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### SPECIAL ARTICLES SURVIVAL OF ABILITY

HAVING found from two different sources unmistakable confirmation of an earlier research of mine showing that mental evolution is going on to-day through a process of natural selection, I would like to present briefly the results, as the full publication may be for some time delayed.

It is often stated that there are now no forces at work to lead towards increase of brain power, because the primitive struggle for existence has ceased to be operative under present conditions of civilization, in which the weak and incompetent are bolstered up and the poor and shiftless are allowed to have many offspring.

It appears, however, that society is being divided into two classes, a small percentage of "aristocrats" and a large percentage of proletariat.<sup>1</sup> Within the so-called aristocracy there is taking place a genuine process of survival of the fittest in which the more ambitious, successful and intellectually eminent are having a larger number of children than their friends and relatives who are less well endowed.

In studying the royal families of Europe I found this to be the case (see "Heredity in Royalty," 1906). Now I have found it to be the same among Harvard graduates and also in the British peerage.

Mr. A. E. Wiggam, writing in the *World's Work* for November, 1926, page 32, makes comment upon the figures for Harvard graduates, which I sent him as confirmation of a belief I have held for twenty years that by-and-large all good human qualities are correlated and therefore mental evolution must continue. Also such facts give an added justification for eugenics and a brighter outlook for the future of mankind. This point of view is contrary to the attitude of Conklin, Pearl and Castle if I interpret their writings correctly, but is accepted by Thorndike; and I think by Terman judging from this same article by Wiggam.

This announcement of mine regarding Harvard graduates has apparently stimulated a number of people to look up the records and see if it be true. This I gather through correspondence. John C. Phillips writes me that he is finding confirmation.

<sup>1</sup> See F. A. Woods, "Social Conifcation," in Proceedings of Second Eugenics Congress, 1921. Published in "Eugenics, Genetics and the Family," 2 vols., Baltimore, Md.

No figures have as yet been published. Those which I possess are for only four graduated classes, '90, '92, '94 and '98. I had hoped to include '96 for the sake of symmetry but the figures as they stand are sufficient to make the conclusion almost certain that judged by the oft-used standard of success, "Who's Who in America," the graduates who are parents of three or more children are a little more likely to be in "Who's Who" than those with less and much more likely than the bachelors. All figures are taken from the class books made up on the twenty-fifth anniversary after graduation, which books have at least the appearance of approximately sufficient care, accuracy and completeness.

#### PERCENTAGES OF HARVARD GRADUATES IN "WHO'S WHO IN AMERICA," 1924-25

##### Number of Living Children

|                   | Unmarried | 0     | 1     | 2     | 3     | 4 or more |
|-------------------|-----------|-------|-------|-------|-------|-----------|
| Class of '90..... | 15.2      | 19.40 | 22.92 | 18.27 | 24.45 | 14.26     |
| " " '92.....      | 14.75     | 14.10 | 18.75 | 22.81 | 20.76 | 18.92     |
| " " '94.....      | 6.25      | 20.0  | 13.33 | 18.07 | 22.45 | 25.45     |
| " " '98.....      | 2.63      | 12.26 | 12.64 | 8.0   | 8.0   | 13.73     |
| Averages.....     | 9.71      | 16.44 | 16.91 | 16.79 | 18.92 | 18.09     |

It can be seen from the figures that no one would suspect from the data regarding any single class, that any such truth lay buried. Take the Class of '90, for instance, which was the first investigated. Here the unmarried have actually a higher percentage of inclusion in "Who's Who in America" than those with four or more children. The grand average, however, smooths the curve out, giving the two highest percentages at the right, 18.92 and 18.09, with the lowest at the left, 9.71, for the bachelors. The remaining figures are satisfactory though the rise is not perfectly uniform. If we add the percentage of the bachelors to the married without children, and divide by two we get 13.08 for the childless compared with 16.+, 16+, 18+, 18+ for the other four groups. The total number of individual cases studied is well over 1,000, which is the number usually necessary in correlation investigations.

