

## OUR CHANGING POPULATION

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In 1960 the Bureau of Statistics published a resumé of the growth and development of the Republic over the past 50 years.<sup>1</sup> Here one can follow, year by year, many of the changes that have been taking place in our population, such as the increase in numbers of the main racial groups, the way in which their age structure has been altering, their vital statistics, the increase in urbanization, and the gains and losses from immigration and emigration.

The current world-wide concern about the 'population explosion', as well as the growing attention which modern medicine is paying to the study of people as such, e.g. the hereditary aspects of disease, the mapping of chromosomes, the detection of enzymic abnormalities, etc., reinforce other reasons for learning as much as we can about our own population. The above provides a convenient source for examining some of the simpler facts on which such a study must be based, and it is hoped that the data which have been selected will stimulate others to consult this mine of information.

Much of the significance of these records is lost while they remain in the form of tables, so it was decided to present them graphically. They have also been brought up to date by including the results of the 1960 Census and even more recent figures, when they were available.

During the course of this work it occurred to me that valuable additional information might be obtained by consulting the records collected by the Medical Officer of Health for Johannesburg. By this means it has been possible to supplement some of the findings for the country as a whole with those for an entirely urbanized area.

The figures for successive years, and the changes which they indicate, are the numerical expression of the resultant of many forces that have been at work, moulding the society in which we live. Some of these factors are obvious, others obscure; some are most desirable, others tragic. Some are of a medical nature, e.g. the devastation caused by the influenza epidemic of 1918; others have an economic background, e.g. the depression during the early 1930s, upon which the 'great drought' was superimposed. The slow but steady effect of medical progress, including the gradual extension of medical, nursing and hospital services, as also the application of hygienic measures and improved housing, have been largely responsible for the improvement of the vital statistics. Then there are the gains and losses associated with the development of agriculture and industry—the latter leading to a rapid adoption of urban ways of life.

Let us first consider the information which covers the country as a whole.

## STATISTICS FOR WHOLE COUNTRY

*Growth of the Population*

The growth in numbers as shown by successive censuses since 1904, together with the contribution made by the 4 main racial groups are shown in Fig. 1. There are more

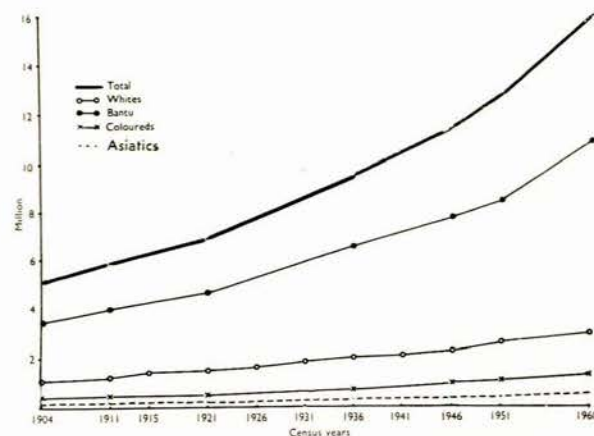


Fig. 1. Population of South Africa 1904 - 60.

records for the Whites because the law required that their numbers should be counted every 5 years. Presumably the difficulty of counting the Bantu completely must have been greater during the earlier censuses, for even now it is no easy matter. It has taken only 56 years for the total population to be trebled, with the Bantu showing by far the largest increase in numbers; that the rate of increase is accelerating for each of the racial groups is also brought out by the graph.

*Crude Birth Rates*

These have been plotted on the second graph (Fig. 2).

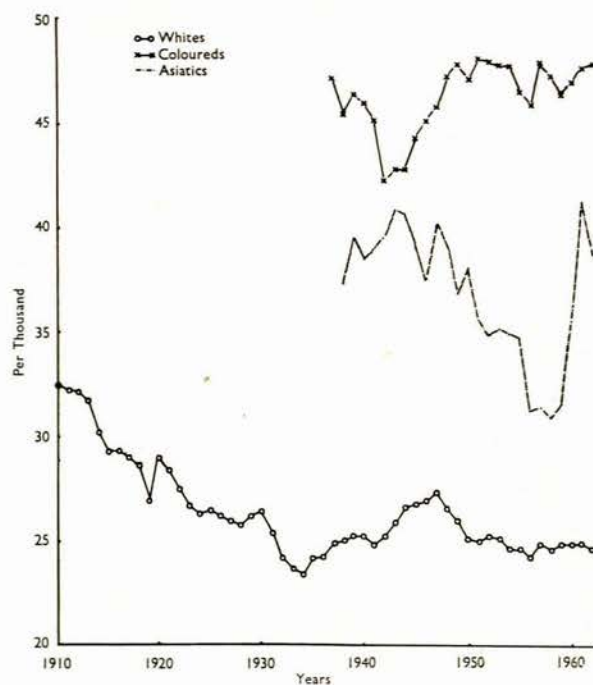


Fig. 2. Birth rates 1910 - 62.



