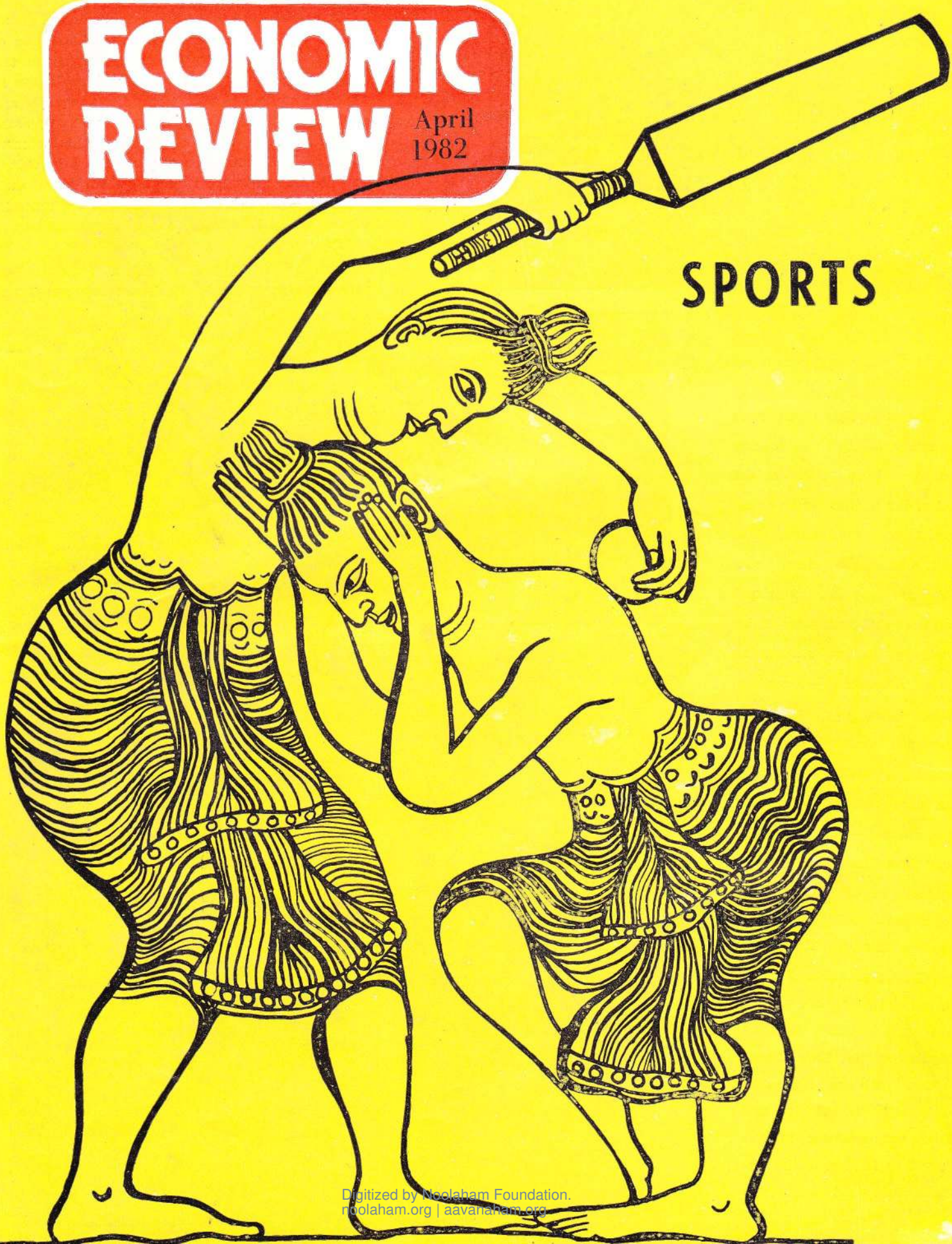
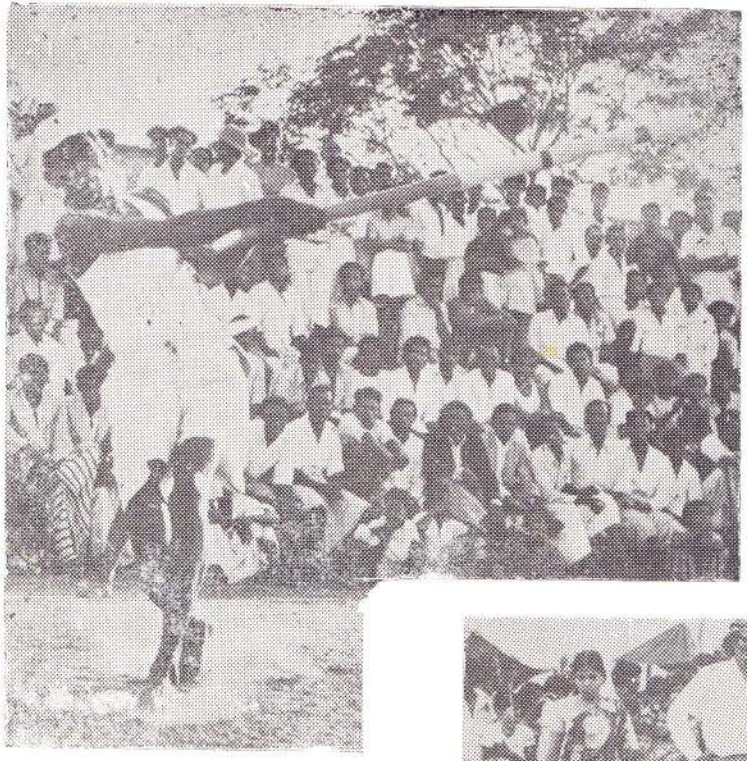
ECONOMIC REVIEW

April 1982

SPORTS

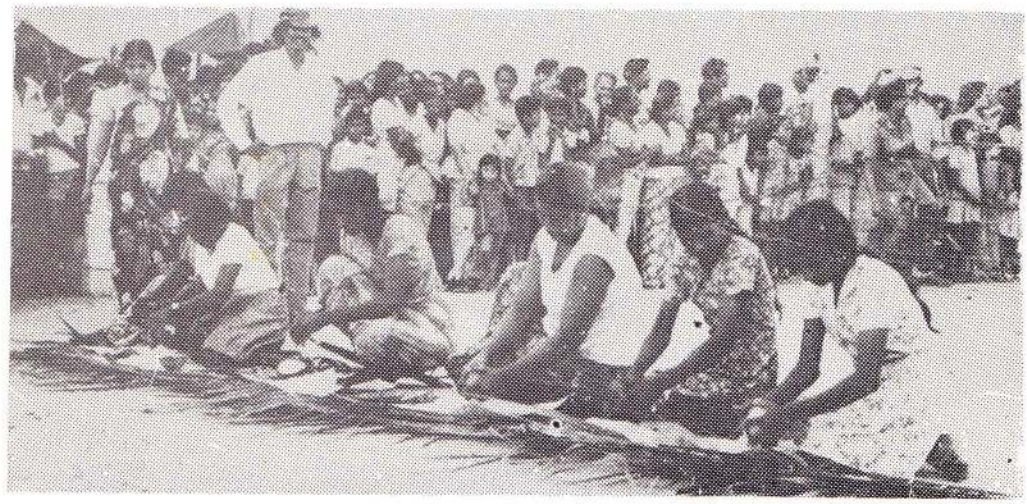


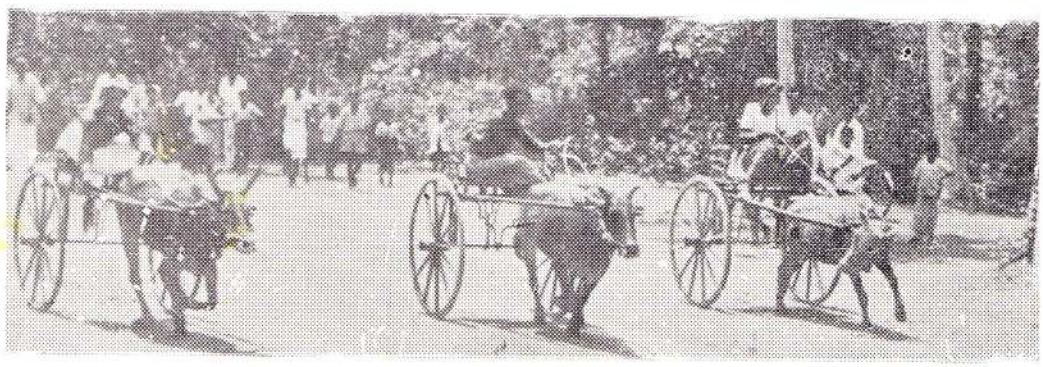


POPULAR SPORTS AND GAMES IN SRI LANKA

Sri Lanka too has had its share of sports and games as in many other ancient civilizations. The evolution of sports in Sri Lankan society has resulted today in two types of activity — the once popular national sports as was played or enjoyed by wide sections of the people and connected in some way with national traditions, social habits, pastimes, amusements and games; and the more recently introduced games, generally associated by today's mass media with "Sports", many of which have their origins in the hitherto coloniser's lands and are generally centred around the "clubhouse" and all its associations of "club life".

The sporting activity and recreation illustrated on this page, however, belong to the former category. Games in ancient society were more commonly indulged in during periods of leisure either at the end of the harvest season or on special festive occasions. On such occasions contests were common, sometimes associated with work and occupations of the people as the two pictures at centre illustrate — contests among women weaving coconut leaves and carter's racing their backeries. At bottom is a contest in a more modern version of popular travel — the cycle race. In all three instances there is a distinct emphasis on a high level of participation as well as spectator interest. The other game illustrated above is "elle" regarded as the only one of local origin among todays officially recognised sports'. Here too, as in other activities illustrated, participation is simple and popular and spectator interest greater than in most of the modern "sports".





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THE ECONOMIC REVIEW is intended to promote knowledge of and interest in the economy and economic development process by a many sided presentation of views & reportage, facts and debate.

THE ECONOMIC REVIEW is a community service project of the People's Bank. Its contents, however, are the result of editorial considerations only and do not necessarily reflect Bank policies or the official viewpoint. Signed feature articles also are the personal views of the authors and do not represent the institutions to which they are attached. Similar contributions as well as comments and viewpoints are welcome.

THE ECONOMIC REVIEW is published monthly and is available both on subscription and on direct sale.

NEXT ISSUE

- Tobacco: Economy of tobacco smoking in the Sri Lankan context
- Foreign Currency Banking in Sri Lanka
- Japan dominates trade in imports
- Energy planning and management in Sri Lanka
- Educational opportunities in science education

COVER ARTIST

S. H. Sarath

Diary of Events

Feb.

20 The I.M.F. approved a $88 million loan to assist Bangladesh hard hit by a decline in the market value of its major exports due to lower prices for new jute and jute products which accounts for almost 70 percent of the country's total exports.

21 Sweden will grant India $58 million for building a forestry project in Southern India under an agreement signed in Delhi between officials of the two countries, stated a Reuter report.

22 The continuing entry of more banks in the international market is resulting in more competition and less profits for multi-national banks, two prominent bankers told a conference of international bankers in Manila. They told the conference international banking had become so risky that few could sustain any expansion and that the International market is overbanked and is generating declining returns.

The Investment Protection agreement between Sri Lanka and Switzerland which was negotiated and signed last year, came into force by an exchange of notes between the two governments, stated a Foreign Ministry announcement.

25 The President inaugurated the Sri Lanka Rupavahini (Television) service in Colombo.

26 Signs of a slowdown in the Swiss economy are growing. Credit Suisse said in its latest economic report. It noted that for the first time in two years the number of vacancies is lower than the number of unemployed. A growing number of companies is having to introduce short time working; although Switzerland's unemployment rate of 0.4 percent at end of January is still the lowest in the world.

27 The Government decided to award a tender for Rs. 38.4 million to the Sumitomo Corporation of Japan for rock blasting and deepway construction in the Galle harbour.

A memorandum of understanding between the Australian government and Sri Lanka was signed by Finance Minister Ronnie de Mel for an Australian grant of Rs. 300 million to help in the development of zones one and five of systems B of the accelerated Mahaweli Development Scheme.

World Bank President Tom Clausen said in Washington that reduction in aid this year by the United States and the industrial countries had dealt a blow to the neediest nations of the world. As a result the IDA which makes interest free loans to poor countries will be able to lend only $2.6 billion this year instead of the $4.1 billion dollars it was counting on.

28 The price of rubber fell to its lowest level in four years before recovering slightly in later trading. Prices have been declining since February 1980 due to a world-wide fall in demand resulting from the effects of recession. Rubber sold in advance on the London Market for delivery between October and December dropped to 53.6 pence a kilo its lowest since April 1978; and was at its peak in February 1980 when rubber sold for just under one pound sterling a kilo.

Mar.

19 The Reserve Bank of India announced a downward revision of the rupee by 0.058 percent in relation to the pound sterling.

23 Gold fell to its lowest level in two and a half years but stock markets moved higher, boosted by the fall in U.S. money supply and prospects of easier interest rates, according to Reuter reports. Gold was fixed at $364.25 dollars an ounce in London up fractionally on the previous day's $64 the lowest since September 1979. In Zurich it recovered to $64.50 dollars after falling to a low of $62.50.

Delegates from 44 developing countries began discussions in New Delhi on co-operation among themselves and aligning their positions to negotiate with the rich 'North' to transfer resources to poor countries.

24 The Government approved a proposal of the Minister of Finance for 12,680,000 dinnars from the Kuwait Fund for Arab Economic Development for construction and other works of the System C of the Mahaweli Development Project.

The President of the ADB said in Manila that a bid by the Bank to raise $4.1 billion in fresh funds to lend interest free to the poorest nations of the region over five years had become unrealistic due to poor response from the US, stated a Reuter report.

India's Finance Ministry's annual survey presented to the Parliament in advance of the National Budget reveals that its balance of payments position will remain under pressure over the next few years and the government will have to raise commercial loans to meet payments deficits. Also, India's trade gap in the current year, ending in March would amount to about Rs. 58 billion ($8.28 billion) against last years Rs. 67.60 billion rupees ($8.39 billion).

25 Shipping recorded the smallest increase in 48 years last year, according to the latest Lloyds Register. There was a sharp rise in bulk carrier tonnage but fall in oil tankerage. Liberia remained the biggest flag carrier with 74.9 million tonnes, Greece moved to second place with 42.0 million tonnes and Japan was third with 40.8 million tonnes.

26 The EEC accepted a hard fought international Textile Trade Pact that attempted to impose curbs on imports from the Third World countries, stated a report from Brussels. The British Secretary of State and Industry said the Ministers agreed to ratify the new multifibre arrangement (MFA) and gave the EEC Executive Commission the go-ahead to start negotiations with 25 individual Third World textile suppliers on the level of their sales to the community.

27 The World Bank and its affiliate the IDA have approved aid totalling $306 million to India and Sri Lanka for agriculture and power projects. A Reuter report from Washington stated the Bank would give $80 million IDA credit to Sri Lanka to assist the construction of an electricity transmission line to serve the Colombo area.

"Modern" sports in this country came into is own in 1948 when Sri Lankan athlete, Duncan White, came close so winning "Gold" at the Olympic Games and later won "Gold" at the Commonwealth Games White's feats over the hurdles were a major achievements for Sri Lanka in the sphere of international sports. Not till Edhirweera Singham Rosa and Wimaladasa won gold medals at the Asian Games did Sri Lankan again achieve such international recognition. (See page 8). The only other major achievements in international sports was M. J. M. Lafeer's world's billiards title in 1978.

SPORTS

Organised sport has gained much prominence in Sri Lanka in recent months. There are many interpretations to this trend but one provocative viewpoint is that it is overshadowing some of the more urgent problems facing the country at this juncture. Games, like many other socio-cultural facets in the lives of peoples have always been an essential part of the communal life in our society. Today, however, games and particularly organised sports, have been propelled into a position of priority well beyond those of all other aspects of cultural life. The situation is taken very seriously by some decision makers at various levels and certain sections of the population and was summed up strongly (Daily News' March 10, 1982) by a prominent politician at Nattandiya who is public occasion 'We are deeply in- reported to have told the people on a public occasion 'We are deeply involved in the international arena of politics and sport".

There is no doubt that the traditional games in Sri Lanka, which were an essential part of the cultural life and leisure time activity of ancient communities, were gradually relegated to obscurity while those introduced by the colonial rulers in more modern times were given full patronage by the administrations of the day. The end result was that by the mid-twentieth century with the entrenchment of western concepts and values in many facets of local life, what came to be regarded as Sports were the organised 'ball' and 'racket' games, 'combative' contests, 'athletic' games and 'indoor' sports as practised widely in Western societies.

What is Sports?

There is no internationally recognised definition of the word 'sport'. The result is that many kinds of human activities "with specific administrative organisation, the historical background of rules or customs which define the objective and limit the pattern of human behaviour" and involving "challenge and definite outcome determined by physical skill" are all considered sport. The mind-body problem has received the attention of philosophers of ancient India, China, Greece etc. More recently considerable attention to various scientific aspects of the phenomenon of sports has been receiving the attention of academicians not only in departments of physical education, but also in departments of philosophy or cultural studies, sociology, psychology, economics, medicine etc. of various institutions of higher learning. However, one has to accept the fact that there are few words in the English language which have such a multiplicity of divergent meanings as the word "sport". A glance through the sports pages of the daily newspapers indicates clearly the variety of activities which are now covered by this word.

The origin of games can be traced as far back as the beginning of man's development as a social being, particularly his interaction and relations with other individuals and groups. His behaviour was influenced by his own particular civilisation and culture and so too were his leisure habits, recreation and play.

Games had many functions though among the most important were: to keep under control or rid participants of their animal spirits and excess emotions by playing rough and strenuous physical contact games; to excite admiration and give pleasure to players and others by demonstrating skills (particularly in display games); to offer an emo-

emotional outlet to large numbers of people through spectator sports, compensating for the lack of opportunity for all to take part and satisfying the enjoyment of people in being part of the crowd at such occasions; to help in defeating boredom; the social function of bringing men and women together and promoting human contact; and enabling people to keep fit; and common to many of these factors the intern spirit of competition among individual participants and spectators alike. The primitive forms of sports among men can be traced back to neolithic and palaeolithic times and these formsdeveloped through the ages until about 3,350 years ago; when in the ancient world the Olympic Games were organised at Olympia in Greece. The indications are that apart from the traditional indoor and community contests in ancient oriental societies, throwing, running, jumping and swimming were the first sports activities to be developed and later organized into competitive forms in the early classless societies in various parts of the world until slavery developed in India, China, Egypt, Babylon, Crete, Persia, Greece and Rome.

Class Character of Physical Culture and Sports in the Slave Holding States

Sports was not for the slaves. It was for the free citizens! During this stage a class-character in sport became evident and games and sports festivals were organised showing that a high level of social development had been reached. Further proof is to be found in bathing systems, medical-gymnastics, techniques and methods of physical exercise and the development of sports and recreation such as dances, archery, fencing, wrestling, fist-fights, swimming, foot-ball, golf, polo and badminton. These sports however, were not for the masses though their origins can be traced to the classless societies of the oriental states. (See box).

