SECOND PROGRESS REPORT ON A STUDY OF FAMILY LIMITATION¹

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N the January, 1933, number of the QUARTERLY there was published a preliminary report on a large collection of data regarding the reproductive histories and contraceptive practices of a large sample of women delivered of the products of conception in hospitals in urban centers in the eastern United States. The plan and scope of the investigation were outlined sufficiently in the first report referred to, and therefore need not be further discussed here.

Since the first report every effort has been bent towards tabulating the great mass of detailed records (30,951 cases *in toto*). It is now possible to present a further progress report upon a sample of 6,000 cases, these being the first 5,000 cases in the order of their collection (and therefore including the 2,000 previously discussed) and the twenty-sixth thousand collected. The twenty-sixth rather than the sixth thousand was added for the purpose of seeing whether the later cases were giving statistical ratios similar to the earlier ones. Of these 6,000 cases, 4,945 pertained to married women living in wedlock, and these alone are considered here.

The statistical methodology of this report is the same as that of the first report except in one respect. This is that further study of the whole matter has led to the revision

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The author wishes to acknowledge with deep gratitude the continued financial support the Milbank Memorial Fund has given to this work. of the method of calculating pregnancy rates.² In principle this pregnancy rate is the same as the original one used in our first report, except for the addition of a constant multiplying factor for ovulations, which as developed in the formula has the effect of confining the limits of variation of the pregnancy rate (and the live birth rate) between 0 and 100 per cent, and of making the physical interpretation of the rates more consistent and intelligible.

	Wh	ites	Negroes		
State	Num- ber	Per Cent	Num- ber	Per Cent	
Illinois	1,056	25.2	66	8.6	
Maryland	825	19.8	198	25.8	
Pennsylvania	679	16.3	230	30.0	
New York	572	13.7	120	15.6	
Minnesota	328	7.9	4	.5	
Missouri	173	4.I	58	7.6	
Wisconsin	160	3.8	I	.1	
Ohio	145	3.5	31	4.0	
Tennessee	66	1.6	42	5.5	
District of					
Columbia	49	I.2			
Michigan	47	I.I			
Indiana	46	I.I	2	.3	
Kentucky	31	•7	15	2.0	
Totals	4,177	100.0	767	100.0	

Table 1. Geographical distribution of cases in present sample.

GEOGRAPHICAL DISTRIBUTION

Table 1 shows the distribution of the women in the present sample by the states in which they were delivered of the products of their last pregnancy at the time of record. Seventy-five per cent of the whites, and 80 per cent of the negroes in the present sample belong to the four states of Illinois.

Maryland, Pennsylvania, and New York. But the general scatter is sufficient so that it may fairly be said that the present data do not reflect solely the condition of any one small region of the country.

²Pearl, R.: Factors in Human Fertility and Their Statistical Evaluation. Lancet, Vol. II for 1933, pp. 607-611.

ECONOMIC STATUS

Table 2 shows the distribution of the women in the present sample relative to economic status. The classes are defined in detail in our first report³ (p. 377).

In comparison with the smaller sample of the first report³ (p. 387) the present sample shows generally a somewhat

higher economic status in the case of the whites, and a slightly lower one in the case of the negroes. Thus in the case of the whites there are 12.2 per cent in the "very poor" class as against 12.5 per cent in the earlier sample; 46.7 per cent as against

Table 2. I families.	Economic	e statu	is of 4	.945		
	Wh	ites	Neg	Negroes		
Class	Num- ber	Per Cent	Num- ber	Per Cent		
Very poor Poor Moderate	510 1,951	12.2 46.7	347 381	45.2 49.7		
circumstances Well-to-do	1,358	32.5	39	5.I		
and Rich	358	8.6				
Totals	4,177	100.0	767	100.0		

50.6 per cent in the "poor" class; 32.5 per cent as against 34.2 per cent in the "moderate circumstances" class; and finally 8.6 per cent as against 2.6 per cent in the combined "well-to-do" and "rich" classes.

