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THE POPULATION OF
GREAT BRITAIN

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THE POPULATION
OF
GREAT BRITAIN

*CURRENT TRENDS AND FUTURE
PROBLEMS*



MARK ABRAMS

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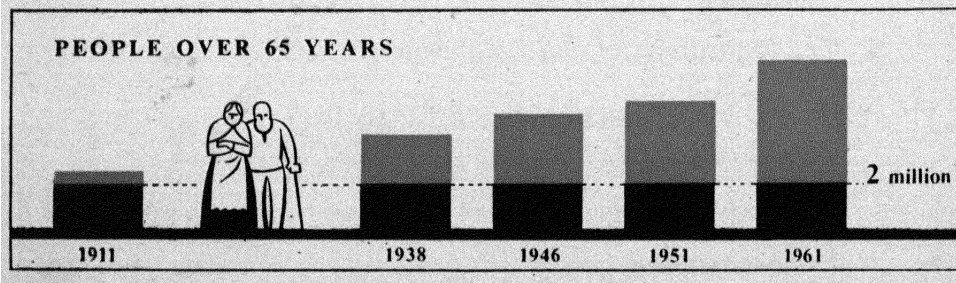
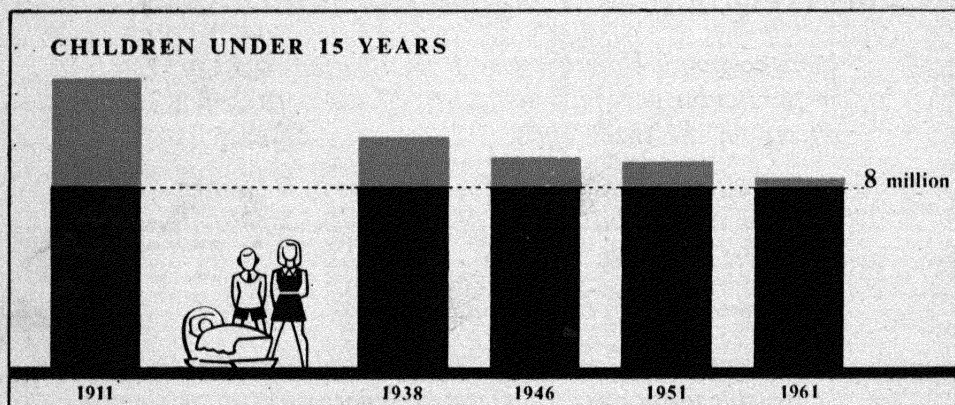
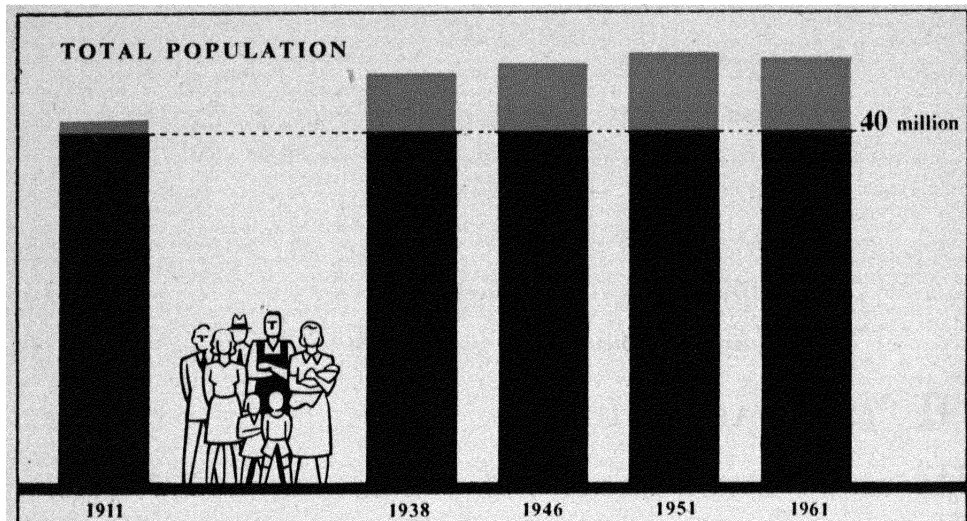
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POPULATION TRENDS

1911—1961



THE PRE-WAR SITUATION

IN the summer of 1939 the estimated population of Great Britain (i.e., England, Wales and Scotland) was 46,467,000. In terms of the world's total population that was hardly a substantial figure—it constituted less than three per cent. of the globe's inhabitants and as a national total was exceeded by at least half-a-dozen other units—China, India, U.S.S.R., U.S.A., Japan and Germany.

ESTIMATED POPULATIONS DECEMBER, 1938	
U.S.S.R.	170,000,000
U.S.A.	130,000,000
Japan	73,000,000
Germany*	69,000,000
Great Britain . . .	46,000,000
Brazil	44,000,000
Italy	43,000,000
France	42,000,000

*Excluding Austria, Sudetenland, Memel

The nineteenth century

It was the product, however, of 150 years of unprecedented growth. There are no reliable counts of Britain's population before the nineteenth century, but it is probable that for several hundred years the number of people in this country fluctuated round the five million mark. Then in the middle of the

18th century as the industrial and transport revolutions started Britain on her career as the world's workshop, carrier and entrepôt, the population began to grow rapidly. Between the beginning and the end of the 19th century, in spite of a steady drain of emigrants to the colonies and the United States, Britain's population more than trebled. Almost certainly this was achieved, not by any increase in the number of children born to the average woman but by a steady fall in the death rate made possible by advances in medical science and communal sanitation.

In 1801, in the middle of the Napoleonic Wars, the first census was taken in this country. The returns for Great Britain showed a total

POPULATION OF GREAT BRITAIN					
	Population	% increase on preceding 30 years		Population	% increase on preceding 30 years
1801	10,501,000		1901	37,000,000	42
1821	14,092,000		1911	40,831,000	37
1851	20,817,000	48	1921	42,769,000	29
1881	29,710,000	43	1931	44,795,000	21
1891	33,028,000	43	1939	46,467,000	16

population of 10,500,000. By 1821, after the war and its subsequent depression had been passed, the figure had grown to 14,092,000, and a generation later, that is, at the mid point of the century, it had passed the 20,000,000 mark. In fifty years Britain's population had doubled ; in the subsequent fifty years almost the same over-all rate of growth was maintained and the new century opened with a population of 37,000,000.

This appearance of unchecked growth, however, was misleading. In the last decade of the 19th century, although the total population continued to increase, the rate of increase began to slow down appreciably. The twentieth century, so far, has not checked this new development ; Britain's population continues to grow—but at an ever-diminishing rate. Soon, there will very probably be no growth at all.

To some this may not seem a matter for concern ; they probably do not realise that, unless our reproduction patterns of the past twenty years change abruptly and considerably, Great Britain's population will, in the not distant future, change its demographic character for the worse ; the total population will fall steadily while the proportion of old (and relatively unproductive) members grows rapidly.

Although this trend dates back at least sixty years, it is only very recently that demographers have pointed out its urgency to the general public in this country. In part, this is because it is only since the last

war that the trend has become spectacular ; and in part because only in the last fifteen years have the necessary statistical techniques been developed whereby the trend could be measured and accurately expressed.

The measurement of population growth

Between any two dates, any change in a community's population is determined by adding the number of births that occurred in the interval, subtracting the number of deaths, and adding or subtracting the net balance of immigration or emigration respectively. For example, at mid-1936 the population of Wales was 2,517,000 ; in the next two years there were 75,000 births, 66,000 deaths and a net balance of 60,000 emigrants ; therefore at mid-1938 the population of Wales was 2,466,000 ($2,517,000 + 75,000 - 66,000 - 60,000 = 2,466,000$).

Death rates

About two of the factors in this equation—the death rate and migration—we need say little at this point. The death rate in this country has fallen considerably in the last fifty years and this development has helped to increase the population. The following figures for England and Wales represent well enough the movement for the whole country. They show that in the middle of the 19th century approximately 22

people out of every 1,000 died each year ; today this rate has halved.

Period	Average annual civilian deaths per 1,000 of population	Standardised deaths per 1,000
1841—1870	22·4	21·4
1871—1900	19·6	19·0
1901—1910	15·4	15·2
1911—1920	14·4	13·5
1921—1930	12·1	10·6
1931—1938	12·0	9·4

The figures in the first column, while impressive enough, in fact under-represent the real fall in mortality. During the period they cover, the proportion of old people (i.e., those most prone to die) has risen steadily. If the age and sex composition of the population is assumed always to

be the same as it was in 1901, then the death rates thus standardised show a much greater decrease.* Looking at the figures for the immediate pre-war years it seems fairly safe to conclude that any imminent fall in Britain's population cannot be staved off by any substantial reduction in death rates.

