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Attitudes On Population Crisis At A Small Liberal-Arts College

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Attitudes on the Population Crisis At a Small Liberal-Arts College

JOHN B. JENKINS

ROBERT C. MITCHELL

AN EDITORIAL (Eisner et al. 1970) and a subsequent paper (van Tienhoven et al. 1971) reported the results of a survey of attitudes on the population crisis, conducted among students and faculty at Cornell University in November 1969. The very high percentage—65%—of respondents who desired three or more children, their very low preference for voluntary sterilization, and their ignorance about the personal consequences of sterilization were unexpected and disturbing findings. At the conclusion of the editorial the authors asked:

> But what are we to make of the educated youth growing up among us that is either unconcerned about population growth or, at the very least, unable or unwilling to apply to itself the simple arithmetic of compound interest? And what, if any, are the prospects for improved sex education when ignorance about the reproductive system is widespread even among those who should know best?

If the Cornell results were indicative of college students' attitudes in general, they would lend important support to the criticism of family planning as a means of lowering the birth rate in the United States (Blake 1969; Harkavy et al. 1969). Blake's critique of family planning came from her analysis of data on the attitudes of the poor toward family size and birth control. The data show, she said, that the provision of birth-control services is likely to have little effect on the reproductive performance of the poor. This led her to conclude that only a basic cultural change in the child-caring and occupational sex-roles would be effective in limiting U.S. population growth. Presumably college students have access or will have access to birth-control devices. If their fertility expectations are significantly above replacement, then traditional family-planning programs, which assume preexistent desires to have small families, are unlikely to limit the future growth of the educated and prosperous segment of the population, as well as the impoverished segment.

In this report we present the results of a replication of the Cornell study. It was carried out at Swarthmore College, a small liberal-arts institution near Philadelphia. We wished to discover whether or not (i) the Cornell results would hold up at another, somewhat different institution of higher learning and for a different kind of sample; (ii) some of the conclusions of the Cornell researchers should be reconsidered; and (iii) a revised version of the Cornell questionnaire might be useful both as a teaching tool in courses dealing with population problems and as a relatively efficient and inexpensive way to build up a useful data-bank on college students' fertility expectations and birth-control attitudes and knowledge.

Conditions of the Swarthmore Survey

The Swarthmore survey took place in April 1970; that is, about six months after the Cornell study. The questionnaire was patterned after the Cornell instrument, even to the format of the questions. The differences between the two were minor.

The major difference between the two studies was the method used in administering the undergraduate questionnaires: at Swarthmore all questionnaires were distributed through the campus mail, but at Cornell this method was used only for graduate students and faculty. The Cornell undergraduates were canvassed in formal classes, where they were given the questionnaire and asked to return it in 15 minutes. The undergraduate response at Cornell consequently was very high: 98%; at Swarthmore the undergraduate response was 40% (461 respondents).

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We hasten to point out that a 40% return for a mail questionnaire, especially one dealing with intimate matters, is considered good. Nevertheless, the mail-questionnaire respondents were more self-selected.

Because much of the following discussion is a comparison of Swarthmore and Cornell undergraduates, it is necessary to discuss the possible bias of this self-selection. If the Swarthmore nonrespondents were those who had less interest in population problems and were more likely to desire bigger families, then the finding (reported below) that Swarthmore students desired smaller families than did the Cornell students would be an artifact of the sample and not a true difference. This possibility should be kept in mind; but we think that there is also the likelihood that the nonrespondents included many of the less conventional students—participants in the counter-culture—whose expectations regarding family size are probably toward fewer children or no children at all. This is conjecture, but it suggests that the tendencies of the nonrespondents might have canceled each other out. We *can* state that the nonrespondents were disproportionately male—and, on the whole, men are less likely to desire larger families than women, according to both the Cornell and Swarthmore results. This is another indication that our results are reasonably representative of the Swarthmore student population.

Swarthmore had only five graduate students (all studying for M.A.s) at the time of the survey, so they were grouped with the students for the analysis.