It was emphasized in our first report that the economic status distribution was probably distorted as a result of the fact that the data were collected during the lowest depths of the general economic depression. It was suggested³ (p. 387) that: "In many cases in the records skilled artisans, for example, who in good times would fall into the 'moderate circumstances' group, had been long unemployed and were in actual fact 'poor,' and in some cases 'very poor' at the time the records were made."

³Pearl, R.: Contraception and Fertility in 2,000 Women. Human Biology, September, 1932, Vol. 4, No. 3, pp. 363-407.

It is now possible to bring support to this view from the more analytical tabulations that have been made from the present larger sample. Figure 1 distributes the material into

three broad occupational classes, in accordance with the classification of occupations recently presented by the writer.⁴

By comparison of the percentages of Table 2 and Figure 1 it is seen that while 79 per cent of the white husbands fall



Class I=Owners, managers, officials, and professional men. Class II=Skilled

and professional men. Class II=skilled and semi-professional workers. Class III= Laborers—unskilled and semi-skilled.

into occupational classes I and II taken together only 41.0 per cent of the white families have an economic status in the combined "moderate circumstances," "well-to-do," and "rich" classes. The difference between these two percentages may be not unfairly taken as a rough index of the extent to which the depression reduced income and resources in the social group which the English call "middle class."

The occupational distribution of the whites in Figure 1 does not differ very widely from that of the total occupied male population of New York City in 1930 which was⁴ (p. 496): Class I, 18.7 per cent; Class II, 53.7 per cent; Class III, 27.6 per cent.

The difference between the white and negro occupational distributions is striking, but about what would be expected. Nearly three-quarters of the negroes fall in Class III, and an insignificant proportion in Class I.

⁴Pearl, R.: A Classification and Code of Occupations. *Human Biology*, September, 1933, Vol. 5, No. 3, pp. 491-505.

RELIGION AND EDUCATION

Inasmuch as the frequency of the practice of contraception is presumably in some degree definitely correlated with the degree of general enlightenment of any population group, it will be well to present some data about the extent of the schooling experienced by the women in the present sample. This is done in Table 3, where education and religion appear in a double entry table, so that it may be possible to get at least some indication about the extent to which so-called religious prejudices against contraception are reinforced or weakened by ignorance or intellectual enlightenment. The entries in Table 3 are arranged in descending order of percentage attending college or university in the case of the whites; and in descending order of percentage attending high school in the case of the negroes.

That the populations from which this sample was drawn are urban is reflected in the fact that more than half the white women are either Catholic or Jewish. The relatively high percentage of Catholics is in spite of the fact that no specifically Catholic hospital was included in collecting the data. Amongst the negroes just over a half of the women were Baptists, and just over a quarter were Methodists.

It is to be understood that in Table 3 each denomination is inclusive of all its branches, sects, or churches. That is the Catholics include Greek and various other sorts of Catholics besides Roman. And the same thing is true for all the other specified denominations.

The most striking result from Table 3 is that in this whole sample of white women 61.6 per cent had never got beyond elementary schools. The implications of this fact are farreaching in relation to their practice of contraception subsequently to be discussed. Any real or thorough understanding of the biological principles involved in the efficient use

	HIGHEST STAGE OF FORMAL EDUCATION RECEIVED									
Religion	Illiterate		Elementary		High School		College or Univer- sity		Totals	
	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent
A. WHITES										
Presbyterian	I	0.8	45	36.3	52	41.9	26	21.0	124	100.0
Episcopalian All others not speci-			62	45.6	53	39.0	21	15.4	136	100.0
fied here	5	0.9	227	41.7	245	45.I	67	12.3	544	100.0
None	2	6.1	17	51.5	10	30.3	4	12.1	33	100.0
Methodist	4	I.I	177	47.6	154	41.4	37	9.9	372	100.0
Baptist	I	0.5	129	58.4	71	32.1	20	9.0	221	100.0
Jewish	26	4.0	328	51.1	253	39.4	35	5.5	642	100.0
Lutheran	2	0.5	288	66.4	125	28.7	19	4.4	434	100.0
Catholic	49	2.9	1,211	72.5	373	22.3	38	2.3	1,671	100.0
TOTALS	90	2.2	2,484	59.4	1,336	32.0	267	6.4	4,177	100.0
			B. N	EGROI	ES					
Lutheran					3	100.0			3	100.0
Episcopalian			9	42.9	10	47.6	2	9.5	21	100.0
Presbyterian			7	58.3	5	41.7			12	100.0
Methodist	8	4.0	122	61.0	64	32.0	6	3.0	200	100.0
Catholic	4	6.8	38	64.4	16	27.1	I	1.7	59	100.0
All others not speci-										
fied here	8	9.8	52	63.4	21	25.6	I	I.2	82	100.0
Baptist	13	3.4	272	70.2	89	23.0	13	3.4	387	100.0
None		• •	3	100.0		• •	• •		3	100.0
TOTALS	33	4.3	503	65.6	208	27.1	23	3.0	767	100.0