Migration

As to migration, the position is much less calculable, since such movements depend largely upon world economic conditions and upon the immigration policies largely of the Americas and the British Dominions. Throughout the 19th century there was an appreciable exodus of young men and women from Great Britain ; this loss increased throughout the 20th century until the world-wide depression of the early thirties not only closed the overseas doors to emigration from this country, but even induced many earlier emigrants to return home. The

* It is necessary to standardise death rates in order to obtain a true picture of the fall in mortality. It is possible that with absolutely no change in mortality rates for each age group of the population, the crude death rate would show an increase, merely because of an increase in the proportion of old people in the population. The following imaginary figures show that the death rates in each group could have remained exactly the same as between 1901 and 1921, but because of an increase in the number of old people the crude death rate would have gone up from 17 per 1,000 to 23 per 1,000. Only by assuming that the age and sex composition remained unaltered would we arrive in this example at the truth—that the mortality rates did remain constant between the two years.

Age-Group	1901			1921		
	Popula- tion	Deaths per 1,000	Actual Deaths	Popula- tion	Deaths per 1,000	Actual Deaths
0—14 years ..	500	10	5	200	10	2
15—29 „ ..	600	15	9	100	15	1·5
30—44 „ ..	700	20	14	800	20	16
45 and over ..	200	30	6	900	30	27
	2,000	—	34	2,000	—	46·5
Crude death rate per 1,000 ..			17			23·2

Period	Average net loss (—) or gain (+) by migration each year	Per 1,000 of mid-decade population
1871—1900	— 39,900	— 1·3
1901—1910	— 75,500	— 1·9
1911—1920	— 85,900	— 2·1
1921—1930	— 56,400	— 1·3
1931—1938	+ 58,000	+ 1·3

figures in the adjoining table are for Great Britain.

On the basis of these figures it is clear that in the past emigration from Great Britain has checked the rate of growth of the population and it is unlikely that future movements in world migration will stave off any imminent fall in Britain's population.

In fact, the key to Britain's current population problems lies primarily in the changes in reproductive fertility that have taken place over the past two generations.

Birth rates and reproduction rates

Until recently most commentators on this subject used as their measure the crude birth rate ; that is, they expressed the number of births in each year as so many per thousand of the total population. Thus, at mid-1938 the population of Wales was 2,465,800 ; there were 37,625 live births in the year and the crude birth rate was accordingly 15·3 per 1,000 of the population.

The obvious defect of using this rate as a measure of fertility is that it takes no account of the age and sex composition of the population. Babies can be produced only by certain members of the community—females between the ages of 15 and 45*, and the number of births therefore should be related to the number of such females in the community.

But even this correction is insufficient since, under contemporary marrying habits, 1,000 women between the ages of 25 and 35 are likely to give birth to many more children than are 1,000 women younger

* Throughout this paper we have taken as the reproductive limits the ages 15–44. It is true that some women over 44 years of age continue to bear children, but the number is very slight.

than 25 or 1,000 women older than 35. It is possible that while in two groups of women between the ages of 15 and 45 the totals are the same, one group has a much larger proportion of its total in the highly reproductive age-groups. Since this is so, it is necessary to break down the age composition of the female population much more finely. Therefore demographers, in arriving at what they call the gross reproduction rate of any society, use the following procedure. A separate fertility rate is worked out for the women of each yearly age and these separate rates are then added to give "the total number of children who would be born to 1,000 girls who passed through the child-bearing ages without any of them dying and assuming that at each year of age they exhibited the fertility observed in the particular year for which the rates were calculated." (D. Glass, "Population Policies and Movements," page 8). Thus we might find that in 1939 1,000 women aged 15 years had given birth to 2 children (i.e., had a fertility rate of 2 per 1,000); that 1,000 women aged 16 years had given birth to 8 children (i.e., had a fertility rate of 8 per 1,000); that 1,000 women aged 17 years had given birth to 15 children (i.e., had a fertility rate of 15 per 1,000) and so we could proceed for each individual age-group from 15 to 45. Finally, all the individual fertility rates are added together (2+8+15 and so on) to arrive at a total for the whole group of women.

One further step, however, is necessary before arriving at the gross reproduction rate; only female babies are taken into consideration. In short, the rate expresses the degree to which any given generation of women is replacing itself with potential mothers for the next generation.

Even this potential, however, calls for some correction. In arriving at it, one has assumed that all the girls born to the child-bearing generation of mothers will reach the age of 15 and will then live through the whole reproductive period. This is an unreal and an unnecessary assumption; some of them will die before reaching 15 years of age and more of them will die before reaching 45. A reasonable estimate of this wastage—as shown by the available current death rates—can be made and a

suitable deduction made from the gross reproduction rate to arrive at the net reproduction rate. When this net reproduction rate is exactly 1.00 it means that each newly born girl will just replace herself (assuming that the given conditions of fertility and mortality remain unchanged). "A net reproduction rate of less than 1.00 means that the population will ultimately fall, while a rate above 1.00 means that the population will grow. A rate of 1.50 means that the population will ultimately grow by 50% every generation, while one of 0.75 means an eventual fall of 25% every generation."* (Glass, op. cit. page 9).

Changes since the eighties

How have these various rates behaved over the past two generations? All of them reflect a substantial decline in the rate of fertility of British women and all of them make clear that unless fertility increases in a spectacular way in the immediate future, the British population will certainly decline. For almost fifteen years the British net reproduction rate has been below 1.00.

Period	Births per 1,000 population		Births per 1,000 women 15—44		Gross reproduction rate		Net reproduction rate	
1880—2	34.0	100	148	100	2.28	100	1.52	100
1890—2	30.8	91	130	88	2.04	89	1.38	91
1900—2	28.8	85	116	78	1.74	76	1.25	82
1910—2	24.7	73	99	67	1.46	64	1.14	75
1920—2	23.1	68	93	63	1.37	60	1.12	74
1930—2	16.2	48	66	45	0.96	42	0.82	54
1935—7	15.1	44	61	41	0.90	39	0.79	52
1938—9	15.3	45	63	43	0.92	40	0.82	54

Certain conclusions stand out clearly from this table and the figures on which it is based :—

1. In the 55 years from 1881 to 1936, the gross fertility of British women has fallen by 60%.

* A generation is roughly 30 years.

2. Even if there were no wastage at all by deaths among females 15-44, gross fertility before this war was already so low that the British population must eventually decline if pre-war fertility rates are maintained.
3. Largely as the result of medical advances that lowered the death rates among females under 45 years of age, the net reproduction rate did not fall as much as did the gross reproduction rate.
4. Even so, if pre-war net reproduction rates are maintained Britain's population will eventually decline by 20% each generation.
5. Since the specific death rates among females under 45 years of age are already extremely low, it is unlikely that in the future medical science can do much to close the gap between gross and net reproduction rates.
6. The greatest rate of decline in gross fertility occurred among the women who reached and retained reproductive maturity during the decade 1923-1933 ; it was presumably during this period that family limitation spread from the higher income groups to all sections of the community.
7. While 1933 marked the lowest point so far reached in British net reproduction rates, the recovery in the subsequent six pre-war years was very slight and the rate had apparently stabilised at a point approximately 20% short of unity.

The importance of age composition

It was pointed out earlier that among the more important consequences of a fall in fertility was a change in the age composition of the population—that is, a change over time in the proportions in which each age-group occurred in the population.

The composition of Great Britain's population in 1938 is given in the table on the following page.

Age	Males	Females	Total	% of total
0—4	1,637,000	1,582,000	3,219,000	6·9
5—14	3,463,000	3,397,000	6,860,000	14·8
15—24	3,724,000	3,707,000	7,431,000	16·1
25—34	3,723,000	3,898,000	7,621,000	16·6
35—44	3,153,000	3,547,000	6,700,000	14·5
45—54	2,603,000	3,086,000	5,689,000	12·3
55—64	2,173,000	2,536,000	4,709,000	10·2
65 and over	1,720,000	2,259,000	3,979,000	8·6
	22,197,000	24,011,000	46,208,000	100·0

The most outstanding points revealed by this table are that in Great Britain as of mid-1938 :—

1. The number of school-children (even if they all survived) was insufficient to replace the current body of recruits to industry (6,860,000 as compared with 7,431,000).
2. The number of potential recruits to parenthood (even if they all survived) was insufficient to replace the current body of young potential parents (7,431,000 as compared with 7,621,000).
3. Of all the women over 15 years of age over 40% had already passed out of the reproductive age-groups (15-44).
4. In the 'working' age-groups (15-64) women exceeded men by 1,400,000 (16,774,000 as compared with 15,376,000).
5. One person in every four was already over 50 years of age (11,427,000 out of 46,208,000).

To realise the full significance of these features of the immediate pre-war composition of the British population it is helpful to go back a couple of generations and examine the age-composition of the population of 1881. Then, the number of school-children *was* sufficient to replace the contemporary body of recruits to industry ; the number of potential recruits to parenthood *was* sufficient to replace the contemporary body

of young parents ; only 30% of women over 15 years of age had passed out of the reproductive age-groups ; in the ' working ' age-groups the ratio of men to women was slightly less adverse ; and only one person in seven was over 50 years of age. In short, although the total population increased by 16,500,000 between the two dates, 8,770,000 of these additions were in the age-groups of 45 and over in 1938.