The birth rate for Whites fell steadily from 1910 until 1934; it increased until 1947 when it began to fall to its present level, which has remained fairly stationary since about 1950. Both for the Asiatics and the Coloureds the birth rates are very much greater; in both races a marked decline has been followed by an equally marked rise.

**Crude Death Rates**

Apart from an increase around 1918 - 1920, the death rate for Whites showed no consistent change until about 1937 (Fig. 3), when a slow and not very marked decrease



Fig. 3. Death rates of South Africans 1910 - 60.

years the death rate for Asiatics has been lower than for the Whites.

**Infant Mortality Rates**

As in most Western countries the decrease in the number of White infants dying during the first year has been dramatic and almost continuous (Fig. 4).

Although at a much higher level, the rates for Asiatics have shown a similar improvement, at least until 1954. On the other hand no such improvement has occurred for Coloured infants since the sudden, drastic and puzzling decrease which occurred around 1944 - 46.

**Natural Increase**

Subtracting the death rate from the birth rate we obtain what is termed the 'rate of natural increase' for each of the 3 racial groups. These are shown in Fig. 5.



Fig. 5. Natural increase (birth rates—death rates) 1910 - 60.

began. Starting at a very much higher level, the death rates for Asiatics and Coloureds have been falling steadily. The Coloured death rate is approaching that for the Whites, but it will be noticed that over the last few

As would be expected the rate of natural increase for the Whites has remained fairly constant at about 1.7% per year. Since both the Asiatics and the Coloureds have high

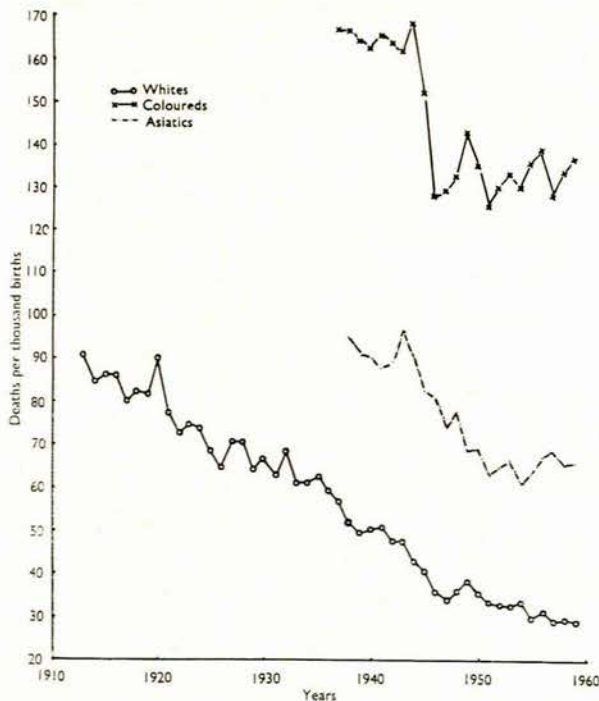


Fig. 4. Infantile mortality rates 1910 - 60.