Table 3. Extent of formal education of women in various religious denominations in the present sample.

of any contraceptive technique now known would seem to make a somewhat greater demand in the way of general intellectual enlightenment than is likely to be attained by such meager education as is afforded by our elementary schools, excellent as they no doubt are.

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The highest percentage of college attendance in the white women is found among the Presbyterians, but they are a small group absolutely in this sample. The same also applies to the Episcopalians, who stand next in proportion of college attendance. The Catholics, who form the largest religious group in this sample, are the lowest group of all in the extent of their schooling.

MAGNITUDE OF EXPERIENCE

The concept of exposure to risk of becoming pregnant has been defined and discussed in detail in two earlier papers (*loc. cit.* footnotes 2 and 3 *supra*) and need not be further elaborated here.

The present sample of material, which represents about one-fifth our total data that will eventually be reported, includes:

- 14,666.6 person-years of exposure to risk of becoming pregnant, among the *whites*, and
 - 2,838.7 person-years of exposure to risk of becoming pregnant, among the *negroes*, and
- 17,505.3 person-years of exposure to risk of becoming pregnant, for the *whole sample*.

These exposures indicate that the present sample is roughly equivalent to what one would get by observing the total normal reproductive activity of the population of a city of about the size of Buffalo for a period of one year.

THE FREQUENCY OF CONTRACEPTIVE EFFORTS

In our first report the objective of the investigation was stated to be to get some light on two questions³ (p. 367) as follows:

1. To what extent statistically is any sort of contraceptive technique, device, or habit actually practised in a

defined sample of the population of the United States at the present time?

2. What is the quantitative effectiveness exhibited by the various contraceptive techniques, considered both separately and all together, in reducing the relative frequency of pregnancy, as these techniques are actually used in a defined sample of the population of the United States at the present time?

Let us now see what the present sample of data contributes to the first of these questions.

In coding the extensive and manifold information on the original record cards a distinction has been made between contraceptive genus and species. By contraceptive genus is meant how, in general, contraception has been practised; and by contraceptive species what particular device or method or combination of devices and methods was used.

The categories into which contraceptive genus is classified are shown in the following code.

CONTRACEPTIVE GENUS CODE

Code No. Way in Which Contraception Was Practised

- B No information
- X Practice of contraception intermittent without indication of reason for intermittence
- o No contraception practised
- I Contraception regularly and steadily practised without intermittence
- 2 Contraception practice intermittent through carelessness
- 3 Contraception practice intermittent through dislike
- 4 Contraception practice intermittent through planning for children
- 5 Contraception practice intermittent through carelessness and dislike

6 Contraception practice intermittent through care-Iessness and planning

- 7 Contraception practice intermittent through carelessness and dislike and planning
- 8 Contraception practice intermittent through dislike and planning
- 9 Contraception practice intermittent for other reasons

For purposes of presenting the data here the classes of the contraceptive genus code have been combined into four broad groups as follows⁵:

Contraceptive Genus-Group A=Code No. o=No contraception Group B=Contraception regularly and steadily practised without intermittence. Code No. 1. Group C=Code Nos. 4+6+7+8=Contraceptive practices intermittent for reasons wholly or partly connected with deliberate planning for children. Group D=Code Nos. X+2+3+5+9 =Contraceptive practices intermittent for reasons wholly other than deliberate planning for children (except for Code No. X, of which there were negligibly few cases).