Age-group	1881	1938	% Increase
0— 4 ..	4,031,000	3,219,000	—
5—14 ..	6,804,000	6,860,000	1
15—24 ..	5,598,000	7,431,000	33
25—34 ..	4,318,000	7,621,000	77
35—44 ..	3,349,000	6,700,000	100
45—54 ..	2,484,000	5,689,000	129
55—64 ..	1,751,000	4,709,000	169
65 and over	1,375,000	3,979,000	189
<i>Total</i> ..	29,710,000	46,208,000	56

Economic measurement of population

There are various criteria from which one can attempt to judge the merits or defects of a particular population and of any changes that occur in its make up. From the economic viewpoint we can assess each citizen (more or less arbitrarily) as so many producer-units and so many consumer-units, and by a comparison of the two totals indicate which way the balance turns as the age-composition of the population changes.

In translating people into consumer-units we have used the following scale of equivalents* :—

* These are the differentials frequently used in social surveys in calculating minimum consumer needs.

One male	15—64	years of age	=	1·00	consumer-units
One male over	64	„ „	=	·60	„ „
One female	15—64	„ „	=	·85	„ „
One female over	64	„ „	=	·60	„ „
One child	5—14	„ „	=	·50	„ „
One infant	0—4	„ „	=	·33	„ „

In turning people into producer-units we have used the following scale of equivalents† :—

One male	25—64	years of age	=	2·50	producer-units
One male over	64	„ „	=	·83	„ „
One male	15—24	„ „	=	·83	„ „
One female	15—24	„ „	=	·625	„ „
One female	25—44	„ „	=	·375	„ „
One female	45—64	„ „	=	·250	„ „
One female over	64	„ „	=	·125	„ „
One child	0—14	„ „	=	·00	„ „

On the basis of these equivalents we find that in 1881 there were 21,700,000 consumer-units in the population and 20,900,000 producer-units. In 1938 there were 36,515,000 consumer-units and 40,460,000 producer-units; that is, consumer-units increased by 68%, while producer-units increased by 94%. In short, even if there had been no increase in output per head between 1881 and 1938, the change in the population's composition would probably have ensured an increase in the average standard of living if the number of working hours per week had remained unaltered. At least from the point of view of material well-being the composition of Britain's population in 1938 was more effective than it was two generations earlier—the number of unproductive consumers had not increased nearly as fast as had the number of producers in the prime of industrial life. We shall discuss later how far, if at all, on the basis of recent fertility and mortality rates this favourable age-composition as of 1938 is likely to be maintained in the near future.

† These differentials are based upon the Ministry of Labour's pre-war census of earnings, and upon the ratios in each age- and sex-group found to be occupied by the census of 1931; these latter ratios seem to be fairly constant—largely because for women marriage is an alternative to paid work; nuptiality rates have remained fairly constant in Britain over the past 50 years.

THE WAR PERIOD

IN World War I the standardised death rate among civilians rose slightly, while fertility fell some 30% between 1914 and 1918. So far in this war neither of these experiences has been repeated—civilian death rates have probably fallen slightly, while fertility has probably maintained its level of the immediate pre-war years.

In the five years between October 1, 1939 and September 30, 1944, the number of live births in Britain exceeded the number of deaths registered by 763,000 (total births 3,693,000, total deaths, 2,930,000).* This was an expansion in natural increase as compared with the five years immediately preceding October, 1939 (total births 3,500,000, total deaths, 2,783,000, natural increase 717,000). It was achieved in spite of the fact that the total of deaths has increased and clearly reflects an increase in fertility; this latter increase has, however, been slight. In the five pre-war years the annual average rate of births per 1,000 women aged 15-44 was 62; in the first five years of the war the rate was 65.

While at a first glance it may seem satisfactory that at least fertility has not declined in this war, a further study of the available statistics suggests that probably all that has happened is that in the past five years many young people have brought forward their marriages by two or three years and thus brought forward by an equal period the birth of their first child. It is impossible to prove this since the necessary figures have not been published but the following statistics support the argument.

In the five years 1934-1938 the number of marriages in Great Britain rose steadily and gradually from 380,000 in 1934 to 400,000 in 1938. If we take as our base the number of marriages in the twelve

* This figure does not include any Service deaths that occurred overseas.

MARRIAGES IN GREAT BRITAIN	
Mid 1938—mid 1939 ..	100
Mid 1939—mid 1940 ..	145
Mid 1940—mid 1941 ..	121
Mid 1941—mid 1942 ..	110
Mid 1942—mid 1943 ..	90
Mid 1943—mid 1944 ..	84

months ended June 1939 we obtain the index in the table on the left.

If only one in four of these 'advanced' marriages that took place between July 1939 and June 1941 instead of in later years, produced a child within three years of the marriage, then all the additional births since the spring of 1940 would be accounted for. Moreover, it is already clear that the marriage

rate is showing a compensating decline and will probably be followed by a comparable decline in the birth rate.

The suggestion that the increase in the birth rate in the fourth and fifth war years (September 1942-September 1944) is at the expense of the birth rate in 1945 and 1946 is supported by the vital statistics for England and Wales. The first impact of the war on these series was a considerable increase in the number of marriages in the 12 months containing the second half of 1939 and the first half of 1940 ; this increase, however, was not maintained and by 1943 the number of marriages had fallen below the pre-war level.

In a community where first maternities form a high proportion of all maternities (in England and Wales the proportion is over 40% of all

Period	No. of marriages in England and Wales	1938—9 = 100
July 1st, 1937—June 30th, 1938	362,700	101
July 1st, 1938—June 30th, 1939	357,300	100
July 1st, 1939—June 30th, 1940	515,700	144
July 1st, 1940—June 30th, 1941	431,100	121
July 1st, 1941—June 30th, 1942	391,400	109
July 1st, 1942—June 30th, 1943	323,500	90
July 1st, 1943—June 30th, 1944	295,800	83

maternities) there is likely to be a close parallel between changes in the number of marriages and changes in the number of births. The 1939 registrations of births indicate that of the 609,000 legitimate maternities in that year 255,000 or 42% were first maternities and that the average interval between marriage and first maternity was $2\frac{1}{4}$ years; i.e., the 255,000 first maternities of 1939 were the average products of the 360,000 marriages of 1937. If we assume that these conditions held true of the war years and that all that happened was an increase in marriages and a strictly proportionate increase in first births, then the 225,000 'war' marriages between mid-1939 and mid-1941 (945,000 actual marriages against a normal of 720,000) would, in the third and fourth years of the war, have produced an additional 160,000 first maternities; in fact the total of all births in the third and fourth war years exceeded the total in the first and second years by 150,000. So far, then, it is too early to see if there has been any real increase in fertility. This increase will only emerge if the 160,000 young women who have married 'prematurely,'* but kept the normal time-lag between marriage and first maternity, now go on, unlike their predecessors, to have second and third children.

In short, the most that can be maintained is that over the first five years of the war net reproduction rates have not fallen below the already low figure of the immediate pre-war years (approximately 0.80) and that any estimates about the future size of Britain's population which use that figure are fairly reasonable and perhaps on the optimistic side. In the light of the first returns of births, marriages and deaths for the sixth year of the war it would be equally reasonable to assume that the rate of decline in net reproduction rates recorded in the ten years before 1939 would be continued in the ten years after 1939.

* In England and Wales in 1939, 78,000 more women married than in 1938, and 54,000 of these additions were under 25 years of age.

POST-WAR PROSPECTS

IN considering any estimates relating to future population it must be remembered that these must be based on assumptions—assumptions as to future fertility rates, assumptions as to future death rates, and assumptions as to the future flow of migration. It would probably be wiser to consider such figures not as ‘estimates’ but as end-pieces to statements that start ‘If recent and current trends in fertility and mortality do not change, then in the year X Britain’s population will be such and such a figure.’ This does not mean, however, that any such estimates are unprofitable or are mere guess-work. There are certain rigid and certain reasonable limits within which the estimates can be made. For example, in Great Britain in 1937 there were 10,179,000 children under 15 years of age. Therefore, in 1947, unless there is a net inward flow of migrants, the number of people aged 10-24 in the country cannot exceed 10,179,000 and, unless the conditions of health of 1935-6-7 worsen, will not be less than 9,900,000.

