FERTILITY AND FECUNDITY

Pages with reference to book, From 297 To 299

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Every individual, each organism, grows, matures and ultimately dies.
Survival, the fight against extinction demands that the organism reproduce itself. A fertility rate of 2.1 is needed to maintain a steady population. To maintain an equilibrium, one individual needs to be replaced by one offspring and this is what the legendary phoenix did. However, such a situation necessitates a sexual or hermaphroditic reproduction or parthenogenesis , none of which would encourage the evolution of stronger strains or elimination of weaker noxious genes.
To allow a continuous evulution of variants and elimination of the unsuitable, nature fosters the dual phenomenon of sexual reproduction and survival of the fittest. Whilst in the animal world the fittest usually means the strongest, in an intellectual world there is a fear that the supremacy of manipulative intellectual strengths may overshadow muscular supremacy and hence encourage development of a brain dependent physically weak generation: a fear expressed in many a science fiction story. Survival and fitness are ensured by cross fertilization-nature insists that even hermaphroditic platyhelminths mate with other worms and some annelids have testis and ovaries in alternate segments.
Closed communities practicing repeated intermarriages over generations have transgressed this vital principle. As with inbreeding in animals there is an increase in the homozygosity of favourable and unfavourable genes with resultant expression of congenital defects and a decline of fertility.

FECUNDITY

Life began in the sea and sexual reproduction in its earliest form was effected by a chance meeting in the male and female sex cells both being released into (what was for them) an embient saline liquid environment. This laid the ground rules for sexual reproduction. Produce an excess of sex cells. “Be fecund”; for only in profusion of fecundity could one ensure chance fertility. The oyster is a classical example
of the tremendous capacity for producing sex cells-an immense fecundity. But its methods of reproduction disseminate the products of its fecundity over such a large cubic volume that its fertility, its ‘capacity to produce live offspring is relatively insignificant.
The migration to land eliminated the medium for the ova to float in and the sperm to swim in. Plants overcame this with the receptive ova held high off the ground in wait for the pollen which would be wafted across by the breeze or later brought by insect life. One fluid medium-saline, was exchanged for another -air. But sperms are not as resistant as pollen and animals cannot afford to have their sperm floating around for ever: hence the necessity for copulation.
With direct methods of introducing sperm into the vagina, and consequent diminished need for sperm one would expect a reduction in the production of sperm. The rate of sperm production continues far in excess of need and like the oyster, the human male remains relative to fertility very fecund. The number of children produced per father has for centuries been maximally around 12 and has in recent years declined. This trend is seen selectively in the highly industrialised nations and in the more sophisticated intellectuals of under-developed nations.
Yet,, each ml of sperm contains well over 40 million sperm. Normal semen was expected in the 1 960s to contain 60-120 million sperm per ml. In the 1 970s, 40-100 million sperm. More recently Meleod has studied the semen of 1000 fertile males and noted that many couples had a count as low as 20 million per ml. Those with counts below 20 million appeared to be subfertile. The lowering of the limit for ‘normal’ semen values appear to suggest a lowering of fecundity levels but may simply represent a better understanding of infertility.
Perhaps the lowered fecundity is due to nuclear fission, natures sardonic paradox : for fissile means

fertile. Television and high tension cables all add to ionizing radiation. What will a nuclear holocast do?

UNCHECKED FERTILITY

In many countries, the 2 parents limit their offspring to 1, and many parents delay their 1st child to beyond the years of maximal fertility. Having reached that age they run from pillar to post to contrive to concieve. This would decimate the human population were such practices universal. Aheady Sweden, France, Holland and Germany are lamenting the lack of children. But there are still areas where fertility is high.

And in such areas unchecked fertility could be the death of man. Like dinosaurs we may chew our way through forests of food just as we today desertify large tracts of land by chopping off large shade providing mud-holding-rooted trees making way for our own extinction.

Governments, cultures and people have at various times thought of ingenious ways to restrict fertility and population growth. Infanticide was practiced in Europe till the 19th century even though Gregory, Emperor of Rome had condemned it in the 4th century: but it was used mainly for unwanted children. The Chinese practiced selective infanticide of female children. The Australian aborigines incised the undersurface of the penis of boys during their pubertal rites. Japanese men marry late or not at all. In Singapore it is extremely difficult to find schooling or benefits for more than 2 children. China is hatcheting itself by half by limiting children to one per family.

Governments used inducements (Transistor radios, Rs. 25/-) to entice people to practice contraception and I have had to reanastomose vasa in young men from other countries. Times have changed. Not too long ago governments utilised the. large population of the lower classes as fodder for enemy cannon, in times of war, wave upon wave of soldiers could be sent out.

Perhaps the government need not worry. What they desire, population planning and limitation may be automatically achieved as Pakistan steps rapidly up the economic ladder. Increasing socioeconomic status and industrialisation lead to a reduction of fertility or at least the size of the family. An agricultural economy needs a large number of sons to man farms. Consequently, the parents keep trying till the requisite complement of Sons (with their associated daughters) are born. The requirements of a developed society are different. Note the trend in USA. In 1800, 10% of the population was urban. At that time the birth rate was 55. In 1910 it was 30 and dropped to 1 5 in 1973. Within developed societies, dependent upon electronic goods, stress is laid on time available to spend with other members of the society in group activities, in activities where personal position may triumph, in ever so small a way: in activities which the individual may feel are more rewarding in their cascade effect on other members of the social group (Figure).