⁵From a careful study of the original data it appears that, of these four Contraceptive Genus Groups, A is the most homogeneous, with D, C, and B following in the order named in comparative homogeneity relative to contraceptive practices and the motives and events lying behind the intermissions and failures of these practices. Contraceptive Genus Group B includes chiefly cases where contraceptive methods were regularly used without conscious or intended intermission for planned children or any other reason, but failed

(continued on page 257)

Table 4 suggests that generalizations regarding the proportion of whole populations of women who practise contraception can have but little real significance. In the present case it is of no great import to say that among the 4,166 white women of this whole sample 54.7 per cent did not practise contraception, when it is seen that in one differentiated group of these women 78.3 per cent made contraceptive efforts, while in another definitely differentiated group only 32.7 per cent made such efforts.

The rates of change in the proportion of white women practising contraception with improving economic status are worthy of more careful consideration. It should, however,

regularly or occasionally to prevent conception in fact. It was set up with the intention to include *only* such cases. But unfortunately this category also probably includes some (relatively few) cases where contraceptive practice was intermittent because of planning (and possibly for other reasons) but without the fact having been specifically so reported. Study of the original records indicates that the proportion of such cases is not large, and probably diminished steadily and almost to the vanishing point as the observers became better trained and more experienced in the course of the work.

Contraceptive Genus Groups C and D have been set up as they are for the purposes of this preliminary report solely as a practical expedient. In a sample of the size of the present one a number of the sub-groups in the Contraceptive Genus Code have too small frequencies to be of any significance by themselves. In the final analysis of the whole material each one of the 12 rubrics of the Contraceptive Genus Code will be dealt with separately, but to attempt this on a sample of less than 5,000, as the present sample is, would be futile.

The net result of lumping code numbers 6, 7 and 8 with 4 in this report is plainly to minimize the results as to the effect of intelligent and precisely performed contraception upon pregnancy and birth rates. The procedure adopted in setting up Contraceptive Genus Group C weights unfavorably the records of those women belonging to code number 4, who practise contraception carefully, intelligently, and persistently with intermissions only for planned and wanted pregnancies. The records of these code number 4 women are compelled by the present grouping to carry along the burden of the women who had the same intentions as they did, but were more careless in their performance. The errors made by so doing, insofar as concerns effects upon pregnancy and birth rates, will be in the direction of understatement rather than of exaggeration.

For further discussion of the grouping the reader must consult the complete report¹, of which this paper is an abstract.

Contraceptive	Very	Poor	Po	OOR	Moderate Circum- stances		Well-to-do and Rich		Totals	
GENUS GROUP	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent
		А.	WHI	TES						
A. No contraception	343	67.3	1,191	61.2	669	49.4	77	21.7	2,280	54.7
B. Regular and steady prac- tice of contraceptionC. Contraceptive practice in-	59	11.6	323	16.6	276	20.4	78	22.0	736	17.7
termittent mainly for planned children D. Contraceptive practice in-	68	13.4	262	13.4	325	24.0	169	47.6	824	19.8
termittent for reasons other than planning Sub-totals $(B+C+D)$. Con-	39	7.7	172	8.8	84	6.2	31	8.7	326	7.8
traception practised TOTALS $(A+B+C+D)$ All	166	32.7	757	38.8	685	50.6	278	78.3	1,886	45.3
cases	509	100.0	1,948	100.0	1,354	100.0	355	100.0	4,166	100.0
		B. N	NEGR	OES						
A. No contraception B. Regular and steady prac-	263	76.0	275	72.2	31	79-4	• •		569	74-3
tice of contraception C. Contraceptive practice in-	30	8.7	45	11.8	4	10.3			79	10.3
planned children D. Contraceptive practice in-	8	2.3	20	5.2	3	7.7			31	4.0
termittent for reasons other than planning Sub totals $(R + C + D)$ Cor	45	13.0	41	10.8	I	2.6			87	11.4
traception practised TOTALS $(A+B+C+D)$. All	83	24.0	106	27.8	8	20.6	• •		197	25.7
cases	346	100.0	381	100.0	39	100.0			766	100.0