Management of Sports in Sri Lanka

Many of the traditional sports coming down from ancient times, had fallen into neglect over the centuries of colonial occupation, and in the period of the British colonisation western "modern", sports were introduced into Sri Lanka. It is these games such as cricket, rugby, hockey or football which are associated most with sports today, particularly by the media. Voluntary Sports Associations were established to develop these games and, under the auspices of the colonial rulers they took a firm hold over influential sections of the population. These sections were essentially from among the affluent classes who owed their positions to the rulers. Some of the

THE ORIGINAL SPORTS AND GAMES

INDIA

India has evidently had sports and games developed in its long history of physical exercise and physical culture. The Maha Bharatha and Ramayana speak of hunting sports and games used for the preparation of the youth for warfare. Multi-lateral education obtained at the time of the Buddha. Prince Siddhartha won the hand of Princess Yasodhara having won a sports contest, Mass-sports festivals had been organised in India many centuries before Christ. At that time riding and horse racing had been common. Prince Siddhartha rode away from his palace on horse back in the first stage of his renunciation. Yoga had been developed in India ages ago for harmonic physical and mental growth. This cohesive development of the mind and the body was a feature of the systems obtaining in the Far Eastern countries, i.e. India, China, etc. as against the one sided physical preparation in European and middle eastern civilizations of old.

JAPAN

The old Japanese sports were Sumo-wrestling, Kendo-fencing (originally with sharp implements and later with sticks) Judo, Kyodo (Ju-Jutsu), Archery and Sui-ei (swimming). Badminton and Foot-ball (different forms of play as against the modern) and horse-riding had also been popular.

SRI LANKA

Sri Lanka, too had its share of sports similar to those in other ancient civilisations, but with closer orientation to those practiced in the Far East. These consisted of acrobatics, jumping, wrestling, fighting on horse back, archery, fencing, etc. These traditional sports (see box on page 6) have been replaced by modern sports introduced by the colonial rulers.

EGYPT

In Egypt there was a highly developed systematic physical-culture from very early times, even before Greek and Roman civilisations, comprising of gymnastics, light and heavy athletics, fighting sports such as wrestling, boxing, fencing with sticks, water-sports, including rowing, archery, and chariot races. Their gymnastics had practically all the forms and exercises found in modern gymnastic programmes

CRETE

Crete being a hilly country the favourite sport had been hunting on foot and they were famous for archery and throwing. Boxing, wrestling, fist-fighting, horse racing and dancing were popular. They had also games in which bulls were used — jumping off the back of galloping bulls, off them from the side, etc.

BABYLON— (Iraq and Syria)

The fertile lands of Babylon had been subjected to many invasions and warfare. It became necessary for its people therefore to be highly physically prepared for defence with the result that physical training and sports were oriented in that direction. Wrestling, fist-fighting, running, horse-riding have evidently found favour here. But there appears to have been no sports activities at school level.

PERSIA (Iran)

The Persians taught their children aged of 15 to 20 years riding and archery. Later they participated in gymnastics, marching, running, horse racing, hunting etc.

GREECE — (Athens)

In Greece gymnasiums were built for the sons of the rich class for exemplary, harmonic and cohesive development of their physique and psyche and for moral education.

The ancient Olympic Games had been held from about 1370 B.C. to the 5th century B.C. when there was a lapse. In 776 B.C. the Games were revived at Olympia and held regularly every four years until the Roman conquerors abolished them in A.D. 393. Over this period of 1169 years the number of events at the ancient Olympic Games increased. There were different competitions in running events, Boxing and wrestling, pentathlon, chariot races, horse races, armed races and sometimes art competitions. However, athletics always took pride of place. Only the free born participated. The winners received an olive wreath and also great honour. Professionalism entered the Games later and in addition to the olive wreath there were rewards in kind, cash and pensions.

ROME

Towards the end of the supremacy of the Greek city states, Rome had become a powerful slave owning state where military physical exercise took precedence over other forms of sports. War-games and exercises for the sons over 18 years of the free citizens were organised. They also had circuses where chariot races and fights between gladiators, who were all highly trained slaves took place. The times of the Roman emperors found an abandonment of the military physical training as armies of soldiers were established. Physical education went out of the education system and also the life of the adults, except for curative purposes. The rich leading luxurious and unhealthy lives had to find remedial measures in warm baths and exercises in ball houses. Their pleasure in pitting human beings against wild animals such as lions exhibited the standards of moral depravity the Romans had descended to.

Associations established over 50 years ago are the Ceylon Rifle Association (1880) the Ceylon Schools Boxing Association (1914) the Ceylon Lawn Tennis Association (1915) the Ceylon Rugby Football Association (1920), the Ceylon Amateur Athletic Association (1920) and the Ceylon Golf Union (1929). The Boxing Association and the Football Association (1932) were followed by many national Associations formed particularly in the post independence era in Sri Lanka. A majority of the sports introduced by the colonial masters were intended to serve their own purposes such as selection and recruitment to the government service, the armed forces and the mercantile and plantation sectors and propagate and maintain British norms and values.

The masses of the country had no opportunity, due to poverty and other social considerations, to participate in these sports and many probably kept away for good psychological reasons from the apparently boring ones such as cricket. Furthermore, it was useful from the rulers point of view if these sports were inculcated among those who served them directly. A false ideology of fairness as ingrained in British sport ("it is not cricket old chum") was also fed in through the colonial schools system whilst Sri Lanka was unfairly held under the British by the same people. On the other hand the indigenous games and recreational activities, like many other cultural events, did not find a place in this scheme of thinking. Therefore the sports that grew popular and came to be recognised were mainly those introduced by them. When a Sports Ministry was finally established in this country, and in 1974 a list of 38 officially recognised sports was issued, about 98 per cent of the sports listed here were those introduced by them. (See Box below). Only "Elle" is of local origin.

Reasons for the present situation can be traced to basically one of patronage. With the 'growing pains of development' sports have been pushed lower and lower down in the scale of priorities over the last three decades by successive governments. Generally, when sports bodies sought official patronage, particularly finances, it was made clear to them that there were far greater priorities such as food, health, education and other social overheads. Access to the recognised sports has naturally got more and more confined to those who could afford to participate in them. The Ministry of Sports, created in 1965, was given the overall responsibility for the management and development of Sport in the entire country. It cannot be said that this function had been satisfactorily discharged during the last 17 years for nearly all sports. Management in the state sector has failed for various reasons. There is a multiplicity of sports organisations both in the state sector and the private sector which function independently. (See Box above). One result is that it has not been possible to develop sports in the country on a co-ordinated, systematic and planned basis. Nor has it been possible to encourage equitable participation or mass enthusiasm for sports; perhaps due to the prevalent conditions in society. The end result has been a stagnation or deterioration in standards of many sports and a low degree of achievement particularly at international levels.

So too with the organisations that manage the various sports. They are generally controlled by officials who could write sufficient influence and afford the time for the running of their affairs. The pattern in the main associations, clubs etc. is that they are run by voluntary officials and often centred in or around Colombo. Inevitably facilities have tended to be centralised and activity too has centred round the metropolis, while other areas suffer comparative neglect. It is no surprise, therefore, that interest in most organised sports has not reached the masses of the country, particularly those in the rural areas where the majority of the people live. It is obvious that some sports are now receiving and spending large sums of money for materials, equipment, playing facilities, etc. The benefit of these are not directly reaching almost the entire 80 per cent of the population living in the rural areas. If an attempt is made to involve large sections from among them in active participation in sports, it is necessary that other forms of sports are introduced that will not

SPORTS ORGANISATIONS

Apart from the approximately 30 National Sports Associations there are other Associations which have controlling powers such as the Sri Lanka Olympic, Commonwealth and Asian Games Association to which the respective controlling bodies for the various sports are affiliated. The major sports organisations in the various sectors of national life can be grouped as follows:

- The School Sports Associations
- The Government Services Sports Associations
- The Mercantile Services Sports Associations
- The Nationalised Services Sports Associations
- The Defence Service Sports Control Board
- The Inter University Sports Associations

In these sports organisations there are associations for different sports such as Cricket, Tennis, Football, Athletics, etc. Most of these associations cater to the needs of their particular sectors of influence. They have their own competitions and they also compete at sports competitions organised by the national controlling bodies. The national controlling associations have a right to-

- control their respective sports
- provide for affiliation of associations, clubs etc.
- make and enforce laws and rules
- conduct tournaments
- take disciplinary action, etc.
- select teams for international competitions
- organise coaching camps and other activities for the promotion of their respective sports.

THE 38 OFFICIALLY RECOGNISED SPORTS

Schedule of National Sports Associations (Gazette of the Republic of Sri Lanka (Ceylon) Extraordinary No. 110/8 of 7-8-74)

1. Archery
2. Athletics
3. Badminton
4. Billiards
5. Basketball
6. Bridge
7. Boxing
8. Cricket
9. Carrom
10. Cycling
11. Chess
12. Draughts
13. Elle
14. Association Football
15. Golf
16. Gymnastics
17. Hockey
18. Women's Hockey
19. Judo
20. Karate
21. Lawn Tennis
22. Motor Sports
23. Netball
24. Power Boat Racing
25. Physical Culture
26. Rugby Football
27. Rowing
28. Softball Cricket
29. Swimming
30. Surf Life Saving
31. Angling
32. Table Tennis
33. Volleyball
34. Water Skiing
35. Weight Lifting
36. Wrestling
37. Rifle Shooting
38. Yachting

Some Ancient Sports and Games of Sri Lanka

From "Some Sinhala Combative, Field and Aquatic Sports and Games" — P. E. P. Deraniyagala; published by National Museums of Ceylon — 1959. (It should be noted that "Sinhala Sport belonged to common local sports of Southern Asia, specially South India. Thus, Tamil Sports, even of India — would not be very different from this list).

1. Combative Sports

(a) Men versus Men:

Angam Pora (Human Combat) with or without weapons; taught at centres of military training — Saramba Salawas.

Mushti Yuddha, Malla Pora or *Mallawa Pora* ... ...

Fist fights, all in fighting, hitting & grappling.

Ura Undhe Angam Pora (Well wrestling)

Asti Pora — Fore-arm fighting) *Combat with weapons*

Polu Haramba — Quarter Staff (8" staff).

Mugura Pora — Mace (wood, irons, bronze, silver, gold) combat.

Ura Undhe Angam Kelima — (Gladiatorial contests between individuals from military clans).

(b) Men Vs. Animals

Gladiators assisted by dogs against leopards

Unarmed wrestler vs. sloth bear.

(c) Mammals in Combat

Gaja Keli — (Elephant fights) *Gon Pora* (Bull-fights)

Migon Pora — (Buffalo fights)

Batalu Pora (Ram fights).

Elu Pora (Goat fights).

Mongoose & Cobra fights

(d) Birds in Combat

Kukul Keliya (Cocking or cock-fighting).

Haban Kukula or Spur Fowl.

Kondaya or Red vented Bulbul.

2. Field Sports (with animals)

(e) Hunting (slaughtering game/capturing animals — buffaloes/elephants for taming) with bows and arrows, spears, knives and later guns.

(f) Falconry

(g) Horse racing

(h) Bull racing

3. Field Games (Religious)

(i) *Pora Pol Gahima* — Coconut

(j) *An-Keliya*

4. Field Games

(k) *Raba*

(l) *Thatla*

(m) *Guda*

(n) *Kala allanawa* or *Lunu Pandanawa*

(o) Swings

Kataru Onchillawa

Bambara Onchillawa

5. Aquatic Sports

(p) *Jala Kreeda* or *Diya keli*

Canoe racing, Swimming at surface, under water, diving high, drop, floating.

(q) *Jala pora* or *Diya gahum* — water fights.

6. Sports Training

Sports training conducted in Saramba Salawas for martial clans etc.

Panam & Pinum — jumping and acrobatics

Malla or *Mallawa pora* — *wrestling & boxing*

Lee Haramba — single stick

Polu Haramba — quarter staff

Mugura pora — mace combat

Kadu-Polu haramba — Sword and shield combat

Allan haramba — fighting from horse back

Khadg silpe — fencing

Hasti silpe — managing the

Dhanu silpe — archery.

require playing areas and involve large amounts of expenditure etc. In this regard the feasibility of revival of our traditional sports could be explored for the benefit of our rural population. It does not seem to be just that the large sections of our people, who produce a very high percentage of the gross national product, are left out whilst the few enjoy the benefits from the monies raised by their sweat.

MASS PARTICIPATION IN SPORTS — Schools

The British Government established a Department of Public Instruction in Sri Lanka in 1870. "Drill" was introduced to the schools in order to teach discipline and improve the physique and precision in movement. Drill and physical training had become a part of the school curriculum by 1891 and by 1900 inexpensive games were introduced. Cricket was played with local materials. By 1902 physical training was compulsory in all schools. The Schools Boxing Association was the first of the schools associations to be formed, i.e. in 1914. However, it was not until 1938 that the Education Department appointed its Boxing Instructors. Physical training two hours a week was made compulsory for all school children by a law passed in 1920.

At the beginning of this century Cadeting was introduced to government schools. A volunteer Cadet Corps and a Boy's Brigade were formed. In 1918 the Ceylon Cadet Battalion was formed. The formation of these organisations at school level was intended to give pre-military training with a view to recruitment of suitable boys for the armed forces and the Police. Scouting was also introduced about 70 years ago and the Boys Scouts Association formed later. This was followed by the Girl Guides Association. These Associations encouraged camping, local tourism and acquisition of various skills which were recognised by the award of badges. In 1979 a Police Cadet Corps was formed at the school level. The total number of children participating in the activities of these organisations is well below 75,000. At the camps held by these organisations sports activities also find a place. In fact, the Public Schools Athletics Association now called the Sri Lanka Schools Athletic Association, was a direct development of the athletic competitions held at the Ceylon Cadet Battalion Camps.

Physical training in the Schools received a change of designation to physical education in 1947. Instructors in physical training were appointed to Teachers' Training Colleges to give instructions to teacher trainees. Schools sports competitions also came into being on a circuit, district and all-island basis. In 1952 the Ceylon Schools Netball and Volleyball championships were started. In 1957 the Central and Senior Schools Track and Field Athletic competitions and in 1958 the first All-Island Physical Training and Wrestling competitions were held. Today at 8 such all-island competitions in various sports and games organised by the Ministry of Education, Schools teams compete at circuit, district and national level. While these competitions are held under the direction of the Ministry of

Education, other such competitions are also held by voluntary Schools Sports Associations such as the Sri Lanka Schools Athletic Association. In the latter competitions children from a few schools affiliated to this Association take part. However, they receive greater publicity and recognition than the competitions conducted by the Education Ministry. Factors such as this tend to create a class distinction among the groups taking part in the different competitions.

The Ministry of Education had a scheme to give specially talented children small scholarships to enable them to attend schools with training facilities. However, the numbers receiving such assistance, if any, are an insignificant number of the nearly 3 million children attending about 9,500 schools in the country. There are a few schools sports associations such as for Boxing, Basketball, Cricket, Athletics, Hockey, Football, Badminton and Table Tennis. They are affiliated to the national controlling bodies. Unfortunately, less than 5 per cent of the schools in the country are members of these associations. Here again it may be observed that excepting for a small minority, sports have not reached the masses of the children attending schools. The education reforms introduced in 1972 made physical education compulsory in Grades 6, 7, 8 and 9 and a compulsory examination subject was introduced at the NCGE on physical education and sports with a theory paper and a practical test. This resulted in a recognition of the need of physical education and sports for every school going child. However, in 1978 the educational system was changed and this programme is now defunct.

Some efforts have been made to co-ordinate the work of the Ministry of Education and the Ministry of Sports in regard to the development of sports. These efforts have by and large proved ineffective. There is now no co-ordinated development planning for sports and recreation at the school level. Sports as a co-curricular activity is indulged in still mainly by a small minority of affluent children as in the past. Unless there is a programme to encourage and develop sports at the school level, where the talent has to be found and guided on a long term basis, the hopes of Sri Lanka's achieving success at international levels is remote. Our comparative success at International Cricket proves this point. All our cricketers now representing the country have been the products of a very small number of schools where Cricket is played and for which game considerable sums of money have been set apart by the authorities. The funds for these have come mostly from the facilities fees etc. paid by all the children at the school. Though a vast majority of these school children pay facilities fees for extra-curricular activities these monies are utilised for the development of talents of a selected few in these schools.

Universities

Participation in sport in the Universities and other institutions of tertiary education is essentially on a voluntary basis. The organisation and management of sports activities in these institutions varies from one to the other. The Universities Sports Organisations are given direct representation on some National Associations for sports. The Universities have a co-ordinating body which organises inter-University competitions in some sports. The types of facilities available at the Universities vary considerably. The Peradeniya Campus, built as a model, had ideal facilities for physical education and sports activities; while the other campuses do not have adequate facilities. Even at Peradeniya the participation of the mass of the students in sports activities is very much limited, if at all. In the past, the University sportsmen were outstanding in the national sports arena; but today, despite the fact that some outstanding school-boy sportsmen have entered the Universities, very few seem to find places in the national sport scene. Deeper investigation to find reasons for this lack of interest on the part of University students and those in other institutions of higher education in participation in sports activities during their careers, can be very revealing. (See table below).

In some countries, particularly the socialist countries regular participation in sports is compulsory for all students at the University level.

None of the Universities in Sri Lanka have physical education departments where courses are conducted in physical education and sports. It appears to be even neglected in the Faculties of Education, with the result that no scientific work has been undertaken in regard to physical education and development of sports in the country.

YOUTH COUNCIL

More recently, the Government created a Ministry of Youth Affairs which carries out implementation of programmes among groups of youth through the National Youth Services Council. It is interesting to note that the Ministry has given a certain amount of importance to organising sports activities, and the National Youth Services Council has been organizing sports competitions among youth at the grass root level. However, here again it would appear that their work is not co-ordinated with the Ministry of Sports. The numbers participating in the sports activities organised by the National Youth Service Council are not available.

LOCAL GOVERNMENT

Although the Local Government Ministry has not been directly involved in development of sports activities in the country, some urban authorities like the Municipalities and Urban Councils, coming under this Ministry, have organised sports activities and provided playground facilities and instructors in their areas for the youth and children for organized and un-organized sports activities and recreation. No statistics are available of the numbers participating; though some of these authorities have also been recruiting outstanding sportsmen to their ranks of instructors.

SPORTS IN THE ARMED FORCES ETC.

Reference has already been made as to how sports had been utilised by the British colonialists to recruit suitable candidates in the armed forces of this country. Indeed from ancient times the training for sports had been part and parcel of the recruitment and training programmes for military purposes. Conversely,

REASONS FOR LACK OF PARTICIPATION IN SPORTS BY UNIVERSITY STUDENTS

Reasons for not taking part	Students who took part at school level	Students who did not take part at school level	Total
	%	%	%
Hindrance to studies	49	41	47
Not getting satisfactory food	42	34	40
Generally disinclined, laziness etc.	9	25	13
Total	100	100	100

The above table is from a study of University Students in residence at Peradeniya Campus by H. L. Hemachandra. His paper on 'University Student Participation in Sports' is held over for lack of space and will be published in our May 1982 issue.

the armed forces, including the Police, have made contributions towards the development of sports in the country particularly at the top level, that is at international competitive sports. In many competitions such as Football, Rugby, Athletics, Hockey, Volleyball, etc. the armed forces have provided individual and team champions. The armed forces have shown partiality for fighting sports or the martial arts, such as Boxing, Judo, Wrestling, Karate, which are specially used during their training period for development of physical fitness. Such activities have brought to light many talented youths, who later blossomed into international stars, starting from — Duncan White in 1948 (Olympic Games Silver Medallist and Commonwealth Games Gold Medallist) S. L. B. Rosa and W. Wimaladasa (Double Gold Medallists at the Asian Games)

Unfortunately such successes have been rare and far apart.

There is a Defence Services Sports Control Board that co-ordinates the inter-services sports activities and each of the Forces has its own sports control board with different organisations for the various sports activities. The Police Force is served by the Police Sports Club. These organisations are generally represented at the National Sports Associations. The service personnel are expected to maintain a high degree of physical fitness and therefore sports activities form an integral part in their day to day activities. However, the armed forces are not in a position to assist in the development of sports among the masses due to the character of their services. Moreover, this is not expected to be their specific sphere of interest.

