EDUCATION AND FECUNDITY

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The paper by Professor S. J. Holmes that appeared in the October, 1924, number of the Journal of Heredity is of peculiar interest. He has given us important data bearing on the question of the changing birth-rate from a distinctly new angle of view. In most of the discussions that have appeared heretofore the statistics have been based upon the fecundity of the college students themselves. In Professor Holmes' work we have presented the situation as it exists in the families from which the college students have sprung. Such data will be of great value for comparison with the conditions that may be found to prevail in the next generation from these same college students. We may easily surmise what in general terms it will be.

His Table IV, dealing with the relation of family size to the parental education is unique and shows in a most striking manner the remarkably close correlation between the fecundity and the education of parents. The following tabular rearrangement of the final averages will make this more clear and bring out some interesting questions. The figures are the average number of children per family in the indicated matings from three types of education. For more complete details see the paper by Professor Holmes.

Ignoring for the present the category of "Means," we may observe that there is a decline of values in each horizontal series from left to right and in each vertical series from top to bottom, also in the diagonal series from upper left to lower right. In all these series the correlation is with the degree of biparental education. Theoretically the remaining diagonal, upper right to lower left, should give a series of approximately equal values since they represent the birth-rates of balanced matings. In reality they differ less in value than for any of the other series of matings. A slight irregular unbalance could be expected under the law of probability and would be of no significance. Curiously enough the tilting of the balance is distinctly, though slightly, in one direction and the series declines downward. This is evidently correlated with the relatively lower fecundity of the educated mothers as compared with the educated fathers noted by Professor Holmes. It seems evident that this series constitutes a delicate test of the reliability and sufficiency of the data.

Age of Marriage

Professor Holmes has suggested that the preponderance of the educated mother in determining "the family limitation" is to be accounted for by "the factor of age at marriage." Age at marriage is unquestionably a greater factor in determining fecundity in the female than it is in the male and it has been demonstrated that securing a higher education tends to delay the time of marriage. Unfortunately the present records do not provide data as to the age at marriage. We have not, therefore, means for actually measuring the influence of this factor as affecting these tables.

In studies made in England on "The Fertility of the English Middle Classes,"* in which special attention was given to the factors of age at marriage and duration, it was concluded that "paying attention to the errors of sampling, there is no difference between the average size of the...

family of a non-college mother and
that of a college mother which cannot
be explained by difference of age at
marriage and duration of marriage." In
these studies the non-college mothers
were the sisters and near relatives of
college mothers and no differing factor
was involved, presumably, except
purely that of degree of education, and
the conclusion seems to be justified
that "the alleged prejudicial effects of
higher education per se upon the capac-
ity or inclination of women to bear
children do not exist."

In consequence of the sources of the
material in Professor Holmes' studies
there is every reason to believe that
it is less homogeneous than the English
data. The different types of mothers
were presumably not usually related
and may have been from very differ-
ent social strata. Is it, therefore,
sufficient to suggest that "Relative
youth rather than relative education
may be the chief reason" for the
closer association of the mother with
family limitation?

Fecundity of High School and College
Mothers

Let us again look at our table and
consider now the series of "Means."
Observe that these are computed from
the original aggregates as given in
Professor Holmes' tables and are not
simply the means of the averages.
From this series we may note that the
mean number of children of a com-
mon school mother mated with all
types of fathers is 4.03, for a high
school mother mated with all types of
fathers it is 3.38, a difference of .65,
while a college mother mated with all
types of fathers yields a birth-rate of
3.23 or only .15 less than the high
school mother. In other words the
decline in fecundity from the common
school mother to the high school
mother is over four times the decline
from the latter to the college mother.
To put it in another way, the high
school mother is 16 per cent less fer-
tile than the common school mother
while the college mother is only 4 per
cent less fertile than the high school
mother. The same facts are evident
also from the means of the fathers
but in a less striking way, the differ-
ences being now 12 per cent and 5
per cent respectively.

Since a girl commonly completes
her high school education by the age
of 18 or 19 years there is no reason to
suppose that the date of her marriage
is on the average materially delayed
by her high school course, or that her
productivity is reduced even one per
cent by a restricted period of bearing.
It is the girl who goes through college
or other higher institution whose re-
productive powers may be affected by
a delayed marriage. After making
correction for duration of marriage, if
we had the data for that purpose, it is
highly probable that the difference be-
tween high school mother and college
mother would be entirely negligible,
if it is not practically so already, but
the difference between high school
and common school mothers would be
in all probability undisturbed. It is not
possible, therefore, that "relative youth"
is an adequate factor in the solution of
the problem.

College Education Not a Factor

The facts here brought out are
further evidence against the unwar-
ranted conclusions often so loudly pro-
claimed, that our colleges and especi-
ally the colleges for women are respon-
sible for the sterilization of the race.
From the data furnished by Professor
Holmes it seems evident that if there
is an educative factor involved in the
problem of a declining birth-rate it is
not operative through the higher in-
stitution, but is chiefly effective in or
below the high school. It may not be
amiss to remark that it is in the latter
institution that our educational system
is most closely in contact with the
adolescent youth. It is between the
parent of common school or less edu-
cation and the one of high school
education that there is an appreciable
and perhaps significant difference in
fecundity and this is in no way in-
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involved with or modified by a question of delayed marriage.

Here is something that will bear further investigation, something that seems promising of fruitful research when adequate data is available. It is the writer's opinion that education, and especially formal college education has little or nothing to do with the declining birth-rate, that the correlations between education and fecundity which have been so greatly exploited are spurious or rather that they are simply mutual correlations with a *tertium quid* and are not directly related. If the data were available in respect to these same families as to the rate of income per head or some other measure of the social and cultural status, it seems probable that we would find an even more consistent correlation with fecundity than is now evident between fecundity and education. It is highly improbable that education in itself is sterilizing our population, and it is time we made search for other factors in the phenomenon. Professor Holmes is doing good service in getting the attention away from the educated individual to the "pit from whence he is digged."

**TABLE I—Average Number of Children per Family, According to the Degree of Education of the Parents.**

<table>
<thead>
<tr>
<th>MOTHERS</th>
<th>FATHERS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Common School</td>
</tr>
<tr>
<td>Common School</td>
<td>4.17</td>
</tr>
<tr>
<td>High School</td>
<td>3.55</td>
</tr>
<tr>
<td>College</td>
<td>3.35</td>
</tr>
<tr>
<td>Means</td>
<td>3.94</td>
</tr>
</tbody>
</table>

**Civilization and Degeneracy**


This is a study of dysgenics, by a psychiatrist. It reaches the conclusions (1) that degeneracy does not necessarily follow a high state of civiliza-

tion and (2) that there are not marked evidences of degeneracy in the German nation at present. Much of the work is second-hand and uncritical, but the book contains a good deal of interest. There is a bibliography of 459 items.

P. P.