000,000 of English speaking people today. Each one had at William's time over 266,000,000 of ancestors, a pretty enormous figure. This means that we all are cousins.

The reason that the English people are largely alike is because we all are related and over related again and again. The Japanese have become a group by themselves in the same fashion, by the welding of different races. The Norwegians have descended from the tall, fair-haired people of the sea. They all go back to a very few. Race characters are in a very large degree simply the trait of the dominant family, the one that got the upper hand, and now you find the strains that are strong are all related more or less to each other. Strong strains come in from Ireland, Wales, Scotland, Germany, France, and from all the countries of the world. Strong strains have come to us from Japan, but, taking the English alone, we find that these strong strains have made us all practically descendants of a certain few.

Working out this idea, Miss Kimball compiled this chart and gave it to me, with the heading which you see on it there: "The Survival of the Fittest." Once in a while one has certain qualities that come to the front, that stand out. Such persons we call "the great or the near great," • if we read the Saturday Evening Post.

This chart shows the recorded descendants of Isabella de Vermandois, who lived in England about 1300, the daughter of Robert Bellamont, Earl of Leicester, and the wife of William Warren, Earl of Warren and Surrey; by later marriages joined to the Houses of Plantagenet, Lancaster, and York. She is known to be the ancestor of a long array of competent and often distinguished people, and by fair inference she is probably an ancestor of more than half the people of England and of the United States. The unity of qualities in England—that is, the English character—rests on common heredity. There were but a few thousands of the people of the time of Isabella who left descendants whose race has endured down to our own day. Each one of us theoretically must have had millions of ancestors in her time, but we use these same ancestors over and over again.

Among the recorded descendants of Isabella in our own time are the following:

Victor Emmanuel III., King of Italy; Francis Joseph II., Emperor of Austria; Manuel, President of Portugal; Louis Philippe, of France, and his son, Victor Napoleon, who is now a pretender to the throne; Wilhelm II., Emperor of Germany; Wilhelmina, Queen of Holland; George V., King of England; Leopold II., King of Belgium; Nicholas II., Czar of Russia; George I., King of Greece; Haakon, King of Norway; Christian X., King of Denmark; Alphonso XIII., King of Spain; Edward Everett; Francis Parkman; Phillips Brooks; George Washington; Merrill E. Gates, late President of Rutgers College; Nicholas Murray Butler; Jonathan Edwards; Aaron Burr; Theodore Dwight Woolsey; Timothy Dwight; Daniel C. Gilman, Lord Churchill, the Duke of Marlborough; Theodore Roosevelt. The Roosevelt family is of Dutch origin, but Mr. Roosevelt's mother, Martha Bullock, traces her ancestry back to Douglas, Stuart, and Bruce; Grover Cleveland; Francis Bacon, and all the Bacons of New Haven, of which I

happen to be one; George Dewey; Roger B. Taney, chief justice at the time of the Dred Scott decision; Charles Carroll; The Adamsses, John, John Quincy, and Samuel. The Adamsses have made something of a specialty of heredity for they run in the male line somewhat along the same general line. Each one of them in our day has been more or less eminent. There are so many Adamsses in Wales that it is impossible to trace them back very far. Of course they may claim to go back as far as Adam, and so do all of us, on the mother's side. On the mother's side the whole Adams group is added to this collection of Isabella's descendants; President Eliot, of Harvard; William Ellery Channing; Wendell Phillips; Oliver Wendell Holmes; Robert Treat Paine, one of the signers of the declaration of independence; Thomas Jefferson; John Randolph; John D. Rockefeller; Ralph Lane, Colonial Governor of Virginia; J. Pierpont Morgan; Gen. Robert E. Lee; Abraham Lincoln. It has been said that Lincoln sprang from poor white stock. The statement with regard to his father is perhaps true, but his mother, Nancy Hanks, is connected with the Plantagenets and with all the rest I have mentioned; John Page, the Governor of Virginia, and all the Page family of Virginia; Benjamin Harrison, Richard Henry Dana; Ulysses S. Grant; Miss Kimball has seen fit to add my name to the list also, David Starr Jordan, and her own; Thomas Campbell, the Scottish poet; Governor Spotswood, connected with the early history of Virginia; Patrick Henry; Chas. S. Minot; and a dozen or more governors and senators.