In arriving at the following estimate for Great Britain at mid-1946 the following assumptions have been made : that in the years 1945-1946

ESTIMATED POPULATION OF GREAT BRITAIN, 1946					
Age-Group		Males	Females	Total	% of total
0—4	1,700,000	1,650,000	3,350,000	7·1
5—14	3,100,000	3,050,000	6,150,000	13·1
15—24	3,300,000	3,350,000	6,650,000	14·2
25—44	6,800,000	7,715,000	14,515,000	30·8
45—64	5,240,000	6,180,000	11,420,000	24·4
65 and over	2,125,000	2,790,000	4,915,000	10·4
<i>Total</i>	22,265,000	24,735,000	47,000,000	100·0

fertility is the same as between 1936-9; that civilian mortality rates remain at the 1936-9 levels; that there is neither gain nor loss from migration; and that Service deaths do not exceed 500,000 for the whole war.

These figures indicate that after the war every one of the unfavourable features of Britain's pre-war population will be accentuated—the number of young replacements will be relatively fewer and the number of people past the prime of life relatively greater. Even at the very favourable specific death rates of 1936-9, the crude death rate in 1946 will be 12.0 per 1,000 of the population, and the number of births per 1,000 women aged 15-44 will have to be 68 (a figure equal to the peak years 1943, 1944) if the annual natural increase (excess of births over deaths) is to be the same in 1946 as in 1938. It is much more likely that the annual natural increase in the years 1945, 1946 and 1947 will be 100,000 instead of the 170,000 that it was in 1938.

On the assumptions already made, the population of Great Britain will reach a peak of 47,500,000 around 1955 and then begin to decline. For all practical purposes we can regard the 1946 population as the largest Britain will have—unless there are very considerable increases in fertility, decreases in mortality and further immigration. From the point of view of the consumer-producer relationship the age-composition of the population will be at its optimum in 1946—and even considerable and immediate increases in fertility and decreases in mortality will not be able to improve this relationship for at least twenty years after 1946.

Period	Consumer-units	Producer-units	P.U's as % C.U's	1881 Relationship as 100
1881	21,707,000	20,905,000	96.5	100
1938	36,514,000	40,460,000	110.5	115
1946	37,140,000	41,475,000	111.6	116

And, finally, if we regard the women aged 25-34 as the potential on which any recovery in the population can be based, then the 1946 group is the largest we can have for at least another 30 years.

CONSEQUENCES, CAUSES & REMEDIES

TO see Britain's population problem in its right perspective it must be remembered that the present situation is the product of trends that have persisted steadily throughout the past sixty years ; that the changes in British family pattern over the past two generations have occurred in all parts of the country and in all classes, with but minor differences in speed and extent ; and that Britain's past experience and probable future are common to most urbanised and industrialised ' white ' communities throughout the world.

We have seen that between 1880 and today the fertility of British women, as expressed in gross reproduction rates, has fallen by 60% (from 2·28 to 0·90). During this period fertility has indeed been affected by prosperity and depressions, war and peace, but their effects have been merely to produce fluctuations in the general trend ; war and depression have temporarily accentuated the decline, and peace and prosperity have, within the general downward trend, made good some of the abnormal declines. Thus, during World War I fertility showed an abnormal decrease, but this was made good by the equally abnormal jump in fertility in the immediate post-war years ; again, the acute depression of the early thirties led in 1933 to the lowest fertility rates ever recorded in this country, but as employment conditions improved and delayed marriages and delayed births were made good, fertility recovered slightly. In fact, if fertility had fallen by a steady and unfaltering 15% every decade since 1880-1882, the gross reproduction rate in 1939 would have been 0·93—as compared with a recorded rate of 0·92. In short, individual wars and depressions are comparatively ephemeral disturbances as compared with the overriding revolution that has taken place in British family life.

Moreover, the revolution has by now affected all sections of the population. Such statistics as are available suggest that the fall in fertility began first among those with large incomes and has spread steadily down the income scale until now, except perhaps in the very poorest families, gross reproduction rates are below unity in every income and social group. Similarly, earlier differentials between the industrial north and the suburban south, and those between urban areas and rural areas have substantially diminished over the past thirty years. The reasons for this are obvious.

At the beginning of this century most of the great equalising communication institutions and facilities of today were non-existent—films, broadcasting, popular newspapers, motors, buses, universal literacy, widespread secondary education. With their establishment on a mass basis the same broad cultural values and patterns have developed throughout the country ; life in the suburbs of Manchester is almost indistinguishable from life in the suburbs of Birmingham. As fertility fell, it fell in every county in the country irrespective of its economic and social make up ; but whereas until 1910 the rate of decline was greatest in the prosperous southern counties, after 1910 the rate of decline increased in the hitherto lagging areas ; the following figures for the four big counties with the lowest fertility rates in 1930-32 (A),

County	Gross reproduction rates			1910—12	1930—2	1930—2
	1870—72	1910—12	1930—32	as % 1870—72	as % 1910—12	as % 1870—2
A.						
Surrey ..	2.06	1.12	.77	54	69	37
Sussex ..	2.14	1.01	.77	47	77	36
London ..	2.02	1.30	.78	64	60	39
Middlesex ..	2.10	1.29	.81	61	63	38
B.						
West Riding	2.47	1.45	.90	59	62	36
Staffs ..	2.85	1.81	1.07	63	59	38
Monmouth ..	2.70	2.07	1.14	76	55	42
Durham ..	2.98	2.08	1.28	70	61	43

and four with the highest fertility rates in that year (B), show that over the sixty years the total relative falls were practically identical.

Thus, in the period 1870-72 to 1910-12 the greatest proportionate fall in fertility was in the two middle-class counties of Surrey and Sussex ; in the period 1910-12 to 1930-32 the greatest decline was in the two working-class counties of Staffordshire and Monmouth ; all of them showed a 60% reduction by the early thirties of this century.

Finally, it must be remembered that Britain's experience, to a greater or less degree, has been that of many other countries. Over the past sixty years, wherever sufficient population figures are available to make possible estimates of fertility, there has apparently been a decline.

NET REPRODUCTION RATES		
Great Britain	1935—7	.79
France ..	1937	.87
Belgium ..	1936	.83
Sweden ..	1937	.76
Denmark ..	1939	.92
Norway ..	1938	.83
Germany ..	1938	.94
U.S.A. (whites)	1937	.96
Canada ..	1938	1.09
Australia ..	1938	.98
New Zealand	1939	1.07
Hungary ..	1938	1.00
Italy	1935—7	1.13

Throughout north-western Europe, the British Dominions and the U.S.A., net reproduction rates before the war were in most cases below unity—that is, these areas were faced with a declining and ageing population. In central and south-eastern Europe the fall in fertility while not so great was equally evident, and net reproduction rates had fallen to the level of Britain in the years immediately before the first World War.

Probably before the war the only Great Powers with net reproduction rates substantially above unity were

Russia, Japan and India ; even in these areas, however, fertility had probably fallen by about one-third from the peaks of the nineteenth century.

Some economic consequences

The more obvious and illustrative economic consequences of Britain's present and near future population problems may be grouped under

three heads—the effects on employment in particular occupations ; the effects on the national pattern of taxation ; and the effects on the long-established cycle of prosperity and depression.

Employment prospects in particular occupations

As to the first of these, the most important aspect is the changing age-composition of the population ; in 1946 the number of children under 15 years of age will be approximately 9,500,000 as compared with 10,080,000 in 1938 ; on the other hand, the number of people over 55 years will be 10,100,000 as compared with 8,690,000 in 1938. Moreover, we can be certain that for at least the next thirty years, numbers in the old group will increase (they may well reach 14,000,000 by 1970) ; and we can be fairly certain that, irrespective of future births and deaths, the number of children under 15 will not show any increase before 1950. The implications of this are clear ; employment will fall in those industries and services which look after the young—toys, sweets, children's clothes and footwear, cots and schools. At the same time employment will rise among those producing for the old, among nurses and undertakers, slipper and armchair manufacturers.

If the current trends persist, the industry most affected in the long run will be house-building and the associated trades that equip, furnish and maintain people's dwellings.

In 1931 there were approximately 11,500,000 families in Great Britain ; by 1946, if normal marriage rates are maintained, this will have grown to 13,000,000 families—that is, the number of families in the country (and therefore the demand for additional dwellings) has been growing at the average rate of 100,000 per annum over the past fifteen years. The country's new families are for the most part created by men and women in their twenties and thirties who marry. Since the number of such people is determined by the babies born twenty and thirty years ago, we can estimate that in the first few years after the war the number of families in Britain will continue to increase slightly

each year. By about 1960, however, the total of families will start to decline, and the only demand for dwellings will be in the replacement of obsolete structures ; if the Government's intention of building 400,000 houses per annum in the first ten years after the war is implemented, the building industry will be able to meet all demands on it in the succeeding 15 years by operating at half this output. On the basis of the birth rate of the past ten years, house building by 1971 will be one of the smallest trades in the country and only 20% of its 1938 size.