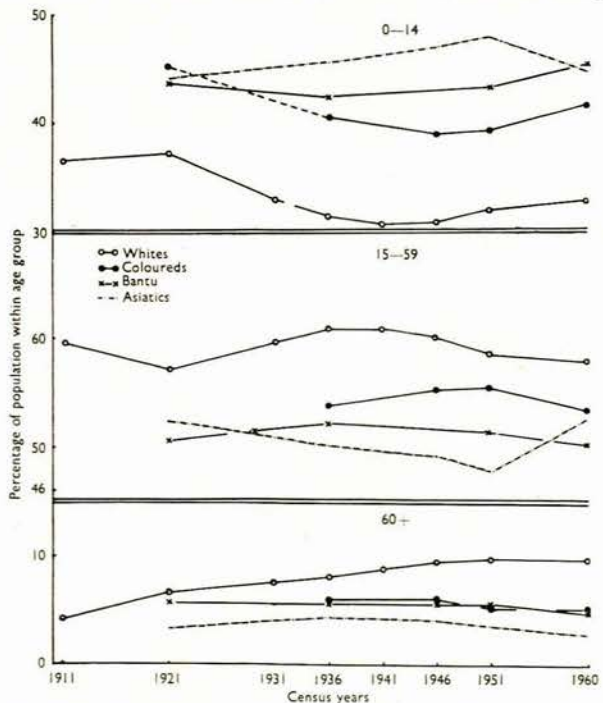


Fig. 6. Change in age distribution of population 1910 - 62.



birth rates and their death rates are declining, it is to be expected that the natural increase is far higher than that of the Whites; it is also steadily becoming greater.

#### *Influence of Sex and Age Composition*

The observed (or crude) birth or death rates of a population are obviously influenced by its sex and age composition. To obtain comparative figures it is therefore necessary to recalculate the rates to a population of standard sex and age composition (standardized rates; area comparability factor). This correction is, however, not necessary here, since we are less interested in making comparisons than in observing *what is happening* to the main racial groups. The graph in Fig. 6 has been prepared not only to indicate the marked differences in age structure that characterize our 4 main racial groups, but also the way in which they have been changing over the years. It will be immediately apparent that the non-Whites include a much larger proportion of young dependants (i.e. persons under 15 years of age) and a lower proportion of old dependants (i.e. those over 60), than the Whites. The proportion of young White dependants first declined markedly, but in more recent years has been increasing somewhat. For the Coloureds and the Bantu the proportion in this age-group has been increasing continuously, while, for the Asiatics, the very high and increasing proportion of youngsters has recently begun to decrease. On the other hand, while the proportion of elderly dependants has been steadily increasing for the Whites it has remained almost stationary for the 3 non-White racial groups.

The social and economic, as well as the demographic, implications of these changes must be numerous and important. Those interested in the way in which the White population is ageing are reminded of Glajchen's survey.<sup>2</sup>

#### *Urbanization*

Another change that is profoundly affecting our population is the extent and the speed with which all 4 racial groups are adopting an urban way of life. In Fig. 7 is

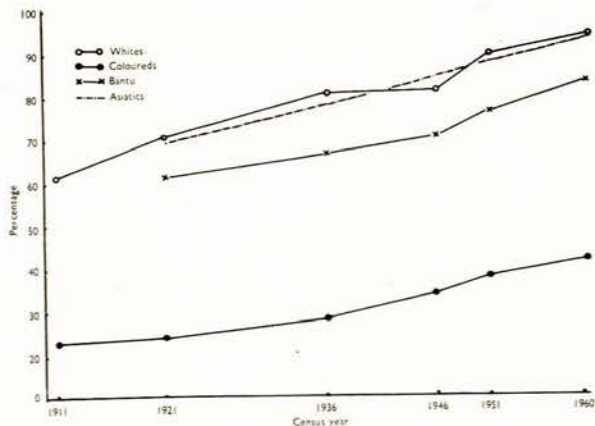


Fig. 7. Percentage of population urbanized 1910 - 60.

seen how this process has been accelerating during the last decade. The Whites and Asiatics follow an almost

identical path, with the Coloureds not far behind. Although a far lower proportion of the Bantu are town-dwellers, the rate at which this large group is becoming urbanized is impressive.

#### *Immigration and Emigration*

Finally, let us examine the changes brought about by immigration and emigration. Since the figures for non-Whites are negligible we need only consider those for Whites (Fig. 8). A gain in population is shown above the

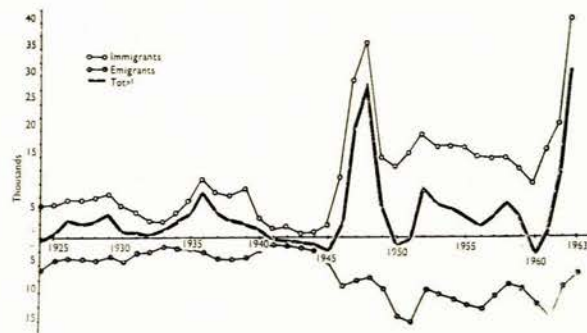


Fig. 8. Nett increase in population due to immigration less emigration (Whites only: changes in non-White population negligible).

date line, a loss below it, and the nett gain or loss is indicated by the heavy black line.