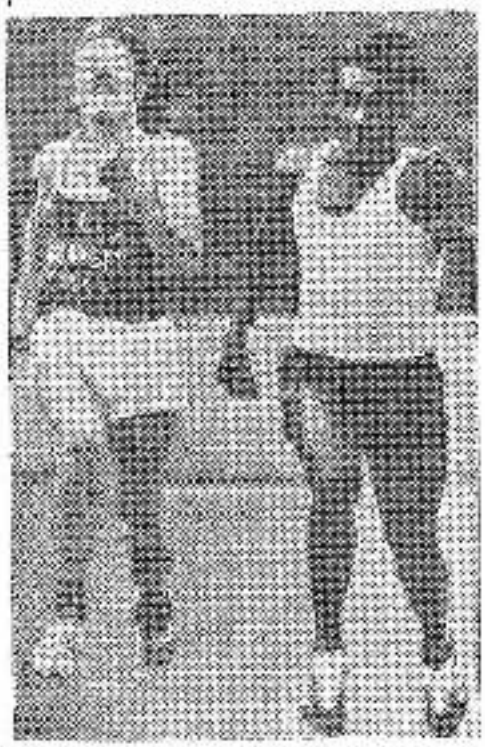
The private sector

The mercantile sector organised its sports for those in their services through the Mercantile Service Sports Association which also organises competitions among the mercantile establishments. Such activities are once again essentially centred in and around Colombo, so that the masses of employees in the private sector outside Colombo are generally left out of active participation in sports and such competition. There is a new development in that some mercantile organisations have taken to the employment of outstanding sportsmen, particularly Cricketers and Rugger players, in their establishments and also sponsoring sports tournaments. Even the recently concluded Cricket Test Match between Sri Lanka and England was sponsored by a mercantile establishment. While this augurs well for the development of the talents of a very selected few and one or two glamour spectator sports there is hardly any encouragement even for the mass active participation in sports of their own employees. The sponsorship programme appeared essentially to be tied up with their advertising programmes and their own commercial interests and motives. How far the commercialisation of sports will result in the development of sports, particularly in the active participation of the people, has yet to be seen.

In this sector too there are no scientific aims and objectives in the development of sports. The programmes are organised haphazardly and often on the whims of individuals but there are no visible signs of long term development. The private sector generally expects of its employees a high level of productivity which is essentially dependent on the health and strength of its work force. It is necessary that the employers therefore appreciate the role of sports in the development of the health and well being of its employees, which would contribute towards their willingness to engage in more intensive work and increase their productivity and also improve the inter-personal relationships between employer and employee and supervisor and worker.

ASIAN GAMES DOUBLE GOLD MEDALISTS

Two talented youth who blossomed into international stars, S. L. B. Rosa (right) and W. Wimaladasa (left).



SOCIAL ORGANISATION IN SPORTS

The social organisation in sports at the national level is composed of the controlling Associations. These Associations are made up of representatives of affiliated sports associations, clubs etc. The office-bearers are all voluntary workers and according to the regulations issued by the Ministry of Sports, in terms of the Sports Law, they can function in their office continuously for a period of two years. Looking back at the leadership of these organisations it is observed that the names of particular people or their close associates keep appearing time and again in one office or another. It is not unknown, that some of these officials have been holding office in more than one such sports association thus restricting participation at the organisation levels too. It is also a fact that most of these leaders in the various sports movements all are from or around Colombo. Such factors have hampered the development of sports among the masses. The sports movements have not reached our villages and towns outside Colombo to enable the organisation of sports activities on a truly mass basis. The motivation of a large number of those who

hold office in these various associations can thus be suspected to be selfish and not in the real interests of the development of sports in the country as a whole.

It is said that many in Sri Lanka have the potential to reach international levels in sports. To do this there should be a high degree of participation. 100 per cent participation has not been achieved by any country in the world, though socialist countries like the GDR and recently Singapore has been able to reach a high level. It would be clear, that this is the main reason why a small country like the GDR has been so highly successful in the achievement of the second position at the Olympic Games and also shown massive successes in other Regional and World Championships, as is illustrated by their performances in winning medals at these various competitions (See table below). The GDR has a population of only 17 million people and as a country has been taking part in international competitions since 1956. The levels they have now reached in some international sports have not been surpassed by even the USA or the USSR. The reasons are to be found in the application of modern science to sports, mass participation of the people, the almost 100 per cent participation of the school children in the schools, compulsory and co-curricular sports programmes, and the selection and development of the outstanding talent to reach international levels, the scientific training programmes conducted over period of eight to twelve years, This emphasis on physical perfection has become part of the system.

LEISURE-TIME AND RECREATION SPORTS

One of the major reasons for the development of sports in Europe and the other developed countries was the availability of free time among the working population that came about with the industrial revolution. The working masses turned to sports for recreation during their free time. With the development of science and technology more and more people have found more time available to them for participation in leisure time activities. The hard work they have to perform during their working days has created the necessity for recreation over the week-end. The machinery that has become part and parcel of everyday life requires a higher degree of physical and mental efficiency. And it is necessary to maintain a balance between these two for the efficient performance of one's day to day activities.

It has not been fully appreciated that regular participation in systematic physical training exercises improves health and efficiency, and also contributes to recuperation and relaxation and increases life expectancy. Such activities can be indulged in individually and collectively though regularity is essential for beneficial effects.

Leisure time and recreational sports are not organised on a wide basis in Sri Lanka. This could be done with very little expenditure using the many competitive sports and other activities with their variety of disciplines which generally have many possibilities for their use for leisure time and recreational purposes.

MEDALS WON BY G.D.R. FROM 1948-1978

World Championships	*Gold*	*Silver*	*Bronze*
Men	283	248	201
Women	171	125	112
Mixed	5	9	8

Total: 1,162 medals.

European Championships	*Gold*	*Silver*	*Bronze*
Men	272	354	425
Women	120	160	123
Mixed	-	3	7

Total: 2,906 medals.

Olympic Games	*Gold*	*Silver*	*Bronze*	*Total*	*Positions*
Summer					
1956	1	0	2	7	15
1960	3	5	7	15	10
1964	3	11	5	19	9
1968	9	9	7	25	3
1972	20	23	23	66	3
1976	40	25	25	90	2
1980	47	37	42	126	2
Winter					
1956	-	-	1	1	16
1960	2	1	-	3	11
1964	2	2	-	4	8
1968	1	2	2	5	10
1972	4	3	7	14	2
1976	7	5	7	19	2
1980	9	7	7	23	2

Total: 295 Medals.

Though the Ministry of Sports through its sports programmes organised on an inter grama sevaka, inter-D.R.O. Division and inter-district basis attempts to reach a wide public, little success has been achieved in obtaining extensive participation.

Neither the Ministry of Sports nor the Ministry of State, responsible for tourism, has yet drawn up plans for making use of the country's natural assets and facilities for the development of sports and tourism among the masses. Movements like "Run For Your Life" organised in the USA, Canada, the Scandinavian and other European countries, Australia, New Zealand and Japan could easily be organised locally with hardly any expenditure and literally thousands could take part simultaneously in these activities. Unfortunately, according to past experience when sports and recreation are thought of, only a few come to be considered. The large mass are often expected to remain inactive spectators.

Leisure time and recreational sports activities need no longer be neglected. The recently concluded Cricket matches between Sri Lanka and England proved to be of interest to wide sections of the population even in the remotest corners of the island. These matches were watched by many, on Television, who even neglected normal work and house hold functions. Interest such as this could be converted into active participation by the masses in sports and allied activities although in its present form it had tended to make a mass of passive observers.

Habit-forming activities such as sports and physical fitness are best organised for children, so that they will appreciate its value and make it a life-long habit. The working population too could be encouraged to take holidays on sites provided at low cost while government agencies, trade unions, employers organisations etc. could facilitate participation of the working masses in leisure time and recreational activities. Co-ordination of the various organisations would become necessary so that there would be such development on a national basis.

SPECTATOR PARTICIPATION

Internationally football has the largest spectator participation in the entire world, However, it has been observed, that there is a class character even in Sri Lanka in regard to various games and sports. Cricket has been slowly and steadily spreading out in the schools system since it was introduced into the country about a century ago. However of the 9,500 schools in the country, less than a 100 participate in this sport.

Our success internationally at cricket has helped in developing a large spectator following all over the country. Mass-media, particularly the recently introduced media of television, has brought this sport home even to villagers in the rural areas.

On objective grounds a boring game which even the British are losing interest in, judging from attendance at matches. Cricket has spread on a class basis and the more affluent schools' efforts (including their 'Big Match' hooliganism) has spread to major regional schools, a trickle down effect from the national elite to the local elite. The rest of the population remains a supine mass watching their antics; now on TV at the local tea mudalalis. Despite the interest in cricket generated recently, it was observed, that a large number of seats available to spectators at the cricket test between Sri Lanka and England were unoccupied throughout the four days of play. The rates charged for the seating accommodation and even the open stands did not permit the majority of the people, who may have been interested in personally watching this event, from participating as spectators. Cricket appears to have gained a greater attraction among most sections of the population unlike football, rugger etc. which have an appeal to particular strata of the community. Though football has the greatest appeal among all sections in other countries, particularly Europe, in Sri Lanka it has become the poor man's game as against rugger which has a following more confined to the elitist sections of Sri Lankan society.

The development of spectator participation (particularly youth) it is hoped, will in due course generate their active participation in sports. Therefore, it is essential that school children and youth attending institutions of higher education etc. should receive special consideration for admission as spectators. Spectator participation is a motivating factor for active participation.

It is clear that material technical conditions such as playing fields, playing equipment and gear, sports clothing, finances etc. will not be available in most parts of the country as in Colombo or the other major cities. When cricket was introduced into Sri Lanka's schools, in the absence of imported gear local materials and equipment were used for the playing of the game. Even today one sees children in playing yards or the streets and in the villages playing cricket with local materials and sometimes even fruits (kaduru) used as a ball and bat carved from a piece of wood or a coconut branch. What is important is participation, not the use of materials and equipment that have priced themselves out of the reach of the common man.

PARTICIPATION IN INTERNATIONAL SPORTS

In the ancient Olympic Games contests were held between the big cities of Greece. International sports, in its present sense, with mass participation of sportsmen from many countries is of recent origin. The modern Olympic Games were started less than 100 years ago, i.e. in 1896, and was the beginning of modern international sporting contests as it is known today. However, there are reports of contests between sportsmen of two countries, as in the case of contests between Sri Lankan and Indian wrestlers, etc., centuries before the commencement of modern international contests. The international sports contests at the Olympic Games, World Championships, Regional Games and Inter-Country Games provide opportunities for mass spectator participation. The greatest of these international competitions is the Olympic Games where there is competition in a large number of sports and games and many thousands of athletes from over a hundred countries participate. Excepting for a break during the World Wars No. 1 and 2 these contests have been held every four years. With the grant of freedom to a large number of states after the Second World War the number of countries participating at the Olympic Games have kept increasing steadily. Sri Lanka took part in the Olympic Games for the first time in 1948 when Duncan White won the Silver Medal in the 400 metres hurdles and broke the then existing Olympic record. Since then, though Sri Lanka has been represented in all the Olympic Games we have achieved no success. Not a single competitor was even sent to the 1976 Olympic Games held in Montreal, Canada, though a Chef-de-Mission was there without a team This was mainly due to the fact that not a single sportsman in the country had reached the required levels for competition at the Olympic Games; a sad reflection on the standards of sport in this country.

International competition requires competitors to be trained both physically and mentally to the highest levels of efficiency and perfection in movement. Unfortunately Sri Lanka has not been able to provide the material — technical conditions and the know-how for the training of the talent available in the country to reach international levels of competition. The countries that have reached 'top' levels in the various sports have been able to achieve this through the application of modern science for the selection and training of the talented children and youth to reach very high levels or performance at given ages. Long-term training on a systematic and scientific basis is the secret of the success of the 'top' countries in the field of sports. In Sri Lanka such systems are conspicuous by their absence.

FURTHER DEVELOPMENT OF THE MANAGEMENT OF SPORTS IN SRI LANKA

Sport includes many areas such as participation at highest levels of competition, exercising and training, children and youths' sports, military physical training, leisure time and recreational sports, etc. The important factors that determine the development of sports in the framework of social development are the management or leadership of the process, cadre, science, material and technical conditions, finances, sports medicine, and the natural environment. In Sri Lanka, in the total context of development, sport has received very low priority.

According to the constitution of Sri Lanka the state is pledged to establish in Sri Lanka a democratic socialist society, the objectives of which includes — "the realization by all citizens of an adequate standard of living for themselves and their families, including adequate, food, clothing and housing the continuous improvement of living conditions and *the full enjoyment of leisure and social and cultural* opportunities" and also raising the moral and cultural standards of the People, and ensuring the full development of human personality".

The application of these principles of politics of the state, would require a consistent development of sports in the country in the context of multi-lateral development. In a social democratic society the leadership has to take steps in the development of total personality of the individual citizens. In this context the development of sports which would permit the majority of the people to participate in active sports individually and collectively has to be planned for. Such a programme has to be planned on a long term basis and also requires that particular attention is paid to the leadership and management of sport in all the sectors. The management of sport in the state and the private sectors has already been discussed, where it was established that there is no clear state policy of aims and objectives for the development of sports on a national basis. It is therefore necessary that early attention be paid to the management of sport and

the leadership of the organisation both in the state and the private sectors with a view to co-ordinating the total process.

The Ministry of Sports is essentially the most responsible authority in the country that would need to take the leadership in this field, particularly in the overall planning and co-ordinating and financing the sports movement of the country.

It has been already observed that a few clubs and associations centred around Colombo influence and control the entire sports movement in the country with the result that the mass of the people in the provinces have not had a say in its development. It is therefore necessary that there should be a clearer definition of the functions of these sports organisations and new organisations brought into being at the levels of the villages and towns building up to divisional, district and national level organisations. The elected representatives to Sports Clubs/Societies of the people at the village and town level and also institutions such as schools, factories etc. could elect their representatives to the divisional sports organisations, the divisions electing their representatives in the district organisation and from the district to the national level. For more people would then have a say in the management of sports in the village, town, division, district, and ultimately in the whole country. Such a structure will allow the people in those particular areas to decide on the sports and other allied activities to be developed in their areas according to their own wishes.

A project which would help in a scientific analysis of the state of development of sport and allied activities in Sri Lanka and the needs of the masses for recreation and sports and also give information for the management of sports appears necessary at this stage. Such research projects have generally been undertaken so far mainly in developed countries. Sri Lanka is a small country with a high rate of literacy and provides ideal conditions for such a scientific undertaking which could give leadership in this direction to other developing countries. There is no doubt that it is within the scope of the country to uplift the sports performances of the mass of the people and also reach international levels if the issues are viewed scientifically and the co-operation and assistance of all sections of the community could be harnessed.

Some of the countries that have been able to afford it, have adopted a more enlightened approach and appreciated the necessity for much activities and developed them, providing facilities and the necessary finances and motivated the entire population to actively participate in sport and recreation for the socio-economic benefit of the country. Other countries are now beginning to take action in such programmes. It has been found that such participation has improved the health of the working population and also increased their productivity. In the light of these findings many countries such as Japan China, Hong Kong, Singapore and Malaysia in the Far East are joining other countries such as the Socialist countries, USA, Australia and New Zealand in organising mass sports programmes even at the work sites. Time-off is provided for sport activities even during working hours.

In Sri Lanka mercantile establishments have been recruiting outstanding sportsmen and allow them time off for training and competitions. There are benefits in such cases though limited. It has been suggested that state patronage be extended on similar lines for developing outstanding talent and that the less privileged be provided the necessary opportunities. More important in this context is the need to draw up a plan for the development of sports and recreational activities for the adult population. This could be organised —

- in individual sports and recreational activities with the working groups, community and family groups
- in organised exercise and training and competitions in sports groups in factories or working places and outside
- in organised and regular training and competition in sports societies in living areas

The natural conditions existing in Sri Lanka permit such forms for easy development. It is necessary that —

- the state take responsibility for the leadership of leisure time and recreational sports programmes
- the role of the sports organisations and sports for trade unions, local government institutions, factories etc. should be fixed
- games and competitions for sports groups and teams be regularly organised
- new sports movements such as 'run for your life' 'run for your health' etc. be organised for mass participation
- recreational centres be provided in all living areas
- the working populations and their families be assisted to participate in outdoor recreational activity, go camping, undertake local tourism etc.
- the participation of the people in individual sports activities and physical training groups be organised through the radio, press and television.

"TOP LEVEL SPORTS"

In the area of sports at the "top level or highest levels of competition, there is no doubt regarding its importance at national and international levels. Top level sport has a special meaning for all countries. It is closely connected with the other areas of physical culture and sports, physical education in the schools and institutions of higher learning, mass sport and competitive sport. In top level sports children, youth and adults strive to achieve outstanding performance. The levels of high performance at international competitions have been rising in the recent years as a comparison of the performances at the Olympic Games and World Championships in Athletics and other sports over the years will show. In comparison to these standards, performances of 'top level' sportsmen in Sri Lanka, and Asian Sportsmen in general (with a few exceptions), are at the bottom end of the scale. For instance, at the World and Athletic meetings on the last two occasions, Asia as a region came last out of eight regions/countries participating at the championships. Sri Lankan athletes found no place in any team.

Top level sport requires regular training and full engagement of all physical and psychological abilities, strong qualities of character and will power, moral convictions and disciplined habits. In addition the correct environment and facilities need to be provided. Success of top level sportsmen provides encouragement to others and motivates them towards active participation and enthusiasm in the sport. The participation in 'top level' and competitive sports also motivates children and youth to train more earnestly in their groups and individually or collectively and gives them the opportunity to test themselves at competition. It also helps to develop the physical efficiency of men to high levels, to further cordial international relations and brings to light the efficiency of the total population in relation to the country's culture. If Sri Lanka is to aim at success at international competitions and top level sports, it is necessary to apply scientific technical knowledge and to select and develop systematically the talent of the younger generation. It is also necessary on a long term basis to develop sports science, and produce more specialised technical staff like sports medicine specialists, sports scientists, coaches, physical educationists etc. who are in extreme short supply now.

It has been the practice in the recent years to accept offers of assistance from some countries by way of coaches and sports teams with a view to developing competitive sports. However, these periodic visits lasting a few days or weeks have failed to produce the results expected. There have also been couches coming on extremely long term assignments to Sri Lanka ostensibly with a view to assist in the development of particular sports. They have been welcomed with open arms. However, it is not clear whether

they have been successful in assisting the development of sports in Sri Lanka. On case in point is the Football project where a coach has been in this country for 3 to 4 years and vast amounts of money have been spent. No significant results have been forthcoming from the plans and programmes of training introduced. In fact some of the teams that have been trained have not brought the country renown at international competitions. On the other hand there are many Sri Lankan footballers who have been trained in coaching who have not had a significant say in local sports.

The Sports Law was originally intended to be the official instrument for encouraging and developing sports in the country, but certain regulations framed under this Law have been criticised as taking away important powers of the voluntary National Associations and placing them in the hands of the political and bureaucratic authorities. Eg. the final sanction of office bearers of National Associations and selection of a national team, rest with the Minister who is advised by his officials. On several occasions sports bodies have maintained that the whole set of regulations needs to be re-examined and the obnoxious regulations eliminated; while thought should be given to a new leadership structure, if "top level" and competitive sports are to develop in the country. It is essential that priorities be established here and sports and games selected where Sri Lanka can reach the top and obtain good results quickly. Priorities have also to be established in the light of the obtaining economic conditions.

