ery, malnutrition, limited somatic functional and mental development even for future generations. This is not compatible with the aim of helping the poor to get out of the vicious cycle of poverty.

The "model" from the industrially developed countries has too many imperfections and is not universally acceptable. The definition of the exact characteristics and the range of standards for the human organism are under continuous debate. What is sure, however, is that the marginal status of low body size and stunting which exists among the poor in the developing countries does not hold any prospect whatever of eventual liberation of the poor from the cycle of poverty, undernutrition and low productivity into which they are currently trapped. This situation is clearly not acceptable.

The achievement of an optimal level of one's genetic potential is the basic human right of everybody in our planet and not just of the 'selected' few. Inequality starts with using different criteria for different peoples. While low body size of the unfortunate poor of the developing countries may be unavoidable at the moment, this situation should not be viewed and welcomed as a satisfactory solution of their painful problems of poverty and undernutrition. All human efforts ought to be devoted to the task of helping the poor of the world to break out of the vicious cycle of poverty. This task should be the concern not only of the developing countries but of the developed countries as well.

The Gopalan Oration on "Evolutionary March of Indian Agriculture – catching up with 2000 A.D." was delivered by Dr. H.K. Jain, Director Indian Agricultural Research Institute on October 7, 1983 in New Delhi on the occasion of the Annual Meeting of the Nutrition Society of India.

Dr. Shanti Ghosh delivered the Kamala Puri Sabharwal Lecture at the Lady Irwin College, New Delhi on December 16, 1983. The subject was "Action Programme for Improving Child Nutrition."

The most crucial segment of our population from the point of view of the "quality" of our future generation are today's young girls who are just on the threshold of marriage and motherhood. These girls are our future homemakers. Their attainments and competence will be the major determinants of the health and nutrition of children of the next generation.

It is precisely also this segment of our population that has been sadly neglected in all our developmental and educational programmes. There has been no organised attempt to prepare and equip this vital segment for the momentous and challenging tasks that await them. An overwhelming majority of our rural girls in most parts of the country are illiterate. A good percentage never enter school. Of those who enter, a high proportion drop out well before reaching the 5th standard. Thus, a great majority of our girls reach their adolescence mostly as illiterates or semi-literates with no skills and no practical knowledge which could prepare them for their future roles. This is the situation which serves to perpetuate poverty, undernutrition and underdevelopment.

The outreach of our health services in rural areas is at present very low. But what is disconcerting is that even the meagre health services available are not effectively utilised. The mothers are neither aware of these facilities nor do they understand their utility and significance. Immunisation programmes and environmental sanitation programmes do not make headway because there is no public demand. Such demand can only come from those who understand the value of these programmes. The high drop-out rates from schools is also related to the illiteracy of the mothers who, themselves not having had the benefit of schooling, cannot understand the value of education.

It must now be clear that under the present socio-economic conditions, the answer to female illiteracy is not just the opening of more primary schools. Our rural girls are "married off" at young ages, sometimes at as low ages as 12 to 14 years; because, unlike boys who can earn through manual work outside their homes, girls are considered an economic liability to the poor families; and there are of course other cultural and social reasons for early marriage as well.

Our family planning programmes have not made the impressive dent that we were anxiously looking for in spite of vast investments. The reason for this is that the major part of the programme which rests mostly on promotion of contraceptive technology and terminal methods, is addressed to women in their thirties and beyond. On the other hand, 50 per cent of all births in the country are accounted for by births in women less than 25 years of age and 75 per cent in women less than 30 years of age (figure). Thus, the major part of our family planning effort is mainly addressed to just a mere 25 per cent of the problem. It is clear that an important item in the family planning strategy must be the raising of the age of girls at marriage and ensuring the spacing of births, right from the time of marriage. We have, of course, a legislation fixing the minimum age of marriage. But the legislation will continue to remain just on paper unless we address the socio-economic factors underlying early marriage. This is what this proposal attempts to do.

A major reason for the under-development of our society is the poor status accorded to our women. Their lack of special skills for employment and their lack of education reduce them to a subordinate role in the family and the society. Thus, half of our population, composed of women, is reduced to a state of servitude. They have no effective say in planning their families, in the schooling of their children or in deploying the available family resources for better nutrition of their families. Apart from engaging in some unskilled manual operations, they are not equipped to offer any useful advice or guidance to their menfolk who themselves are mostly illiterate and who stand in need of such advice.

Since they are wholly unaware of their legitimate rights as citizens, our rural women and their families are easy prey. They are exploited by the more privileged
sections and by “middle men”. They meekly accept wages, much lower than the prescribed minimum. Education imparts some degree of self-confidence and strength even to the economically weak. Our women are now totally denied that self-confidence.

