بعض خصائص سكان الكويت

د. محمد علي الغزاوي

يتناول البحث بعض الخصائص الديموغرافية لسكان الكويت، مثل معدلات المواليد ومعدلات الوفيات والزيادة الطبيعية، والهجرة. وكذلك تقسيم السكان إلى فئات بحسب السن والنوع، وقوة العمل، وحسب الحالة العلمية.


ويخلص البحث إلى عدة نتائج منها:

1. انخفاض معدلات الوفيات إلى نحو 14 في الألف في مقابل 18.1 وهو معدل البقاء في كل ألف من السكان. وهذا يراجع إلى الرعاية الصحية العالية والمستوى المعيشي المرتفع في الكويت.

2. ارتفاع معدلات المواليد، والتي تبلغ 11.5 في الألف وهي من أعلى النسب في العالم.

3. ارتفاع نسبة الزيادة الطبيعية نتيجة انخفاض معدلات الوفيات مع الحفاظ على نسبة المواليد العالية. وقد بلغت الزيادة الطبيعية لسكان الكويت في عام 1970 نحو 2.3% في السنة.


SOME ASPECTS OF KUWAIT POPULATION

Dr. M. A. El-Farra *

Introduction

Kuwait is a tiny State which lies at the head of the Arabian Gulf with an area of around 16,000 square kilometers. The land is barren and could not provide its inhabitants with a livelihood, so they turned their faces towards the sea as their sole supporter. Consequently fishing, pearl diving and seafaring were the main human activities and the backbone of the pre-oil Kuwait’s economy.

In 1934 an oil concession agreement was granted to Kuwait Oil Company (K.O.C.) through its parent companies, i.e., the British Petroleum Company (previously called the Anglo Persian Oil Company and later Anglo Iranian Company) and Gulf Kuwait Co. (a subsidiary of Gulf Exploration Co. of America).

Exploration was begun in 1935 and oil in commercial quantities was discovered in 1938 but all the operations were suspended during the Second World War, and the first Kuwaiti Oil shipment was postponed to 1946. As a result of the Iraqi oil crisis in 1951 and World demand increase, Kuwait’s oil production skyrocketed. The oil industry opened new fields of activities to Kuwaitis who were relieved of their previous arduous occupations such as pearl diving. More important still it brought Kuwait into a completely new era. Immigrants mainly from the neighbouring countries came to Kuwait to contribute to the economic boom and to take part in building a new country which was in need of their skills and efforts. To meet the requirements of the increased population, as building the country’s social overhead capital and infrastructure, there was a need for a census.

Consequently in 1957 the first census was conducted by the Department of Social Affairs (now Ministry of Social Affairs), followed by another census in 1961. These two censuses were not accurate since some population elements such as Bedouins, Iranians and other illegal immigrants escaped registration. Furthermore the enumerators recruited were not efficient enough to cope with the requirements of a census since their training was not up to the standard required, on the other hand the citizens response was very weak because, as in most developing nations, they consider such matters as an interference in their privacy. Moreover no measures, as imposing curfew, were taken to restrict the movement of population during the enumeration.

In 1965 the third census was conducted by the planning board followed in 1970 by the fourth census. These two censuses are comparatively more reliable and the results of this paper largely depend upon them.

The 1970 census revealed that, 733,196 people were living in Kuwait State, with an increase of 255 per cent in the span of thirteen years, since the first census of 1957 had been conducted, or in other words the annual percentage increase was about 19.6% which was the highest increase in the world. This increment has not occurred by natural increase only, but also by the mass migration and --- to a lesser degree --- the naturalisation laws. The increments among Kuwaitis was 264.2% while among non-Kuwaitis was 317% (See table 1.)

* Dr. Mohammad Ali El-Farra is lecturer in Geography in the University of Kuwait.
Table 1. Population of Kuwait - Censuses, 1957, 1961 and 1970

<table>
<thead>
<tr>
<th>Date of Census</th>
<th>Kuwaitis</th>
<th>Non-Kuwaitis</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Males</td>
<td>Females</td>
<td>Total</td>
</tr>
<tr>
<td>1957</td>
<td>59,154</td>
<td>54,468</td>
<td>113,622</td>
</tr>
<tr>
<td>1961</td>
<td>34,461</td>
<td>77,448</td>
<td>161,909</td>
</tr>
<tr>
<td>1965</td>
<td>112,569</td>
<td>107,490</td>
<td>220,059</td>
</tr>
</tbody>
</table>

In order to assess the population increase and its trends, we have to examine the two aspects of this increase i.e. the natural growth (through birth rate and death rate), and the net immigration. The factors influencing these aspects are of great significance in analysing the past, present and future population policy in Kuwait.