Several peaks in the immigration curve occur, the largest increase being in 1963; on several occasions, however, the considerable gains by immigration were a little more than offset by emigration.

The social, biological, technical and economic effects of this influx of new blood and new skills must be considerable, though they cannot be expressed quantitatively. However, the extent to which the White population has been increased is as yet small; thus, over the decade 1954-1963 the nett increase only amounted to 65,000, or not much over 2% of the population in 1960, while almost half of this gain in numbers occurred in 1963. If similar gains continue in the next decade the effect would soon be appreciable, particularly since these immigrants are, presumably, mostly in the younger age brackets.

#### VITAL STATISTICS FOR JOHANNESBURG

The long series of reports issued by the Medical Officers of Health for our larger cities and towns offer an alternative source of information regarding the changes that are taking place in the population. Since they only deal with an urban population, and are collected in a different way, it is not permissible to regard them as equivalent to a sub-sample of the total population. Moreover, a city such as Johannesburg has grown selectively, with a marked change in the ratio of men to women, especially among the Bantu. Again, while changes in the standard of housing, hygienic facilities and the provision of a wide range of medical services have been taking place both in the towns and rural areas, such changes have been more rapid as well as more extensive in Johannesburg.



Nevertheless such records are of considerable value, not only because in some cases they cover a longer period than those of the census, but more particularly because they include information about the Bantu which is absent from the national statistics.

**Birth Rates**

No doubt because such a high proportion of the White population is urbanized, the curve for the birth rates in Johannesburg (Fig. 9) follows the same pattern as was

curves for the Asiatics and Coloureds are again fairly similar, with both showing very high figures; both series also show that the Coloured birth rate has been increasing over the last few years. The Asiatics do not reflect the recent increase seen at the national level, in fact a decrease is recorded, but since the Asiatic population of Johannesburg is not large, these, and subsequent figures referring to this racial group, should be viewed with some reserve. For reasons to be discussed later the birth rates for the Bantu are subject to several sources of error, so that only the figures for the last few years should be accepted; even so they are complicated by the large number of women who visit the city in order to make use of our maternity services. (In this and several of the graphs that follow it was necessary, to avoid overlapping, to choose rather large units for the ordinates which exaggerate the magnitude of the changes from year to year.)

**Death Rates**

For the reason already given, the death rates for Whites follow a curve which is substantially similar to the national pattern (Fig. 10). Both for Asiatics and Coloureds there is the same dramatic decrease, which, for the Asiatics, as at the national level, has reached lower figures than have so far been attained by the Whites. The records for the Bantu are of exceptional interest since there are no national figures with which to compare them. They show the degree to which the Bantu have become

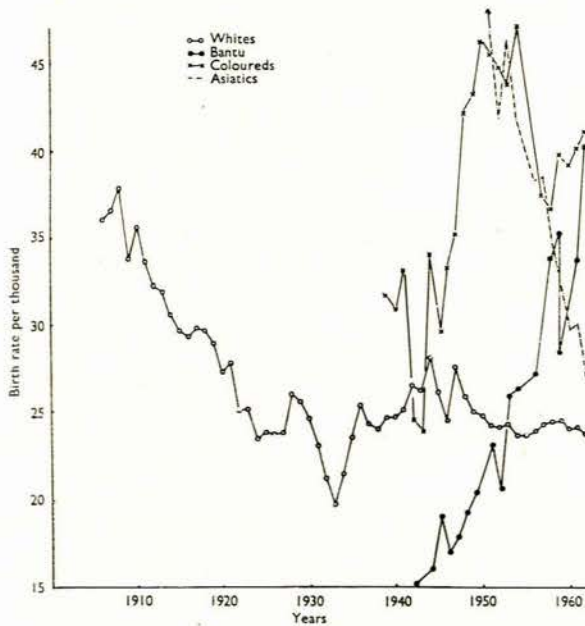


Fig. 9. Birth rates in Johannesburg municipality.

seen in the graph in Fig. 2, but attention is drawn to the high birth rates that obtained during the 6 years before Union in 1910. Both the national and Johannesburg