Table 4. The practice of contraception in relation to economic status.

be kept clearly in mind that the absolute numbers are small in some of the sub-classes, and that in consequence final judgment as to the import of the figures should be reserved until the whole material, of which the present sample is only about a fifth, has been tabulated. With this reservation in mind we see from Table 4 that in this sample of white women the relative frequency of the practice of contraception regularly and without intermission (*Contraceptive Genus Group B*) rises steadily as economic status rises, but on the

whole not as fast or as far as does the practice of contraception which is intermittent for reasons that are in whole or in part connected with deliberate planning for children (Contraceptive Genus Group C). The practice of contraception that is intermittent for reasons that do not involve deliberate planning for children (Contraceptive Genus Group D) does not sensibly change as economic status rises. The frequencies for this type of contraceptive behavior are substantially horizontal. It relates chiefly to people who are intermittent in their contraceptive efforts through carelessness. It suggests that under the thraldom of the sexual urge the economically better off folk contain among their numbers a residue of about the same proportion of people who, though well intentioned about contraception, are reckless upon occasion. It will be extremely interesting to see whether this suggestion is borne out by the whole material when it is tabulated.

Amongst the negroes of the present sample the relationship between contraceptive efforts and economic status appears to be somewhat less marked than among the whites, a result that accords with general expectation. But a definite conclusion on the point is not warranted yet. In view of the facts, first, that the proportion of negro women who have ever made any contraceptive efforts is much smaller than among the whites; and, second, that our total sample of negroes so far tabulated is small, it results that in the contraceptive genus groups for negro women practising contraception the numbers are generally too small to yield reliable percentages.

In the present sample 1,583, or 38.0 per cent, of the white women had experienced pregnancy but once in their lives up to the time of record, while the remaining 2,583, or 62.0 per cent, had experienced two or more pregnancies. Among the negroes the corresponding figures are 201, or 26.2 per

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cent, women who had experienced their first (and only) pregnancies; and 565, or 73.8 per cent, who experienced two or more pregnancies. It thus appears that this sample of women delivered in hospitals is not only heavily weighted with first pregnancies (and first births) but that the whites are more heavily weighted in this series than the negroes. It is important to see what effect this has upon contraceptive practices.

An analysis of the data on the point suggests that:

1. The percentage of women not practising contraception is bigber among the primigravidae than among those who have been pregnant two or more times. This is true for both whites and negroes, and within each economic group. The differences in both races are largest in the very poor class, tend to become progressively smaller in the higher economic classes, and are, in the whites, smallest in the well-to-do and rich class.

2. Conversely the percentage of women *practising* contraception is *lower* among the primigravidae than among those who have been pregnant two or more times, in both whites and negroes and in all four economic classes.

Furthermore, the figures for the women in this sample who made contraceptive efforts of some sort suggest that general dumbness about contraception (and presumably other things) is no exclusive prerogative of any particular economic class. In fact it would seem to be rather evenly distributed amongst the women of this sample practising contraception who had experienced but one pregnancy. Women who had experienced two or more pregnancies appear generally sharper-witted and more intelligent in their practice of contraception than those who had experienced but one, as might reasonably be expected *a priori*. This is especially true of women in the well-to-do and rich class.

The women in Contraceptive Genus Group C, who practise their contraception intelligently and for the most part effectively, are proportionately more numerous in the higher than in the lower economic classes; and except for the very poor class, are more numerous relatively among those in any given economic class who have experienced two or more pregnancies than among the primigravidae. Again these are results which might reasonably have been expected a priori. Women who are careless about doing their contraception (Contraceptive Genus Group D) diminish in relative frequency as we go up in the economic scale, but are relatively about as numerous, on the whole, among those who have experienced two or more pregnancies as among those who have had only one pregnancy. These results again seem about what might reasonably be expected a priori. Carelessness and indifference about so grave a matter as creating more human beings are probably matters of character, bred in the bone, and unlikely to be rapidly altered by experience.