To a geographer, it is interesting to pay attention to the geographical distribution of the population, as it may shed light on the economic potentialities of the country. It is relevant also here to analyse the distribution of the population by age-group, sex, labour force and educational status.

First, we shall turn to the geographical distribution of the population in the country, then to the population growth, and last but not least population and the labour force.

The geographical Distribution of Kuwait Population

From Figure 2 we can note some important points of which are:

a) Kuwait, as a whole, is a thinly populated
country. Main land ratio (density of population) is about 45.8 people per square kilometer, if we assume that population is very equally distributed over the country. But this assumption does not exist, since most of the people are packed into a tiny part of the nation. The inhabited area is about 150 square kilometers or 1.25% of the country's area. The density of the inhabited area which is about 3,666 persons per square kilometer, is also very unequally distributed. 30% of the nation's population lives in the Capital Governorate, 37% of this ratio lives in Kuwait Old Town, while the remainder settles in the suburbs, neighbourhoods and villages of the Capital Governorate.

b) The built up area (The Greater Kuwait), which includes the Kuwait Old Town, with its connected neighbourhoods and suburbs on the one hand and Hawalli and Salmia towns with their connected suburbs on the other hand, altogether have 436,245 people or about 59.5% of the country's population.

c) About six kilometers to the south west of Kuwait town, lies the second human concentration, but it is relatively less than the populated built up area. The Core of this concentration includes the villages of Farwaniyah and Abraq-Khitan, with small satellite connected or semi connected settlements. This area has 158,617 people or about 21.5% of the State's population.

d) The third area of human concentration is Ahmadi-Fahaheel, with a population of 51,041 or about 7% of the country's population.

e) Scattered tiny settlements with a wide range of density i.e. Jahra (24,001) and Salwa and Muesala (1,573).

The population concentration in Kuwait town and its environs essentially a manifestation of the broader issue of uneven distribution of the population as a whole in the country. This unevenness obviously results from an imbalance in economic opportunities. Half of the country's employment is found in the Government which administers in the Kuwait town. The high rate of urbanisation attained in the country should, however, be considered a result of special circumstances, such as a small population base, a land prevalently arid and dominant Kuwait town.

It is worth noting that about 91% of the country's population live near the Arabian Gulf coast. The towns, villages and settlements take a linear development shape, extending from Doha in the north to Shuaiba in the south. Even the inland villages and settlements are not located far from the coast at a ten kilometer maximum. This coastal population development goes back to when Kuwait was inhabited in the early days by its pioneer people. The land was resourceless and they were attracted to the sea potentialities.

Population Growth

1. Birth Rate

The birth rate in Kuwait is 45.7 per thousand, 46 for Kuwaitites and 45.4 for non-Kuwaitis. It seems that there are some factors favouring high birth rate in Kuwait, they may be pointed out as, a) a religious conviction which has its direct effect on accelerating natural population growth. A country like Kuwait, where 94% of its population are Muslims, favours large families, and people do not like to practice what is called birth control, some of them having the idea that birth control does not reconcile with the faith. Professor Garnier observed that communities which are profoundly religious have high birth rates. In most of the Muslim countries birth rate is over 40% (Garnier 1967), birth rate is over 40% (Garnier 1967). b) Population structure: another element weighs directly and heavily on the birth rate, this is the composition of the population by age and sex (See population by age-group, and sex below). It is migration which determines the most rapid and profound variations in demographic structure; thus the displacement of male workers into Kuwait inflating the male population of the country. The encouragement of migration towards Kuwait has the opposite effect of increasing adults and often young couples, and so the birth rate is high. c) Traditional customs: There are several traditional customs which have undoubted repercussions on the birth rate, they, too are generally linked with religious beliefs or convictions.