The response rate for the Swarthmore faculty was about 50%, which compares favorably with the Cornell response rate for faculty—45%—by the same method of distribution. The total number of completed questionnaires for the Swarthmore study was 568, and 519 (88%) of them were from undergraduates.

Attitudes toward Family Size

One of the most striking differences found by comparing the results of the two studies is the much smaller family size desired by the Swarthmore students and teachers. Table 1 shows, for example, that only 24% of the total sample of Swarthmore men wanted three or more children, whereas 66% of Cornell men wanted that many children—a difference of 42%. It is important to recognize, however, that the total samples differed in composition: 18% of the Cornell sample were graduate students, against less than 1% of the Swarthmore students.

The table also presents comparisons of biology and nonbiology students and of upperclassmen and freshmen. These data show an even greater difference between the two samples: the Swarthmore students desired significantly smaller families than did the Cornell students, in each comparison. It is interesting to note, however, that both the Cornell and the Swarthmore majors desired smaller families than did the nonbiology majors in the respective schools, despite the differences between the two institutions.

Table 1 shows that not only did more Swarthmore students desire fewer than three children (73%, vs. 35% at Cornell), but 13% of the Swarthmore students wanted only one child or no children at all. Indeed, 6% of the total Swarthmore sample wished to be childless. (The comparative Cornell figure is not available.)

Table 1. Number of children desired by Swarthmore and Cornell students. The Cornell data in this and the other tables are from van Tienhoven et al. (1971). Totals vary according to the number of respondents who answered each question. N = number of respondents.

	Cornell				Swarthmore				
	Number of children:				*Number of children:*				*% span, 3 or*
Respondents	*0–1*	*2*	*3 or more*	*N*	*0–1*	*2*	*3 or more*	*N*	*more children*
Male students	4%	30%	66%	393	12	64%	24%	189	42%
Female students	5	25	70	197	15	56	29	251	41
Biology upperclassmen	3	33	64	99	18	65	18	51	46
Biology freshmen	2	29	69	56	24	57	19	21	50
Nonbiology upperclassmen	2	24	74	112	12	61	27	253	47
Nonbiology freshmen	3	23	74	163	14	57	29	102	45
Total sample: undergraduate and graduate students and faculty	5	30	65	858	13	60	27	499	38

The Swarthmore and the Cornell data suggest that women and nonbiology majors desired more children than did men and biology majors. It is possible, however, that there is distortion in these results; for example, the difference between biology and nonbiology students might be due to the presence of a disproportionate number of women among biology

Table 2. Mean number of children desired by Swarthmore undergraduates, by sex and by major studies. Range was 0–6 children. N = number of respondents.

	Male students		Female students	
Major study	*Mean*	*N*	*Mean*	*N*
Biology	1.97	33	2.0	40
Physical sciences	2.17	36	2.17	12
Social sciences	2.18	66	2.41	79
Humanities	2.22	36	2.09	105

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Table 3. Percentages of Cornell and Swarthmore students, by groups, who would never use surgical procedures—abortion, vasectomy, tubal ligation—for limiting family size.

Group	Abortion		Vasectomy		Tubal ligation		No. of respondents	
	Cornell	Swarthmore	Cornell	Swarthmore	Cornell	Swarthmore	Cornell	Swarthmore
Male students	46%	23%	53%	33%	53%	30%	393	189
Female students	46	28	47	25	53	27	197	251
Biology upperclassmen	52	13	56	16	59	16	124	51
Nonbiology upperclassmen	48	26	57	28	57	30	143	253
Biology freshmen	46	36	49	28	52	32	83	21
Nonbiology freshmen	44	31	53	34	55	29	241	102

majors. Table 2 cross-tabulates data for undergraduates by sex and major, using the mean number of desired children as a more convenient statistical representation of the dependent variable. As it turns out, the number of men and women who were majoring in biology at Swarthmore was about even. (A much higher proportion of the physical-science majors were men; the reverse was true for humanities majors.) These data show some interesting results:

1. For both men and women, biology majors desired a smaller number of children than did majors in any other discipline. Indeed, women majoring in biology had the second-lowest mean number of desired children—2.0—of all the categories in the table.
2. Women majoring in the social sciences had by far the highest desired number of children: 2.41.
3. Among humanities majors, the men surpassed the women in the number of children desired. This was the only one of the four disciplinary comparisons in which this reversal occurred.