Finally the last column of the table reveals a somewhat significant fact. It appears that if we take all the women together, regardless of both economic condition and experience in reproduction, somewhat less than half of the white women in this sample who practise contraception did it intelligently, precisely, and effectively, using the word "effectively" in the sense of meaning the one-hundred-percent achievement of the objective which they (the women) set out to obtain by the practice of contraception. In the wellto-do and rich class the case is different. There a much higher proportion of the women fell in our Contraceptive Genus Group C.

CONTRACEPTIVE SPECIES

Table 5 gives, for the white women, the distributions (absolute and relative) of contraceptive species according

to contraceptive genus groups, for the total usage (alone or combined) of each method or device. The items are arranged in descending order for Contraceptive Genus Group C (contraceptive practice intermittent mainly for planned children).

It is apparent from Table 5 that the particular methods and devices for contraception employed by this sample of white women varied considerably according to their general mode of using them (contraceptive genus). The women falling in Contraceptive Genus Group C who by and large do their contraception intelligently and carefully, intermitting it only for planned children, favor most the condom. This is undoubtedly because it is the most reliable method known to these women, who for the most part have never had formal, scientific instruction in contraception. In this same Group C coitus interruptus comes next in frequency of usage, and this is followed in turn by medicated douches.

The women of Contraceptive Genus Group B (regular and steady practice, but failing mainly through ignorance and stupidity about contraception) rely most heavily upon medi-

Course Second	Cont. Gro	Genus Dup B	Cont. Gro	Genus up C	Cont. Gro	Genus up D
CONTRACEPTIVE SPECIES	No.	Per Cent	No.	Per Cent	No.	Per Cent
Condom	227	19.6	408	32.5	130	25.9
Coitus interruptus	223	19.3	272	21.7	92	18.4
Douche alone-medicated	337	29.1	243	19.3	125	24.9
Douche alone—water	225	19.4	148	11.8	87	17.4
Medicated vaginal suppositories						
or jellies	64	5.5	103	8.2	24	4.8
"Safe period"	40	3.5	35	2.8	15	3.0
All other methods together	41	3.6	47	3.7	28	5.6
TOTALS	1,157	100.0	1,256	100.0	501	100.0

Table 5.	Methods a	nd devices	used for	preventing	conception	by
white wome	n, accordin	g to contra	ceptive ge	enus groups.		

cated douches, with condom, coitus interruptus, and plain water douches following, each with about equal frequency.

The careless couples in Contraceptive Genus Group D depend about equally upon the condom and medicated douches, but less on the former and more on the latter than those in the Genus C group.

PREGNANCY AND BIRTH RATES

What are the pregnancy rates, and birth rates of defined groups of women endeavoring in various ways to practise contraception or not attempting to practise it at all, and how do these rates differ among themselves?

We shall now proceed to exhibit the data of the present sample arranged in such form as to show their bearing upon this question. In the following discussion *pregnancy rate* means "number of pregnancies per 100 computed ovulations." *Live birth rate* means "number of live births per 100 computed ovulations."

Table 6 gives the mean pregnancy rates of the women in the present sample, together with their probable errors, tabulated by contraceptive genus groups and economic status. Thus in the upper left hand corner cell of Table 6 the figure 14.02 ± 0.62 means that the group of white married women in this sample who did not practise contraception and were very poor had an average pregnancy rate of just over 14 per cent.

Since Table 6 embodies the most interesting and significant results of the present report they are exhibited for the white women in graphic form in Figure 2. If the reader will study this diagram he may find it easier to grasp the general purport of the somewhat complicated figures of Table 6.