Now, what this means is not that here and there some of us are descended from kings, but that practically each one of us is so descended from the days of the Plantagenets, and that every one of these ancestors was at least a good, valiant citizen, before any feeble-minded alliances had been brought in. I have no doubt that primogeniture has made all the citizens of England of royal blood, has practically brought the traits from the Plantagenets particularly, from Charlemagne, from Otho the Great, and from Alfonso of Castile. The point I want to make is that primogeniture has kept the race from breaking up into first, second and third classes, and has tended to give the virile traits to all the people of England.

Now, an exception to that has come from the fact that England has allowed only its well-born, those that are vigorous and competent, to go to war, and that has given her, in the city of London, a great many people that cannot make a living no matter where they are. The feeble-minded have dropped there because she has rejected them from her armies. The slums of London have exactly the same phenomenon that is found in the Valley of Aosta. It is the phenomenon of rejecting and putting in a mass together, those who could not be used in war. That is the basis of the problem of the English slums.

The existence of certain groups of people living together, intermarrying, becoming by heredity incompetent to do the work of citizenship, is a matter that has attracted more or less attention for some time. Dr. Dugdale began the work by making a study of the family which he calls "the Jukes," although I believe that is not their real name. They were a group of degenerates, living in the mountains in Orange County, New York, and were descended from a woman known as "Margaret, the mother of criminals." The men were all-thieves; the women, all prostitutes. A care-

ful study of this matter has shown that wherever the men of the family have no respect for the property of others, the women have no respect for themselves; they become thieves and prostitutes by inheritance, but of course a very large number of women who are occupying evil positions are doing so through other reasons. The white slavers are responsible for throwing into this class hundreds of thousands of women who might have been useful in society. This study by Dugdale, so far as I know, was one of the first series of investigations into this matter.

Another interesting study is that by Dr. Oscar C. McCulloch, who took up a family of paupers called "Ishmael," in the city of Indianapolis. They were descendants of the poor whites, coming mostly from Kentucky, Tennessee, and North Carolina, who in turn were descended from prisoners of debt sent to this country from England in the seventeenth century, and later squeezed into the mountains because of their inability to keep slaves. Their criminal record is very large. They were for the most part thieves, although there have been a number of murderers among them. They were responsible for the "Clem" murder, a long and celebrated case, which cost Indiana a large amount of money. In the fall these descendants in Indiana used to come into the city in their covered wagons, with their dogs and tow-headed children, and camp outside the city. In the winter they lived down in the river bottoms—there is something in the river bottoms here which looks very much like it to one knowing nothing about it. The whole family, as many as fifteen persons, would live in one room. The men would go about gathering swill and ashes, but had no regular occupation. The women would beg and send their children, with their eyes made sore by vitriol, to beg. They were responsible for most of the petty thievery in the city. McCulloch found about four thousand of these people. They could not work hard and broke down early. Deaths were frequent, especially among the children. The records of the city hospital show that—taking out surgical cases, acute general cases, and cases outside the city—seventy-five per cent of the cases treated were from this class. They intermarried, chiefly with each other, and prostitution and illegitimacy were very large. Nearly all the various things that go with a decadent group of people were connected with this "Tribe of Ishmael." "They underran society like devil grass." Charity in the sense of outdoor relief, is responsible for keeping this sort of people in existence. They ought to be examined, and those found incompetent should be put into places where they could be reasonably comfortable, but the community should see that they have no children. It is not charity to feed these creatures and to marry them when they don't know what they are doing. It is not charity to keep up the stock of people suffering from goitre. It is not charity to keep up the small breed of the hopeless criminal.