Changes of this type in employment in particular industries will create a special problem. In the past such shifts have occurred constantly—partly as the result of changes in industrial technique and partly as the result of changes in taste and fashion. In the past, however, the method by which the nation's labour supply adjusted itself to these disturbances was comparatively simple. In the years immediately preceding the first World War the total occupied population of Britain was roughly 18,500,000 ; each year some 400,000 boys and 275,000 girls left school and went to work. Each year these 675,000 recruits, within the limits set by geographical immobility, their parents' income and their own temperament, intelligence and knowledge, tried to enter those occupations with the best prospects and avoid those with the worst. It was, indeed, largely by the allocation of recruits, and not by the redistribution of adult workers that the major changes were effected in the personnel attached to each industry. By 1946 (irrespective of any change in school-leaving conditions), the supply of new recruits to industry will be less than it has ever been since 1881, and from that point on for at least another fifteen years these recruits will amount to a constantly declining proportion of the occupied population.

In short, we can no longer rely on the old machinery for adjusting the supply of labour between particular occupations, and the readjustments called for by the changing age composition of the consuming public will have to be met more and more by the retraining of unemployed adults.

Effects on taxation

The second field in which we can look for some obvious economic consequences is in national taxation. Throughout the 19th century, although the national budget expenditure grew steadily as the State undertook additional communal responsibilities, yet the charge per head of the population was kept in check appreciably by the rapid increase in population. Since the First World War, however, this counter check has been of diminishing importance, and, as we have seen, over the next twenty years the national revenue will be raised from a population almost constant in numbers. It would be unprofitable at this point to speculate about either the size or composition of Britain's post-war budget, but at least this can be said with certainty—even if there is no upward change in old age pensions, the amount required for this item in 1951 will be nearly 50% greater than it was in 1937 and will grow steadily for at least a further twenty years.

And it is unlikely that there will be much compensatory saving at the other end of the age-scale. A reduction of ten or fifteen per cent. in the number of school-children will not lead to any reduction in overheads ; practically the same number of schools will be open and the same expenditure on lighting, heating and maintenance will be called for. Thus, apart from any other changes, a net reproduction rate below unity will, by checking the growth in total numbers and by increasing the number of people over 65, increase the taxation burden per head.

Effects on the trade cycle

Finally, we may consider the effects of recent population trends on general employment. It seems reasonable to assume that after the war a considerable part of the British economy will still be dependent for its prosperity on world economic conditions. In so far as this is so, and in so far as Asia, Russia and Latin America are integral parts of this world economy, it will still be true that many of our industries will be producing for an expanding number of consumers and that our savers will not lack opportunities for productive investment. In short, Britain's

capacity to avoid general booms and general depressions will largely depend upon the capacity of international society to control the flow of international investment.

We saw however, even before the war, that in some degree Britain was able to insulate herself from world-wide depressions and to enjoy her own recovery. In the early thirties, for example, unemployment in Britain was never quite so widespread as in Germany and the United States, and during the middle thirties the increasing rate of investment in house building gave the country something that approximated fairly closely to stable prosperity in many parts of the country. It is therefore reasonable to consider the population problem while regarding Britain as a more or less closed economy.

It has been argued that with a constantly increasing population booms and depressions are less likely to happen. Historically, there is very little support for this view (e.g., the experience of Britain in the nineteenth century). The most that can be said is that where business men as a class are, over a long period of years, inclined to be over-optimistic and to over-estimate regularly the demand for their products, with an expanding population these errors are less likely to occur, and when they do occur are likely to be liquidated fairly quickly. It is probable that such conditions prevailed in the United States from the middle of the nineteenth century until the end of the first World War. The widespread and almost chronic optimism of the American entrepreneur during that period did not result periodically in deep and prolonged depressions, largely because he was assuming risks in a community where natural resources and human consumers were multiplied unflinchingly. Between 1851 and 1921, the population of Great Britain doubled, but in the United States it increased fourfold. Generally, we may assume that cyclical fluctuations one way or the other are not likely to be affected by changes in numbers.

A more important factor lies in the relationship between age and capital. It has been estimated that in the period 1924-1930 more than half the capital in the country was owned by persons over 55 years of

age. Since then the proportion of such people in the total population has increased steadily, and it would be reasonable to assume that after the war at least two-thirds of the nation's capital will be in the hands of people over 55 years of age, and that at least one-third will be owned by women over 55.

Two outstanding consequences are probably associated with this distribution of wealth and with the increasing length of life—a fall in the rate of interest and a growingly cautious investment policy on the part of those who save and own capital. This latter development may well lead to a less progressive use of savings and a decline in purchasing power and therefore to a basic tendency towards depressions in economic affairs. Clearly, in meeting and avoiding this state of affairs, much will depend upon how far the job of investment in capital goods is taken over from private individuals and assumed by corporate bodies (e.g., industrial banks, investment trusts, insurance companies) and by the State. One of the consequences of Britain's population problem is to make this transfer of function more necessary.

Some suggested causes

The main possible causes of the fall in fertility over the past 60 years may be

- (a) a decline in fecundity (i.e., the physiological capacity to conceive and bear children) ;
- (b) a decline in the proportion of women who are married during the child-bearing years ;
- (c) a change in social values and interests that has led more and more married people voluntarily to attempt to limit the size of their families ;
- (d) an increase in the efficiency of methods of family limitation.

Changes in fecundity

It has been argued that over the past 60 years changes in diet (e.g., the decreased intake of vitamin E) and in personal hygiene (e.g., the

greater use of soap and baths) have led to a fall in fecundity. Whether this is so or not, it is impossible to say ; no relevant experiments have been carried out, and there are no population statistics that can be accepted as confirmatory evidence. The demographic experience of Germany since 1933 suggests the contrary—that fertility can be very much influenced by a complex of economic incentives, harsher criminal legislation, unique and unexpected political success, ubiquitous State propaganda and a revolutionary social ideology. In the five years between 1933 and 1938 gross reproduction rates in Germany rose almost 40%, and net reproduction rates by 33% ; in Britain, the increase in these rates over the same period was of the order of 5%. On the whole it would be unwise to attribute the population changes we have discussed to any parallel change in human fecundity.

Changes in nuptiality

Next, has there been any change in marrying habits ? (Over the past 60 years only some 4 to 5% of all births each year are illegitimate, and we can therefore at this point ignore fertility outside marriage.) Between 1871 and 1931, nuptiality, or the proportion of married women in each of the main age groups of the reproductive period, fell slightly ; this decline, however, as the following figures show, was altogether insufficient to account for the 60% fall in fertility.

PROPORTION OF MARRIED WOMEN IN EACH AGE- GROUP			
Date	15—24 %	25—34 %	35—44 %
1871	17.8	66.5	75.0
1901	14.2	63.5	77.9
1931	13.8	64.9	74.5

Moreover, in the late 1930's and during the first years of the war, the marriage rate, especially among young women, rose considerably, so that to-day the proportion of women aged 15-44 who are married is probably as high as ever before.* What is much more striking than any change in the figures in the table on the left is the fact that a census taken

* Thus for England and Wales the proportion of married women in the age-group 15-24 was 16.6% in 1938-9, as compared with 14% in 1931, 14.4% in 1901, and 18.4% in 1871.

at almost any point in the past 70 years would have shown that 40% of the women aged 20-44 were unmarried.

In short, all the available evidence, both direct and indirect, indicates that the fall in fertility in the past two generations is the result of voluntary limitation and that the real problem of causation therefore lies in the question, "Why have parents of the twentieth century chosen this course?"

Changes in social values and interests

Judged by results the family, regarded as an institution for biological continuity, is to-day failing. We can say either that it has failed to adapt itself to the social changes of the twentieth century, or that there are still gaps in those social changes which prevent and dissuade the family from carrying out this function.

A hundred years ago most families were in many ways closed communities. Each was a self-contained and self-sufficient community as far as education, entertainment, recreation, employment, emotional and spiritual activity, health services, friendship, were concerned. To-day there is powerful outside competition in the provision of all these satisfactions; and the new providing group is inevitably something very much larger than the family and something in which the individuals participate, and must participate, after having shed, at least for the time being, their family associations and ties.

But to participate in these group activities outside the family, the adult requires freedom—freedom in terms of time and freedom in terms of money, and the presence of the children in the family at present deprives the adult of both forms of freedom. If the adult wishes to go to the pictures, to a trade union meeting, to an adult education class, to a dance, to read a book (and unless they can do these things they are missing things which are valuable and important) then he or she must be free sometimes in the evenings and at week-ends to get away from and ignore the family hearth completely. Free time from the domestic ties created by the presence of children is essential if the individual is to live a full political and social life.

The economics of parenthood

Equally, the presence of children in the family reduces the adult's economic capacity to enjoy these outside satisfactions. Every social survey carried out in this country has revealed the same pattern of connection between family prosperity and family size. When a young couple marry, at least in the working class, the man has reached, or is very near, his maximum industrial value. As long as they are childless, in normal times, an adequate standard of living can be maintained. With each child, since there is no compensatory increase in earnings, the family's standard of living falls (and not only does it fall absolutely, but what is perhaps more important, it falls in relation to the standards of those friends who have remained childless). The arrival of a third or fourth child may well bring the family below the poverty line—that is, there is not enough money in the house to provide every member of the family with sufficient food to maintain good health and normal physical development. It will almost certainly cut off the housewife, and very often the husband too, from association as spending equals with their earlier friends and acquaintances.

