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ALTERNATIVE HEREDITY OF MENTAL TRAITS.

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BY

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THE sharp contrasts in traits of character between children born of the same parentage and educated under the same surroundings is often a matter of wonderment, and such variations in the human strip, reckless as they at first sight seem in their wide individualistic expressions, have often deterred belief in the value of heredity. The real lesson is quite the reverse, and these same contrasts, when rightly understood, form, perhaps, the strongest argument in favour of mental inheritance. They support the belief in the essentially predetermined nature of such differences as commonly exist between man and man, and bring the whole question of family and individual vicissitudes within the scope and understanding of the germ-cell theory.

Alternative heredity is exemplified when any two contrasted qualities are present in a stock, either as outward body manifestations or as inward germ-cell determinants, and these qualities are passed onward from generation to generation without neutralising each other, or, in other words, without mutually

destroying the contrast. Qualities black and white, good and bad, are in the parentage and in the stock. The offspring must be made up and entirely compounded out of either black or white or good or bad, one or the other, this is the "alternative." In the case of sheep the creature must be, as we all know, clearly and absolutely either one thing or the other. This is *alternative heredity* working at its perfection.*

How far is this true for mental and moral traits? Though man cannot be divided into good and bad, great and small, there is nevertheless much more alternative heredity at work than is commonly supposed. This can be the more readily demonstrated if one divides individuals into three classes. Let the great mass be placed in the middle or common grade, and then watch the appearance and reappearance of either one of the types belonging to the extreme ends of the scale, either the rare superior or the rare inferior. If these types are traced through long pedigrees of human beings by studying intensively families where most of the brothers and sisters and uncles and aunts can be traced and accounted for, the phenomenon of alternative inheritance can be seen to have an universal value. Everywhere we find certain children inheriting the peculiarity in question, while, if the records are complete, it is equally clear that others do not.

* The phrase, alternative heredity, was in use before the rediscovery of Mendel's law in 1900. It is a broader, looser term than strict Mendelian heredity, and does not raise the question of dominance and recession. It does, however, involve the idea of segregation of the germ plasm, and is a convenient term to employ when "factors" and "units," "dominance" and "recession" have not yet been unravelled.

No pedigrees are better preserved than those of Royalty, the names and dates being quite complete. As I have elsewhere offered proof of the essential validity and general utility of the historical and biographical materials,* I will cite some instances to prove how frequently a peculiar or exceptional mentality shows its presence in one member of the family while its absence is found in the very close of kin.

The House of Hanover had a sprinkling of pleasure-loving and dissipated princes, but the majority were quiet and domestic. Frederick Prince of Wales, Frederick Henry Duke of Cumberland, and Edward Duke of York, and Frederick Duke of York resembled George IV. in this particular, and in their moral nature stood in sharp contrast to George III., William Henry Duke of Gloucester, Edward Duke of Kent, and Adolphus Duke of Cambridge.

The Hohenzollerns in Prussia have had among their number a few men and women of remarkable mental endowments, and these also well illustrate the action of alternative inheritance, the genius springing apparently from the Houses of Orange and Coligny with Montmorency in the background (see Pedigree). This first appeared in the Great Elector of Brandenburg, a son of Elizabeth of the Palatinate, who was one of the thirty-two grandchildren of William the Silent—four only of whom had shown the family genius. The parents of the Great Elector were neither of them

* "Heredity in Royalty," Henry Holt, New York, 1906, and "Historiometry as an Exact Science," "Science," New York, April 14th, 1911.

more than mediocre. His son Frederick I. was but a vain and ostentatious figure-head, but an intermarriage caused at least a partial reappearance of the exceptional type in Frederick William I., of Prussia, and a second intermarriage produced Frederick the Great. Four of this generation were almost equal to Frederick the Great himself. His brother Prince Henry was a great strategist. His sisters Sophia Ulrica (Queen of Sweden, "The Minerva of the North"), Charlotte of Brunswick, and the Princess Amelia, were noted for their intellect, while at least four of the other five brothers and sisters could not possibly be placed in the same class. Out of all the nieces and nephews of Frederick the Great it is quite easy to pick seven as showing in one form or another the family brilliancy, while at the same time the feeling is strongly forced on one that, with one or two partial blendings as exceptions, the others do not. The seven whom I have included in this group which seem characterised as "brilliant" are Gustavus III. of Sweden and his sister Sophia Albertina; Augustus Frederick of Prussia, reputed the best artillery officer in the Prussian army, who died young; Louis, a son of Ferdinand of Prussia; Amelia Duchess of Saxe-Weimar, the distinguished patron of genius and learning, of Wieland, Herder, and Goethe; sixth, the celebrated commander Charles William Ferdinand of Brunswick; and seventh, his brother William Adolphus.