In connection with our knowledge of Eugenics, it is clear that with the extension of the science two results must follow. The first is a tendency towards wiser mating on the part of men and women of intelligence and education. The second is the limitation of public authority of the marriage of the defective, the insane, and the criminal. In the latter respect there must be natural limitations. You would not want a Justice of the Peace to say whether you or your children ought to be allowed to count as fit to survive; you would not want an ordinary congressman to appoint a man who

would be Chief Eugenist of the state. The state is a very clumsy and wasteful instrument for doing anything whatever, but it is the best we have. There isn't anything better than a democratic state, but you and I would begin to rebel the minute the state began to meddle minutely with our affairs.

A third result is sometimes the dream of enthusiasts, the formation of a superman by the processes of selective breeding. The result could be reached in a few generations if the best of men and women could be induced to submit themselves to the methods of selection, but those best worth while would never submit to it. The best of men and women will always choose their mates for themselves. Any man who is worth anything wants to hunt his own wife; he wants to pick her out. He may do it stupidly, but the very best way of doing it is to let him do it. It is considered somewhat disreputable for a man to marry a woman with money, even if he marries for love. If he marries where there is money, he has to apologize and explain a little to his friends.

The artificial breeding of the superman would defeat its own ends, because it would breed out of existence the two most important factors the race has won, so far as mating is concerned. These are Love and Initiative. The superman produced by official Eugenics would not take his fate into his own hands, and his descendants would not know the meaning of love. Of course there are a great many love marriages that are failures, but the ideal love marriage is not so. The survival of the fittest in the long run has meant the survival of those who have initiative in these matters and who are bound together by love.

"Love is the greatest thing in the world," notwithstanding the baseness of its many imitations.

Among the greatest triumphs of the applied science of our times is the creation of new plants, new fruits, and new flowers, by the use of known laws of heredity and variation by the skillful hand of Luther Burbank. There is nothing magical or mysterious in all this. "Like the seed is the harvest." The art lies in choosing the right seed and the right combination.

I have spoken on the natural selection by which the best tend to survive in the long run. As our civilization continues we have more and more the survival of the fittest. We have now to consider only a single factor. In science this factor is known as "reversal of selection." "Send forth the best ye breed." That was the war-call of the Roman. And the spirit of domination took these words literally, and the best were sent forth. In the conquests of Rome, *Vir*, the real man, went forth to battle and to the work of foreign invasion; *Homo*, the human being, remained on the farm and in the workshop and begat the new generations. Thus "*Vir* gave place to *Homo*." The sons of real men gave place to the sons of scullions, stable-boys, slaves, camp-followers, and the riff-raff of those the great, victorious army cannot use but does not exclude.

Greece died because the men who made her glory had all passed away and left none of their kin and therefore none of their kind. "Tis Greece, but living Greece no more;" for the Greek of today, for the most part, is the son of the stable-boys and scullions and slaves of the day of her glory, those of whom imperial Greece could make no use in her conquest of

Asia. Dr. Seeck says: "Only cowards remained, and from their brood came forward the new generation. Cowardice showed itself in lack of originality and in slavish following of masters and traditions."

The fall of Rome was not due to luxury, effeminacy, corruption, the wickedness of Nero and Caligula, the weakness of the train of Constantine's worthless descendants. It was fixed at Philippi, where the spirit of domination was victorious over the spirit of freedom. It was fixed still earlier, in the rise of consuls and triumvirates and the fall of the simple, sturdy, self-sufficient race who would brook no arbitrary ruler. When the real men fell in war, or were left in far-away colonies, the life of Rome still went on. But it was a different type of Roman which continued it, and this new type repeated in Roman history its weakling parentage.

One of the Spanish writers says this of Spain, "She makes men and wastes them." And you find the same in other countries. I won't take your time to go into that in detail, but in this connection I wish to mention the effects of emigration, which run parallel with the effects of war, but with this enormous difference; The strong men who emigrate are not lost to the world. The loss of one region is the gain of another. But the losses in war can yield no corresponding gain.

In modern times the greatest loss of Germany has been not from war, but from emigration. If the men who have left Germany are of a higher type than those who remain at home, then the blood of the nation is impoverished. That this is the case the Germans in Germany are usually not willing to admit. On the other hand, those competent to judge the German-American find no type of men in the Old World his mental or physical superior. If a good man goes from St. Paul to Seattle, it is hard on St. Paul, but a good thing for Seattle.