THE DEVELOPMENT OF CADRE

The study of the cadre situation, in the state and private sectors, engaged in the development of sports shows that a majority are not adequately qualified for the performances of the duties assigned to them. The Ministry of Sports has a small cadre consisting of a Secretary, Additional Secretary, Director, Assistant Secretaries, Assistant Directors, many of whom are from the administrative service and have no special qualifications to function in the specialised area of sports. At the lower levels there are coaches, some of whom have undergone short term training abroad and sports officers who are in charge of sports in AGA's divisions. These sports officers are also given brief training on appointment and follow coaching camps later. Practically the whole island is covered through these divisional organisations. However, excepting for the organisation of inter-Gramasevaka. Inter-division and Inter-district sports competitions not much has been attempted to raise the standards of performance at the grass-root level. The coaches are assigned to districts and some have to cover several districts. Such a scheme alone cannot be expected to provide much enthusiasm for sports and even adequate regular and systematic coaching and a consequent upliftment of the standards.

The Ministry of Education has about 9,500 schools where physical education and sports programmes have to be organised by the Instructors in Physical Education or Teachers. There are less than 500 qualified teachers in physical education in the entire country, which is far short of requirements if results are to be achieved.

The local government bodies under the Ministry of Local Government employ active sportsmen as playground instructors. Their main qualification is that they have participated in their respective sports, some at top-level. They are expected to organise and coach the youth attending their playgrounds. Some of these centres have produced outstanding sportsmen, though their potential has not been adequately tapped. Coaching is a highly specialised activity and the mere fact that one has participated in sports does not qualify one to be a coach.

Particular attention has therefore to be paid to the training of an adequate cadre of managers, coaches, etc. if sports are to be developed island-wide which ultimately help to raise standards to international levels and to achieving sports successes internationally. It is also necessary that the management cadre should be trained so that the leadership in respect of sports is distributed to the periphery and sports is organised according to the needs at grass-root level.

MATERIAL-TECHNICAL CONDITIONS

The building of sports complexes in the big cities such as grounds for International level Cricket matches are undertaken at very high cost. The Ministry of Sports also allocates Government funds for the development of play grounds in various parts of the country. However the needs of majority of the people are not being met.

Type plans should be drawn up for play grounds and facilities for villages, town and urban council areas schools etc. where minimum facilities are provided in regard to changing rooms and toilets. These plans should be made available by the Ministry of Sports to those respective areas so that those responsible may obtain funds from sources such as the district development councils for the establishment of play grounds on a uniform basis.

The play grounds should also have the equipment essential for the respective sports and games. It is necessary, that action is taken to produce locally as much of the equipment as possible as the cost of imported materials is beyond the reach of many At the same time it should

FINANCING

It is often said that the development of sports in the country is hampered by the lack of funds. In the light of low priority given by governments for development of sports, funds allocated to the Ministry of Sports are very limited. The President of the Board of Control for Cricket in Sri Lanka found that there was urgent need for the establishment of suitable venues for international Cricket. Funds had to be raised and he established a fund for this purpose. With a great deal of initiative he has been able to collect the necessary funds. This in itself was an achievement. His strong efforts helped in creating a good image and winning the confidence of philanthrophists and the business sector. There are many means of collecting monies for the development of sports. One is to get it from the business sector, as we have seen; or through the organisation of a Sports Lottery etc. Funds are vital for sports development and it is important that every effort should be made to obtain adequate finances for specific projects.

Unfortunately when it comes to government funding the priority for sports has always been low. Since the establishment of a separate Ministry for Sports in Sri Lanka, in the 1960's, the annual expenditure voted by government has not exceeded Rs. 3 million. In contrast we have India or Malaysia where the Government Votes for Sports have kept increasing over the years. In Malaysia for instance, a comprehensive sports programme has been planned under the Fourth Malaysia Plan for 1981-85, and an amount of $70.35 million of public development expenditure has been allocated for sports. This is an improvement over the allocations of previous years of $7.29 million for 1971-1975 and $21.39 million for 1976-1980. In a country like Singapore too, which can afford both the funds and the leisure, more than half the population is engaged in some form of sport and officially 'physical fitness' has been declared a priority objective in the country. Sports facilities here are therefore being constantly improved and expanded.

When no serious official initiative is taken to bring the benefit of participation in sports to the mass of the population it is only natural that only those who have access to the facilities or can afford them will participate in sports. It was in such a situation that Pierre de Courbetin, the founder of the Modern Olympic Games, bluntly posed the question: **"Sports in the ancient world excluded the slaves. Is modern sport only to be the priviledge of the rich?"**

Recombitant DNA—'Gene Splicing': A New High Flying Technology

Research during the last decade has paved the way for a new technology that would in very many ways have, in a literal biological sense, an immediate impact on human life. It is also scheduled to be a high-flier technology in the 1980's. This is the new technology surrounding manipulation of genes. Its growth during the rest of the century would have as much economic importance as micro processors since the mid 1970's and electronics in general since the 1960's.

For millenia humans have been using micro organisms to make desirable products for example, alcohol. However, instead of selecting from nature particular micro organisms that would do a given job — for example produce alcohol — the new technology would by introducing new genes into the micro organisms tailor-make the micro organisms to give any characteristic. These new genes operating through their micro organisms would then produce the compounds that are desirable.

In 1973 Stanley Cohen and Herbert Boyer of the United States discovered a new and powerful technique for manipulating the genetic bads of life. This technology has come to be known as recombinant DNA or gene splicing. Using these techniques it is now possible in theory to cut precise sections of DNA from a given organism and insert it into another in a similar manner that recording tapes are spliced. It therefore, in theory becomes a technique for changing the properties of living matter in almost any given direction. The genes which are grafted to change micro organisms could come from plants, animals or humans. Already researchers have produced several new compounds using these techniques for research purposes while commercial companies have produced such diverse products as human interferon, industrial solvents, insulin and growth hormones.

These new products have become patentable in the United States, the US Supreme Court declaring in 1980 "the live human made micro organisms as patentable subject matter" and awarding the first patent to an Indian born biologist Anand Chakrabarty of the University of Illinois. This has now resulted in a high degree of commercial interest in the field. Although business interest in the technology was slow at first it gathered momentum, so that by 1981 some of the Companies involved in gene-splicing had the most sought after stocks. A company that has been often mentioned is Genentech founded in 1976 by a 28 year old investment banker and Boyer, the co-discoverer of gene-splicing. Other companies include Cetus, again of the US and Biogen a Switzerland based firm with both American and European interests. However by 1981 most leading chemical manufacturers had begun an involvement in genetic engineering (see box).

Of the three human oriented products which have caught the imagination are insulin, interferon and growth hormones. Human interferon which is the body's natural weapon against viruses is believed to be also useful against cancer. Gene splicing techniques have been used by Genentech to produce human interferon. Insulin used against diabetes is normally obtained from the glands of pigs and cattle. The supply tends to be limited and further because pig and cattle insulin differ somewhat from human insulin, it sometimes has unwanted side effects in patients. Human insulin has also been commercially produced by Genentech. Similar results have also been obtained in the case of human growth hormones which had earlier been obtained from cadavers.

Apart from these medical applications there are several ones of commercial importance which could also use recombinant DNA. These include traditional areas where micro organisms have played a role such as the manufacture of antibiotics and of ethenol — which is increasingly becoming important as a fuel. Genes splicing could also be used for modifying the genetic materials of plants. Plants are more malleable in this sense since the whole plant could be propagated from a single cell. With suitable gene splicing techniques, it would be possible to include particular characteristics into plants such as higher yields, thicker stalks, resistance to disease and even the capacity to fix nitrogen by introducing proper genes.

New manufacturing innovations have also been reported such as development of 'gene machines' which according to its developer, a Canadian Company, is expected to carry out in a few hours tasks that would take chemists several months. In these gene machines, micro processors control the introduction of chemicals in the right amounts and at the right time so that the particular desired chemical chain would be created. The new companies that have been formed have created a

Most leading chemical manufacturers now are involved in genetic engineering . . . . among them are:

Dow Chemical
Invested $5 million in Collaborative Genetics of Waltham, Mass., building in-house program in human health, agriculture, industrial-use enzymes, and catalysts.

Du Pont
Large in-house program with specific interests in plant genomes and interferon. Collaborative effort with Caltech's Institute of Technology scientists and sizable program through acquisition of New England Nuclear.

Gulf Oil
Modest in-house program plus co-operative agreement to develop biomass with unspecified Japanese company. Also some research contracts with university consultants.

Monsanto
Extensive programs, including $20 million investment in Biogen involving close co-operative scientific efforts, a contract agreement with Genentech involving animal nutrient products (growth factors), and minor equity holdings through interest of Genentech and Cetus. Also building in-house capabilities.

Phillips Petroleum
Company considers area "highly proprietary" and says it's not involved. Unconfirmed reports of recruiting activity.

Shell Oil
Has contract with Cetus sponsoring development of interferon.

Standard Oil (Ind.)
Variety of projects, including single-cell protein, edible fat production, photosynthesis, health-care products, industrial processing — and considers all of them "highly proprietary" — out of Naperville, Ill., research center. Unconfirmed recruiting activity. Equity holding in Cetus.

high degree of commercial interest. Thus Genentech Cetus, Biogen and Genex had by the end of 1979 a paper value of more than 225 million dollars. It more than doubled to 500 million dollars by May 1980. Investors in these new small companies included large multinationals. When some of the shares of these firms went public, there was a considerable demand. Thus when Genentech went public in October 198- with an initial price of $35 per share, the share prices boomed within 20 minutes to $69. Genentech in 1979 without yet having a single product on sale had a paper worth of $529 which was almost one-tenth value of the very large commercial company Du Pont.

Firms that have started on this innovative technology are small ones with a few people involved in them. (Athough large companies have later come into the field). This is a phenomenon generally in high technology fields, a clear precusor to this being the development of the micro processors and computer technology in the 1970's by small firms in the so called 'Silicon Valley' of California. Here tens and hundreds of small manufacturing units grew-up, whose products fitted into the newly developing technological nitches.

Many Third World countries have traditionally been followers of technology largely because the capital equipment required for industriallisation of the 19th century heavy industry variety was very high. There is now a partial re-division of labour underway resulting from some of those industries becoming uneconomical in the developed countries and are being relocated in the Third World specially in repressive regimes which provide a reserve army of quiescent labour.

However, the new bio technology — as well as the other high flier of microprocessors and computer hardware and software — are areas where newcomers possibly have new windows for technological leadership. At the least to some technological equality India has designated these frontier areas of gene splicing and micro processors as vital ones for its technological leap ahead and is planning with these considerations. In Sri Lanka there is no such formal planning of science and technology like that which occurs in the Indian scene, (the Indian CSIR being in the forefront of much of this planning). It is but appropriate that Sri Lanka should look at these new technologies with bold and open eyes and identify avenues of development. This could be done specially by associating University departments in such efforts as centers of commercial development because of the knowledge intensive nature of the new technology.

The Economy

Economic Prospects for 1982

Sri Lanka's economic growth rate averaged 6.1 per cent during 1977-80 and the growth rate of 1981 has been estimated at just under 6 per cent. According to the medium term perspectives of the government, the economy is projected to grow at an average annual rate of 5.7 per cent during 1981-85. To maintain the average growth trend of the past five years as well as to realise the medium perspectives of the government, the economy must achieve a growth rate of around 6 per cent in 1982. How far is a growth of 6 per cent a realistic target for 1982? Will the actual performance fall short of this figure? It is easier to raise these questions than to answer them. However, present indications point to a modest growth performance. It is not easy to identify any major sector in the economy which could be expected to show a substantial growth performance over the year.

Agriculture: Agriculture is the largest contributor to the Gross Domestic Product of Sri Lanka. (In 1980 its contribution was a little over 22 per cent). Within agriculture, the most important sub-sector is paddy and subsidiary crops (which accounted for 17 per cent of the GDP in 1980) as against the plantation crops (which accounted for only a little more than 5 per cent). Hence the performance of paddy and subsidiary crops is an important determinant of the overall growth of the economy. There has been a very encouraging trend in paddy production in the past five years with a production increase of about 30 per cent. On the other hand, the growth trends in the subsidiary crop sector remained relatively low in the context of low producer margins (resulting partly from competing imports); some improvement was, however, seen since about 1980. In 1982 the performance of the paddy and subsidiary crop sector is likely to be adversely affected by several developments. For one thing, the serious drought that has prevailed since late 1981 has adversely affected the Maha crop particularly in Anuradhapura, Amparai and Hambantota districts. For example, it has been reported that in the Amparai district the yield per acre has dropped by about one-third and that the official target set for the district has not been realised.

Many of the peasants in the Dry Zone districts, including many of the new settlers in the Manaveli irrigated lands, have become victims of the drought and are now subsisting on drought relief and special food coupons provided by the government. The number depending on such relief has increased over the months. Several donor agencies and countries have come in to assist the drougt stricken peasantry. The drougnt is bound to affect the subsidiary food crops as well. In this context, the paddy and subsidiary food crop sector (at least Maha crop) cannot be expected to make a contribution to the economic growth prospects of 1982.

A further disturbing trend has been the sharp decline in the fertilizer usage in this sector, following the fertilizer price hike of February 1981 (which raised the prices of most varieties of fertilizer by well over 100 per cent). (See table on page 15). In 1981, fertilizer sales to the paddy sector has recorded a drop of 20 per cent and for other crops the drop has been as high as 40 per cent. Reduction in fertilizer usage was an important factor in the low growth of the 1981 Yala paddy crop (a growth rate of only 1 per cent over the Yala of 1980). Unless the fertilizer prices are reduced (which would mean a higher subsidy which may not be practicable in the present context of government finance) the decline in fertilizer usage is likely to continue into 1982 (at least no increase in usage can be expected) thereby compounding the effects of the drought on agricultural production.

It may also be noted that there has been a marked decline in rural credit for cultivation purposes since 1979. Although the statistics for 1981 are still not available, there are no grounds to believe that the trend has been arrested last year; and the situation would probably continue into 1982 (unless some policy changes are made to increase the volume of rural credit). In this situation, resort to non-institutional credit sources, namely, money-lenders and traders, at exorbitant interest rates would have increased. This situation coupled with the adverse effects of the drought on the peasantry cannot but cause serious implications on

FERTILIZER ISSUES BY CROPS 1980 AND 1981

Crop	1980	1981*
Tea	101.7	101.7
Rubber	21.5	16.9
Coconut	55.6	37.7
Paddy	188.8	151.5
Minor food crops	23.2	14.7
Minor Export crops	5.0	3.2
Other	46.1	39.9
Total	432.1	365.6

*Provisional

Sources: *National Fertilizer Secretariat and Ceylon Fertilizer Corporation*

poverty and indebtedness in the rural sector.

The drought could also cause adverse effects on the plantation output, in particular on tea and coconut output. The tea production which rose markedly in 1981 (by nearly 10 per cent) may not be able to sustain the growth trend if adverse weather (which has already brought down the production in January and February) continues for a few more months. It would take about a year or even more before the current drought makes an impact (in the form of lower harvests) on coconut production. Rubber production was affected by a decline in prices last year but a recovery in prices is seen from about November. Fertiliser usage in rubber and coconut has recorded a marked drop in 1981 (by 18 per cent and 30 per cent respectively), and within the tea industry, the fertiliser usage of smallholdings has recorded a sharp decline. These trends, unless arrested by policy changes are likely to continue into 1982 and they do not augur well for the prospects of future plantation output.

In summary, the forces at work in the agricultural sector prevent it from being a significant source of economic growth for 1982.

Manufacturing: This sector comprises plantation processing industries, factory industries and small industries, and has contributed 14 per cent of the Gross Domestic Product of 1980. Any drop in plantation crop production would have its consequences on the processing industries, meaning a lower level of processing activity. The output in the factory and small industries is not expected to show a marked change over the trends in 1981.

The Katunayake Investment Promotion Zone has currently about 11 factories in operation (with almost 20,000 employment) and some 30 more are in various stages of implementation many of which should commence commercial production in 1982. Garments continue to be the main item of production in the Zone but non-garment factories are gaining in importance. Two leading transnational firms have signed contracts with the GCEC for the manufacture of electronic components at least one of which is expected to commence factory construction work around April this year.

Construction: Construction activity had slowed down by around mid-1981. In the face of inflationary pressures and financial constraints, some government projects had to be scaled down and some postponed. Decline in house and property values and also a decline in house rents have accompanied these developments. However, real estate development in the private sector, in particular the construction of hotel and shopping complexes is expected to continue through 1982, which should keep the overall construction activity at a modestly growing trend.

Service Industries: The growth in the service sector has also shown signs of slowing down in 1981 and the situation cannot be expected to show any marked change in 1982. The transport sector (private transport in particular) appears to have reached a saturation point with the number of new registrations of motor vehicles recording a sharp drop over the months. The average number of monthly registrations which ran over 5000 in 1980 has dropped to less than 2500 in the final months of 1981 and this decline can be expected to continue through 1982.

The year 1981 also witnessed a much slower growth in imports (hence in the overall trade in the economy) than during the previous two years. This may be an indication that the rush for imports to meet the unsatisfied demands of the pre-1977 period is gradually dying down. Further evidence of this is likely to be forthcoming in 1982. Continued expansion of tourism (though at a reduced rate than in previous years), substantial remittances from migrants in the Middle East, expansion of the television network to cover the entire country, activation of the share market (with more and more new companies offering shares to the public), and the continued openness of the economy are factors favouring the service sector of the economy.

While the growth of imports is likely to slow down, prospects for export growth (outside the free trade zone) appear modest. Hence the balance of trade deficit will continue to remain high but the magnitude of the deficit could show some decline (it was Rs. 14.6 billion in 1981 as against Rs. 16.2 billion in 1980.)

Domestic resource mobilization from non-inflationary (non-bank) sources for the financing of growing budgetary gaps will continue to figure as a major problem in the fiscal sphere. Heavy recourse to inflationary financing (mainly from the Central Bank) characterized the fiscal picture of 1980; recourse to inflationary sources has been considerably reduced in 1981. It remains to be seen how far the government could avoid resort to inflationary financing in 1982. Much depends on the ability of the government to restrain the growth of government expenditure over the originally budgeted levels.

Employment generation which continued at a high level in 1978 and 1979 has slowed down since 1980. Prospects for any substantial employment growth appear modest in 1982. The unemployment level currently stands at over 15 per cent of the labour force.

Inflation which ran well over 30 per cent in 1980 appears to have slowed down in 1981. The cost of living index rose by 18.3 per cent during January - December 1981. This index, given its well known shortcomings, presumably understates the actual rise in living costs. It may be noted that food prices in this index rose by 22.4 per cent in 1981. The fact that petroleum prices did not record any substantial change in 1981 was a favourable factor which slowed down inflation. But the depreciation of the Rupee vis-a-vis the US dollar by almost 13.5 per cent was an important contributory factor (by raising the rupee cost of imports) to the inflationary situation of 1981. In 1982, however, the possibility of a rise in the domestic prices of petroleum products (resulting partly from the rise in international prices and partly from the depreciation of the Rupee) cannot be ruled out. Inflation will continue to remain high in 1982 though perhaps at a lower level than in 1981. The actual level of inflation will depend on a number of factors such as behaviour of international prices of imports, extent of further depreciation of the Rupee, the inflationary pressures emanating from the budgetary financing, extent of the petroleum price increases, and the harvests of principal food crops such as rice, chillies, onions and others.

The Value of Money, a Generalised View of "Both Sides of the Rupee"

S. T. G. Fernando

In this generalised discussion on the value of money Dr. S. T. G. Fernando shows how crucial money is to modern economic society and emphasises that the proper control of money is a vital exercise. He explains how its value is dependent on both domestic policies and the international trade and payment policies persued; while measures affecting the quantity, price and velocity of circulation of money affect in one way on another the price level. "Maintaining the value of the rupee is therefore a matter for synchronised policy action in domestic/monetary policy and in foreign exchange management", he concludes.

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"Money is the root of all evil" so goes the age old saying. Present day society based on specialisation and production for the markets can barely survive without money and monetary transactions. Unless we view society as isolated and functioning at a very low level of economic development, the fact has to be accepted that money is central to modern economic society and the control of money is a vital exercise to be performed by a body whose standing and integrity is beyond question.