From Table 6 and Figure 2 the following significant results emerge:

Contraceptive Genus Group	Very Poor	Poor	Moderate Circum- stances	Well- to-do and Rich	Totals All Women in Group
	(Per Cent)	(Per Cent)	(Per Cent)	(Per Cent)	(Per Cent)
	A. W	HITES			
A. No contraception	14.02+0.62	16.00+0.38	13.59+0.46	16.97 + 1.89	15.03+0.26
B. Regular and steady practice of contraceptionC. Contraceptive practice inter-	8.77 <u>+</u> .92	10.56 <u>+</u> .50	8.6 <u>3</u> + .46	9.71 <u>+</u> .88	9.60 <u>+</u> .31
mittent mainly for planned children D. Contraceptive practice inter- mittent for reasons other	6.32 <u>+</u> .40	7.27 <u>+</u> .32	6.55 <u>+</u> .27	5.16 <u>+</u> .28	6.48 <u>+</u> .16
than planning	8.59+1.25	10.41 + .65	9.67 <u>+</u> .84	8.87 <u>+</u> .89	9.85 + .44
	B. NI	EGROES			
A. No contraception	14.03+0.74	14.67 + 0.71	18.24+2.55		14.57 + 0.51
 B. Regular and steady practice of contraception C. Contraceptive practice inter- 	10.42 <u>+</u> .84	10.8 <u>3</u> ±1.40	21.35 <u>+</u> 5.35		11.20 <u>+</u> .92
mittent mainly for planned children	5.63 <u>+</u> .58	9.2 <u>5</u> +.64	9.17 <u>+</u> 1.84		8.30 <u>+</u> .51
D. Contraceptive practice inter- mittent for reasons other than planning	9.22 <u>+</u> .88	9.33 + .86	1		9.45 <u>+</u> .62

¹Only one woman in this class, with a pregnancy rate falling in the class 20.0-29.9 per cent.

Table 6. Mean pregnancy rates for 100 computed ovulations in all married women in the present sample, by contraceptive genus group and economic status.

1. The mean pregnancy rates of white women in this sample who had not practised contraception at all (Contraceptive Genus Group A) are substantially similar in all economic status classes. The greatest difference between any two classes in average pregnancy rates is that between the moderate circumstances and the well-to-do and rich classes, and amounts to 3.38 ± 1.95 , a statistically insignificant difference. The next greatest difference is that between the moderate circumstances class and the poor. This amounts to $2.41\pm.60$. This is probably a "statistically significant" difference, but seems absolutely too small in amount to have any particular biological significance. The very poor class has nearly the lowest mean pregnancy rate and the well-to-do and rich class the highest mean preg-



Fig. 2. Showing for the different economic status classes and contraceptive genus groups the mean pregnancy rates per 100 computed ovulations.

nancy rate among the white women not practising contraception. While this result does not accord with popular preconceptions, and as had been noted the difference in any case is not statistically significant, its trend is in agreement in principle with the results of Edin⁵ for the Stockholm population.

2. The white women belonging to the Contraceptive Genus Group C (contraceptive practice intermittent mainly for planned children) in this sample display an average pregnancy rate for the whole sample that is only 43.1 per cent of that shown by women not practising con-

⁵Edin, K. A.: Fertility in Marriage and Infantile Mortality in the Different Social Classes in Stockholm from 1919–1922. Proceedings World Population Conference, London (Arnold), 1927. pp. 205–207.

Id. The Birth Rate Changes. Stockholm 'Upper' Classes More Fertile Than the 'Lower.' Eugenics Review, 1929, Vol. 20, pp. 258-266.

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traception at all, a reduction of about 57 per cent. In the women of the well-to-do and rich class the Contraceptive Genus Group C mean pregnancy rate is only 30.4 per cent of that of the women in the same economic class not practising contraception at all. This reduction of approximately 70 per cent in the average pregnancy rate associated with the relatively intelligent and careful practice of contraception is a very substantial lowering indeed. The mean pregnancy rate is lowered least (about 52 per cent) in association with Contraceptive Genus Group C in the moderate circumstances class, but the reduction is of approximately the same order as this in both the very poor and poor classes.