The House of Montmorency shows in the same way that genius tends to hold itself as a single entity and

skip about in course of descent. From Eberhard Montmorency, contemporary of Hugh Capet, to Anne, the great Constable of France, there were eighteen generations—one hundred and seven individuals—yet only two great names, Mathew I., who died in 1151, and his grandson Mathew II., who died in 1230. From his death to the birth of the celebrated Constable Anne two hundred and fifty-three years passed, and then a new centre of genius appeared which probably had nothing to do with the earlier manifestation, though it may, of course, have been an extreme reversion. Anne's second son, Henry I., Duke of Montmorency, was a distinguished legislator, being the only one of seven mature children to attain high fame, the others representing the mediocre ancestors. Henry II., the representative of the next generation, was even more eminent than his father. He was the only son to reach maturity. His three sisters were not distinguished for intellectual qualities. One of these sisters, Charlotte, married Henry II., Prince of Condé, and became the mother of Louis the Great Condé, and also of Anne Duchess of Longueville, celebrated for her beauty, tact, and diversified talents. The youngest of the children, Amand, Prince of Conty, in no way inherited the same qualities. He was an utterly weak and insignificant person. The marriage of Louis II., the Great Condé, with Clemence de Maillé de Brezé brought insanity and degeneracy into the line, and for three generations brilliancy, debauchery, and eccentricities ran rampant. There were, however, five other members

of the family about whom little is known, or at least nothing is readily obtained. The presumption is that these were mediocre normal and negative persons, who, having neither gifts nor vices, did not interest the gossips of the time.

The talent in the House of Bourbon also shows an alternative tendency, especially in the capacity found among the relatives of Henry IV. of France. His father was mediocre, but his mother, Jeanne d'Albret, one of the chief supporters of Protestantism, was distinguished for her talents, virtues, and heroic qualities. Her father, Henri d'Albret, was of little account, but her mother was Margaret d'Angoulême, famous for her literary work, and gave chief refuge to the advocates of the reformed doctrine in her time. Among the five children of Henry IV. Henrietta, who married Charles I. of England, seems to have had the brains and spirit, while Louis XIII. and Gaston of Orleans were unusually weak. In the next generation Anne Marie amply represented the genius of her grandfather. She was Duchess of Monpensier—generally known as “Mademoiselle”—and belongs among the few famous military leaders who have been women. The spirit and daring of “Mademoiselle” were indeed remarkable, especially at the capture of the town of Orleans, where she rendered important service. She also wrote memoirs which are interesting reading.

This type of active mentality disappeared in the subsequent generations of the French royal family. I have accounted for this in “Heredity in Royalty,”

by the force of selection. The marriages of Henry IV., Louis XIII., and Louis XIV. were especially disastrous, since they introduced the Italian and Spanish, Hapsburg psycho-neurosis. Degeneracy and viciousness thus introduced did not appear in Elizabeth, eldest daughter of Henry IV., or in Louis Duke of Burgundy, father of Louis XV. There is no good evidence that the two youngest daughters of Louis XV. were otherwise than normal, and in the last generation Louis XVIII. and his sisters, Princess Adelaide and Princess Elizabeth, seem to have entirely escaped the family blight, which in one form or another had affected certain individuals among their ancestors since the days of Joanna “the Mad,” who died in 1555.

The Regent Philip of Orleans was notorious for his vices, and his daughters have left a bad name; but it must not be forgotten that Louis his son and Philippine the youngest of the daughters were as remarkable for their virtues as Marie, Charlotte, and Elizabeth were for their depravities. The mother, Frances Marie de Blois, was a good character, and the explanation from alternative heredity, of course, is that, in morality, some resembled the father and some the mother. The later history of the House of Orleans presents an exception inasmuch as normality was universal in the two generations following the debauched “Egalité.” There were eleven children, and one or two might have been expected to repeat the degenerate type.

In the early history of Spain, at the time of the

Moorish wars, strength alternated with mediocrity. After the time of Charles V. an unfortunate ancestral combination gave nothing for mediocrity to alternate with as far as mentality was concerned, save insanity and imbecility. A few fine moral characters are still found here and there rising conspicuously among a mass of lazy or cruel degenerates.