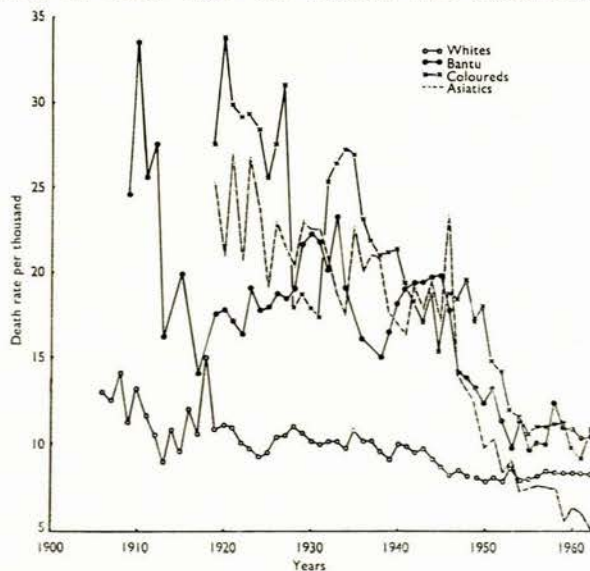


Fig. 10. Death rates in Johannesburg municipality.

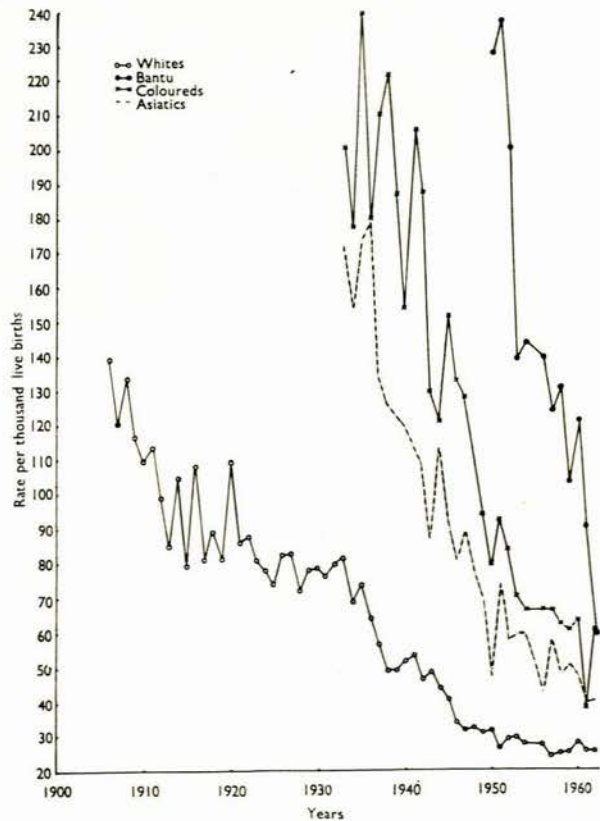


Fig. 11. Infant mortality in Johannesburg municipality.



adapted to urban life, with death rates not so dissimilar to those of the Whites, or at least to those of the Coloureds.

#### Infant Mortality

The records for Whites go back to 1906, when no less than 14% of the infants died within a year of birth (Fig. 11). Thereafter, for the reasons already mentioned, the steady improvement closely follows the national pattern. On comparing this graph in Fig. 11 with that in Fig. 4 it will be noticed that while the early improvement in the infant mortality rates for Asiatics and Coloureds has not been maintained for the country as a whole, this improvement for Johannesburg infants has been so marked that their chance of surviving their first year is now not greatly inferior to that of White infants. This improvement is particularly noticeable for the Coloureds.

For many years the returns made by our Medical Officers of Health have included estimates of the infant mortality rates for the Bantu. Until 1952, when the registration of births was made compulsory for all races, it was well known that large numbers of Bantu infants died in infancy, but it was impossible to calculate the mortality rates accurately owing to the equally well-known fact that under-registration of births was so extremely common. Since 1952, however, the registration of births has been steadily becoming more complete, while other means of checking the number of births have become available. The figures in the graph (Fig. 11) have been included to illustrate this double change; beginning at 1950 the earlier entries show the reduction due to the gradual improvement in registration, while we have been assured by the Medical Officer of Health that those for the last few years are 'real', i.e. they are not to any substantial extent influenced by under-registration. This statement agrees with the conclusions previously obtained by correspondence with the Medical Officers of Health for Pretoria and Durban. The actual figures for the 3 cities are shown in Table I.