3. Taking the white women in this sample as a whole group the mean pregnancy rates in Contraceptive Genus Groups B and D are roughly about 65 per cent of those exhibited by the women not practising contraception at all, showing in other words a reduction of only about 35 per cent as compared with the 57 per cent shown by the women of Contraceptive Genus Group C. Careless and unintelligent contraceptive efforts, in short, have associated with them in this sample of women a smaller reduction in the mean pregnancy rate than do careful and intelligent efforts.

4. The mean pregnancy rates of the white women in this experience are extraordinarily similar in each economic class, for the same contraceptive practices. To put it another way, if we were to connect the tops of each set of similarly hatched bars in Figure 2, we should have a series of nearly horizontal lines, only deviating from horizontality by amounts generally well within the range of expected fluctuations of sampling. The horizontal lines would, however, be at different levels, associated with the modes of contraceptive practice which they designated. What this suggests biologically is that the innate natural fertility of these women is about the same in the different economic classes here distinguished, and that the differences in average *expressed* fertility observed in the differ-

ent economic classes are due mainly to different degrees of artificial alteration of the innate natural fertility. On the basis of the present material this conclusion seems clear and indubitable, but it will be well to reserve final judgment on the matter until the other four-fifths of our whole material has been tabulated.

5. The lower half of Table 6 dealing with the negro women shows in general, and within its limitations imposed by the smaller size of the sample, the same kind of relationships as those just discussed for the whites. The chief difference is that the lowering of the mean pregnancy rates among the women of Contraceptive Genus Groups B, C, and D, as compared with Group A, is generally not quite so large in amount as in the white women. But the outstanding and somewhat surprising result is the general likeness between the white and the negro tables. This is so marked that it seems unnecessary to display the negro figures graphically.

6. Comparing negro and white groups as wholes it appears that the negro women who did not practise contraception at all in this sample have a mean pregnancy rate almost identical with that of the white women in the same category. The mean rate for the negro women is actually slightly lower than that for the whites but no significance is to be attached to the slight difference. The average negro rates do, however, lend additional support to the view expressed above that these data suggest that innate natural fertility uninfluenced by artificial alterations appears to be about the same for all groups of women into which this material has been divided. If substantiated by further data this would mean that the reason for the frequently observed higher birth rates of negroes might be sought in the fact that as a racial group they practise contraception much less frequently than whites, and somewhat less intelligently and carefully when they do practise it.

7. The lowest average pregnancy rate among negro women not practising contraception at all is in the very poor class, and the highest in the moderate circumstances class. This agrees in principle with the findings in the whites, but the difference is not statistically significant having regard to its probable error.

8. Taking the negro group as a whole, the average pregnancy rate is below that of the women not practising contraception at all, by about 23 per cent in those belonging to Contraceptive Genus Group B; by about 43 per cent in those belonging to Contraceptive Genus Group C; and by about 35 per cent in those belonging to Contraceptive Genus Group D.

If live birth rates instead of pregnancy rates are analyzed they lead to the same results as those stated above, in all essential particulars.

CONCLUSION

The general picture is of a state of affairs where a high proportion of the economically most fortunate classes are practising contraception with a relatively high degree of precision and intelligence, producing mainly only as many babies as they want and when they want them. On the other hand the less and particularly the least fortunate economic classes, in this material certainly, are to a much smaller extent making any attempt to practise contraception at all, and of those who are making the attempt the proportion who are doing so intelligently and precisely is also smaller. Our detailed records indicate clearly that this is due primarily to ignorance of contraceptive methods and technique, rather than to a desire to have large families. Hundreds and hundreds of the women in this sample who do not practise contraception are pleading for information and instruction so that they may.

The logic of our results would seem to point clearly and unequivocally to the probability that prompt removal of all legal restriction to the free dissemination of contraceptive information, and barriers to the unrestricted distribution of

contraceptive devices, would tend to have the effect of bringing the differential fertility of social classes more nearly into balance again. Whether this would be a "good" or "desirable" thing to do is a matter of opinion, to which our results *per se* make no contribution. Therefore that question will not be discussed. But it seems clear that if restrictions upon the dissemination of contraceptive information and advice were removed, it might somewhat lighten the burden of poverty and unemployment with which our children and grandchildren bid fair to be faced.