We could argue that biologists are more acutely aware of population problems than are nonbiologists and that therefore they desire fewer children; but there is no explanation, as far as we know, for the latter two findings. It will be interesting to see if comparable patterns are found in similar studies at other institutions.

Preferences for Birth-Control Measures

The preferences for various birth-control techniques expressed in the Swarthmore and Cornell samples were virtually identical when the expressed purpose was to space children: both strongly preferred the pill. In the matter of limiting family size, however, preference for the pill lost some of its appeal among the Swarthmore respondents: a higher percentage preferred the more radical techniques of sterilization; that is, vasectomy and tubal (oviducal) ligation. In general, as shown in table 3, the Swarthmore students were much more willing to entertain "radical" methods of birth control than the Cornell students, and this effect increased with the length of time at Swarthmore: seniors were most willing to undergo sterilization, freshmen least willing. The Cornell sample showed a slight tendency in the opposite direction.

The data in table 3 also suggest that Swarthmore men were more willing to accept abortion than were Swarthmore women. No such difference is evident from the Cornell data. At the same time, both Cornell and Swarthmore men were more inclined to reject vasectomy than were the women. The data also show that a strong tendency existed among Swarthmore's upperclassmen in biology to accept sterilization more readily than the Swarthmore nonbiology upperclassmen, whereas the corresponding differences at Cornell were small and tended in the opposite direction. The same comparison among freshmen does not show a strong difference at either school; this suggests that participation in the Swarthmore biology program may have had an effect on attitudes toward radical methods of birth control.

Ignorance of Birth-Control Techniques

The Cornell researchers found "widespread ignorance and misunderstanding about the consequences of sterilization" even among biology graduate students and faculty. This was disturbing because, they said, "Ignorance on the part of the educated is likely to be indicative of even greater ignorance on the part of the population at large, and this throws into question the entire sex education system and its effectiveness" (van Tienhoven et al. 1971).

Table 4. Professed ignorance of various birth-control techniques, in percentages of the total samples. "Professed ignorance" was obtained by combining percentages of those who answered "Not quite certain how it works" and "Don't know how it works." Swarthmore respondents who chose the "no information" response to this question—a response not on the Cornell questionnaire—were added to the Swarthmore total.

Technique	Swarthmore	Cornell
Condom	15%	20%
Diaphragm	22	19
Intrauterine device (IUD)	34	30
Abstinence	9	15
Pill for women	6	6
Vasectomy	20	25
Tubal ligation	23	20
Rhythm	12	14
Withdrawal	11	14
Abortion	7	7
Spermicidal foams or jellies	28	25

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The questionnaires measured two kinds of ignorance, and it seems useful to consider each of these separately:

1. The questionnaires sought to explore the degree of knowledge or experience with various birth-control measures. Table 4 shows the percentages of the Swarthmore and Cornell total samples who *professed* at least some degree of ignorance about the techniques. The overall profiles are remarkably similar in the two samples, considering the differences in gathering data and the differences in composition discussed earlier. The pill and abortion were understood equally well in both samples. The highest degree of ignorance was professed for the intrauterine contraceptive device (IUD) and for spermicidal foams and jellies. It is surprising and possibly alarming, considering the educational level of the respondents, that 15–20% expressed ignorance of condoms and that 9–15% said they were not sure how abstinence and withdrawal (coitus interruptus) work. Perhaps the terminology, rather than the method, was what was not understood; but it is also possible that the respondents were attempting to interject their own brand of humor into the questionnaire through sarcasm.