One of the most important is the actual
concept of marriage-monogamy or polygamy. Islam admits polygamy. It is calculated that out of 111,838 marriages occur, in Kuwait up to 1965, 2,962 were polygamous, or in other words 26.5 per 1,000 marriages. Polygamous marriage has its impact on birth rate. In this connection, H.V. Muhisam conducted a survey study among the Arab Bedouins of the Negev (Southern Palestine) (Muhisam, 1956). It is interesting to reveal his conclusion here because they may be relevant to this study, insofar as most of the polygamous marriages in Kuwait occur amongst Bedouins who have more or less the same characteristics and way of life as those in the Negev.

Muhisam concluded that the fertility of women living in monogamous marriage is far higher than that observed in polygamous of the same social and cultural milieu but the total number of children born in a polygamous family (by all wives together) exceeds the total number of children born in a monogamous family.

Another most important traditional custom which also has its undeniable repercussions on the birth rate is the early marriage. The age at marriage in Kuwait is low, i.e. 55.6 per 1,000 of the girls of the age 15-19 years are married (1970 census), apart from 2.6% of all marriage cases is found among girls under 15 years of age. It is calculated that 56.3% of the marriages of 1966 occurred among girls under 15 and 15-19 age group.

2. Death Rate

The average of deaths per 1,000 population is 12.61 and the average of survivals per 1,000 population is 987.38. (See Fig. 3).

Within the different age groups the rate is 49.8% for infants under a year old, and only 0.62 in the 10-14 age groups, 1.71 for the group aged 30-34, 8.52 for the 50-54, and 60.99 for those over 70 years old. Though it is normal for the death rate to increase amongst the elderly, a particularly significant feature is the high proportion of infant mortality under a year old, especially among Kuwaitis, the rate is 71.8% for males, 53.7% for females and 63.1% for the average, the corresponding rates for non-Kuwaitis are 37.8%, 32.6 and 35.5% respectively.

The high infant mortality in Kuwait as compared with the international average rate which accounted for 37.3 (1965) may be ascribed to climatic conditions and to the economic-social class of the family.

Thus among Bedouins who live in tents in the desert and those labourers who live in shanty settlements in the outskirts of the urban areas, infant mortality is high, because of the low standard of living they practice and the lack of facilities in the houses in which they live. For an infant under one year, it is difficult to survive in a very hot climate, as in Kuwait, without air conditioning which father cannot afford.

Unlike the underdeveloped countries which have a high rate of still-births, Kuwait has an average of 15.7 for the period 1958-1966. But still-births registration in Kuwait does not exist among the Bedouins of the desert, so the rate is unreliable.

This relatively low death rate which appears to occur in Kuwait, may partly be considered abnormal by reason of the large scale immigration which has produced a considerable proportion of parents with numerous children and in addition of course the hygiene is excellent and sanitation well ordered. Thus with an improvement in education, increased medical facilities and a rise in the standard of living, death rate comes down sharply. In 1949 there were four doctors in Kuwait, in 1957 there was one doctor to 1,430 inhabitants in 1961 there was one doctor to 1,111 inhabitants, in 1966 the ratio increased to one doctor for every 1,000 inhabitants, and in 1970 to about 750.

3) The Natural Growth

Population growth is normally and primarily the result of an excess of birth over death, although the rate of increase resulting may be augmented through net immigration, as in the case of Kuwait. The natural growth in Kuwait is 3.3% per year, i.e. 4.4% for Kuwaitis and only 2.6% for non-Kuwaitis. It is important to point out in this connection that this high natural growth in Kuwait, as in most of the developing countries has been due fundamentally to the fact that while Kuwait benefited much and quickly from the adoption of death control technique, it has not experienced any change in its cultural patterns or social con-
Fig. 3 mortality per 1000 population in Kuwait (1970)
ditions which would help in restricting the growth in number or in the size of the family. The size of the family as seen in the 1965 Census of Kuwait ranges from one person to 15 and above. It seems that there is a correlation between the size of the family and the occupation of the father or the supporter, i.e., people in managerial, technical and high posts who ought to be well educated tend to have relatively small families, and so vice-versa with those in the menial and lower posts.

4. Immigration

According to 1965 and 1970 Census, the population of Kuwait is divided: 47.1% Kuwaitis and 52.9% expatriates (non-Kuwaitis). There are fewer Kuwaiti than in 1957 and 1961 when the proportion was 56.2 and 50.3 respectively.