There is no general agreement among economists upon what constitutes money. Modern economics has tended to widen the definition to suit the times, policies and controls. Basically, as with most economic terms it does not matter crucially to the agreement what meaning we adopt as long as one adheres to a definition and refrains from changing it halfway through the argument.

Money is defined in most text books as "anything which is widely accepted in payment of goods or in discharge of other kinds of business obligations". The property of being widely acceptable invariably involves another attribute, namely the property of being expressed in units, in terms of which the values of other exchangeable items are measured. These two properties of money are what are referred to as "Medium of Exchange" and "Measure of Value". There are two other intrinsically useful and important functions performed by money, namely as a 'Store of Value' and as a 'Standard for deferred payments'.

The Use of Money

In a discussion of the value of money, due emphasis should be placed on the benefits resulting from monetization of transactions. Money overcomes the difficulties of barter and the associated "double coincidence of wants", by serving as a general medium of exchange or means of payment. Money, when it performs its role as ordinarily expected, is something which is accepted by everybody within national territory, in exchange for goods, services and discharge of debts. The one important distinction between money and other commodities is that money is required not for its own sake (this is true especially in regard to paper money) but because the general public is prepared to accept money in return for goods and services. Money then becomes a "flow" in the hands of the people, a currency, and contrasts with a "stock" concept assuming a quality of being "generally acceptable purchasing power" held by the public with confidence as regards the facility of converting it back to goods if necessary.

The wider use of money in the above sense logically leads to an examination of the other quality of money, namely as a measure of value ie. to make contracts, to keep accounts and to plan outlays for the future. Accordingly, any action taken by the Government, the Central Bank or the banks to alter the value of money affects these calculations. Changes in these calculations affect income, production, prices, expectations and the savings of the people. Looking at the issue more closely from the standpoint of the consumer, given a certain flow of money income and a set of prices for goods he is interested in, guided by the urgency of his wants, he is enabled to make his purchases. The information on purchases by households taken as a whole is transmitted to producers by placement of inventories, demand for more goods etc. Producers in turn adjust their operations to meet future requirements and depending on the level of activity generated, the level of future prices is influenced. The movements in the latter are induced by the strength of demand, level of economic activity — whether it is a boom period or not, the availability or shortages of factors of production and extant plant capacity. The price mechanism which signals producers and consumers and eventually the composition of the national product available to society, is based on the functional (directional) role of money as a measure of value. Concern over the value of money stems from the signalling process which influences resource exploitation, resource use, resource development and eventually the pace of economic growth. In a period of rising prices and near stable production, the value of money falls and the converse holds valid when the general level of prices fall under conditions of stable production. The expressions used to describe these movements are in terms of the purchasing power of the currency; in time of rising prices as measured by an index number of general prices, the phenomenon is labelled as a situation of inflation and the purchasing power of the monetary unit falls; in times of falling prices also measured by an index, the situation is named deflation and the purchasing power of money increases and the principal beneficiaries are those with fixed money incomes.

Why do people accept money even when they observe changes in the purchasing power? The answer is quite straight forward; there is no substitute for money in a "closed economy", having the same degree of acceptability despite observable disadvantages.

While moving into the field of monetary economics to answer the question 'what determines the value of money', it is important to mention that one is in fact attempting to find the reasons for changes in the purchasing power of money over things in general, because the value of money is the reciprocal of the general level of prices. More specifically, if the general level of prices has doubled in a given period, the value of money has fallen by 50 percent during the same period.

The forces affecting the value of money, as of anything else in value theory, can be discussed under the two headings of supply and demand. The supply of money in a particular country depends on its monetary and banking structure and the conventions which have been fostered. The demand for money, as for anything else, depends largely on the alternatives available for substitution and the purposes for which money is demanded. Although in fact the demand for money and the supply of money determine the price and value of money, money belongs to a special category because we cannot express the value of money in terms of itself. There is no way in which we can express the value of a rupee except by enumerating one by one, all the different arti-

cles and services a rupee could buy and the process of determining same would be practically a tedious and impossible task. The changes in value of money, the value of the rupee, is therefore expressed as the reciprocal of the changes in the general level of prices and it is by measuring the latter that the value of money is determined as a derived result.

Measuring Price Levels

Changes in the value of money are therefore measured indirectly by another standard, namely the general level of prices. Although the measurement of the general level of prices is of considerable practical interest, it is one exhibiting some theoretical difficulty. It is common knowledge that one distinguished mathematical economist conducted an examination of 44 algebraical formulae of increasing complexity representing different methods of measuring the changes in the value of money. The choice of the one which is most representative is guided by the degree of emphasis to be laid on particular price movements for groups within society.

How do we measure changes in prices or for that matter 'the general price level'? This is done by recourse to a statistical device called — 'index numbers". An index number is an artificial number which represents another number or set of numbers facilitating comparison. We can list out a group of commodities and ascertain the extent of the price movement for two distinct periods not too far removed from each other. There are several different ways in which we can compress or bring together all the changes into one single figure showing the percentage change between the two dates. As there are different ways of doing this exercise, the results invariably differ and the indices provide different measures of the value of changes in money.

Can we list out the possible areas where different results could emerge when measuring the same phenomenon of the purchasing power of money (value of money) by different techniques? Such a listing would provide the reader with the knowledge to be on the defensive when handling index numbers.

The more important areas to note are:

(1) the mathematical method employed to measure, i.e. the type of the index number calculated. There are three calculations, a 'Paasche Index', 'Laspeyre Index' or a 'Bowley Index' all commonly in use, but providing very different results;

(2) The "base year" chosen for evaluating price changes and reasons for its choice;

(3) The "Normalcy" of the current year. It is important that both the base year and the current year should be normal years without sudden, abnormal changes;

(4) The composition and representative character of the basket of goods measured for price changes;

(5) Technical improvements incorporated into goods of later years which cannot be adequately provided for or distinguished in a formula. This feature of technical advancement of later years makes comparison of the two baskets difficult and the interpretation misleading unless due regard is given.

(6) Taste changes which alter the demand for goods and thus register wrong or misleading weightage to goods accorded in the index.

(7) The range and flow of goods — quite apart from their prices could be different between periods and this affects the utility of money outlays and the real result of purchases and choice before the consumer.

Supply of Money

The supply of money, which influences prices in general and the value of the purchasing power of money, is determined by the banking system. At the apex of the monetary system is the Central Bank which is entrusted with the formidable task of formulating and carrying out the monetary policy of the country. As the economic circumstances change, monetary policy too is changed and the Central Bank has periodically to take measures which are appropriate to ensure that the tempo of economic activity, the resulting general price movements and the changes in the purchasing power of money are fully in accord with the desired goals of monetary movements.

Two ideas have to be spelled out in detail when concern is on the supply side of the equation:

(a) How is the supply of money determined?

(b) What sort of monetary policy should be followed to ensure the target results of —

(i) Stable prices,

(ii) Stable relative prices,

(iii) A slowly rising price level or

(iv) A slowly falling price level which is in harmony with Government Policy?

In modern communities the supply of money consists partly of notes and coins put into circulation by the Central Bank and partly of credit extended or created by the commercial banks. While the traditional concept of money is that of notes and coins which are legal tender, the deposits of these monies in the commercial banks and lendings of these by the banks to the public have enabled the stock of money to increase by a multiple of the initial deposits. Over the years, the banks have found out that the public does not withdraw all its deposits, and that banks could safely lend more than the initial deposits.

Some additional lending is done by way of loans and overdrafts and the growth of this technique of supplementing the notes and coins base has been greatly facilitated by the wider use of cheques for settling payments. The latter is now the principal source of money growth in developed communities with widespread banking habits. By maintaining certain statutory or conventional fractional reserves with the monetary authority of the Central Bank, commercial banks have, in general, acting with considerable foresight in the matter of their own standing, developed and fostered public confidence in the acceptability of this new form of money. The business community, likewise has responded well to this development.

In most monetary legislation, Central Banks in the control of money supply have provided specifically monetary reserves/ratios to be maintained by commercial banks. These reserves (ratios) are in respect of till cash, demand deposits, savings deposits, loans and advances and where necessary, overall liquidity. One of the tasks of the Central Bank is to see that some or all of these reserves/ratios are maintained. The statutory supervisory function performed by the Central Bank enables the commercial banks to increase money supply in the hands of the public by an amount larger than the banks aggregated capital and reserves as well as cash holdings. The acceptability and stability of the new money created by the banking system depends on —

(a) the supervision exercised by the Central Bank over the banking system,

(b) the strict adherence by banks to the ratios prescribed by the Central Bank,

(c) the wide acceptance by the general public of cheques as a means of payment,

(d) the use of loans and overdrafts for financial accommodation and the prompt payment of these to the banks on due dates, and

(e) fostering a close and successful dialogue between the Central Bank and the commercial banks whenever the growth of money supply is in excess of economic requirements.

The control of money supply is a vital aspect in an exercise which attempts to regulate the value of money, because the value of money

is linked closely to the supply and availability of money. An excessive and continued growth of money supply, in relation to output increases, causes the general price level to rise and the value of money to fall. There is a convenient formula arrived at which relates money supply, in relation to output increases, volume of output (T); if M (defined to include velocity of transactions v) is increased and T is static or near constant, then P should rise and when P increases the value of money falls. The equation is both simple and explanatory and has a basic validity which cannot be brushed aside.

How best can the supply of money be controlled in order to maintain the value of money? What techniques are there which the monetary authority could use to ensure that the value of money is "What it should be" that is, as targeted and where necessary to bring back the monetary system to a regulated course Financial discipline and a deep commitment to its role of providing stable expectations is by far the most important factor helpful in controlling the growth of money supply and avoiding the results of falling money values. Huge budget deficits, high and unrestrained consumer spending, excessive liquidity both in the hands of the public and in the banking system and the frequent recourse to financing of budgetary requirements from new money issues (i.e. Treasury bills) all enable the commercial banks to expand credit, while maintaining required conventional ratios, without running the risks of a draw down of cash and painful readjustments from monetary squeezing. A commitment to financial discipline is a sine qua non.

Given this attitude and acceptance, there are several monetary weapons available to the Central Bank to control the growth of money supply to match same to requirements of economic growth and thereby to prevent a serious fall in the value of money. These measures are known as monetary stabilisation measures and some of the more widely used techniques, which have proved successful, are given below; The principal monetary instruments used are —

(a) Manipulation of the Bank rate i.e. the rate at which the Central Bank would grant credit to the commercial banks. A high bank rate implies a high cost for borrowed funds and tight control which is a signal for commercial banks to be cautious in lending. The reverse is valid when the bank rate is reduced and spending is encouraged.

(b) Structuring of penal rates of borrowing beyond the accommodation given at bank rate. These rates are progressively increased to affect the cost of borrowing, making it more and more difficult and expensive for the banks to borrow through placement of their securities.

(c) Sale and purchase of Government bills and securities by the Central Bank enables the latter to influence the level of cash deposits of the banks with the Central Bank. This particular device is called "Open Market Operations" and is frequently used because the purchase or sale operations can be done either discretely through money brokers or openly by the Central Bank at its 'discount window". The aim here is to expand or contract the banks liquidity and its ability to create credit. Lending is made more or less difficult for the commercial banks depending on the directional trust required by the Central Bank.

(d) Changes of prescribed reserve ratios or direct stipulation of special ratios over base period achievements. Higher reserve ratios reduce lending ability and also affects a bank's profitability as the reserves maintained at the Central Bank do not earn an income for the commercial bank.

(e) Issue of special short period stabilisation securities under special provisions of the monetary law governing the banking system. These securities have very restricted "rights" as regards lodgement for discounting.

(f) Selective control of credit by specifically singling out areas for discriminatory treatment. Restrictions on consumer lending, hire purchase lending, overdrafts for speculative holding of stocks, speculative and long drawn out construction activity have been resorted to as measures to reduce money supply growth and dampen activity. These measures are widely adopted as there is selectivity in the controls imposed on lending.

The distinction often drawn between 'Monetary policy' and 'Credit policy' is a hazy one. Both policies (where the differentiation can be introduced) serve the same goal of moderating inflationary pressures and tendencies. The control of inflation has become the chief preoccupation of Governments and Central Banks. If the authorities are anxious to contain inflation, they cannot give the banks a free hand to expand credit. To achieve the result of stable prices (stable relative prices) monetary discipline, has to be accepted at all levels and from all quarters. 'Bad' budgeting, 'Weak' financing, 'liberal' lending by the commercial banks all tend to increase (M) in the simple equation referred to earlier. Unless (T) is increased by more than the proportionate increase allowed for (M), the result would be an increase in (P). While sophisticated refinements can be introduced by way of "leads and lags", adjustments for velocity of circulation, monetization of rural areas, hoarding etc. the casual links mentioned above between M, P and T holds good for a large range of situations where output is inelastic.

Demand for Money

What influences the "demand" for money? This is the other blade of the scissor. As mentioned earlier, money has a derived demand and the total amount of money balances that the public wishes to hold for all commercial and household purposes is called the demand function for money. There is a cost of holding any money balance because an income is foregone when a balance is held in the form of cash or as a demand deposit. From here it is easy to distinguish the reasons for holding cash balances. Money balances held for meeting day to day transactions are classified as **transaction balances** and the desire to do so is called the "transactions demand for money". People require balances because of the time lags between receipts of income and calls for payments. As a general proposition, money held for transactions will be higher, (i) the larger the national income as measured in current prices and (ii) the greater the time lag between receipt of income and planned outgo.

Another motive for demanding money is to provide specially for time lags in receipts and payments and to cover for contingencies. Additional cash balances in excess of transaction balances are held which cater for **precautionary** requirements, that is for playing safe. The higher is the estimation of uncertainity in economic outturn, the larger are the balances held as "precautionary balances". There is one other source of demand for money, that is the direct provision for uncertainity and expectations of risks concerning the future. Provision here is categorised as **"Speculative** balances" and the motive for holding such balances is termed the Speculative motive. Were all these separate functions added, these often overlap, the result is a "total" demand function for money which is in turn a general function of

both the level and rate of growth of real national income and the rate (s) of interest maintained.

In attempting to stabilise the value of money from the demand side — a far more difficult exercise than attempting same from the supply side — concern is principally with regard to matching transaction demand for money with the level of output and its flow. The very success achieved, in keeping the price level stable, helps in reducing the total demand for money; similarly, an increase in the price level with the stock of money held constant and the real national product stable, produces the result of an excess demand for money at that level of economic performance; this is what is commonly termed as an "inflationary gap". To reduce an inflationary gap, the flow of output has to be increased either domestically (internally) by higher production or by added inflows of imports (reducing the country's foreign exchange reserves) and allowing in the process for domestic money to be sterilised at the Central Bank as foreign currency is exchanged for domestic currency for payment of importables.

Excess demand, it would appear where domestic output is slow to respond, is better controlled by running down external reserves and adjusting to a low equilibrium than by seeking generous foreign grants and soft loans to supplement the flow of output and allowing purchasing power to remain in the hands of the public till counterpart funds are created. Further, there is the possibility that counterpart funds would be used to finance extra budgetary outlays and add to demand pressures.

The two sides of the coin

The value of money depends on both domestic policies influencing the demand for and supply of money and through the exchange rate the international trade and payments policies pursued. Measures affecting the quantity, price, and velocity of circulation of money affect in one way or another the price level. Maintaining the value of the rupee is therefore a matter for synchronised policy action in domestic/monetary policy and in foreign exchange management. The latter should take into account the service payments falling due from foreign debt obligations. Measures affecting the volume, purchasing power, and velocity of circulation of money, all of which have a bearing on the domestic value, are bound to react on foreign exchange rates as well. Likewise, a continued decrease in the country's foreign exchange reserves to supplement import availability and output, is liable to react "favourably" on the internal monetary situation with the dampening effect it has on growth of money supply as rupee funds get sterilised at the Central Bank with the conversion of rupees for foreign currency. Indeed, the internal and external aspects of the value of money are inseparable aspects of the same thing, the proverbial two sides of the same coin. The internal price level and the exchange rate influence each other and together makes it imperative for the Central Bank to determine the two simultaneously. Beyond doubt for a developing country, exchange rate movements and the level and drawdown of foreign reserves provide a very revealing and sensitive index of the external value of the currency, the qualitative counterpart of the quantitative domestic purchasing power index.

Domestic monetary policy cannot afford to ignore movements in exchange rates and decisions taken to influence foreign payments. The character of the exchange rate policy adopted, whether fixed or fluctuating, open floating, adjustable peg or crawling peg, has a very strong bearing on the internal monetary situation and domestic price level.

The value of the rupee is determined both by the form and character of the monetary policy pursued by the Central Bank and the appropriateness of the exchange rate adopted and the foreign exchange stabilisation programme accepted. The draw down of exchange reserves is guided by the level of reserves, the safety margin for covering imports and payments and to the export impetus given by providing for the essential import content in exports and thereby strengthening the value of the currency. Looked at in this way, the 'other side of the rupee" is the external value determined by the exchange rate maintained for it. One cannot of course stabilise the domestic (internal) value of the rupee if the external value of the rupee is left open ended. The decision as to whether policy should provide for "more" or "less" devaluation for a ruling exchange rate or "more" or "less" revaluation is an important and difficult one, and has to be consciously written into the stabilisation equation of the value of the rupee. The success of the domestic stabilisation programme hinges crucially on the external stabilisation programme and the exchange rate adopted. The "other side of the rupee" has a far more complex puzzle to be figured out by economists and is essentially a challenge to the specialists. The causal links between the balance of payments outturn, the terms of trade, the exchange rate and the measures taken to influence directly (visible payments) from inter-related issues for policy decisions.

The internal value of a currency becomes the sole concern of policy makers only in the limiting situation of the hypothetical "closed economy" with no outside trade and payments. But as economies gain from product specialisation, factor movements, international trade and capital movements, the external value determined by the exchange rate and terms of trade has to be explicitly reckoned.

International trade is fostered on the basis of production grounded on comparative advantage. The ratio of exchange of internationally traded items is expressed as the "net barter terms of trade". The terms of trade measure the external purchasing power of the rupee, and is the opportunity cost of obtaining goods through international trade. The exchange rate is the price at which purchases and sales of foreign currency take place and therefore the rate of exchange and the net barter terms of trade should be taken together. These are related to one another and simultaneously determine external value.

The relationships between the exchange rate and the terms of trade are embodied in two quite different theories, the 'elasticity theory" and the "Scandinavian model". Both theories state that the net effect of a change in the exchange rate is a change in relative prices and switching of expenditure and following from this premise a change in the exchange rate is referred to as a policy for "expenditure switching". In the elasticities model which is more applicable to developed trading economies, and thus better represented in text books, the absolute price levels of trading communities are given by their respective domestic circumstances and the exchange rate for the demand and supply for each others currencies determine the terms of trade. The Scandinavian model asserts that internationally traded goods have prices which are internationally set and these prices are not affected by exchange rates. The effect of a change on the exchange rate is to change the relative price of internationally traded commodities on the one hand and domestically produced non-traded commodities on the other. It is now conceded that this model is more applicable to a country like Sri Lanka whose export and import activities do not affect the level of international prices. But it is the elasticity model which is more generally discussed and its central proposition can be summarised that a country's terms of trade worsen when its exchange rate depreciates and improves when its rate appreciates. Relative prices change to equilibrate international payments by switching ex-

penditure away from imports in depreciating countries and towards imports in appreciating countries.

If the domestic price level of a country rises faster than that of its trading partner, the value of the first country's currency will be falling relative to that of its partner. Domestic price level increases will impinge on the external position. Inflation in a country dependent on exports for earning foreign exchange and on imports for supplementing essential items (consumer, intermediate and capital goods) poses to policy makers a difficult task of remaining competitive in international trade by lowering the exchange rate (i.e. through devaluation) yet bearing an equally painful increase in the import price level and the general price level. The latter result could self defeat the initial act of depreciation and produce a "ratchet effect".