2. *Actual* ignorance was measured by items that asked the respondents to indicate the effects of sterilization procedures. The Cornell researchers created an ignorance index by combining "don't know" answers with answers that expressed the probability or certainty of the incorrect answer for the most misunderstood effects: elimination of ejaculation by vasectomy and interference with the menstrual cycle by tubal ligation. Table 5 gives this index for both samples.

Comparison of the various cells in table 5 indicates that Swarthmore students were less ignorant of the effect of vasectomy on ejaculation than were the Cornell students. This is possibly a function of the fact that the Swarthmore questionnaire defined vasectomy as a "minor operation"—information that was not given in the Cornell questionnaire. This possibility is strengthened by the data for ignorance of the effect of tubal ligation on the menstrual cycle. With the exception of the Swarthmore upperclassmen in biology, comparisons with Cornell students show the same or greater ignorance on the part of Swarthmore students. At both schools the biology majors were better informed about the effects of these surgical techniques than were nonbiology students, on this index.

Summary of the Swarthmore Survey

The replication of the Cornell birth-control study at Swarthmore College gave the following results:

1. Swarthmore students desired significantly fewer children than did Cornell students (tables 1 and 2).

2. Swarthmore students were approximately twice as receptive to sterilization as a method of limiting family size (table 3).

3. Swarthmore and Cornell students expressed similar degrees of ignorance about methods of birth control—except that Swarthmore upperclassmen majoring in biology were noticeably less ignorant than were students in other subgroups (table 4 and 5).

4. At both schools biology majors desired fewer children and were less ignorant about the effects of sterilization. In addition, Swarthmore upperclassmen in biology were more receptive to sterilization than were Swarthmore nonbiology upperclassmen.

Unfortunately, it is not possible to offer a satisfactory explanation for the Swarthmore–Cornell differences. The Cornell questionnaire did not include any of the usual background variables, such as socioeconomic status of family, race, size of home town, education of parents, and religion; so the differential composition of the two samples as to these important factors is unknown. If one assumes that most of the Cornell undergraduates were in the liberal-arts college, they probably were roughly similar to Swarthmore undergraduates in SAT scores and in parents' socioeconomic status. Swarthmore is one of the most highly selective colleges in the country; and the most we can say without more information—apart from pointing out the difference in sampling techniques—is that students, who have chosen to attend a small college with a Quaker heritage, like Swarthmore, must differ from the undergraduates at a major university.

Table 5. Actual ignorance of selected effects of vasectomy and tubal ligation, in percentages, by groups. "Actual ignorance" was obtained from answers indicating either professed ignorance or else possibility or certainty as to the elimination of ejaculation after vasectomy and change in the menstrual cycle after tubal ligation.

	Cornell		Swarthmore	
Group	*Vasectomy*	*Tubal ligation*	*Vasectomy*	*Tubal ligation*
All males	55%	51%	47%	61%
All females	48	41	47	63
Biology upperclassmen	47	56	31	33
Biology freshmen	61	60	56	60
Nonbiology upperclassmen	62	56	45	67
Nonbiology freshmen	68	73	51	72

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Table 6. Percentages of white non-Catholic women in the U.S. in 1965-69 and percentage of a total sample in the U.S. in 1971 who disapproved of abortions being permitted to parents who have all the children they need. The 1965-69 surveys were of white non-Catholic *women* only (Blake 1971). Data for 1971 were available only for the total sample, which included men, Catholics, and blacks (Commission on Population Growth and the American Future 1971). In general, men are slightly more favorable to the legalization of abortion and Catholics are much more opposed (Ryder and Westoff 1969).

WHITE NON-CATHOLIC WOMEN					TOTAL SAMPLE	
Education	*1965*[a]	*1968(i)*[b]	*1968(ii)*[c]	*1969*[d]	*Education*	*1971*[e]
College	83%	80%	76%	70%	Completed college or more	25%
High school	92%	91%	86%	81%	Some college	32%
Grade school	89%	90%	84%	86%	Completed high school	41%
					Did not complete high school	48%

a National Fertility Study; number of respondents, 3,180. Question: "Would it be all right for a woman [to have a pregnancy interrupted] if they [the couple] didn't want any more children?"

b Gallup Poll, May 1968; number of respondents, 548. Question: "Do you think abortions should or should not be legal . . . when the parents simply have all the children they want although there would be no major health or financial problems involved in having another child?"

c Gallup Poll, December 1968; number of respondents, 511. Question: same as *b*.

d Gallup Poll, October 1969; number of respondents, 512. Question: same as *b*.

e Poll taken for the Commission on Population Growth and the American Future; number of respondents, 1,700. Question: "Do you think abortions should or should not be permitted when the parents already have all the children they want?" Percentages are given for those who said "Not permitted."