Immigration has been high since the early 1950's due to the growth of oil production as well as revenues, and to the 1948 war in Palestine that pushed about a million of the Arabs from their homeland. Moreover, Iranians flooded the country as a result of the 1951 oil crisis in Iran which faced acute economic problems.

Table 2 shows that the great majority of those coming into Kuwait are from Arab neighbouring countries, Iran, India and Pakistan. In these neighbouring countries there are only limited employment opportunities and the prevalence of extensive under-employment, the low salaries and wages compared to those in Kuwait, coupled with political instability and war, have all stimulated immigration into Kuwait.
<table>
<thead>
<tr>
<th>Year</th>
<th>1979</th>
<th>1965</th>
<th>1961</th>
<th>1957</th>
</tr>
</thead>
<tbody>
<tr>
<td>00 %</td>
<td>00 %</td>
<td>00 %</td>
<td>00 %</td>
<td>00 %</td>
</tr>
<tr>
<td>No. of Re.</td>
<td>No. of Re.</td>
<td>No. of Re.</td>
<td>No. of Re.</td>
<td></td>
</tr>
<tr>
<td>387,298</td>
<td>18,001</td>
<td>4,65</td>
<td>4,06</td>
<td></td>
</tr>
<tr>
<td>11,091</td>
<td>10,89</td>
<td>7,28</td>
<td>8,28</td>
<td></td>
</tr>
<tr>
<td>30,42</td>
<td>10,21</td>
<td>10,28</td>
<td>8,28</td>
<td></td>
</tr>
<tr>
<td>2,721</td>
<td>8,49</td>
<td>6,28</td>
<td>5,28</td>
<td></td>
</tr>
<tr>
<td>1,106</td>
<td>2,28</td>
<td>2,28</td>
<td>2,28</td>
<td></td>
</tr>
<tr>
<td>2,538</td>
<td>2,538</td>
<td>2,538</td>
<td>2,538</td>
<td></td>
</tr>
<tr>
<td>3,14</td>
<td>3,14</td>
<td>3,14</td>
<td>3,14</td>
<td></td>
</tr>
<tr>
<td>9,69</td>
<td>9,69</td>
<td>9,69</td>
<td>9,69</td>
<td></td>
</tr>
<tr>
<td>14,712</td>
<td>14,712</td>
<td>14,712</td>
<td>14,712</td>
<td></td>
</tr>
<tr>
<td>14,712</td>
<td>14,712</td>
<td>14,712</td>
<td>14,712</td>
<td></td>
</tr>
<tr>
<td>10,12</td>
<td>10,12</td>
<td>10,12</td>
<td>10,12</td>
<td></td>
</tr>
<tr>
<td>9,990</td>
<td>9,990</td>
<td>9,990</td>
<td>9,990</td>
<td></td>
</tr>
</tbody>
</table>

**Table 2.** No. of walled population by nationality (1957 - 1979)
Population by Age Group

The 1965 Census of Kuwait reveals that 95% of the population are aged between 15 and 59 years, an increase of about 3.4% since 1957. In 1970 the ratio dropped to 54.4%. The age group under 14 years constituted 38% of the population in 1965 against 34% in 1970, an increase of 11% in the same period, while the age group 60 and above 3% (2.8 in 1970) a decrease of 6% (See Fig. 4).

The increase of the population in the years of childhood in Kuwait is ascribed to the general idea that a country with a rapidly growing population is typically 'young' that is to say, there will be a larger proportion in the lower age groups than in any country where population growth rate is stationary. Another factor which stimulates the population age group under 14 is the large number of migrants who are young adult males i.e., 46.4% of the 1965 non-Kuwaiti population are males between the age of 15 and 40. This is mainly due to the fact that many single expatriates tend to marry or bring their families from the neighbouring countries to settle with them in Kuwait, this has its effect in the increased ratio of people under 15 years old in the 1965 Census. To this may be added also, the political instability in the countries adjacent to Israel (especially Jordan) which enforced many families to join their relatives in Kuwait. (The Jordanians and Palestinians during the period 1957-65 increased from 16.3%, of all the expatriates to 31.4% and to 38.13 in 1970. See table 2).