This condition of absolute and relative poverty persists until the children reach school-leaving age at 14 or 15, and are able to go to work to supplement the father's earnings. But by the time this has happened the young couple who have undertaken parenthood have reached early middle age, and during their most vigorous and imaginative years have "abstracted" themselves from many aspects of social life.

In the working class the presence of third and fourth or more children often means both absolute and relative poverty; in middle-class families it means relative poverty—the inability to afford holidays in the "right" places, to buy books, to send the children to the "right" schools, to buy clothes that are obviously good, and so on. In short, at all economic levels, parents of families large enough to maintain the total population find that their children have limited their economic freedom.

In many ways the social changes of the past sixty years have emphasised this latter sacrifice involved in parenthood. The new institutions

for social communication have not only made the family less self-sufficient, they have simultaneously, through secondary education, cheap transportation and other communication facilities, both increased inter-class mobility and heightened the individual's awareness of differences in class traits and interests, and his recognition of the importance of these differentials. In short, the tensions pulling against the integrity and adequacy of the family are cumulative.

Some suggested remedies

In discussing how we should face the fall in fertility and the probable decline in our numbers, all these factors must be borne in mind.

Laissez-aller

We may of course decide to do nothing at all to change the trend, but limit ourselves merely to planning production so as to cope with the consequences of an ageing and declining population with as little waste as possible. On the other hand, we may decide to attempt to check and then reverse recent trends in fertility. If this is the decision taken, three forms of policy are available—to be applied either separately or jointly. First, there is the negative and repressive prospect that we may seek to hamper the hitherto successful efforts of adults to restrict fertility ; secondly, there is the possibility of positive change, whereby parents are saved from all or part of the economic sacrifices involved in bearing children; and thirdly, the equally positive policy of effecting such further innovations in group institutions that parents will still have the time and leisure to enjoy and participate in the social changes which in an unco-ordinated way have already appeared in the past sixty years.

Before considering these last three forms of encouragement, it is worth noting that those who are prepared to adopt a *laissez-aller* policy may be hoping that to some extent part of the necessary economic adjustment can be made by adopting an aggressive immigration policy. Results from this, however, are not likely to be substantial. Firstly, the history of migration suggests that the basis of such movements is the attraction of countries with a relatively high standard of living.

Normally people do not move simply because the standard of living in their own country is low. If this remains true, Britain, in order to attract immigrants in the post-war world, will have to achieve a standard of living not only high in itself, but noticeably higher than that of other countries, particularly the Dominions and the Americas. Such a possibility is remote.

Secondly, we may well ask where will such immigrants come from ? We have already seen that in practically every industrialised white community in the world, net reproduction rates are below unity, that is, they themselves are likely to adopt competing immigration policies. The only large groups of population which, because of their fertility rates, could be regarded as sources of immigrants, are Japan, China and India ; the social problems that would result from the ' importation ' of man power from these areas into Britain are obvious and substantial.

Repressive measures

As to the other three forms of policy, there is, merely on grounds of probable effectiveness, little to be said for the purely repressive policy. Legislation and administrative action to suppress present means of family limitation will not alter the fundamental attitudes of people ; therefore, even if the repression is effective in the short run, it must sooner or later lead to the use of other methods of limiting fertility ; it may well lead either to a greater disintegration of family life, or to a reduction in nuptiality or to an increase in illegal abortion.

A comparable repressive measure, and one that has been tried on the Continent, is the limitation of the paid employment of women. The arguments against this are fourfold. It does not alter people's fundamental preferences ; it is an arbitrary restriction of the civic rights of half the population ; it deprives society of a valuable body of labour ; and finally there is no evidence to suggest that it would appreciably succeed in its purpose—the raising of fertility. As we have seen, each decade since 1881 has recorded a steady fall in fertility. During that time there has been no appreciable change (apart from war periods)

in the proportion of women aged 15 to 45 who go out to work.' In short, our problem is not that women have abandoned parenthood for jobs, but that married women, whether they go out to work or not, have preferred smaller families. A mere increase in the proportion of married women at each age-group—assuming that that would follow from the ban on paid work—would not of itself increase fertility.

Positive measures

Finally, we come to the positive forms of encouraging fertility, that is, those which recognise the changes in social environment that have taken place in the past sixty years, and which seek to 'modernise' the family by providing parents with freedom either in terms of economic resources or/and in terms of leisure.

In recent years most nations of western and northern Europe have experimented in varying degree with such possibilities. To provide parents with leisure there has been a steady expansion in the 'communalising' of child care. The Government, both central and local, has supplemented the efforts of private individuals in the provision of crèches, kindergartens, boarding schools, school meals, cheap domestic help (e.g., in Germany), and houses so constructed that both children and parents can have privacy at home. So far, however, even in countries where before the war this policy had gone furthest, the sum total of effort was slight and barely touched the mass of the population. Moreover, this policy had been in operation for at most three or four years, and it is therefore impossible to say how far it had affected or might affect fertility trends. Even if such a policy were capable of raising fertility substantially, it might well be argued that it should not be pursued too drastically. Wartime experience suggests that when very young children are separated from their mothers, their emotional and moral stability suffers considerably.

The remaining possibility that has been suggested by some is a national population policy which aims at least to relieve parents of the poverty, both absolute and relative, which to-day so frequently accompanies

parenthood. Many countries have made a start with such devices. In some the taxation system was modified so that bachelors and childless couples were penalised, and parents received tax-free allowances for children. In other countries action was more constructive. For example, either through rent rebates or building subsidies various authorities were attempting to meet part of the additional costs of occupying a dwelling large enough to contain children. In many working-class families rent frequently absorbs as much as 15 to 20% of the household income, and any relief in this direction often decides whether families in the lower income brackets and with children will be above or below the poverty line.

Child allowances

Those who seek a more ambitious policy have advocated and in some countries experimented with child allowances. The principles in all such schemes are fundamentally alike—with the arrival of a child, and as long as it remains an economic dependant, the housewife receives automatically and each week a sum of money which will cover part of the cost of rearing the child. The variations on this are many. In some schemes the allowance increases with each additional child ; in others it remains constant or even decreases. Further variety is found in the financing of the schemes. In some the total cost is borne by the general taxpayer ; in others, where the allowances are envisaged as part of a wider system of social insurance, the cost is shared by employers, employees and the general taxpayer. Again, there are possible variations in the machinery of administration ; in some cases the allowances are administered through employers and in others through the Government. What is likely to be the approximate cost of a family allowance scheme for Great Britain ?

In his recent report on Social Security, Sir William Beveridge includes children's allowances as part of his over-all plan to combat insecurity. He estimates that the total expenditure on such allowances in 1945 would be £110,000,000. The basis of this estimate is a flat

rate of 8s. per week for every child under 15 when the head of the household is in receipt of any insurance benefit (e.g., unemployment or ill-health benefit) ; when the head of the family is not drawing any such benefit, this allowance of 8s. per week will be paid for every dependent child in the family except the first.

At the same time, Sir William assumes that all the other present forms of helping in the cost of maintaining children (e.g., school meals, subsidised milk) will be maintained.

It must be remembered that Sir William's purpose in arriving at this figure was not that of raising fertility ; he merely sought to prevent that almost inevitable fall below the poverty line that occurs whenever a working-class family grows to include three or four young children and still has to live on the earnings of an ordinary adult male wage earner. Presumably something more than 8s. per week would be needed to induce parents to reverse present fertility trends and to have families of four and five without feeling that they were making sacrifices in terms of the health and economic welfare of themselves and their one or two children.

Even an allowance of 10s. per child would not go far, as the following rough breakdown of this sum suggests :—

Item	Expenditure per week
	s. d.
Food	6 0
Clothing and footwear	1 0
Extra cleaning, light, fuel, etc.	6
Extra rent	1 6
Miscellaneous—health, toys, sweets, etc.	1 0
<i>Total</i>	10 0

On this figure of 10s. per week and on the basis that it is paid to every dependent child irrespective of whether or not its father is

receiving insurance benefits, the total annual expenditure in 1946 would be, without allowing for costs of administration, £242,000,000—over a quarter of the total national budget in 1939. If, however, no allowance were normally paid for the first dependent child in each family, and there is much to be said for such exemption, the expenditure would be £140,000,000.