The proposal presented here represents a new strategy to bring about a socio-economic transformation of our poor rural communities through an imaginative programme of education and training addressed to our girls and young women. It is a programme which seeks to develop a new generation of educated, emancipated and enlightened young women who, in their turn, will be able to contribute to the improvement of the quality of life of the families which they will be rearing.

This programme must be looked upon as an essential requisite and indeed as an integral part of other major welfare programmes, because the section of the population to which this programme is addressed, holds the real key to the success of our programmes in the field of health care, nutrition, family planning, child development and rural development. It will thus reinforce existing programmes and not duplicate them.

This also appears to be the only strategy which will make a significant impact and bring about a quality-change in the rural scene before the turn of the century. “Health For All By 2000 A.D.”, now a mere slogan, will become a reality; the family planning programme will get an immense boost. Therefore, the scheme suggested here deserves the highest priority.

**The Proposal**

Special Schools of Arts and Crafts may be set up in villages for “education for better living” and vocational training, exclusively for girls between the ages of 12 and 20 years living in rural areas. All girls including those who have not had Primary School Education and who are currently illiterate will be eligible for admission.

“Education for better living”: The girls will be given practical (not theoretical) education in the following:

- Personal hygiene and environmental sanitation;
- Nutrition – the value of different local foods and the types of nutritious recipes that can be fashioned out of them, preparation of inexpensive balanced diets out of foods available in the village;
- New agricultural technology for increased food production, effective and economic use of fertilisers, safe and timely use of pesticides;
- Simple post-harvest technology for avoidance of food waste during storage, techniques for preservation and storage of perishable foods;
- Simple agro-based industrial technology;
- Sex education and family-planning;
- Care in pregnancy and lactation;
- Care of the new-born and infant feeding and rearing;
- Child-care and development;
- Home nursing and first-aid;
- Available health care facilities and how they could be used;
- Immunisation, care of diarrhoeas (oral rehydration) and diseases of children, simple remedies for common ailments;
- Importance of education of children, and legal rights of women and citizens, and their obligations.

This course, which could also be termed as “Home Science for Rural Girls” will extend to 2 years. The girls will spend half day on each of six working days of the week in their school, during this period. This will leave them free for half the day to help their parents.

All this instruction must be imparted through audio visual aids and not through books and written material, since most of these girls will be illiterates.

It will be appropriate to link these schools as “extension units” of our Agricultural Universities; indeed the programme we are suggesting is squarely within the purview of the objectives of our Agricultural Universities. These schools will render far greater practical service to our rural areas and poor agricultural families, and indeed to the country as a whole, than the present Home Science Colleges which largely cater to the needs of the urban elite and which are not affiliated to these Universities. It may be a good arrangement to ask each of these Home Science Colleges to adopt the “Rural Home Science Schools” which we are envisaging in this project, and to provide them additional inputs for this purpose.

The training of the instructors, who must be women, is extremely important. The Agricultural Universities with their Home Science Colleges, and the National Council of Educational Research and Training, may join hands in training the teachers, providing them an instruction manual, and in developing the appropriate audio-visual aids. The Central Health Education Bureau can also assist.

(In course of time when the extension of T.V. to rural areas becomes a possibility, T.V. could become a powerful, and effective medium for this purpose. Programmes for expansion of T.V. system, and colour T.V. can be better justified if their major objective is to serve an educational programme of the kind proposed here)

**Vocational Training:** The girls will also receive training in simple crafts. The craft(s) chosen for a school must obviously be appropriate to the location, the appropriateness being determined by tradition, local acceptability, and marketability of the product manufactured. A wide range of crafts may be considered such as rope-knotting, basket-weaving, mirror-work, doll-making, tailoring, handloom, bee-keeping, silk-worm farming, cane and bamboo craft, embroidery, knitting, wooden handicrafts, ceramics and pottery, preparation of 'processed' foods (jam, jellies, pickles), etc. The inputs needed for each craft, and therefore for
each school, must be decided separately. All this will involve a great deal of micro-level planning on the one hand, and also a great deal of overall coordination on the other.

The Government has already with them considerable information in this regard and considerable work in this area has been done and a great deal of experience is already available. Offices such as that of the Development Commissioner for Small Scale Industries, and organisations such as the All-India Handloom Board, the All-India Handicrafts Board, the Khadi and Village Industries Commission, the Coir Board, the Central Silk Board, and the Educational and Vocational Guidance Unit of the NCERT and the Corresponding State-level organisations could be brought together in a Coordination Board which can help in the organisation of vocational training and in the recruitment and training of instructors (who must be women). The experience gained by such organisations as SEWA and Lijjar Papad etc., must also be utilised for this purpose. The entire vocational training programme must be backed up by necessary management and marketing expertise of the highest order available. This is an essential requirement for the success of the programme. An organisation for the purpose of monitoring the programme in the school and for marketing the products manufactured must be set up jointly by the Central and the State Governments with the co-operation of the local Panchayats.