The price levels internally of two trading partners are determined by the internal monetary policies of the two countries and the external purchasing power of the currencies as conditioned by the terms of trade and the exchange rates. The question whether the internal price level influences or determines the appropriate level of the exchange rate or whether the latter determines or influences the allowable rate of increase of the internal price level in a competitive trading position is one which cannot be answered conclusively, even by specialists in this field. Yet in seeking an answer, one should note that the extent of international trade figuring in national output — the import content in consumption and exports, and numerical values of the foreign trade elasticities (there are four such trade elasticities for a country) are of decisive importance in assigning the relative importance to the selection of the determinant variable. Here we have another classic example of circular economic causation; the internal value of the rupee being influenced or determined (partially) on the external value and the external value likewise being influenced or determined (partially) by the character of the internal monetary (and fiscal) policies pursued.

No wonder the debate on the efficacy of devaluation as a means of correcting a passive external balance is still inconclusive and domestic stabilisation policies which provide for exchange rate management are subject to criticisms which are hard to counter. This is because the state of the subject is itself inconclusive and empirical verification of a programme is difficult. There is ample room for more than one view point to be expressed and alternative arguments to be introduced.

Effects of Inflation on Income Distribution

Tilak Samaranayake

In this paper Tilak Samaranayake, an economic consultant, discusses inflation, and income distribution in Sri Lanka with the objective of assessing the effects of inflation on low income groups within the country. He concludes that development policies must focus on areas that will facilitate the increased participation of the rural poor in the development process so that benefits of economic growth activities will directly accrue to the low income groups. This, he maintains, will help to minimise the adverse effects of rapid economic growth and high inflation.

Inflation and income distribution are two separate fields in economics, but are highly interdependent and complexly inter-related. This complex inter-relationship is the principal reason for questions as to the appropriateness of expansionary monetary policies as a means to mobilize domestic resources to finance economic growth. While the possibility of increasing capital accumulation, a condition necessary for economic growth, through expansionary monetary policies is generally accepted, questions arise because there are also possibilities of adverse developments in the economy such as regressive income distribution emerging from expansionary policies through increased inflation. However, inflation is not the only cause for adverse developments in income distribution. Thirwall (1974) reports the findings of a large number of empirical investigations to support the hypothesis of increasing inequality in income distribution in the early stages of economic growth followed later by a decrease in inequality. Thus, income distribution is adversely affected by inflation as well as economic growth. This is a dilemma that confronts many developing nations since expansionary monetary policies, although useful as a means to induce economic growth, lead to high inflation affecting income distribution, and, in addition, exacerbate inequality in income distribution through economic growth.

The purpose of this study is to examine the effects of inflation on income distribution in Sri Lanka. According to statistical information, there has been a sharp increase in inflation in Sri Lanka more or less corresponding to the period of relatively impressive growth performance in the economy begun after 1977. Given the existing inequality in income distribution coupled with widespread poverty, the chosen area of study is important from a public policy standpoint. Although firm conclusions have not been attempted due to serious shortcomings in data bases, the tentative conclusions emerging from this analysis will be helpful for making policy decisions and designing projects.

In this study, income distribution is taken as the core of the analysis and no attempt is made to provide comprehensive coverage of the many facets of inflation. However, inflation enters the analysis in so far as it directly affects income distribution. In other words, only the end result of inflation on income distribution is considered and it does not explicitly deal with the complex process that led to the sharp increase in inflation 1/. The approach taken here keeps the analysis within manageable limits.

The rest of the Paper is divided into three sections. Section I briefly reviews the recent inflationary experience in Sri Lanka followed by an analytical description of income distribution in Section II. In this section comparisons are made between the latest income distribution data with the previous data in order to highlight the major trends in both national and regional income distribution. Section III deals with effects of inflation on income distribution and, due to data limitations, this section concentrates only on the effects of increasing food prices on income distribution with particular emphasis on food consumption and nutritional status of low income groups.

DEFINITIONS AND MEASUREMENTS OF INFLATION

(a) Definitions

Inflation is commonly defined as a general rise in prices. However, since there is generally a tendency for prices to rise over time, a more precise definition is necessary to distinguish inflationary price increases from non-inflationary price increases. In economic terminology, inflation is a consequence of continuing trend of income growth at a more rapid rate than the output of goods and services 2/. When an economy is characterized by this phenomenon, a process of upward surge of prices is initiated, pushing up all prices' together, leading to a rapid and continuous increase in the general price level. Broadly speaking, therefore, inflation is a consequence of rapid growth in income, but reflected in an increasing price level.

The rate of inflation, which is defined as the rate at which general prices are changing, is the indicator showing the degree and magnitude of inflation. Most economists believe that a general price increase of around 5 per cent is not inflationary, but a condition necessary to avoid economic stagnation. In fact, there is empirical evidence to support the hypothesis that a mild inflation - an inflation rate below 10 per cent — provides a strong stimulant to economic progress. As Kaldor (1959) pointed out: "A slow and steady rate of inflation provides a most powerful aid to the attainment of a steady rate of economic progress..." This argument is based on the premise, which has been supported by empirical evidence in a wider number of historical studies, that inflation is a stimulant to maintain a high rate of profit which gives rise to a higher rate of capital accumulation than would otherwise have occurred 3/. However, when the rate of inflation exceeds this critical level passing from mild to high inflation, the need for stabilization policies to control inflation is frequently stressed and becomes a leading policy issue. This concern stems from the fact that high inflation not only destroys the social fabric, but also threatens both the political and economic stability.

(b) Measurements

The rate of inflation in Sri Lanka accelerated sharply after 1977. The magnitude of currently prevailing inflationary tendencies is clearly manifested in comparable rates of inflation. Table 1 presents rates of inflation for the 1960-80 period computed in terms of four indices. 4/ The average price increase during the 1960-70 period was between 3.3 per cent and 4.1 per cent, compared to 8.5 per cent and 14.2 per cent during the 1970-75 period, and 14.5 per cent and 17.3 per cent during the 1975-80 period. A comparison of inflation rates before and after 1977 makes it clear that there has been a substantial acceleration of inflation after 1977. The rate of inflation in 1980, in particular, was

Table 1 ESTIMATES OF AVERAGE ANNUAL INFLATION RATES

Type of Technique	*Period*						
	1960–70	70–75	75–80	1977	1978	1979	1980
Colombo Consumer Price Index ...	3.3	8.5	14.5	1.2	12.1	10.7	26.1
Unpublished Consumer Price Index	—	—	()	15.1	9.2	19.0	37.8
Wholesale Price Index ...	—	—	—	0.9	15.8	9.5	33.8
GNP Deflator (Market Prices) ..	4.1	14.2	17.3	10.0	8.0	15.9	18.2

Source: *Central Bank of Ceylon.*

quite unprecedented representing an 8 -10 fold increase compared to the 1960-70 period.

All these indices clearly demonstrate that there has been a sharp increase in the general price level, especially since the 1977-78 period. However, the extent to which inflation affects different income groups largely depends on their consumption preferences and needs as well as their income level. For example, the 30 per cent increase in food prices and the 77 per cent increase in energy prices between 1979-80, compared to the 28.1 per cent average increase recorded in the Consumer Price Index (CPI) causes increasing difficulties to low income groups. Accordingly, the rising prices of basic necessities frequently receive greater attention at times of rapid inflation because of the likelihood of lowering the living standards of the majority of the poor.

TRENDS IN INCOME DISTRIBUTION

The concept of income distribution simply deals with individual persons or households and the total income they receive. It is the measure most commonly employed in the description of the degree and magnitude of income inequality and absolute poverty. A common method employed in the analysis of income distribution is to divide the population into successive quintiles and then determine the proportion of income received by each quintile.

(a) National Income Distribution

Table 2 presents the computation of income shares for 1973 and 1978. The distribution depicted in the relative income shares bring out two important issues: firstly, there is enormous disparity in income distribution among different income groups; and secondly, there is a tendency for increasing disparity in income distribution over time.

Table 2—PERCENTAGE OF TOTAL INCOME RECEIVED BY DIFFERENT INCOME GROUPS

Quintile	*1973 Share*	*1978 Share*
First 20 percent	4.9	3.9
Second 20 percent	10.1	8.4
Third 20 percent	15.6	13.2
Fourth 20 percent	23.2	20.9
Fifth 20 percent	45.9	54.1

Source: *Consumer Finance Survey, Central Bank of Ceylon.*

In 1978, for example, the bottom 20 per cent of the population received 3.9 per cent of the national income against 54.1 per cent of the upper 20 per cent. If the proportion of income received by different income groups is an adequate yardstick for measuring relative living standards, the magnitude of difference in living standards between the rich and the poor income groups can be easily comprehended since the income of the upper 20 per cent is almost 15 times greater than the bottom 20 per cent. It has frequently been observed that the high degree of inequality in income distribution coupled with low incomes is the primary cause for the concentration of a substantial proportion of population below the absolute poverty line. Studies carried out regarding income distribution and absolute poverty in Sri Lanka enumerate approximately 40 per cent of the population in the category of absolute poverty. (For example see Marga (1980).

Another characteristic depicted in the relative income shares is the deterioration of income distribution between 1973 and 1978. This appears

1/ The Box on pages 22 and 23 provides a fairly detailed exposition to inflation citing examples from the Sri Lankan experience.

2/ The underlying cause of the consequence of inflation are defined in terms of: (a) excess aggregate demand over aggregate supply and/or (b) increasing production costs of goods and services. The impact of rising oil prices, the most predominant cause for inflation in recent years, is also included under these categories. See Box on pages 22 and 23 for details.

3/ For a comprehensive review of the empirical findings of the relationship between inflation and capital accumulation see Thirlwall (1974).

4/ Among the several computational procedures measuring price increases, the Consumer Price Index (CPI) is the most frequently employed. In Sri Lanka, however, the CPI is based on the Colombo City prices and, therefore, it is not really representative of the rate of inflation throughout the country. It is because of this limitation of CPI that a few other statistical measures such as the Wholesale Price Index, the unpublished Consumer Price Index and the Gross National Price (GNP) implicit deflator are frequently employed in measuring inflation.

to have occurred from disproportionate growth in income resulting in a greater proportion of income accruing to upper incomes households. This suggests a complete reversal of trends in income distribution compared to the 1963-1973 period during which income distribution was considered to be progressive, since there were noteworthy improvements in relative income shares of low income groups.

The improvement in income distribution between 1963 and 1973 has frequently been explained as outcomes of egalitarian policies pursued by respective governments which resulted in a considerable transfer of income towards low income groups. The implementation of these policies required a greater allocation of public expenditure on health and education, in addition to direct consumer subsidies on such areas as food and transport. Unfortunately, given the precedence on welfare over economic growth, a high degree of economic stagnation and unemployment resulted. It often has been argued that economic growth and employment had to be compromised to obtain relatively better income distribution during the 1963-73 period.

In the face of economic stagnation, high unemployment and rapidly increasing labor force, it was not surprising that economic growth and employment received the highest priority in development policy after 1977. The policy makers conceived that a better income distribution is compatible with rapid economic progress provided that avenues are opened to the target poverty groups to accelerate their income growth. It was this recognition that led to the formulation and implementation of development programs, including the Accelerated Mahaweli Program where the major emphasis is on agriculture and rural development

A deterioration in income distribution is a phenomenon frequently observed in developing countries following a rapid expansion of the economy. Thirlwall (1974) reports, on the basis of empirical evidence of the relationship between economic growth and income distribution, that

Causes and Types of Inflation

Inflation can be originated from different sources due to a wide variety of factors. All these sources or factors are generally grouped into two: (a) excess of aggregate demand over aggragate supply, and (b) increasing production costs of goods and services. These two categories or types are commonly referred to as 'demand-pull' and 'cost-push' inflation. In practice, when inflation is underway, with both costs and prices rising, it may be extremely difficult to distinguished between these two types of inflation. Furthermore, when inflation is sustained over a considerable period of time, interaction between demand-pull and cost-push inflation is likely to occur resulting in several other types with combined elements causing further difficulties in the determination of true causes of inflation. The following brief review highlights major features of these types with examples.

(1). DEMAND-PULL INFLATION

The demand-pull inflation arises from excessive demand over supply. This type of inflation is quite common in most developing nations and is usually generated by accelerated development efforts. Thorp (1971) in reviewing growth efforts and inflation in several developing nations concludes that the rapid inflation that followed development efforts is a consequence of a number of structural constraints found in developing nations generally taken to be: (a) the inelastic supply, (b) the foreign exchange bottleneck, and (c) the financial constraints. The financial constraint or the lack of internal financial resources to finance economic growth is frequently solved by recourse to deficit financing with rapid income growth and inflationary consequences. Given these constraints in most developing nations, along with expansionary policies to finance economic growth, inflation is inevitable when the demand for goods and services is rapidly increasing.

Inflationary experience during the last few years in Sri Lanka provides numerous examples for demand-pull inflation. Perhaps the best examples comes from the construction sector. Following the growth oriented development policies pursued since 1977, the demand for construction material increased considerably. As a consequence of increased demand, and also due to the capacity limitation for increased production in the short run, the prices of most building material more than doubled within a short period. Although imports of building material helped to partially offset the growing domestic demands for certain building material (eg. cement iron and steel), prices of building material, even that produced domestically, continued to increase very rapidly. The increase in the price of domestically produced material appears to have been partially caused by the influence of the world market prices of imports into the economy.

Sometimes countries deliberately pursue expansionary monetary policies to induce demand-pull inflation as an objective for rapid growth. The policy is frequently found in developing nations which are characterized by high unemployment low economic growth, and lack of financial resources. The latter is partly due to low revenue bases and partly to limited and unreliable foreign capital inflows. Since economic growth in developing economies is largely a function of capital accumulation, the capital shortfall or financial resource limitation could act as a serious impediment to economic growth. It is often argued, however, that monetary expansion could eliminate this constraint through increased money supply to bridge the deficit arising from the difference between planned investments and anticipated revenue. The link between increased money supply and potential for economic growth occur since increased money supply can provide enough saving to achieve the desired capital (Tobin, 1965. Empirical studies provide substantial evidence to support this proposition as indicated by strong correlation between money supply and real output growth as well as the ratio of investment to income and the growth of per capita income (Fan, 1970).

Monetary expansion has been a leading source of financing budget deficits in Sri Lanka. As Table 3 bears evidence, its importance has grown steadily in recent years. In 1978, only about 2 3 per cent or Rs. 167 million of the total budget deficit of Rs. 7,165 million was financed by expansionary means while in 1980, the proportion has increased to 46 per cent or Rs. 7,077 million of the total deficit of Rs. 15,270 million.

Financing public expenditure through monetary expansion has favourable outcomes on economic growth only if the production of goods and services is feasible in the context of increasing demand or, in economic terminology, the supply of goods and services must be elastic with respect to demand accompanied by monetary expansion.

Otherwise, inflation is inevitable. Further, if supply does not respond favorably to increasing demand, the im-

Table A 1—FINANCING BUDGET DEFICITS-1978 to 1981

	1978	1979	1980	1981
Revenue	11,688	12,730	13,756	16,176
Expenditure	18,853	21,521	29,026	30,407
Budget Deficit	7,165	8,791	15,270	14,231
Financing the Deficits Domestic Sources ...	2,653	4,582	8.885	5,962
(a) Non-Bank Market Borrowing ...	2,033	2,086	2,692	2,550
(b) Non-Market Borrowing ...	453	1,096	884	—
(c) Banking System	167	680	7,077	3,412
Foreign Finance	4,454	4,237	6,253	8,269

Source: *Annual Budgets for* 1979, 1980 and 1981.

because the factors of production are largely concentrated in the hands of the rich, the direction of income flow is necessarily towards the upper income groups. The Central Bank Report (1979) commenting on the trends in income distribution observed similar reasons for increasing disparity;

> "It is also noteworthy that, although all income deciles gained (in absolute terms), the only decile that improved its share in 1978 was the highest. This was probably inevitable, at early stages of rapid growth, when accrual of profits to new investors who made an early entry into business are relatively greater, on account of lesser competition in the economy, a initial competition. With greater larger spillover of benefits of new economic activity to lower income groups could take place, but this may have to be supported by appropriate fiscal policies..."

Another reason for income deterioration among low income groups is the inflationary spiral accompanied by development programs. This is also a common development in developing nations, since most developing countries, as Kirkpatrick and Nixon (1976) point out, are characterized by market imperfections, poorly integrated sectors in the economy, different supply elasticities, financial resource limitations, high propensity for imports and adverse balance of payments. Under these circumstances, increased public spending aimed at increasing consumption leads to rapid inflation and results in regressive income distribution.

(b) Regional Income Distribution

Table 3 presents household income distribution in terms of urban, rural and estate sectors for 1973 and 1978/79. Again, there is evidence of increasing disparity in income distribution. The relative income shares of low income groups declined sharply between 1973 and 1978. The bottom 60 per cent of the population in the urban sector, in particular, received 32 per cent of the total in-

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post on unemployment is virtually insignificant. Thus monetary expansion, as a policy objective to achieve economic growth, more employment and improve living standards, has serious limitations, if the economy is characterized by structural constraints. This is the main reason for so much controversy and theoretical conflict among economists about the appropriateness of monetary expansion policies for developing nations. It is often argued that the economies of developing nations are characterized by supply inelasticity arising from resource constraints, economic dualism, imperfect financial systems, disparities in income distribution, etc, and under these conditions monetary expansion only generates inflationary tendencies without any beneficial effects on either economic growth or employment.

In spite of highly impressive growth performances and increased employment opportunities accompanied by growth-oriented policies during the last few years, the Sri Lankan experience, especially in the context of more recent developments, does not sharply contrast to the dangers and unfavourable consequences of monetary expansion described in the previous section. This can be demonstrated quite convincingly, in addition to the declining economic growth rates and slow growth of employment in near perfect supply inelasticities of the three most vital sectors of the economy presented in Table 3. Although these elasticities are based on aggregate data, they nevertheless provide ample evidence of resource constraints and perhaps the existence of institutional rigidities negatively influencing the ability to respond favorably to increasing demand accompanied by expansionary policies. Thus, one of the major sources of increasing inflationary tendencies in recent years appears to be the capacity limitation of the economy to increase the production of goods and services, following the extensive demand brought about by inflationary measures.

Table A 3—SUPPLY ELASTICITIES OF THREE MAJOR SECTORS (1972–80)

	Agriculture	*Manufacturing*	*Construction*
1972	.16	.31	—
1973	.03	.10	.14
1974	.08	.06	.22
1975	1.01	.12	—
1976	.14	.23	.25
1977	.16	.01	—
1978	.14	2.05	.21
1979	.08	.08	.13
1980	.04	.01	.05

Source: *Own Computation.*

(2) COST-PUSH INFLATION

Theoretically 'cost-push' inflation originates from increased production costs attributable either to wage increases or to a rise in import prices. The increased cost of goods and services are transmitted into the economy which in turn results in higher prices.

The argument that wage increases cause inflation frequently comes under severe criticism especially from trade union leaders. While emphasizing the lag relation between annual rate of inflation and wage adjustments, they claim that wage increases are not a cause, but a consequence of inflation. There is little evidence in Sri Lanka that wage increases are contributing to inflation by a considerable magnitude. In fact, except in the organized private sector and specialized manpower categories, the wage increases appear to be below the annual rate of inflation.

Policy makers consider that the recent inflationary tendencies in Sri Lanka are primarily a consequence of increased price of imports. During the 1978-80 period, the prices of imports have increased by approximately 117 per cent, while the prices of exports have only increased by 26 per cent leading to highly unfavourable terms of trade. Considering the price increases of both exports and imports in a joint perspective, the claim that the domestic inflation is largely caused by the increases in international prices beyond the control of domestic economy is rather convincing.