The effects of emigration can well be studied in England. From Devon and Somerset across the colony of Massachusetts Bay. From the loins of Old England arose our New England, and from the germ of self-governing New England arose the United States.

We read in Kipling that,

"There's a widow in sleepy Chester
Who mourns for her only son;
There's a grave by the Pabeng River
A grave which the Burmans shun."

If you want to know why Chester is sleepy, you have only to look at the tablets, which can be seen everywhere, in memory of young men who have given up their lives in some far-off petty war. In the parish churches these records are numbered by the score. In the cathedrals they are numbered by the thousand. Go from one cathedral to another—Canterbury, Chichester, Exeter, Salisbury, Wells, Ely, York, Lincoln, Durham, Litchfield—and you will find always the same story, the same sad array of memorials to young men. England has exchanged her young men for marble tablets.

Now, I think you come to see what all this means. It has an enormous value from the standpoint of Eugenics. There are said to be eleven million people—one million in every four—in Great Britain that haven't any

property. They are not good for anything in war and not good for anything in peace. The "assisted immigration" to New South Wales is today a curse to Australia—they have wanted to be assisted ever since; not all of them, but the great body of them, fall back on somebody for help.

I have spent this summer trying to see what effect the loss of three hundred thousand of the flower of her young men has had upon the South and to see how much that shows at the present time. In some places it shows very plainly; in some, not at all; in some it is obscured by the young men's going West. But greater than the cost of the war, greater than the destruction of property by Sherman, greater than the destruction of the Shenandoah Valley—which was so great that Sheridan said that "a crow flying across it would have to carry his rations on his back"—is the loss of fine blood all over the South, especially in Virginia and the Carolinas, whose armies was made up of strong young blood, the "flower" of the people, one-third to one-half of them lost in the war.

Now, the North had the same experience, but the North has had so many changes it is difficult to follow them. I had occasion to speak on this matter the other day in Boston, and the next day this question was asked, "Where are the forty orators of Boston, successors to Longfellow, Emerson, Whittier, and all the rest, who made Boston in 1860 the intellectual insurgent center of the world?" More than any other place it at that time represented the leadership of intellectual thought and movement in the world. It doesn't represent that now. I wouldn't venture as a mere westerner, to say anything very critical of Boston, but if you want to know where the forty orators of Boston are, go over to Harvard Memorial Hall and read the list of the best of the Boston men who went into the war and who fell on the field of battle. These men would have given us the same leadership that we had then. If their sons and daughters were in Boston, today they would stand for the same leadership that Oliver Wendell Holmes tells us that there are noble souls that have been waiting ever since time began for parents fit to be born of. The sons and daughters of these men must wait on forever. Harvard doesn't stand alone; it is the same all over the country.

A professor in the University of Cambridge, on a visit to America, told me that in coming to the United States the one thing that impressed him the most was the chance remark of a man in Boston that he belonged to the sixty-ninth regiment of Massachusetts Volunteers. That sixty-nine thousand young men from so small a district as Massachusetts had gone into the war because they believed it was right, gave an impression of the mightiness and the cost of the Civil War that he had gained in no other way. But there were 159,165 men in all who enlisted from Massachusetts. The regiments were not of a thousand each, many filled their ranks with 2,500.

"Like the seed is the harvest." War destroys the best human seed, leaving the weaker to germinate. As Franklin said: "Wars are not paid for in war times; the bill comes later."

All these elements of life, of strength, achievement and waste, come into the study of Eugenics. This elementary talk will give you the scope of it. The main value of such discussions is to lead people to further and

deeper study. The essential matter is to make Eugenic knowledge accurate and widely diffused a part of our life, as our knowledge of the multiplication table or of the geography of Europe is. Wise forethought moulds public opinion. Public opinion controls future action. There is no new or startling change to result from Eugenic knowledge. But to add to the stock of human wisdom in relation to heredity, is to promote human welfare and to enhance human happiness.