SCIENTIFIC BOOKS

DIFFERENTIAL FERTILITY

Group Differences in Urban Fertility. By CLYDE V. KISER. Baltimore: Williams and Wilkins Company. 296 pp. 1942. $2.50.

THIS is a study of differential fertility in urban communities based on data gathered in the National Health Survey, 1935–36. Although the data were intended primarily to throw light on the health of the population the abundance of the information on the social and economic status of the families and the report on births during the year preceding the survey made it possible to study fertility differentials both between and within certain classes of the population. Furthermore, the sample was carefully selected to secure representative populations. The results, therefore, are of great interest to all who are concerned with sources of population growth in the United States, although they relate primarily to urban populations.

It will not be possible in a brief review even to mention the methods employed to insure the accuracy of the results. It will suffice to say that in the reviewer's opinion these methods adequately guarded against biases which might easily creep into the use of such data.

When the population was classified into four large groups according to the occupation of the husband, the number of births per 1,000 wives (standardized for age) was as given in Section A of the accompanying table.

The points of chief interest here are the higher rate among the native whites in the professional than in the business group, the only slightly higher rates (except professional) among the foreign-born and the lower rates among the colored.

When education of the wife was used as the basis of the classification (see table, Section B) the rates show a steady increase for all groups as the amount of education decreased but the differences are not as large as might be expected. In these cities differential fertility is becoming less.

When income is made the basis of classification (see table, Section C) there is a steady rise in the birth rate as income decreases except in the $3,000–4,999 and $2,000–2,999 groups among native whites. Here there is a decline of one point at each successive decline in income, which is scarcely significant. But it may be significant that above the income level of $2,000 among native whites, there is no further decline in rate or it may merely mean that in 1934 (births of 1935) the higher income groups, $5,000 and over, felt less pressure to postpone births than the $2,000–5,000 groups.

	Native White	Foreign-born White	Colored
Section A Occupation of Husband			
Professional	94	86	79
Business	86	109	81
Skilled	100	111	85
Unskilled	115	122	86
Section B Education of Wife			
College	87	82	64
High School	91	108	85
7th–8th Grades	105	109	85
Under 7th Grade	118	125	87
Section C Family Income			
$5,000 and over	78	83*	45†
3,000–4,999	77		
2,000–2,999	76	90	
1,500–1,999	81	102	60
1,000–1,499	90	104	73
Under $1,000 and Total Relief	117	128	90
Nonrelief under $1,000	96	108	69
Total Relief	147	155	126

* $3,000 and over.
† $2,000 and over.

When occupational groups (native whites) are further divided according to education of wife there is a steady increase in the birth rate as education decreases in each occupational group. When these occupational groups are divided into income classes, there is, with minor exceptions, a rise in the birth rate of each occupational group as income decreases, but at the same income level there is either very little difference in birth rate between the several occupational groups or it decreases in proceeding from professional to unskilled until the income falls below $1,000 and here there is a steady rise as social status declines.

The fact that the birth rates noted above refer to married women only obscures the relative reproduction rates of these classes to some extent since higher social and economic status is associated with a smaller proportion married and with older marriage age. This is shown clearly in the net reproduction rates which show that where family incomes were over $3,000 there were only 42 per cent. of the children needed to maintain the population. This per cent. increased steadily as income decreased until at less than $1,000 it rose to 96 per cent. Where the wife had a college education there were only 52 per cent. of the needed children, but where she had less than seven grades of schooling, it rose to 97 per cent. In this

group of urban women, there was no social or economic group (except the relief families) that had a birth rate high enough to maintain itself and as a whole they would decline in numbers by 30 per cent. in a generation.

The small sample of the rural population studied like the urban showed in general an increase in the marital birth rate as social status declined and also as the amount of education decreased. But it had a significantly higher birth rate than the urban group, enough higher to insure the maintenance of its numbers with some to spare for increase.