TABLE I. INFANT MORTALITY RATES FOR BANTU IN 3 URBAN AREAS

	1958	1959	1960	1961	1962	1963
Johannesburg	133	105	123	92	61	66
Pretoria	113	117	102	112	92	84
Durban	275	277	246	167	148	107*

\*kwaMashu Township 78.

It may be objected that in each city the infant mortality rates are falsified because they include many instances where mothers have come in from the country for their confinements, or with sick children who subsequently die before they return. While these sources of error tend to offset each other, and while mothers who give outside addresses are not included in the calculations—at least in Johannesburg—they cannot be eliminated entirely. But this in no way detracts from the fact that at least in our larger cities the Bantu infant mortality rate is falling rapidly; there is evidence that it is also beginning to decline in the rural areas. Moreover it would seem likely that the steady improvement in infant care that is taking place in the cities will spread to the rural areas all

the more quickly because of such visitors. Even though only confined so far to our larger cities this decline in infant mortality represents the beginnings of a change in the vital statistics of the Bantu that will profoundly affect their rate of growth in the years to come.

The marked improvement in the vital statistics of our urban non-White population surely reflects great credit on the officials who have devised and carried out the numerous measures, including better housing, better sanitation, medical and educational services, etc., which now characterize our larger cities.

#### FUTURE POPULATION

Before concluding this superficial survey of the ways in which our population has been changing over the last half century it may not be inappropriate to consider what effect they may have on the future population of South Africa.

In 1963 Dr. L. T. Badenhorst startled a conference at Durban by suggesting that by the end of the next 60 years the population may well reach 70 million. Although he calls this 'a crude guess', such an astounding increase in such a comparatively short time, when made by one of our outstanding demographers, cannot lightly be brushed aside.

Let us therefore try to peer into the future, remembering, of course, that the further ahead we do so the less likely it is that our forecasts will prove correct. To some this may appear to be a particularly futile occupation, not only because of the many factors that may alter the current rates of growth, but also because South Africa faces a future involving so many other kinds of uncertainty. However, there are those, who, for various compelling reasons, find that they must look ahead. Plans for the future must be prepared, e.g. in agriculture, education, housing and in industry; indeed, large sums of money can be involved, which depend in part upon the number,

TABLE II. ESTIMATED POPULATION OF THE REPUBLIC DURING THE NEXT FOUR DECADES\*

Date of Census	Whites	Asiatics	Coloureds	Bantu	Total
1946				7.831	
1951	2.642	0.367	1.103	—	12.671
1960	3.088	0.477	1.509	10.928	16.003

(Expressed in millions)

From these figures the geometric annual rate of increase was calculated to be:

1946—1960				2.43
1951—1960	1.74	2.97	3.54	2.64

(Expressed per cent)

Assuming these rates of increase continue unchanged, the population during the next 4 decades would be:

1970†	3.7	0.6	2.1	13.9	20.3
1980†	4.4	0.9	3.0	17.7	25.9
1990†	5.3	1.2	4.3	22.4	33.2
2000†	6.2	1.5	6.1	28.5	42.3

(Expressed in millions)

\*As calculated by the Bureau of Statistics these rates of increase are: Whites 1.69, Asiatics 2.86, Coloureds 3.42, Bantu 2.38. Total population 2.53.

†No allowance has been made for the effect of immigration on the White population.



TABLE III. ESTIMATES OF THE POPULATION OF SOUTH AFRICA BY THE YEAR 2000\*

	Glass <sup>3</sup> (1939)	Sadie <sup>4</sup> (1950)	Badenhorst <sup>5</sup> (1950)	Tomlinson Commission <sup>6</sup>		Du Toit <sup>7</sup> (1960)	Author's estimate	Badenhorst <sup>8</sup> (1964)
				Estimate A	Estimate B			
White .. .. .	3.7	5.7	4.5	6.2	4.6	5.3	6.2	5.2
Asiatic .. .. .	—	1.1	1.4	1.1	1.4	1.1	1.5	1.2
Coloured .. .. .	—	2.6	3.1	2.6	3.9	2.9	6.1	4.0
Bantu .. .. .	—	18.9	21.4	16.3	21.4	25.7	28.5	25.9
Total .. .. .	—	28.3	30.4	26.2	31.3	35.0	42.3	36.3

\*Expressed in millions.

age and race of those who will have to be catered for. Such population forecasts have been made in the past and have to be attempted in the present; indeed, Dr. Badenhorst has been engaged on an elaborate undertaking of this kind for the National Resources Development Council.