It has been estimated that since some 20% of women pass through the reproductive age limits without marrying, and that since a further proportion (sometimes thought to be as high as 5%) marry but are *involuntarily* sterile*, the average woman who does marry and have children should bear four children if the net reproduction rate is to remain on the right side of unity. In such families, with three out of the four children receiving allowances of 10s. per week (as long as all four were below the age of 15), the supplement to the income of the ordinary working-class family affected would be between 40 and 50%. (Before the war the weekly earnings of the average adult male were about 65s.) No scheme which has so far been in operation has paid allowances at such a high proportionate rate. It might well be therefore that the failure of all past child allowance systems to reverse the downward trend of fertility would not be repeated if Britain, as part of her population policy, were to adopt such a scale of allowances with its initial annual cost of £140,000,000. If this move were successful, i.e., if it raised fertility to unity and kept it there, the annual expenditure would then be in the neighbourhood of £180,000,000.†

The limitations of child allowances

Our earlier discussion of the causes of the decline in fertility suggests that it would be unwise to assume that child allowances, even on this

* A measure of the total voluntary and involuntary sterility in married women is provided by the vital statistics of 1939 for England and Wales. In that year 69,276 married women over the age of 44 died (that is, they had all passed through the reproductive period). Of 64,391 it was possible to record whether or not they had ever had a child; 10,054, or 15·6% (almost one in six) had been infertile. This is perhaps a surprisingly high figure when it is remembered that the bulk of these women married thirty or more years ago when birth rates were comparatively high.

† It is unlikely that the Government's present proposal of 5/- per week for each child after the first is intended as part of a policy to raise fertility.

scale, would reverse the trends of the past sixty years. In the final analysis we are faced with a deep and widespread change in attitudes towards marriage and family life. The motives behind this change are many and often conflicting. Some who limited the size of their family decided to put allegiance to a larger social group first ; others were determined not to give up any of the pleasures they had enjoyed before marriage ; some realised that their economic resources were insufficient for the proper rearing and education of more than one or two children ; others were anxious to imitate the small-family fashion set by those whom they regarded as their social betters. In the long run, therefore, any population policy, no matter how repressive legally, or how generous economically, is bound to fail unless the claims and sacrifices involved in parenthood are voluntarily accepted as part of a pattern of private values and social relations consistent with the material environment of the twentieth century.

THE FUTURE—SOME ESTIMATES

VARIOUS estimates, based on a variety of assumptions as to future fertility, mortality and migration, were made shortly before the war as to the future population of Great Britain. Almost all of them adopted assumptions that lead to the conclusion that Britain's population will reach its peak, in terms of total numbers, by the middle of the next decade, that between 1951 and 1971 the total population will decline by approximately two million, and that at the latter date the number of people over 65 years of age will constitute about one-sixth of all the people in Britain and will exceed the number of children under 15. It is impossible at this point to make any satisfactory assumptions as to war casualties, but clearly their effect will be not only to reduce total numbers but also to reduce the number of people in the prime of life and to increase the proportion of the population over 65 years of age.

Among the more widely published estimates are those prepared by the Registrars-General of England and Wales and of Scotland in 1938 and presented to the Royal Commission on the Geographical Distribution of the Industrial Population of Great Britain. The assumptions made in arriving at the results were :—

- (a) *Mortality* : a continuation of the fall in death rates that has been experienced in the last 100 years ;
- (b) *Fertility* : stability at the 1934-37 level ;
- (c) *Migration* : inward balance equal to 1·4 per 1,000 of the population in each year between 1938 and 1941, declining gradually to nil by 1951 and remaining at that point thereafter.

GREAT BRITAIN							
Age-group	Actual Pop. (000's) 1938	Forecast populations (000's)					
		1941	1951	1961	1971		
Children 0—14	10,079	9,573	9,054	8,433	7,600		
Males 15—29	5,584	5,541	4,975	4,443	4,274		
„ 30—44	5,016	5,260	5,436	5,099	4,413		
„ 45—64	4,776	4,867	5,579	6,382	6,542		
Females 15—29	5,656	5,539	4,907	4,319	4,147		
„ 30—44	5,496	5,637	5,557	5,069	4,351		
„ 45—64	5,622	5,822	6,482	6,957	6,790		
Persons 65 and over	3,979	4,326	5,511	6,490	7,863		
<i>Total</i>	46,208	46,565	47,501	47,192	45,980		
Proportion each group	%	%	%	%	%		
Children 0—14	21·8	20·5	19·1	17·9	16·5		
Males 15—29	21·1	11·9	10·5	9·4	9·3		
„ 30—44	10·9	11·3	11·4	10·8	9·6		
„ 45—64	10·3	10·5	11·7	13·5	14·2		
Females 15—29	12·2	11·9	10·3	9·2	9·0		
„ 30—44	11·9	12·1	11·7	10·7	9·5		
„ 45—64	12·2	12·5	13·7	14·7	14·8		
Persons 65 and over	8·6	9·3	11·6	13·8	17·1		
	100·0	100·0	100·0	100·0	100·0		

Another recent estimate, but this time for England and Wales and not Great Britain, was made by Mr. D. V. Glass in his book "Population Policies and Movements" (published 1940). Here again no allowance was made for war casualties, and in arriving at his 'Estimate I' Mr. Glass made the following assumptions:—

Mortality : constant at 1935 rates.

Fertility : constant at 1935 rates.

Migration : on balance, nil.

ENGLAND AND WALES

Age-group	Actual Pop. (000's) 1938	Forecast populations (000's)			
		1940	1950	1960	1970
Children 0—14	8,843	8,543	8,037	7,429	6,698
Males 15—59	12,868	12,885	12,996	12,781	11,946
Females 15—59	13,973	13,928	13,633	12,960	11,899
Persons 60 and over	5,531	5,769	6,646	7,222	8,039
<i>Total</i>	41,215	41,125	41,312	40,392	38,582
Proportion in each group	%	%	%	%	%
Children 0—14	21·5	20·7	19·4	18·4	17·4
Males 15—59	31·2	31·3	31·5	31·6	31·0
Females 15—59	33·9	33·9	33·0	32·1	30·8
Persons 60 and over	13·4	14·1	16·1	17·9	20·8
<i>Total</i>	100·0	100·0	100·0	100·0	100·0

Thus, although the two estimates are based on widely different assumptions (so that the relatively optimistic Registrars-General forecast a fall of 1·3% in population between 1941 and 1971, while Mr. Glass forecasts a fall of 6·2%) the general pictures are broadly similar. Unless the mortality, fertility and migration trends of the past sixty years alter drastically they will produce within the next decade a declining total population, and a population in which both the number and proportion of old people will be increasing substantially.

Some measure of the intractability of the problem facing those who wish to adopt a population policy that would prove these forecasts wrong can be gauged from the following figures. Disregarding the possibility of large-scale immigration to this country, they can look either to further reductions in death rates or to increases in gross reproduction rates. The figures for England and Wales show that in the

sixty to seventy years before the war the mortality rates in every age-group under 45 were cut by approximately 70% ; between the ages of 45 and 64 the reduction was approximately 50%, and even among those older than 64 mortality was reduced by about 20%. In short, they suggest very strongly that it would be unwise to look to any modification in the forecasts for the next thirty years by reducing mortality rates. Perhaps the most that can be achieved here is the ability to lengthen the lives of those over 60 years of age, and thus increase their relative weight in the population.

ENGLAND AND WALES							
Age-group	Civilian death rates per 1,000 in each age-group						1936—8 rates as % of 1861—1880 rates
	1861—1880	1881—1900	1901—1920	1921—1930	1931—1935	1936—1938	
0—4 ..	66.0	57.2	40.3	22.7	18.1	16.3	% 25
5—9 ..	7.2	4.8	3.6	2.4	2.2	1.9	26
10—14 ..	4.1	2.7	2.2	1.6	1.4	1.2	29
15—19 ..	5.9	4.0	3.2	2.6	2.3	2.0	34
20—24 ..	7.6	5.2	4.0	3.2	3.0	2.6	34
25—34 ..	9.4	7.0	5.3	3.6	3.2	2.8	30
35—44 ..	12.7	11.0	7.8	5.5	4.8	4.2	33
45—54 ..	17.6	17.0	13.4	10.0	9.4	8.9	45
55—64 ..	31.0	31.4	26.6	21.3	20.0	19.8	64
65—74 ..	63.9	65.0	57.3	50.8	49.2	48.1	75
75—84 ..	141.3	137.4	126.4	120.9	119.8	117.7	83
85 and over	302.4	277.4	257.5	260.2	257.6	264.2	87
All ages (Standardised)	20.8	18.4	14.4	10.6	9.6	9.0	43

What about fertility ? We have seen that gross reproduction rates fell precipitously in the two generations before the war ; in 1880-1882

it was (in England and Wales) 50% greater than what was required to yield a net rate of 1.00, and by 1936-7-8 it was almost 25% below what was required, at current death rates, to yield a net reproduction rate of 1.00.