This study is significant for the factual information it contains rather than for any changes found in the usual class, race and nativity differentials. To the reviewer the most interesting point in the study is that it adds to the accumulating evidence that differentials between the birth rates of social and economic classes are diminishing. This is probably taking place not through a rise in the birth rate of the more fortunate groups but through the further decline of that of the less fortunate groups. It is a sad commentary on our civilization that the people who have got most out of it economically, and in position, have less than half enough children to take their places in the next generation. Even if the birth rate in 1935 was somewhat below what might be considered normal it is still of great significance that those to whom our civilization has been kindest do not consider it a fit environment in which to bring up children; or is it that they are so absorbed in their own success that they have no time to consider the need for their participation in the future of our national life by taking part in reproduction? Such facts as are here adduced can not but arouse thoughts on the meaning of a civilization which sterilizes or nearly sterilizes those who generally believe themselves to be its most perfect fruit.

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SPECIAL ARTICLES

PURIFICATION AND PROPERTIES OF THE SECOND ANTIBACTERIAL SUBSTANCE PRODUCED BY PENICILLIUM NOTATUM[1,2]

IN an investigation begun in the laboratories of Dr. S. A. Waksman, New Jersey Agricultural Experiment Station, in the winter of 1940 and continued at the University of Pennsylvania, the observation was made that strains of *Penicillium notatum* produce an antibiotic substance different from penicillin. The properties of this second antibacterial substance, for which the name penatin has been proposed, have been discussed[3] and the cultural conditions for the production established.[4] Progress has been made in the purification of penatin, which, in its bacteriostatic power, not only surpasses the purest preparations of penicillin, but is also effective against bacteria which are not susceptible to any appreciable degree to the action of penicillin, notably some gram-negative organisms. Of 50 pathogenic and non-pathogenic organisms tested, none have been found which would resist the bacteriostatic action of penatin in dilutions of not less than 1:10 millions. The purest preparations obtained were bacteriostatic to certain organisms in even higher dilutions, for instance, 1:400 millions. Penatin is also bactericidal, but to a lesser degree. Table 1 shows the bacteriostatic action of penatin, which contrasts sharply with the range of action of penicillin.

TABLE 1

BACTERIOSTATIC ACTION OF PENATIN AGAINST VARIOUS PATHOGENIC AND NON-PATHOGENIC ORGANISMS

Test organism	Dilution 1: millions						
	12.5	25	42	125	250	420	1250
Sarcina lutea	–	–	–	–	–	Tr	N
Gaffkya tetragena	–	–	–	–	–	I	N
N. catarrhalis	–	–	–	–	–	I	N
Staph. aureus	–	–	–	–	Tr	N	N
C. diphtheriae	–	–	–	I	N	N	N
Cl. histolyticum	–	–	–	I	N	N	N
Ps. aeruginosa	–	–	–	N	N	N	N
Eb. typhosa	–	–	–	N	N	N	N
B. anthracis	–	–	Tr	N	N	N	N
Br. melitensis	–	–	Tr	N	N	N	N
Br. abortus	–	–	Tr	N	N	N	N
S. paratyphi	–	–	I	N	N	N	N
D. pneumoniae, Type I	–	Tr	I	N	N	N	N
S. pyogenes (C203M)	–	Tr	N	N	N	N	N
Es. coli	–	I	N	N	N	N	N
Trichophyton interdigitale[5]	–	I	N	N	N	N	N

Conduct of the test: Penatin was incorporated in tryptose agar and the test organism streaked out. Readings after 48 hours at 28° or 37° respectively. – = no growth, Tr = trace of growth, I = inhibited growth, N = normal growth, similar to control.

While the addition of growth-stimulating substances, such as corn-steep liquor, yeast or malt extract, to the Czapek-Dox medium were found to be beneficial for the formation of penicillin, their presence will prevent the formation of penatin. It is further noteworthy that the particular strain of *Penicillium notatum* (PEN 2) found most active in the production of penatin was discovered years before

[1] From the Schools of Medicine and Veterinary Medicine, University of Pennsylvania.

[2] This investigation has been supported by the Thos. H. Dougherty, Jr., Fund, and by grants from the Department of Agriculture, Commonwealth of Pennsylvania.

[3] W. Kocholaty, *Jour. Bact.*, 44: 143, 1942.

[4] *Ibid.*, 44: 469, 1942.

[5] Krainsky's agar was used. Readings after 10 days at room temperature.