Discussion of College Students' Views

The authors of the Cornell study assumed that college students should be the most enlightened members of society in their knowledge of the severe effects of the current population explosion and in their determination to limit their own families. They treated their data as both an exploration of the situation at one school and—because their findings showed what was, to them, a surprising degree of unenlightenment—as possibly representative of a general failure of the environmental movement and sex education to significantly influence this segment of the American population.

The issue of the relationship of higher education to the population explosion surely is an important one; therefore we want to examine a number of the Cornell authors' general premises and conclusions in light of (i) the Swarthmore replication, which failed to support the generality of some of their findings, and (ii) the demographic literature on this topic. Pending further replication of the study at other institutions (which we recommend in the last section of this paper), we conclude that the situation may not be as bad as was originally thought—especially because Swarthmore may be more representative of the direction the attitudes of college-educated Americans are taking. This is not to deny the considerable need for the improvement of sex education—especially as regards sterilization.

1. The Cornell researchers asserted that it is reasonable to expect college students to be knowledgeable about sterilization procedures. But it should be borne in mind that at the present time these procedures are in relatively slight use in the general population; that they are surgical operations and therefore rather esoteric; and—most important—that they are not of immediate relevance to men and women (the bulk of the respondents) who are yet to enter into their reproductive roles. Furthermore, few college courses consider these matters, and many college clinics refuse even to dispense contraceptive devices and information.

2. Based on the preceding premise, the Cornell researchers concluded that college students show a widespread ignorance of sterilization procedures. Here we come to the vexing question of whether the glass is half full or half empty. The Swarthmore data replicated, on the whole, the findings of the Cornell study on both professed ignorance (table 4) and actual ignorance (table 5) of sterilization procedures; so our argument is based on another interpretation of the same data. Bearing in mind the points made in the preceding paragraph, it is possible to find some comfort in the fact that no more than 25% of either school's respondents *professed* ignorance about vasectomy and tubal ligation. The *actual*-ignorance measure, of course, shows that as many as 73% of the students were wrong or uncertain about the full effects of vasectomy and tubal ligation. But the two effects chosen for the actual-ignorance measure were only two of a total of 13 effects the respondents were asked about. The highest amount of "ignorance" shown for the total samples on any of the other 11 effects was the 31% of the total Cornell sample who were ignorant of the effect of vasectomy on the regression of the testes. It can be argued, therefore, that the actual-ignorance measure used by the Cornell authors somewhat exaggerated the ignorance of the respondents and that the level of actual ignorance is understandable and perhaps not quite as widespread and acute as the Cornell authors have suggested. However, we wholly concur with their unassailable generalization that "our young

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have yet to learn all that needs to be known about the biology of sex."

3. The Cornell investigators found a "widespread prejudice against sterilization even for the purpose of limiting family size after the desired number of children has been reached." Here the Swarthmore data show a much lower level of prejudice as measured by the percentage of students who rejected outright the use of sterilization for this purpose: only 29% of the Swarthmore students rejected sterilization, as against 51% of the Cornell respondents (table 3). Furthermore, more Swarthmore students than Cornell students preferred sterilization for this purpose than preferred abstinence or withdrawal.

Is 29% nevertheless representative of a "widespread prejudice"? Again we are faced with the "half full or half empty" question. We suggest that 29% may mean a surprisingly *low* level of rejection. Even if this interpretation is accepted, however, it can still be asserted that Cornell, as a major university, is likely to be more representative of the general situation than is a small college like Swarthmore and that the Swarthmore data therefore do not really challenge the finding of "widespread ignorance." The answer to this last point depends, of course, on more replications of the Cornell study at different schools.