(3) COMBINED ELEMENTS OF DEMAND-PULL AND COST-PUSH FACTORS

As stated previously, when inflation is underway, it is difficult to attribute inflation to any specific cause; frequently a process of interaction occurs bringing together elements from different causes. For example, rising import prices have undoubtedly contributed to recent high inflationary tendency in the country. The increase in volume of imports, which can be attributed mainly to expansionary policies, also has played a significant role suggesting that current inflation is largely due to combined effects rather than to one cause in particular. While import prices have increased by 117 per cent during the 1978-80 period, the volume also has increased appreciably by 40 per cent. The export volume, on the other hand, has declined by one per cent during the same period while there has been a 26 per cent increase in prices. This suggests that monetary expansion as a means of financing public expenditure has serious limitation in developing countries like Sri Lanka because it leads to adverse effects on balance of payments, especially under conditions of increasing volume and prices of imports, relative to exports and scarcity of foreign exchange reserves. Consequently, a vicious circle develops requiring further expansion of the money supply to finance increasing public expenditure due to inflation which in turn results in excessive demand, increased expenditure on imports, and further inflation. In fact, Sri Lanka's experience in more recent years can be appropriately described along these lines.

come in 1973 compared to 25 per cent in 1978, while in the rural sector, the share of the bottom 60 per cent declined from 35 per cent in 1973 to 27 per cent in 1978/79. Among the estate sector households, on the other hand, there appears to be an improvement; the bottom 60 per cent of the population received 38 per cent of the total income in 1978 as against 34 per cent in 1973.

Table 3—PERCENTAGE OF INCOME RECEIVED BY DIFFERENT INCOME GROUPS IN URBAN, RURAL AND ESTATE SECTORS

		1973			1978		
		Urban	*Rural*	*Estate*	*Urban*	*Rural*	*Estate*
First	20 percent ...	5.1	5.3	7.5	3.8	3.7	8.1
Second	20 percent ...	11.0	11.3	11.8	8.4	8.7	13.2
Third	20 percent ...	16.1	18.0	14.9	13.1	14.2	16.7
Fourth	20 percent ...	22.4	23.0	20.7	19.4	20.8	22.1
Fifth	20 percent ...	45.4	42.4	45.1	55.3	52.7	39.9

Source: *Consumer Finance Surveys, Central Bank of Ceylon.*

The regional variation in income distribution as well as increasing disparity over time is another likely outcome in the early stages of rapid economic growth. Although economic growth activities are largely concentrated outside urban centers, the direction of income flow in most developing countries is in favor of urban households. After examining a number of empirical studies Chenery (1974) concludes that rapid economic progress follows a transfer of income to urban centers because of the concentration of institutional, financial, administrative and business and commercial activities in urban areas.

MEASUREMENTS OF INFLATIONARY EFFECTS ON INCOME DISTRIBUTION

The paucity of data with sufficient accuracy and continuity is a major limitation in an analysis dealing with inflationary effects on income distribution. For example, the latest data on income distribution in Sri Lanka refer to 1978 whereas the inflationary tendencies became particularly pronounced only after 1978. This demonstrates as to how data could be a limiting factor in measuring inflationary effects on income distribution. Due to this limitation it was necessary to adopt a rather disjointed approach in order to extend the effects of inflation on income distribution beyond the period where data are available.

Table 4 presents the quintile mean incomes (for 1973, 1978 and 1980. While the 1973 and 1978 quintile mean incomes have been computed from the respective consumer finance surveys, the 1980 were derived by inflating the mean incomes of different income groups by the annual average growth rates of respective income classes between 1973 and 1978. In other words, the 1980 income distribution has been projected assuming the continuity of average income growth prevailing during the 1973-78 period. In the absence of income data for 1980, this is the only possible option to estimate income distribution even though this approach has serious limitations.

Between 1973 and 1978, the rate of income growth has varied between 13.7 per cent per annum in the low income group to 21.4 per cent in the upper income group for the country as a whole. However, a regional disaggregation in terms of urban, rural and estate sectors indicates a much wider range between 10.9 per cent (bottom quintile in the urban sector) to 22.0 per cent (upper quintile in the urban sector). The rate of growth increases from low income to upper income groups in both urban and rural sectors, while in the estate sector the growth rate is increasing up to the third quintile and turns into a declining trend thereafter.

In order to draw conclusions of the effects of inflation on income distribution, the rate of income growth is compared against the rate of inflation. In the absence of a single inflation index accounting for overall price increases in the economy, this comparison is made in terms of the Colombo Consumer Price Index and the GNP implicit deflator, the two measures frequently employed in measuring inflation. The rate of growth of Colombo Consumer Price Index averaged 9.3 per cent per annum during the 1973-78 period, while the GNP deflator recorded an average rate of 13.6 per cent per annum during the same period.

Rates of income growth shown in Table 4 indicate that all income groups are above the average annual inflation rate between 1973 and 1978 when measured in terms of CPI. Income groups in the upper quintiles at national level (as well as in all three sectors) experienced a significantly impressive growth rate compared to the CPI. However, when the comparison is made in terms of GNP implicit deflator of 13.6 per cent per annum, the average income growth of the lowest 20 per cent barely kept pace with the average inflation rate. When income distribution is disaggregated in terms of the three sectors, and about 55 per cent of the urban sector fell below the average rate of inflation. This implies a reduction in real income of the households in these categories. All income groups in the estate sector, however, maintained income growth rates above the average annual inflation rate.

The rate of inflation accelerated after 1978 and all indicies depicting the rate of inflation recorded unprecedented increases ranging from 9.5 per cent per annum to 19.0 per cent per annum for 1979 and 26.1 per cent to 37.8 per cent per annum for 1980 (Table 1). At 9.5 per cent per annum in 1979, inflation has not adversely affected any particular income group, but at 19.0 per cent per annum a number of income groups appear to have suffered and their income levels have been reduced by varying degrees. With the rate of inflation for 1980 varying between 26 per cent to 37.8 per cent in terms of different indicies, almost all income groups have been affected. The loss in real income ranges between 12 and 25 per cent and between 5 per cent and 17 per cent among different income groups.

As previously noted, inflation affects different income groups differently depending on their consumer needs and income levels. However, when the prices of basic necessities rise, low income groups experience greater difficulties than upper income households due to their inability to accommodate increased cost. Furthermore, almost the entire budget of the low income groups is spent on their basic necessities and increasing cost means declining real

Table 4—INCOME DISTRIBUTION BY INCOME GROUPS (MEAN MONTHLY INCOMES IN RUPEES)

		1973	1978	*Average Growth Rate* (r)	1980 *Estimate* (y)
First	20 percent	56.0	122.0	13.7	158.0
Second	20 per cent	115.0	262.0	14.6	344.0
Third	20 percent	180.0	411.0	14.7	541.0
Fourth	20 percent	264.0	630.0	15.6	842.0
Fifth	20 percent	522.0	1679.0	21.4	2475.0

Notes: r–(1/5) In (Y_j 1978/Y_j 1973); Where Y_j represents qintile mean incomes of respective income classes.

Y–r (Y_j 1978); where x is equal to 2

Source: *Consumer Finance Surveys and own computation.*

Table 5—ESTIMATES OF PRICE INCREASES OF BASIC NEEDS 1977-1980 *

	1978 Mean Incomes (Rs.)	Proportion of Expenditure on Food	Clothing	Energy	1978 Expenditure (Rs.)	1980 Expenditure (Rs.)	Rate of Increase
Low Income Group ...	122.0	62.8	4.9	5.4	90	130	44
Middle Income Group	630.0	53.4	9.4	4.5	424	606	43
Upper Income Group	1679.0	25.9	6.6	2.0	613	852	39

Source: *Consumer Finance Survey 1978. Central Bank of Ceylon*
* See Note below for computational procedure.

NOTE:

1. The 1980 estimates of expenditure on food, clothing and energy were arrived on the following computational procedure:

$$FCE_{1980} = Y_F \left[I_1 \left(\frac{FI}{FI} \right)_1 \right] + Y_C \left[I_1 \left(\frac{CI}{CI} \right)_0 \right] + Y_E \left[I_1 \left(\frac{EI}{EI} \right)_0 \right]$$

Where FCE — Expenditure on food, clothing and energy in 1980
Y_i — Mean incomes of income groups
T_i — Proportion of expenditure on food
C_i — Proportion of expenditure on clothing
E_i — Proportion of expenditure on energy
FI_1, CI_1, EI_1 — Index numbers (CPI) of food, clothing, and energy for 1980
FI_0, CI_0, EI_0 — Index numbers (CPI) of food, clothing, and energy for 1978.

2. Evaluation of Calorie Intake of the Food Stamp Recipient

	1979 Quantities	1979 Calories	1981 Quantities	1981 Calories
1. Adult Recipients ...				
Rice	8.0	745	3.8	365
Flour/Bread	2.5	232	1.3	114
Total Calories	—	977	—	479
1980 Calorie Intake as a percentage of 1979				49
2. Children between 8-12 years				
Rice	8.0	745	3.9	365
Flour/Bread	2.5	232	1.3	114
Sugar	2.0	207	1.0	104
Total Calories		1184		583
1980 Calorie Intake as percentage of 1979				49
3. Children below 8 years				
Rice	8.0	745	3.9	365
Flour Bread	2.5	232	1.3	114
Sugar	2.0	207	1.0	104
Milk Foods	1.0	66	0.5	33
Total Calories	—	1250	—	616
1980 Calorie Intake as a percentage of 1979				49

standards, since the rate of income growth of low income groups is usually below the rate of inflation. This is clearly demonstrated in the figures of Table 5 in which the household monthly expenditure on food, clothing and fuel have been estimated on the basis of expenditure share of the respective household budgets of low, middle and upper income households. In the case of the low income group, a 44 per cent increase in nominal income is necessary to keep them at the 1978 standard, while the upper income group requires only a 39 per cent increase.

(a) Effects of Inflation on Food Consumption

Food consumption has been a major area of concern of the respective governments for almost 30 years since the second World War. Under the food subsidy program maintained by the government from 1942 to 1979, there was a more direct government role in food consumption since the food subsidy concept was based on the supply of quantities of basic food items either free or at subsidised rates. The Food Stamp Scheme, which replaced the subsidy program, on the other hand, is basically an income support scheme for low income households, defined as those who receive less than Rs. 300 per month, since the new program provides the households with encashable coupons. About 7.4 million are enrolled in this program implying that approximately 52 per cent of the population in Sri Lanka receives less than Rs. 300 per month. The majority of the food stamp recipients are adults representing 70 per cent of the total in the program, followed by children under 8 years accounting for 16.8 per cent, and the balance 10.5 per cent by children between 8 and 12 years. The composition of food stamps recipients with a greater population of adults appears to be the major reason in the high demand for rice, flour and sugar and the relatively low demand for milk products.

One of the major disadvantages of the Food Stamp Scheme, especially from the point of view of food consumption and nutritional status of low income groups, is that the value of food stamps is fixed in monetary terms. The prices of basic food items, on the other hand, have been almost entirely determined by the supply and demand conditions or market forces after the removal of subsidies. Given food stamps fixed in monetary terms rising food prices inevitably lead to a reduction in purchasing power of food stamps. This is now becoming a major policy concern. Although there was popular support for the Food Stamp Scheme at its inception, the information coming out from surveys indicate that this support is losing ground. For example, according to the recent survey conducted by the Food and Nutrition Division of the Ministry of Plan Implementation, only about 31.8 per cent of the stamp holders are now in favor of the food stamps, while 38.5 per cent indicated a preference for the previous food subsidy program. The balance 29.7 per cent were indifferent.

Compared against the rice subsidy Program, the Food Stamp Scheme is a fairly flexible program since the consumer has the option of choosing among several consumer items. This appears to be the reason for widespread acceptance of food stamps at the beginning, but the scheme is now viewed less favorably due to rising prices of almost all commodities available under the program 5.

A comparison of the purchasing power of food stamps in terms of calorie intake indicates the rapidly declining role of food stamps as a means of assisting to maintain food consumption needs of low income households. In 1978, for example, food stamps would have contributed about 50 per cent of the total calorie intake for adults, 60 per cent for children between 8 to 12 years, and 75 per cent for children below 8 years. Assuming that consumption preference remains unchanged, food stamps can now provide only about

5/ The cost of food index which takes into account the changes in food prices, gained 25.6 points in 1979 increasing from 237.5 per cent in 1978 to 263.3 per cent in 1979. This represents an increase of around 11 per cent in 1979. Reported a dramatic gain of 76.4 points in 1980 over 1979 recording 339.7 points. This represents almost a 30 per cent increase in the average price However, the index reported of aroun of food.

49 per cent of calories of food stamp recipients in general, compared to the 1979 contribution, due to the almost doubling of food prices between 1979 and 1981. (See note below table 5 for computation).

Although the above discussion does not lead to any firm conclusions about the effects of inflation on income distribution, the tentative picture that merges indicates that inflation, to a greater extent, affects income distribution of low income groups. Given the low per capita incomes, inflation means a reduction of their relative living standards since the rate of income growth often lags behind the rate of inflation. Accordingly, the concern about the effects of inflation on low income groups stems from these considerations.

In most developing nations, the low income groups belong to four distinct economic groups: the landless, rural farmers, the urban underemployed, and employed. These groups are seldom benefited even with rapid economic development and, in fact, according to cross country experience, are adversely affected in the early stages of economic growth. Furthermore, since inflation is another possible development accompanying economic growth, low income groups are affected by economic growth as well as increasing inflation. This is the basic reason for the increasing concern about the need to focus on target poverty groups in development policies of developing nations. It should be noted, however, that the scope of public policies aimed at redistribution of existing income and wealth in any significant role is highly limited and politically infeasible. A shift in sectoral emphasis in resource allocation also may not help to improve income distribution or welfare of low income groups. For example, if a project is located in a rural area but is heavily dependent upon capital intensive modes of production, skilled workers, sophisticated technology and services that are usually found in urban areas, the investment in a rural project is likely to lead to a weak linkage between the project activities and the target poverty groups in the area. Consequently, the location of the project even to a relatively poor geographical region may not bring significant improvements in the welfare of the poor. As Chenery (1974) points out, growth with distribution is possible provided that development policies focus on: (a) physical investment or infrastructural development. (b) investment in capital to raise skill level (c) increasing access to production inputs such as seeds, fertilizer and credit, and (d) development and utilization of domestic resources and technology. A greater emphasis in these areas will facilitate the increased participation of the rural poor in the development process so that the benefits of economic growth activities will directly accrue to low income groups, thus helping to to minimize the adverse effects of rapid economic growth and high inflation

CONCLUSION

This Paper broadly dealt with inflation and income distribution with the objective of assessing the effects of inflation on low income groups. After discussing the trends in inflation and income distribution, the analysis examined broadly the extent to which households are affected by rising inflation. Considerable attention was given to the effects of inflation on food consumption, since this relationship is judged among the most important and, thus, is a frequently discussed issue. This analytical investigation appears to support the widespread concern that low income groups are adversely affected by rising inflation as well as rapid economic growth. Even during the periods of rapid economic expansion, the income growth of low income groups has been considerably below the rate of inflation, suggesting the likelihood of adverse effects of inflation on these income groups. It is therefore imperative to design appropriate policies specially aimed at raising the income level of low income groups in order to prevent the decline of living standards.

DATA AND METHODOLOGY

This analysis largely depends upon published and unpublished data on income distribution, price indices, and household expenditure. In addition, data on several other macro-economic indicators were obtained from annual Central Bank reports and reviews.

The data base was very weak; as a result, the scope of analysis had to be severely curtailed from the intended Work Plan outlined in the preliminary research proposal. The most serious problem encountered was the lack of data on income distribution and household expenditures after 1978 when the rate of inflation gathered momentus. Therefore, income distribution had to be projected assuming that the trend in income growth continued between 1973 and 1978.

The problems associated with the data substantially reduced the analytical strength and comprehensiveness of the analysis. However, an attempt has been made to utilize the available data in the best possible manner, employing a few simple statistical techniques and deriving tentative conclusions. As a first step, inflation is defined and measured in terms of several indices to make a comparative assessment of the recent inflationary tendency. This is followed by an analytical investigation of income distribution, providing an inter-temporal comparison of relative changes in income distribution among different income groups both at national and regional level. The regional breakdown is in terms of urban, rural and estate sectors. This follows a projection of income distribution for 1980 and this (projected income distribution) is then compared with the rates of inflation to assess the net effects of inflation on income distribution. The final section concentrates on effects of inflation on household expenditure on basic needs with specific reference to low income households.

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The Large Towns in Sri Lanka

M. W. J. G. Mendis

The considerable shift in public investment towards urban development programmes in recent years has raised many issues from the economists' and urban planners' points of view. In this paper Professor Willie Mendis, Head of the Town and Country Planning Department, University of Moratuwa, discusses the trends resulting from this shift and consequent processes of urbanisation and emphasises the importance of national spatial strategies in this context. One of his findings of interest is that there has been no excessive growth in the 'Big Towns' and therefore a polarisation of very large populations has not occured in them. He calls for a national urban growth strategy, to facilitate 'promotional' urban development, in order to realise the full potential of specific regional areas.

It is now recognised that although much attention in research has been focussed on the urban sector in recent years, actual public investment in it had been "somewhat neglected" in Sri Lanka. (1) Hence the inclusion by the present Government of a substantial share of public investment in two urban programmes, (out of its three lead projects), represents a dramatic reallocation of resources, both sectorally and spatially. In this situation the study of how this shift will influence the process of urbanisation has become most necessary. More particularly, the focussing of attention on city-size classes has become relevant, both to cope with "big city" problems and also in promoting national spatial integration.

In the above context, the specific study of the large towns will be of much use to planners.

Theoretically, the greater the population, the more likely will there be certain advantages in the city which many persons seek to share. A big city could be expected to offer a quality market for just about all the basic elements which any individual believes essential to his happiness. One is also familiar with many development agencies in the urban complexes announcing the availability of "plenty of labour" in order to attract investments. The GCEC is one such agency. (2) Further it is argued that the "Big Towns" (see tables) offer greater prospects for improved economic welfare and increased local prosperity. However, while such arguments hold some truth, it is also known that "exploding cities" conform to the law of diminishing returns.

In the above circumstance, research is needed to comprehend the situation of the "Big Towns" in Sri Lanka. It will reveal how many of our towns reached the big league and also what their characteristics are. Hence, this Paper will attempt to contribute to such knowledge.

It will also examine the planning issues related to the utilisation of the Big Towns in strategies for national development.

CITY SIZE CLASSIFICATION AND DISTRIBUTION OF TOWNS IN SRI LANKA

Using the definition of urban as used in the national census, recent data indicate that Sri Lanka has had 43 towns in 1953; 99 in 1963; 135 in 1971; and 134 in 1981. In each of those census years a large proportion of the towns were located in the south-western quadrant of the country, which corresponds to its wet-zone. Thus in 1981, seventy-eight towns were located in the ten districts of the wet-zone, and fifty-six towns in the fourteen districts of the dry-zone.

The polarisation of towns in the wet-zone has been more accentuated in the districts of Colombo, Kalutara and Gampaha, which had 38 towns in 1981. (See Map for Districts in Sri Lanka).

In terms of city-size classification, the situation in the post-independence period is shown in Table 1. It indicates that more than half the share of the urban population live in small cities of various ranges below 50,000 persons. In 1981, the number of towns at or above 50,000 size population were ten as follows:

Town	Population
Colombo City	555,776
Dehiwela-Mt. Lavinia	174,385
Moratuwa	135,810
Jaffna	118,215
Kotte	101,563
Kandy	101,351
Galle	77,163
Negombo	61,476
Battaramulla	58,535
Maharagama	49,806

On the proposition that the divide in city-size classification between towns in the big league and other town is 100,000 population, then the number of "Big Towns" in Sri Lanka is only six. These being, Colombo, Dehiwela-Mt. Lavinia, Moratuwa, Kotte, Jaffna, and Kandy. Of them, the first four are situated contiguously in the urban region of Colombo. Further it is also noted that five are situated in the Wet Zone and only Jaffna is in the Dry Zone. In addition four are coastal towns and two are inland towns.