We have only attempted the simplest form of forecast and have calculated what the population for each of the 4 main racial groups would be for the year 2000—which seems the favourite date to take—assuming that each will continue to grow at its present rate throughout the next 36 years. To do this we first calculated the geometric rate of increase for Whites, Asiatics and Coloureds, as indicated by the Census figures for 1951 and 1960. Because of the size of the Bantu population it seemed best to be more conservative and to use the longer interval between the 1946 and 1960 Censuses. The results of these calculations, when applied to the population as at 1960, is given by decades in Table II.

Since the validity of such a forecast depends upon the assumption that the annual rates of increase will continue unchanged, it is necessary to consider whether there is evidence that they are more likely to decrease or to become greater. Probably it will be agreed that the White birth and death rates have been so relatively stable for so long that only minor changes are likely to occur during the next 36 years; however, if large gains from immigration continue, the rate of increase would begin to rise.

Ignoring the relatively small contribution to the total made by the Asiatics and Coloureds, we are left with the Bantu. Here there is much room for uncertainty, not only because of their large numbers, but also because of the paucity of information regarding their vital statistics. Even a casual inspection of the graph in Fig. 9 suggests that a marked and widespread decrease in their birth rates would be required to slow down their present rate of increase; that such a change may occur is, of course, possible, but is usually a late development with more primitive peoples; moreover, such a decrease in the birth rate would have to outweigh the decrease in the death rate, including the infant mortality rate, which is usually an earlier change and which already appears to be taking place in the urban Bantu. Combining the foregoing considerations with the fact that a somewhat conservative estimate of their current rate of increase has been chosen, it seems doubtful whether our estimate of 28 million is likely to be too high.

In Table III the available forecasts made by various authorities in the past for the year 2000 have been assembled, together with the results of Dr. Badenhorst's calculations, which have only just been completed and which he has kindly allowed me to use.

Finally, in Fig. 12 an attempt has been made to combine the facts of the past with the visions of the future. In

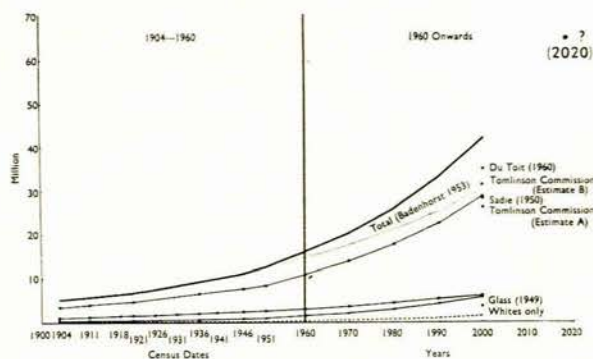


Fig. 12. Anticipated population increase by the year 2000.

general, it seems that the tendency has been to underestimate rather than over-estimate the capacity of the various racial groups to multiply.

Although the author records with gratitude the encouragement, kindly criticisms and assistance in filling up gaps in the records received from Dr. H. M. Stoker, Director of the Bureau of Statistics and his staff, from Dr. J. W. Scott Millar, Medical Officer of Health for Johannesburg, and especially from Dr. L. T. Badenhorst, he is solely responsible for the manner in which the available data have been utilized.

## REFERENCES

1. Bureau of Census and Statistics, Union of South Africa (1960): *Union Statistics for 50 Years*. Pretoria: Government Printer.
2. Glajchen, D. (1963): *S. Afr. Med. J.*, **37**, 213.
3. Glass, D. V. (1939): Quoted by Sadie, J. L. (1948): *South African Journal of Economics*, **16**, 68.
4. Sadie, J. L. (1950): *Journal of Racial Affairs*, **1**, 3.
5. Badenhorst, L. T. (1950): *Population Studies*, **4**, 15.
6. Commission for the Socio-Economic Development of the Bantu Areas within the Union of South Africa (1955): *Summary of the Report*, U.G. 61/1955.
7. Du Toit, M. S. (1960): *Farming in South Africa*, **36**, 214.
8. Badenhorst, L. T. (1964): Unpublished report to Natural Resources Development Council.