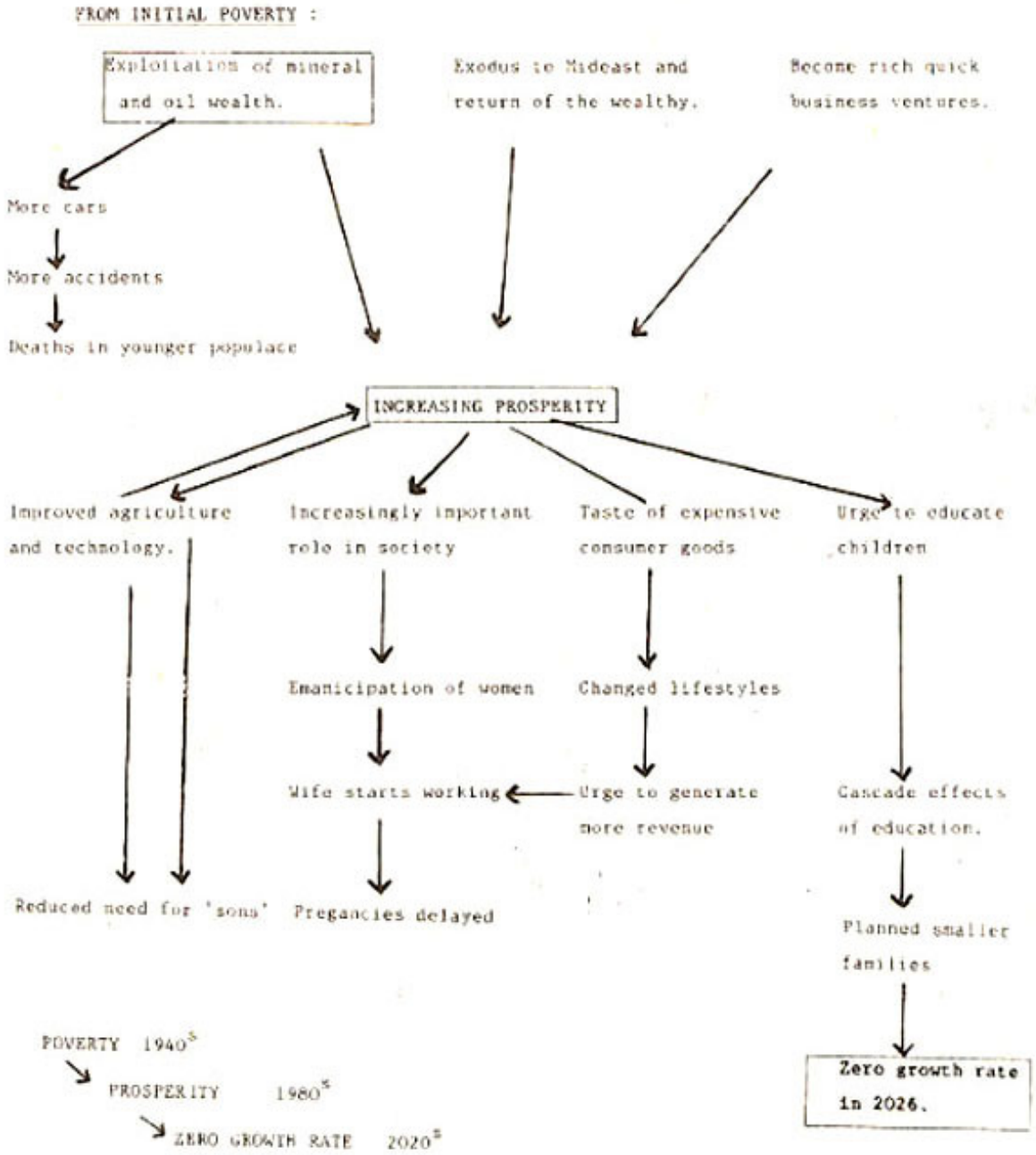

Figure. Possible evolution of fertility patterns for Pakistan.

The quest of keeping up with the Malik's and the lust for latest laser or electronic equipment result in the deduction that nothing can be done without adequate money, and the mother joins the father in a money rewarded occupation; again postponing child birth. That women who work away from home have a smaller family is abundantly documented. Further more the realisation that few children can be looked after better, that children of smaller families have a better chance for intellectual development, as also the realisation that limitation of size makes it easier to advance living standards results in smaller families. In urban populations in Pakistan, socioeconomic status and income are clearly related to the number of children*

RAIN LAND AND FERTILITY

Fertility has always held an important place in man's thinking. Subconsciously, he has known that the survival of his race depends on his capacity to produce offsprings; and food from the earth. The fertility

of the ground, the fertility of kings, of people and kingdoms have often been inter-linked in man's mind, specially the concept of human fertility and fertility of the earth. Rice and grain is still sprinkled on the head of a marrying couple, in some communities, to promote fertility. In Ireland upto the middle ages, the new king sacrificed a horse, bathed in its broth, and partook of it to ensure his fertility and that of his kingdom.

Ancient ritualistic dances enacted the male aggressive role whilst the female was made to represent fertility. The cult of Balim and Baalot compared man's fertility with rain which nourished the land and made it fertile and temple dances were part of the ritual to make rain.

Osiris, Egyptian god of fertility lived in the water of the life giving Nile-whilst Seth, the God of violent aggression resided in the desert and remained sterile.

STORED FERTILITY

The Queen Bee stores sperm obtained in her single nuptial flight. Man has reached in the 1950s, after prolonged experimentation, the ability to store sperm at-79° and later at -196° in liquid nitrogen. Sperm can now be stored from a fertile youth about to be exposed to irradiation and then utilised to inseminate his wife at various intervals. Has man achieved by "technological revolution" that which the Queen Bee has done for generations?