The Vocational Training will run concurrently with the “educational part” of the programme (“education for better living”). The girls will spend half their time in school every day in vocational training and the other half in the “educational programme”. The vocational training will also last for 2 years.

At the end of the 2 years training-cum-education programme, the girls will work in the schools for a further period of 3 years being engaged in the Arts and Crafts for which they had earlier undergone training. They will produce goods for the school which will be marketed through the appropriate organisation.

Incentives

Each girl will receive during her 5 years period in school the following:

- A cash payment of Rs.25/- per mensem which will be considered as a monthly stipend for education and training during the first 2 years and as the monthly wage for goods produced in the next 3 years.
- 15 Kg. of foodgrains per mensem.
- Delayed marriage bonus: Interest-bearing bonds of Rs.50/- per month for five years which could be cashed only at the end of 5 years or after the girl attains 20 years of age. If the marriage takes place before the five-year period or before the girl attains 20 years of age, the bonds will not be negotiable.

The programme could also cover girls below the age of 20 years who are already married. Such girls will receive the incentives 1 and 2 mentioned above; however, instead of the “delayed marriage bonus” for unmarried girls, these girls will get “a delayed maternity bonus” in the form of interest-bearing bonds of Rs.50/- per mensem for 3 years. These bonds will be cashable only in case the birth of the first child does not take place before the girl attains her 21st year of age.

Some Practical Considerations

It is estimated that in a village with a population of 1,000, there may be about 100 girls between the ages of 12 and 20 years. After initial hesitancy, if the programme is conducted with real dedication and competence, we may hope that a good proportion of these girls, if not all of them, will willingly join the schools. No compulsion is envisaged.

Each year a fresh crop of girls in the village will have entered the 12 year age group and will qualify for admission; after the initial period of 5 years, batches of girls will also be leaving the school every year after completion of the 5 years. The total number of girls in a school for a population of 1,000 is thus not likely to exceed 100.

Each school will have 2 instructors – one for vocational training and the other for “Home-Science education”. The students could be divided into two batches of 50 each for Vocational Training and Home Science class respectively; the batches could cross over at the interval; this arrangement will ensure that the instructor will not handle more than 40 or 50 students at a given time.

The school can in fact serve a much larger population than 1,000, because (a) not all girls between 12 and 20 years will enrol themselves and (b) since the total duration of instruction for a batch will not exceed 3 hours in a day two shifts will be possible, and thus one school can serve 200 pupils.

Accommodation for the school and free residential accommodation for the instructors and other local facilities must be provided by the local panchayat. In fact, the Gram Panchayat, the Gram Sewak Mandals, Mahila Mandals and Co-operative Societies in the village must be brought into the programme which they must consider as their own and not one being imposed on them from above. The entire programme must be explained in advance to the village leaders and to the villagers themselves so that their willing participation is ensured. If the people are taken for granted and if there is no genuine consultation, the programme will languish, like most welfare programmes imposed from the top.

The annual expenditure in running 1,000 schools of this type for the training of nearly 2 lakh girls covering a total population of 2 million will be around Rs. 30 crores. This does not take into account the value generated by the goods produced.

The programme will generate several spin-off benefits. Thus, for example, instead of one Community Health Volunteer or Anganwadi Worker for a village, we will, in effect, be creating several such workers so that practically each home will have a trained health worker of its own. We may even eventually be able to disband the CHVs and Anganwadi Workers. Supplementary feeding programmes may become increasingly unnecessary. We would have created a climate favourable for the acceptance of the family planning programme in the villages. We would have provided a solution for the high drop-out rates from schools. The programme may also provide an answer to the dowry menace. It will help ensure the economic emancipation of women and the raising of their status. We would, in short, have contributed to all-round development of our rural areas in a manner which we will not be able to do with any other single programme. The budget must be judged in the light of all these potential benefits.

It will be unrealistic to expect miracles from this programme. Raising the age of girls at marriage, because of many cultural and economic factors and traditions, is a formidable undertaking and will call for considerable patience and tact. But then the programme does not aim at just this objective alone. It is addressed to a much larger objective of raising the quality of life of our rural masses.

The proposal contained in this paper was presented by the author in broad outline in his inaugural address at the annual session of the Indian Association for the Study of Population in New Delhi in January, 1983. In finalising the details of the proposal the author has borrowed some of the suggestions of Mr. G.V. Ramakrishna, currently Chief Secretary, Andhra Pradesh, especially with regard to incentives.
The Tamil Nadu Nutrition Projects

There are currently two major nutrition projects in operation in Tamil Nadu — the Chief Minister’s Nutritious Meal Programme for children, and the World Bank aided Nutrition Project. These two projects cover several thousands of children and involve huge financial and man-power investments.