Supposing that by some means or another this deficiency were eliminated and the increase maintained, how quickly would it affect the general picture given in the above forecasts? Let us take a simplified example from the past. In the five years, 1933-1937 there were in England and Wales 10,800,000 families and 9,850,000 women between the ages of 15 and 44. In the average year they produced 600,000 babies; what changes would have emerged in the 1938 population if they had increased their gross reproduction rates by 33% and produced 800,000 babies in each of these five years? * There would have been 1,000,000 more babies born, but not all of these would have survived to 1938; some 75,000 would have died and left a net addition of 925,000 children. The size and composition of the population of England and Wales in 1938 would then have been as follows:— (in 000's).

Age-group	Actual Population, 1938		Pop. with 33% increase in gross fertility		% increase in numbers
	No.	%	No.	%	
0—14	8,843	21.4	9,768	23.2	10.5
15—44	19,422	47.2	19,422	46.1	—
45—64	9,375	22.7	9,375	22.2	—
65 and over ..	3,575	8.7	3,575	8.5	—
<i>Total</i> ..	41,215	100.0	42,140	100.0	2.2

Thus, even a sudden and sustained increase in fertility large enough to restore net reproduction rates to unity and to recover half the fertility lost in the past generation would not affect materially, for some time, either the total population or the internal balance of the population.

* * No allowance is made in the following figures for any effects on mortality rates among women aged 15-44 as a result of this increase in child-bearing.

Appendix I

THE NEW BIRTH AND MARRIAGE STATISTICS

ON July 1st, 1938, the Population (Statistics) Act came into force. Its main purpose was to ensure that at every birth, legitimate or illegitimate, live or still-born, there should be registered, among other facts, the age of the mother, the interval since marriage, if it was a legitimate maternity, and the number of previous children (surviving, dead or still-born) born to the mother. The results for the second half of 1938 and for 1939 have now been published, and since they throw considerable light on the pattern of fertility in this country some of the main findings are presented here.

The following figures relate to the registrations for 1939 in England and Wales.* For the most part they deal with maternities and not live births. A maternity has been defined by the Registrar-General as 'a pregnancy which has terminated in the birth of one or more live or still-born child or children.' Thus, the total of maternities will rarely coincide with the total of live births. Some maternities produce multiple births—twins and triplets, etc.—and some maternities end in still-births. The difference between maternities and live births will, however, normally be slight. In 1939 the 636,060 maternities produced 619,352 live births, and the ratio of still-births to maternities was 1:26.

Again, the following figures usually relate to legitimate maternities ; each year in this country approximately 4⁰% of births are illegitimate†, that is, fertility is so closely related to the institution of marriage that

* Not all the registrations were complete; e.g., in 0·57% of maternities the age of the mother was not recorded. Under all heads, however, these omissions were very slight and do not affect the general picture.

† Although a much larger proportion are conceived before marriage.

in considering the problem of fertility it is more enlightening to consider it in terms of legitimate maternities.

In 1939 there were 11,464,000 women in England and Wales between the ages of 15 and 49. Of these, 6,543,000, or 57%, were married, and these married women produced 609,136 maternities—roughly one maternity for each eleven married women.

The following table gives the ages of the 632,408 mothers of legitimate and illegitimate maternities in 1939 where the age was recorded.

Age of mother at maternity	% of all maternities in each age-group	Cumulative total
Under 20 ..	4.6	4.6
20—24	22.6	27.2
25—29	32.3	59.5
30—34	23.4	82.9
35—39	12.7	95.6
40—44	4.0	99.6
45 and over ..	.4	100.0
<i>Total maternities</i>	100.0	—

Thus, almost 80% of the children registered in England and Wales in 1939 were born to mothers whose ages were between 20 and 34; child bearing, either before 20 or after 34, is comparatively unusual.

Since maternity, however, is for the most part dependent upon marriage the following shows maternity rates in terms of the number of married women in each age-group.

Thus, in 1939, of all the females aged 15-24 in England and Wales, only 16.7% of them were married; but two out of every five of these young wives had a baby; two-thirds of the women aged 25-29 were married and one in six of them had a child. Of the women aged 30-49, three-quarters were married, but only one in twenty of these wives

Age-group	Number of women		Married as % of total	Legitimate maternities per 100 married women
	Single, married and widowed	Married		
15—19	1,797,200	48,500	2·7	49·6
20—24	1,505,400	503,900	33·5	27·0
25—29	1,763,000	1,151,500	65·4	17·4
30—34	1,763,000	1,310,400	74·4	11·0
35—39	1,655,400	1,277,400	77·2	6·1
40—44	1,538,500	1,184,200	77·0	2·0
45—49	1,441,200	1,066,700	74·0	0·2
<i>Total</i> ..	11,463,700	6,542,600	57·1	9·3

had a baby. After they have reached the age of 35 relatively few English wives undertake maternity.

This suggests that in any particular year a high proportion of all maternities are either first or second maternities. In fact, in 1939, 42% of all legitimate maternities were first maternities, another 26% were second maternities, and another 13% were third maternities. There is, however, within the general body of mothers aged 15-49, a very small group of oldish women who had a confinement in 1939 and had previously had a relatively large number of maternities. The mere fact that they were older means, of course, that they spent their early married years at a time when fashions as to size of family were different from what they are today, but they might almost be regarded as a special group particularly prone to maternity. The following table classifies all 1939 maternities in terms of the number of previous children born to 1939 mothers of various ages.

Thus, of the 604,559 legitimate maternities for which full information is available, 198,975, or 33%, were those of wives under 30 years of age who were having their first child. At the other extreme, 11,009, or less than 2%, were those of wives 35 or older who were having their ninth or later maternity.

LEGITIMATE MATERNITIES, ENGLAND AND WALES, 1939

Age of mother at maternity	The number of previous children (surviving, dead and still-born) of all marriages being							
	0	1	2	3	4	5, 6, 7	8 and over	Total
Under 25 ..	106,980	37,447	10,679	2,691	591	133	11	158,532
25—29 ..	91,995	58,824	26,773	12,183	5,408	3,154	100	198,437
30—34 ..	41,647	42,392	24,667	14,294	9,023	10,581	1,282	143,886
35—39 ..	11,813	15,831	13,440	9,936	7,605	13,616	5,249	77,490
40 and over ..	1,893	2,691	3,149	3,105	2,816	6,800	5,760	26,214
<i>Total</i> ..	254,328	157,185	78,708	42,209	25,443	34,284	12,402	604,559

The general picture so far is that the 'typical' English wife and mother of the pre-war generation had her first maternity round the age of 26 ; about half of them went on to have a second maternity three or four years later, and that the vast majority of them gave up child bearing after they had reached 35 years of age.

In the following figures we have related what are apparently today the two most important elements in the English fertility scene—marriage and the first maternity.

Interval since marriage	% of all legitimate maternities	Cumulative total
Less than 1 year	15·2	15·2
1—1·9 years ..	13·6	28·8
2—2·9 „ ..	11·0	39·8
3—3·9 „ ..	9·4	49·2
4—4·9 „ ..	8·2	57·4
5—5·9 „ ..	6·7	64·1
6—6·9 „ ..	5·4	69·5
7—9·9 „ ..	12·4	81·9
10—14·9 „ ..	11·3	93·2
15 and more years	6·8	100·0
<i>Total</i> ..	100·0	—

Interval since marriage	% of all maternities of women married at least 1 year
1—1·9 years..	16·1
2—2·9 „ ..	13·0
3—4·9 „ ..	20·7
5—9·9 „ ..	28·9
10—14·9 „ ..	13·3
15 and more	8·0

Age of mother at maternity	% of all legitimate first maternities
years	
Under 20 ..	8·2
20—24 ..	33·8
25—29 ..	36·2
30—34 ..	16·4
35 and over	5·4
	<i>Total</i> 100·0

Interval since marriage	Proportion of all first legitimate maternities
0—2 months	2·4
3—5 „	9·9
6—8 „	10·6
9—11 „	12·2
1—1·9 years	26·6
2—2·9 „	14·1
3—3·9 „	8·6
4—4·9 „	5·4
5 years and more	10·2
	<i>Total</i> 100·0

The readiness to bear children apparently diminishes very rapidly after the first year or two of marriage. In 1939, 29% of all legitimate maternities were those of women who had been married less than two years, and only 18% were those of women who had been married for ten years or more.

In so far as at least half the maternities that occur in the first year of married life are pre-marital conceptions a better picture of the married woman's voluntary readiness to bear children is obtained by considering only the maternities of women who have been married at least one year.

Finally, there are the new statistics about first maternities. In 1939 these formed 42% of all maternities in England and Wales. Most of the mothers concerned were under 30 years of age and the proportion in each age-group is shewn in the accompanying table.

The average time lag between marriage and first maternity was two-and-a-quarter years, but there were very wide divergencies from this average. Over one-third occurred within less than a year of the marriage, and 10% came at least five years after the marriage.

In 1939, in 75% of cases where the maternity was completed in less than nine months from marriage, the mothers were less than 25 years of age at the time of maternity. These mothers were equivalent to over 20% of all women under 25 who married in 1938.

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