The heritage from the mad Joanna also appeared in the Austrian line of the Hapsburgs, but did not at first affect many members. Selection was almost entirely through normal parentage. Vehse, in his well-known "Memoires of the House of Austria," refers to the more recent reappearance of the ancient ailment, "Whereas the children of Maria Theresa were all of them healthy, the sons of Ludovica were afflicted with the hereditary evil of the Spanish Bourbons, convulsions and epilepsy. The Archduke John alone was free from it, and all the other sons suffered more or less from the terrible malady; the Archduke Charles very badly, most of all the Archduke Rodolph. Ludovica's daughters were free, but the malady reappeared in the grand-daughters—as, for instance, in the Archduchess-Co-Regent Caroline of Saxony."

The history of Portuguese royalty is easily divided into two main periods, that prior to Emanuel the Fortunate, who died in 1521, which was an era of great kings, and the subsequent generations composed of little or mediocre personages. In the early period Ferdinand I. and Alfonso V. stand out in contrast, owing to their weakness; while in the latter period

much alternative heredity is seen on a close analysis of all the family members, especially evident in the different types of moral character. In fact, much the same picture is seen here as among their close cousins, the Spanish, Hapsburg-Bourbons. Since the middle of the nineteenth century the Saxe-Coburg and best Orleans blood has eliminated the insane and abnormal types, but has not introduced any ancestry containing great ability.

The early Romanoffs in Russia show a cruel, passionate, violent, and often epileptic type. This was absent in the Czars Michael and Alexis, appeared in Peter the Great, his brother Ivan and sister Sophia, and in two of his children, but not in his daughter Anne. The children of another Anne, who had herself inherited the Romanoff eccentricities and had married the excellent though mediocre Anthony Ulric of Brunswick, are especially interesting, as they show what the outcome may be after a very exceptional environment. All the children were taken when infants and for political reasons imprisoned for thirty-six years. Ivan, the eldest, was almost an imbecile, and showed occasional symptoms of insanity. This imbecility might naturally be attributed to the imprisonment, which was extremely severe; but the characteristics of the other four children make one suspect alternative heredity pure and simple. "Elizabeth, the youngest sister, was a woman of high spirit and elegant manners. On being released she wrote a letter of thanks to the Empress so well expressed as to excite admiration how she

could have obtained sufficient instruction during her long confinement."

The other children were mediocre, and in no way peculiar. "They amused themselves with reading, playing billiards and cards, riding, and walking. They walk about the town and in the environs, and drive out in carriages; the princes frequently ride, and particularly Alexis, who is very fond of that exercise, and said to be an expert. They not infrequently pay visits in the country and dine with the neighbouring families."*

Thus among five children exposed to a very unusual environment from infancy, we find a result showing little influence other than should be expected from heredity. Three were mediocre, representing the majority of the strain; one was an imbecile, corresponding to his mother and great-grandfather, Ivan; and one was spirited and cultivated in spite of it all, and rose very nearly as high as any of the immediate ancestors. Of course, such remarkable circumstances must have modified the characters of the four normal children, to some slight extent at least; still, even these exceptional cases deviate very little from what is to be expected from the force of heredity, if segregation of the germ-cells be taken into account.

The early history of the House of Oldenburg, in Denmark, shows little alternative heredity of a striking sort, but this is because there is little deviation from mediocrity or the average. Of course, if

* Coxe, "Travels," Vol. V., p. 19.

no marked peculiarities are obvious, then there is no opportunity to contrast its absence. Sweden, on the contrary, had, just before and after the time of Gustavus Adolphus, several very remarkable persons in the royal family. These are quite clearly differentiated from the mediocre types, though transitions also exist. These transitions naturally exist to considerable extent in all families. It is impossible to always satisfactorily estimate, classify, and grade mental and moral differences; but I believe these transitional individuals are much rarer than is commonly supposed, and my purpose in writing this article is merely to call attention to the universal tendency in mental heredity to give at least a partially perfect alternative inheritance. I have often looked for demonstration of pure Mendelian dominance and recession in psychic heredity, but have never found it in the material I possess. It may very likely be that a further splitting up of such rough first approximations and classifications as I have been forced to make will bring to light some unit character that will prove dominant or recessive. It would seem as if the mental qualities were more or less formed into one unit, and certain specific moral types into another, and as if the germ-cells were trying with more or less success to segregate these units.

The appreciation of the general principle of alternative heredity in human mentality is at least a valuable consideration, because it is something which environment cannot, we must think, tend to cause,

but rather would tend to obliterate had environment a power to do so. The fact that these differences are not obliterated, even among those living in the same social atmosphere, is a strong argument in favour of germ-plasm causation. The more minutely one studies separate families and traces them through succeeding generations the more one is convinced that the welfare of the family and consequently the nation depends on stock. At the same time, the more one seeks an explanation for the facts of family variation in any humanly imposed or artificially created atmosphere of surroundings the more one finds his expectations fail.