This confirmation of the results from the royal families led me to believe that the same truth would undoubtedly be found in the records of the British peerage, namely, that the more notable or able, are (within any one homogeneous social class), the ones who have the largest number of living children. The well-known "Burke's Peerage" is an exceedingly complete and accurate book. I have divided all the peers (Edition of 1921) into two groups: first those whose male lines are traceable as early as 1450, and second,

those whose male lines are not traceable to such an early date. This bears on the average some relationship to the date of elevation to the peerage, but that is another matter.

These in the first group are the peers who belong to the very old families, so-called. They constitute about half of all the peers. Their family names are well known to everyone conversant with English history.

As regards their achievements, which must be in a considerable degree due to a mixture of ability, vitality and ambition, they have all been placed in two groups. First, a comparatively small group who have done nothing or next to nothing in the way of rendering public service and, second, a majority group whose public services appear to have been both genuine and continuous. Naturally there are border-line cases difficult to place, but these are not very numerous and I have been careful to place the doubtful cases in such a way that they would count against rather than in favor of my theory. Only those over 34 years of age have been included.

All who have been elected members of parliament or risen in the navy to the rank of commander or colonel in the army (not honorary colonel), also those who served in the great war, have been included in the "service" group as well as the few business and professional men. Both "Burke" and "Who's Who" have been consulted for each case. Generally speaking if there is anything in their biographies that can be called "service" they have been included in this group.

In spite of this liberality of inclusion in the "service" group there are about 68 among the peers of the newer families whose achievements appear to be either nothing at all, or very inconsiderable. These have 138 living children, which gives an average of 2.03.

There are about 274 peers of the newer families who come within the "service" group. These have 640 living children or an average of 2.33. An even greater rise is to be found in favor of the greater fecundity of the peers who have rendered "service" when we summarize the facts concerning the older families. Here about 70 peers with little or no public service to their credit have 131 living offspring or an average of 1.87, while 210 "service" peers have 610 living children. The average for living children here rises to the surprising height of 2.90.

The English peers evidently want children and they have them. The best among them apparently want them the most, so that in spite of the large number of sons killed in the war, this special caste of humanity is more than holding its own.

Dr. J. McKeen Cattell and others have shown that parenthood to-day is largely a voluntary matter, at least among the more intelligent classes. The desire for children is doubtless in part an instinct and as far as it is an instinct should be subject to hereditary transmission. It is in all likelihood correlated with such virtues as domesticity and stability. It appears from these figures to be also correlated directly with intelligence and ambition. When we reach the type of ability generally called genius there is again a falling off in the number of offspring, but it is a matter of satisfaction to know that within the different groups of humanity there is by-and-large a survival of ability.

The average for total offspring for all college graduates is lower than it ought to be to keep up the type. For all Harvard graduates it averages below two. Some may say, "What is the use of survival of ability when if this goes on long enough there will not be any ability left to survive." The answer to this is a long one and can only be indicated here. Voluntary parenthood is a recent phenomenon. The average for all graduates, *circa* 1.5, rises for the more successful to *circa* 1.6. As nowadays only those who want children have them, the children should themselves inherit this temperament. This is a new condition which did not exist until recently. From now on this inheritance of the parental instinct should in a few generations restore the number to a little over two, which is necessary for a continuance of the breed.

It is true that the people of the slums are having undesirably large families, but this class is now almost entirely separated as far as intermarriage is concerned from the upper classes—more so in England than in the United States, but increasingly so on both sides of the Atlantic. It is probable that an intensive study of families within the slums where brother could be compared with brother and sister with sister would show the same result, namely, the better members of the family having the largest number of surviving offspring.

FREDERICK ADAMS WOODS

#### QUANTITATIVE HYDROLYSIS OF STARCH BY BUFFERED TAKA-DIASTASE

THIS work represents an attempt to eliminate the use of acid hydrolysis in determining the starch content of plant material.

The standard method is the "maltose hydrolysis." This consists in treating the alcohol extracted materials with taka-diastrase in water solution, filtering off the insoluble residue, and heating the filtrate with dilute acid to hydrolyze the dextrin and maltose to