The decrease of the 60 and above age group may be attributed to the high death rate in this group, and to the emigration of some expatriates of this group because they tend to spend their retirement in their home countries, thus they increase the ratio of unproductive people in those countries.
Fig 4 population distributions by age and sex in Kuwait (1970)
### Table 3 Population of Kuwait by Age-Group (1957, 1961, 1965 and 1971)

<table>
<thead>
<tr>
<th>Age-Group</th>
<th>1957</th>
<th>%</th>
<th>1961</th>
<th>%</th>
<th>1965</th>
<th>%</th>
<th>1970</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 14</td>
<td>27,231</td>
<td>27.0</td>
<td>101,482</td>
<td>31.0</td>
<td>177,589</td>
<td>38.0</td>
<td>316,033</td>
<td>43.1</td>
</tr>
<tr>
<td>15 - 59</td>
<td>114,785</td>
<td>55.6</td>
<td>179,486</td>
<td>55.8</td>
<td>275,579</td>
<td>59.0</td>
<td>396,612</td>
<td>54.1</td>
</tr>
<tr>
<td>60 &amp; over</td>
<td>18,778</td>
<td>9.0</td>
<td>22,906</td>
<td>7.0</td>
<td>14,171</td>
<td>3.0</td>
<td>20,551</td>
<td>2.8</td>
</tr>
<tr>
<td>Bedouins</td>
<td>15,679</td>
<td>8.4</td>
<td>17,747</td>
<td>6.2</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Total</td>
<td>206,473</td>
<td>100.0</td>
<td>321,621</td>
<td>100.0</td>
<td>467,339</td>
<td>100.0</td>
<td>733,196</td>
<td>100.0</td>
</tr>
</tbody>
</table>

A high proportion in the years of childhood and elderly people means a heavy dependency burden on the economically active members of the population. In Kuwait there are 339,957 persons under fifteen and over 60 years of age, that means there are about 84 persons of the age group 0-15 and 60 and above, for every 100 persons of 15-59 age group. In Switzerland, U.K. and Austria, there are fewer than 50 dependents per 100 persons in the productive ages (Hauser and Runcan, 1966).

Naturally Kuwait obtained this relatively high ratio of 15-59 age group by immigration, but this ratio may fall down if the Government imposes restrictions on immigration (provided that the natural growth is still high). In this case the situation in Kuwait may change. It is obvious that when in one country the number of people in the working age group is larger than in another, there is a favourable ratio of producers to consumers in the former. In the latter, savings are to be lower not only because the number of producers is relatively smaller, but also because the smaller productive group has to satisfy its own consumption needs and those or its dependents before it can put by anything for purposes of investments.

The above mentioned conception that considered persons below the age of 15 and above 60 unproductive cannot be regarded as better than first approximation, however. In Kuwait as in most parts of the world, participation in the labour force begins before the age of 15 and continues beyond the age of 60. According to calculations based on the 1965 Census, it was that 13.3% of the male age group 12 - 14 were employed, and 42.9% for the age group 60 and above.

**Population by sex**

In 1957 about 80% of the non-Kuwaiti population were males. This ratio had decreased to 73%, 70.2% and to 62.5 in 1961, 1965 and 1970 respectively. The nation's ratio of females per 1000 males in 1965 was 662.954 for Kuwaitis and only 423 for Non-Kuwaitis while in 1970 it was 725.2, 981.5 and 599.7 respectively. Thus Kuwaiti population tends to be predominantly males, because the migrants who are mainly males, either not yet married or tend to leave their wives behind with other family members, returning frequently to their countries and making periodic remittances.

The increase of females during the 1957 - 1970 period was higher than that in males; it was 325% for the former and 215% for the latter. While the corresponding overall of the country for males and females was 2.55. This high female increase occurred as a result of marriages taking place among single expatriates, as well as others bringing their families from their country of origin to settle with them in Kuwait.

**Population and Labour Force**

The working age class among the Kuwaitis represents 158,096 or 53.8 of the indigenous population. In other words, 64 of the total Kuwaiti population was either under 15 or over 60 years of age. This contrasts with the non-Kuwaiti portion, where 69% of the males fell into the working age category in 1970. Among the female non-Kuwaitis 51% likewise were included in the 15 - 19 category, making the share of potential workers 62% of total non-Kuwaitis, compared with 46% for the Kuwaitis, thus labour force is predominantly non-Kuwaiti.