Meanwhile, we are permitted the speculation that the Swarthmore data may represent a harbinger of changing attitudes: Swarthmore's highly select student body may be something of a weathervane. Some support of this notion is given by the available data on the analagous issue of abortion. Table 3 shows the Swarthmore sample to have been less prejudiced against abortion than the Cornell sample. There is recent evidence to the effect that general American attitudes toward abortion are rapidly becoming more liberal, especially among college-educated people. We have summarized these data in table 6. The table also shows a strong educational effect: the higher the education, the more liberal the attitude toward the legalization of abortion.

4. The Cornell investigators speculated that the prejudice against sterilization might be the result of misapprehensions about the consequences. Our comments above might appear to call this speculation into question, because the Swarthmore respondents were roughly similar to the Cornell respondents in their ignorance of sterilization but were less prejudiced against it. Nevertheless, a cross-tabulation of the measure of of ignorance by the measure preference for sterilization for the Swarthmore respondents shows a strong relationship (gamma of 148 for men on elimination of ejaculation and .31 for women on interference with menstrual cycle—both significant at the .01 level) between knowledge and acceptance of the sterilization procedures—thus supporting the speculation of the Cornell researchers.

5. The Cornell researchers suggested that our young remain yet to be persuaded of the need for reproductive restraint. This generalization was based on what they called their "most disconcerting" finding: that Cornell respondents preferred families of relatively large size. This is indeed very true of the Cornell respondents: the 2.9 mean number of children desired by them is far above the replacement level. But even this high figure is somewhat lower than the mean numbers reported for college-educated samples in national surveys over the past 25 years. What is more comforting however, are the much lower means for the Swarthmore respondents. Only replication of these studies at other schools can determine whether or not a weathervane effect was operative here; but until then the Cornell authors' generalization we have been discussing must be regarded as unsubstantiated for college youth as a whole.

6. There was more than a hint from the Cornell investigators that college students are somewhat hypocritical in professing concern about population growth while desiring relatively large families. They asserted that college students see the population bomb as everybody's baby except their own. We take exception to this rather derogatory implication because there are absolutely no data to support it in their report. It is fallacious to generalize from aggregate data to individual behavior (Robinson 1950). In order to show this relationship the Cornell investigators would have had to include a measure of environmental concern or awareness in their research instrument and to cross-tabulate this measure by desired family size.

With regard to Blake's strictures against family planning as the national policy: the apparent support for her argument in the Cornell data on desired family size is not evident in the Swarthmore data. Of course, this does not refute her argument, which is based on the pronatalist attitudes of the poor and the relatively uneducated. Indeed, if we had more data on the attitudes of the Swarthmore and Cornell respondents toward child-rearing and occupational sex-roles and could show that Swarthmore students were less inclined to place females in the traditional child-rearing and occupational roles than were the Cornell students, our data would support her argument. Unfortunately such data are not available in the surveys under discussion; but they can and should be gathered in the near future.

Appraisal and Suggestions

The Cornell study and its replication at Swarthmore have weaknesses as research instruments—as we have tried to point out. They lack questions on the backgrounds of the respondents; and the wording of some of the questions leaves something to be desired. Nevertheless, they do give a rough measure of student attitudes toward family size and student knowledge of contraceptives. Furthermore, comparison of the two studies—bearing in mind the differences of sampling and the few changes in question-wording—raises some important questions about the

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impact of college education on population attitudes and how the teaching of population-control problems might be improved.

Considering the widespread use of college students as subjects for psychologic experiments, it is surprising that more systematic use has not been made of them for longitudinal and comparative studies of fertility and related topics. The Knowledge–Attitude–Practice (KAP) studies in developing nations (Berelson 1965) are a model for the kind of research that should be undertaken in this country.