While both projects are aimed at improving the nutritional status of poor children, the strategies employed for this purpose, in the two projects, are totally different. The central plank of the Chief Minister’s Programme is the provision of a nutritious noon meal to all poor children in the concerned age groups, no attempt being made to identify and select beneficiaries. The World Bank Project, on the other hand, seeks to identify and select beneficiaries for nutrition supplementation; only those children currently suffering from “severe” undernutrition qualify.

Arguments in favour of both these strategies can be advanced. The basis of the strategy underlying the Chief Minister’s Programme is that all children drawn from very poor communities with uniformly low income levels are currently undernourished, though the degree of such undernutrition at any given point of time may vary from one child to another. So all these poor children stand in need of nutritional care, and ‘selections’ on the basis of current degree of undernutrition among them may be invidious, and perhaps also scientifically unjustifiable since, in any case, current procedures for ‘grading’ undernutrition are wholly arbitrary. Furthermore in a field operation among poor families, it will be unrealistic to provide nutrition supplement to one child in the family (which “qualifies”) and withhold it from another (which does not qualify).

The strategy of the World Bank aided project is based on the ground that nutrition supplements are expensive and therefore should be used selectively and sparingly only in situations of dire need where undernutrition is so severe as to threaten the very survival of the child. The nutritional status of other less severely undernourished children should be improved through nutrition education directed to improving family diets through better use of available family resources. With given resources this strategy may permit of wider coverage and will also facilitate the eventual phasing-out of nutritive supplementation.

It would thus appear that the central thrust of the Chief Minister’s Programme is directed to improvement of child nutrition; that of the World Bank Project to better “child survival”. This is not to deny that the World Bank Project also seeks to improve child nutrition through an integrated programme of education and health care. It is, however, doubtful whether, in actual practice, in the context of acute poverty, nutritional status of children can be improved significantly through a programme of nutrition education alone in the absence of increased income generation. For this reason, it may be legitimately expected that the only immediate measurable impact of the World Bank aided Project would be better child survival. In the Chief Minister’s Programme, if the noon-meal supplement does not significantly reduce the level of intake of the habitual home diet, improvement in the nutritional status of the children may be expected especially because a nutritious meal is being provided practically all round the year.

The fact that two such massive programmes involving different strategies are in operation in the same State, provides an excellent opportunity for assessing the relative merits of these two approaches. It will be most unfortunate if this opportunity is lost. We understand that both these projects have been subjected to “internal evaluation” — that is, evaluation by those actually involved in the formulation and implementation of these programmes. We have no reason whatever to doubt the competence and the experience of those who had reportedly conducted these internal evaluations. It will, however, be most useful for the sponsors to obtain the benefit of an objective, independent, “external” evaluation as well. We may add that when we speak of external evaluation, we are certainly not suggesting evaluation by a foreign agency, but evaluation by nationals or national agencies not directly connected with the implementation of the projects. Such external evaluation may provide new insights, and generate new messages, which may prove most useful not only to these programmes but to future nutrition programmes among poor communities.

Evaluation even if strictly objective and critical must be constructive, the object being to ensure that the basic objectives of the programme are realised. If this consideration is recognised by both the sponsors and those undertaking this evaluation, reluctance to permit and promote external evaluation of these programmes may disappear. The programmes will greatly benefit from such external evaluation and gain considerable credibility.

We earnestly urge the Tamil Nadu Government and the World Bank to welcome and encourage such objective external evaluation of these programmes. We feel that this is all the more necessary because we gather that negotiations are under way for a further extension of the World Bank aided Nutrition Project. It is desirable that external evaluation precedes such extension.

Prevention of “nutritional blindness”

According to official estimates, 30,000 cases of keratomalacia are being reported from hospitals in this country every year. Since hospitals currently cover only 15 per cent of our population and since the system of maintenance of records is wholly unsatisfactory in many hospitals, this figure may be considered to be an underestimate.

The National Institute of Nutrition had developed and promoted several years ago a simple programme for the prevention of keratomalacia through six-monthly administration of a teaspoonful of vitamin A concentrate (2,00,000 I.U.) to children under 3 years of age. This programme has been included in the Plan and is currently in operation. The success of this programme, however, depends on the regular supplies of vitamin A to our health centres.

We understand that this programme was seriously disrupted in the first half of 1983 because of non-availability of vitamin A concentrate. It is gathered that the multimational firm which used to supply vitamine A concentrate for this programme failed to do so, for whatever reason. Fortunately the Government stepped in to import vitamin A concentrate and thus, after temporary disruption, the programme could be resumed.

This experience should highlight the danger of our dependence on a foreign source for a vital programme affecting the health and nutrition of our children. We understand that arrangements for indigenous production of vitamin A are under way. This effort must be given high priority so that our vitamin A deficiency control programme is no longer at the mercy of a single multinational firm.

The Foundation gratefully acknowledges the matching grant being provided by UNICEF to meet the cost of producing this publication.