Apart from grouping by age, the composition of the labour force shows that the ratio of employment to population is higher among non-Kuwaitis than among Kuwaitis. Non-Kuwaiti workers, numbering 170,896 from about 71% of the non-Kuwaiti population in the 15 - 59 age group. The number of Kuwaiti workers was 56,635 or about 36.6% of the working age group. This disparity can be explained in part by the fact that the non-Kuwaitis come to the country especially for work and are required to find employment in order to remain, while the bulk of the indigenous population is no longer in need of work as they have other source of income, or they are in the schooling age.

As for the distribution of the population by economic sectors, one finds that services represent the largest single sector, with over 82,500 employed, largely by the Government. The Kuwaitis are relatively well represented here (25,519) or about 63% of Kuwaiti workers, as compared with largest number of work-
ers of any of the economic activities, reaching in 1965 almost 29,000. Construction is also distinguished by its near-saturation by non-Kuwaitis: only 1,264 Kuwaitis are involved in this area. Commerce, in which about one quarter are Kuwaitis ranks third, followed by manufacturing and transport. Agriculture ranks last as a sectorial provider of employment.

The most striking fact in this connection is that although oil is the leading sector in contribution to the gross domestic product (61% of GDP), and is responsible not only for the bulk of governmental revenues but of export earnings, it is practically the least important sector in employment. Oil is a heavily capital-intensive industry made more efficient through concentration and compactness in a small geographical area, thereby easing exploration, gathering, and movement of crude oil. Much of the labour needed is moreover, unskilled, and anyhow the employment in oil industry accounted for only 3.8% of the country's labour force.

Population by Education

The building up of an effective labour force depends, to some extent, on education, its quality and quantity. During the last decade the educational changes that have occurred in Kuwait have, perhaps, been more pronounced than any other field. These successful educational changes brought down the illiteracy in Kuwait to 26% in 1970.

Illiteracy is relatively high among Kuwaiti females and low among non-Kuwaiti females. This phenomenon may be attributed to the relatively high rate of non-Kuwaiti females who come to the country to work especially in educational, medical and nursery fields.

Compared to the neighbouring Arab countries, Kuwait thus maintained a high literacy rate which was 18% in Iraq (1960), 32% in Jordan (1960) and 35% in Syria (1960).

During 1957-70 the increase of education was appreciable. the percentages of increase among those who received primary, secondary and university degrees were 2,588,858 and 956 respectively. In 1970 there were 107 per 1,000 persons who received primary degrees, the corresponding figures for secondary and university degrees were 51 and 20 respectively, for Kuwaitis the rates were 121.21 and 4. This means that the country benefited from the migrants who had already received their secondary and university degrees.

Conclusion.

Since the discovery and production of oil in Kuwait, the country has witnessed an unmatched population upsurge. In the fifties great mass migrations flooded the country—most of them were labourers, artisans, as well as, a high rate of professionals as teachers, physicians, engineers and architects who were badly needed to meet the requirements of the country's infrastructure and social overhead capital.

In the sixties Kuwaiti economy was distinguished by reaching a relatively mature level. Consequently the country tended to insist on letting in professional immigrants, i.e., skilled labourers, senior teachers, consultants, and other specialists who were needed in diversification of the heavily oil dependent economy.

The implications and ramifications of Kuwait's population policy stems from the high natural growth and the insecurity of the expatriates. The high natural population growth will eventually level off due to the education programmes undertaken in the country, while the non-Kuwaiti 53% floating population might remain the serious problem facing Kuwait. In such a situation Kuwait might have two alternatives, i.e., either to assimilate and integrate the non-Kuwaiti segment or to naturalize some of them and induce others to return to their home countries, as well as, imposing restrictions on immigrants. The choice between these two alternatives depends on the Government decisions, and on the prospects of the Kuwait oil economy which could finally determine the size of the population growth and the opportunities for those aliens.

Acknowledgement

The author wishes to thank his colleagues Mr. Ahmad Hassan and Mr. Jamal ed-Deen Hamid who kindly helped in drawing the maps and figures of this paper.

References
3 - Muhaim, H.V., 1956 Fertility of Polygamous