In an effort to promote the systematic study of the factors that promote understanding of and positive attitudes toward birth control on the part of college students, we have redesigned the Cornell questionnaire, and we offer it to interested scholars who may care to write to us about it. We feel the revised questionnaire will be a useful instrument in the classroom to promote the personal involvement of students in the discussion of population problems. Before taking up that topic in his course, an instructor can administer the questionnaire to his class. After tabulating the results he can present them to the class either as an introduction to the population material or, at some further point in the discussion, as a way of getting the students to consider their personal attitudes and what they imply for the United States' population situation. He could also show the students how they compare with the Cornell and Swarthmore students.

The revised questionnaire contains most of the original questions; however, the wording of several questions has been altered to improve their clarity and to get a more reliable estimate of desired family size. We have also added some questions, in order to get more background information on the respondents and their attitudes on the possible restructuring of the family and of male and female roles—changes that Blake (1967) saw as potentially having important antinatalist effects.

The data gathered by a number of teachers and researchers at different schools, using the same questionnaire, will generate a low-cost yet useful data-bank, which should permit the investigations as such topics as these:

1. The social correlates of antinatalist attitudes.
2. Contextual effects of college environments on antinatalist attitudes.
3. Relationship between knowledge of contraceptive practices and their acceptance.
4. Shifts of attitude on the part of successive cohorts of college students.

The last-mentioned topic would require systematic restudies at the colleges over a period of time. We plan such a study at Swarthmore College in the near future.

REFERENCES

BERELSON, B. 1965. KAP studies on fertility. In *Family planning and population programs*, ed. by B. Berelson et al. University of Chicago Press, Chicago.

BLAKE, J. 1967. Reproductive ideals and educational attainment among white Americans, 1943–1960. *Population Studies* 21:159. Tables 1 and 2.

_____. 1969. Population for Americans: is the government being misled? *Science* 164:522.

_____. 1971. Abortion and public opinion: the 1960–1970 decade. *Science* 171:540.

COMMISSION ON POPULATION GROWTH AND THE AMERICAN FUTURE. 1971. [News release, c. 27 October.]

EISNER, T., A. VAN TIENHOVEN, and R. ROSENBLATT. 1970 [Editorial.] *Science* 167:337.

HARKAVY, O., F. S. JAFFE, and S. M. WISHIK. 1969. Family planning and public policy: who is misleading whom? *Science* 165:367. See also subsequent correspondence.

ROBINSON, W. R. 1950. Ecological correlations and the behavior of individuals. *American Sociological Review* 15:351.

RYDER, N. B., and C. F. WESTOFF. 1969. Relationships among intended, expected, desired, and ideal family size: United States, 1965. *Population Research* [Center for Population Research, National Institute of Child Health and Human Development], March issue.

VAN TIENHOVEN, A., T. EISNER, and F. ROSENBLATT. 1971. Education and the population explosion. *BioScience* 21:16.

NSF Summer Short Courses

Drug abuse, social sciences, and environmental studies are among the subjects that high-school teachers will study at intensive summer short courses supported by the National Science Foundation.

Short courses last up to 4 weeks and are held primarily on college and university campuses. A directory listing institutions offering short courses for secondary-school teachers and supervisors may be obtained by postcard request to Summer Study Program, Division of Pre-College Education in Science, National Science Foundation, Washington, D.C. 20550; or telephone 202–282–7906.

Biology for the Blind

"Biology Laboratory Techniques for Blind Students" is the title of a filmstrip (also available in 35-mm slides) created by Dorothy Tombaugh, a biology teacher at Euclid High School, 711 E. 222 St., Euclid, Ohio 44123. The filmstrip is available as a free loan to teachers. Included is a script booklet with cassette tape or a Braille book; please specify choice when ordering. The materials have been produced through a grant from the Martha Holden Jennings Foundation.

Analyzing Environmental Impact

A booklet, *Environmental Impact Analysis: Philosophy and Methods*, is offered free by Linda Weimer, editor, Sea Grant Publications Office, University of Wisconsin, 1225 W. Dayton St., Madison, Wis. 53706.

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