By status, Colombo enjoys primacy and was until very recently the "capital city" of Sri Lanka. (3) It is now the Commercial Centre of the country. Kotte is the new capital city and also the Administrative centre of the country. Kandy was the capital of the last Sinalese Kingdom of Sri Lanka. Further, four of the big towns are Municipalities and only Moratuwa and Kotte are Urban Councils.

RATE OF ENTRY INTO THE BIG LEAGUE

Census data indicate that Colombo city has always belonged to the big league. In fact it had a population of 110,502 even in 1881.

The entry of the next town into the big league was in 1963, when Dehiwela-Mt. Lavinia reached the size of 110,934. Thus, it had taken over eight decades after Colombo, for this occurrence.

The third town to enter the big league was Jaffna, when in 1971 it reached a population of 105,184. It's entry occurred nine decades after Colombo and eight years after Dehiwela-Mt. Lavinia.

The fourth, fifth and sixth towns made their entry only in 1981 when the populations of Moratuwa, Kotte and Kandy exceeded 100,000 in each. These occurred 101 years after Colombo, two decades after Dehiwela-Mt. Lavinia and a decade after Jaffna. In this connection, it is also worth noting that the actual population of Moratuwa exceeded that of Jaffna, in 1981.

The rates of entry of the six towns into the big league shows an acceleration after 1971 (See Table 2). However, the study of the other towns between 50,000 and 100,000 populations indicate that other than by planned urban growth it is most unlikely that any more will join the big league until the turn of the century. Furthermore, even considering a consciously planned re-distribution of population as per a well conceived national urban growth strategy, it is unlikely that more than two other towns, (possibly, Galle and Trincomalee), will enter the big league before the Year 2,000.

(1) Population Re-distribution Policies and Measures in Sri Lanka, Dr. W. Weerasooriya, Secretary, Ministry of Plan Implementation, 1980, P. 9.

(2) "Sri Lanka's Investment Promotion Zones", GCEC, 1980, P. 15.

(3) Government announcement as reported in the "SUN" of 15th January 1983.

Table 1—DISTRIBUTION OF URBAN POPULATION ACCORDING TO SIZE OF TOWNS, SRI LANKA 1946-1981

		Below 2,000	*2,000 to 4,999*	*5,000 to 9,999*	*10,000 to 19,999*	*20,000 to 49,999*	*50,000 to 99,999*	*100,000 to and over*	*All Towns*
1946	Number of towns	3	9	7	13	5	4	1	42
	Population	3,601	28,386	55.874	174,598	177,123	221,388	362,074	1.023,044
	Percentage of total urban	0.4	2.8	5.5	17.1	17.3	21.6	35.4	100.0
1953	Number of towns	3	8	4	15	6	6	1	43
	Population	4,062	28,338	29,691	213,150	154,727	383,038	426.127	1,239,133
	Percentage of total urban	0.3	2.3	2.4	17.2	12.5	30.9	34.4	100.0
1963	Number of towns	9	21	23	21	18	5	2	99
	Population	15,342	74,681	158,280	278,153	487,986	379,265	622,578	2,016,285
	Percentage of total urban	0.8	3.7	7.9	13.8	24.2	18.8	30.9	100.0
1971	Number of towns	6	32	30	34	25	5	3	135
	Population	10,819	104,095	215,848	499,561	781,874	411,311	823,798	2,848,116
	Percentage of total urban	0.4	3.7	7.6	17.5	27.5	14.4	28.9	100.0
1981	Number of towns	3	28	28	35	31	3	6	134
	Population	5,173	90,518	199,189	511,138	976,957	195,094	1,216,830	3,194,999
	Percentage of total urban	0.2	2.8	6.3	16.0	30.5	6.1	38.1	100.0

Sources: *Population of Sri Lanka Country Monograph Series, Mo. 4, UN-ESCAP, Bangkok, Thailand.* 1976 *and Census of Population and Housing-*1981. *Department of Census and Statistics, Colombo* 1981.

Accordingly, the national urban hierarchy in Sri Lanka will contain a dispersed network of small and medium sized towns which will accommodate a larger share of the future increases in urban population. This proposition is based on the belief that the Mahaveli and other agro-based development programmes will enable the rural masses to upgrade their quality of life in their own environment rather than through mass migration to the big urban areas.

On the other hand, a failure of the agro-based schemes through natural disasters, extremely high energy costs, or massive inflation, may accelerate the entry of mere towns into the big league.

CHARACTERISTICS OF THE BIG SIX TOWNS

The pattern of growth of the Big Six towns in the last inter-censal period indicate tat the average annual rate of growth of each one except that of Moratuwa and Dehiwela-Mt. Lavinia, has been lower than the corresponding rate for the national urban population. (4) Moratuwa has had a dramatic rate of growth of 4.1% per annum which was nearly 3.5 times the rate for the national urban population. The exceptional situation in Moratuwa could be attributable to the establishment of a major housing estate (at De Soysa Pura), new industrial factories, training institutions, and government offices.

Table 2—RATE OF ENTRY INTO BIG TOWN STATUS

Name of Big Town	*Population at Census Years*				
	1946	1953	1963	1971	1981
Colombo City	362,074	426,127	511,644	562,420	585,776
Dehiwela–Mt. Lavinia ...	X	X	110,934	154,194	174,385
Moratuwa	X	X	X	X	135,610
Jaffna	X	X	X	107,184	118,215
Kotte	X	X	X	X	101,563
Kandy	X	X	X	X	101,281

Note: X.....Denotes population below 100,000 persons.

Table 3—POPULATION GROWTH IN THE SIX 'BIG' TOWNS OF SRI LANKA

Name of Town	*Census Year*	*Population*	*Inter-censal increase Total*	*Percentage*	*Average Annual Growth Rate %*	*Remarks*
Colombo ...	1946	362074				
	1953	426127	64053	17.69	2.5	Population increasing at a decreasing rate
	1963	511644	85517	20.0	2.0	
	1971	562420	50776	9.9	1.2	
	1981	585776	23356	4.1	0.4	
Dehiwela Mt. Lavinia ...	1946	56881				Population increasing at a decreasing rate.
	1953	78213	21332	37.5	5.3	
	1963	110934	32721	41.8	4.2	
	1971	154194	43260	38.9	4.8	
	1981	174385	20191	13.0	1.3	
Moratuwa ...	1946	50698				Population increasing at an increasing rate.
	1953	60215	9517	18.7	2.7	
	1963	77833	17618	29.0	2.9	
	1971	96267	18434	23.7	3.0	
	1981	135610	39343	40.8	4.1	
Jaffna ...	1946	62543				Population increasing at a decreasing rate.
	1953	77811	15268	24.4	3.5	
	1963	94670	16859	21.6	2.2	
	1971	107184	12514	13.0	1.6	
	1981	118215	11031	10.0	1.0	
Kotte ...	1946	40218				Population increasing at a decreasing rate.
	1953	54318	14163	35.0	5.0	
	1963	73324	18943	34.8	3.5	
	1971	93680	20356	27.7	3.5	
	1981	101563	7883	8.4	0.8	
Kandy ...	1946	51266				Population increasing at a decreasing rate.
	1953	57200	5934	11.6	1.7	
	1963	68202	11002	19.0	1.9	
	1971	93303	25101	36.8	4.6	
	1981	101281	7978	8.5	0.9	

In terms of population increases in absolute numbers, Moratuwa has added the most in the last inter-censal period with Colombo having the next largest addition.

However, in each of the Big Six towns except that of Moratuwa, the population is increasing at a decreasing rate. (See Table 3). The actual drop in the growth rates have been dramatic in all those towns.

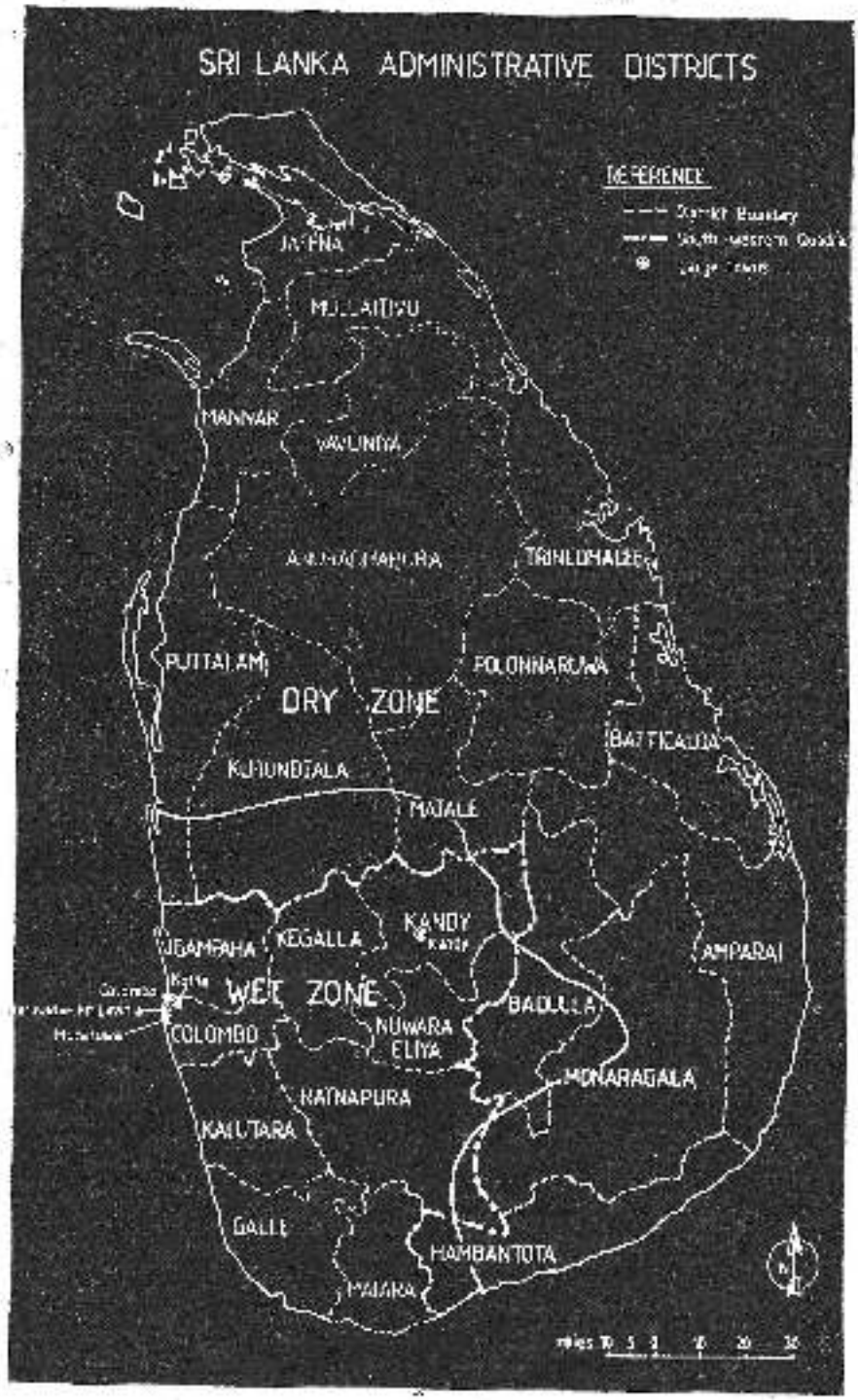
Presently (1981), the Big Six Towns accommodate, 1.22 million persons or 37.5% of the total urban population or 8% of the national population. Of this, nearly half or 600,000 persons were added in the post-independence period 1946-1981. (see Table 4). The latter represents 27% of the increase in the total urban population and 7% of the increase in national popula-

(4) The annual average growth rate of the national urban population in the last inter-censal period (1971-1981) was 1.2%.

tion. The average rate of absorption into the Big Six Towns has thus been about 17,000 persons per annum, in the post-independence period. However, with the increase in population at a decreasing rate, the Big Six towns are unlikely to have similar rates of absorption in the next two decades. It is more likely that the future rate of absorption may be about 10,000 persons per annum. Accordingly, the probable size of population in the Big Towns at the end of this century will be about 1.5 million or just under 1/3rd the forecast total urban population of approximately 5.0 million at that time.

The slow rate of growth of population in five of the Big Six Towns suggests that levels of saturation conditioned by existing situations have been reached in each of them. On the other hand the prevailing (1981) population densities in them are not indicative of this situation. Thus Colombo, Dehiwela-Mt. Lavinia, Moratuwa, Jaffna, Kotte and Kandy, have gross population densities of 64, 34 42 24 28 and 16 persons per acre, respectively. In this situation, the study of the land-use patterns of the Big Six Towns is necessary to ascertain other underlying reasons for the slow rate of growth.

Thus, recently classified land-use patterns in each of the Big Six Towns show that more than 75% of te land comprise residential, marshes, parks and other reservations and roads. (See Table 5). Hence, the capacity to absorb increases in population becomes limited. In such a context, the absorption of future populations will result in sub-divisions, high prices of land, and higher occupancy rates in dwellings (through rentals of parts of dwellings).



THE BIG TOWNS AND NATIONAL SPATIAL STRATEGIES

City sizes have played a key role in fashioning national spatial strategies in many countries of the world. Thus, there have been conscious efforts to contain cities within "preferred sizes" or "optimal sizes". Further, excessive polarisation in cities have been overcome by dispersion policies. In addition, "growth centers" have been developed as part of a national urban growth strategy. Hence, all of these actions have evolved out of a consideration of city sizes to develop the national space economy.

In this connection the observation of what is happening in the Big Six Towns in Sri Lanka show that they do not have excessive growth. The polarisation effect has also not been very great due to the various processes which have been triggered off by several policies of successive Governments. However, the core region of Colombo which contain four of the Big Six Towns, has acted in concert to pull a large population and there-

Table 4—INTER-CENSAL INCREASES IN POPULATION IN THE "BIG SIX" TOWNS IN SRI LANKA

Name of Town	*Inter-Censal Increase in Population*				*Total Increase*	
	1946–53	1953–63	1963–71	1971–81	1953–1971	1946–1981
Colombo	64053	85517	50776	23356	136293	223702
Dehiwela-Mt. Lavinia	21332	32721	43260	20191	75981	117504
Moratuwa	9517	17618	18434	39343	36052	84912
Jaffna	15268	16599	12514	11031	29373	55672
Kotte	14163	18943	20356	7883	39299	61345
Kandy	5934	11002	25101	8260	36103	50297
Total "Big Six" Towns	130267	182660	170441	110064	353101	594432
Share of Inter-Censal Increase in Big Towns as Share of Increase in Total Population (%)	9.0%	7.0%	8.0%	5.1%	7.8%	7.0%
Share of Inter-Censal Increase in Big Towns as Share of Increase in Urban Population (%)	60.3%	23.5%	20%	31.7%	22%	27%

by serve as a single platform of urban concentration. Such a monolitic urban settlement, while having advantages, may also have diminishing returns.

In respect of the Big Towns outside Colombo, it is significant to note that there also exist no excessive effects of polarisation on Jaffna and Kandy. However, it will be relevant to conduct further studies to determine whether sub-urban expansion has begun around them.

In this situation, the Big Six Towns in Sri Lanka seem to exist with no known effort being made to consciously link them with the network of small and medium size towns, in the context of a national spatial strategy. If the latter existed, then the Big Six Towns could stimulate the commercialisation and marketing of agricultural output; the provision of high-order services to residents of the peripheral region; the promotion of national spatial integration and decentralisation of job opportunities; and the more equitable distribution of economic welfare among urban areas and among regions.

For such purpose, the Big Six Towns need to be spatially integrated with the existing network of small and medium sized towns in the country. In this connection, the towns now being developed in the Accelerated Mahaveli Programme become very significant as the dry-zone presently lacks adequate numbers of the different city sizes for effective integration. The eastern sector of the dry-zone could then actively promote the growth of one Big Town as none presently exist. The obvious choice would be Trincomalee with a current population of 45,000 persons. In a similar manner, another Big Town in South Sri Lanka will also be desirable. This choice could vest with Galle with a current population of 77,000 persons.

Thus, an appropriate national urban growth strategy that would complete a broader national spatial strategy, will comprise the conscious development of the four Big Towns in the core-region of Colombo, and also Jaffna, Kandy, Galle and Trincomalee. These in turn could be spatially integrated with the other sizes of towns in their respective regions.

Using a norm of 100,000 persons (or more) as being adequate for classifying a Sri Lankan town as a "Big Town", presently the country has six such Big Towns with a combined population of about one and a quarter million persons.

Past trends indicate that no additional Big Towns are likely during this century, unless extra-ordinary circumstances compel massive urbanward migration. On the other hand, the active promotion of an appropriate National Urban Growth Strategy may be desirable and could result in the addition of two more Big Towns by the year 2000; (these possibly being Galle and Trincomalee).

There is no excessive growth in the Big Towns and consequently the polarisation of very large populations in them have not occurred.

There is no excessive growth in the Big Towns and consequently the polarisation of very large population in them have not occurred.

There is no known spatial strategy to integrate the Big Six Towns with towns of other sizes, so as to achieve several known advantages.

Table 5—PERCENTAGE OF TOTAL LAND IN SELECTED LAND-USE CATEGORIES IN THE BIG TOWNS IN SRI LANKA

Name of Big Town	*Residential* (%)	*Parks, water bodies, Cemetaries and other Reservations* (%)	*Marshes* (%)	*Roads* (%)	*Total* (%
Colombo (a) ...	52.0	6.0	10.0	5.0	73.0
Dehiwela/Mt. Lavinia (b) ...	62.3	4.6	9.6	3.9	80.5
Moratuwa (b) ...	62.9	5.1	1.0	7.0	76.0
Jaffna (b) ...	68.6	5.3	Nil	8.5	82.4
Kotte (a) ...	56.7	2.2	26.6	6.7	92.2
Kandy (a) ...	34.8	38.6	Nil	10.5 (c)	83.9

Notes: (a) Surveys carried out in 1979
(b) Surveys carried out in 1981
(c) Includes area of water bodies.

Sources: *Surveys carried out by the Dept. of Town and Country Planning, University of Moratuwa, and the Urban Development Authority.*

The adoption of the above strategy will result in a massive demand for the allocation of resources for urban development. Already, a great commitment has been made and needs to be continued in the Colombo urban region. (5) Such actions may cause intolerable strains on domestically available resources. However, it could also provide the complementarity required to broad-base the national economy so that urban-rural potentials could be fully exploited. In such a context, reliance on external sources may initially become necessary. The latter will be justified and viable due to the several advantages of spatial integration policies mentioned earlier.

CONCLUSIONS AND RECOMMENDATIONS

The conclusions arrived at from the discussion in this Paper comprise the following:

The recommendations arising from this Paper comprise the following:

Promotional urban development is facilitated by agglomeration economies and hence the establishment of a National Urban Growth Strategy is recommended.

(5) A study done by Gunadasa (1981) indicated the estimated costs of major "approved" building projects by the private sector in the Central Area of Colombo and in the immediate urban region is Rs. 6,210 million. This excludes the Free Trade Zone, and public sector investments.

The Use of A Desk Computer for Writing Vernacular Languages

Jean-Pierre Schaefer

This paper introduces a method for writing letters from a vernacular language with the help of a desk computer. It is a simple, cheap and fast way of writing, in various alphabets, a text. A program has been developed for writing in Sinhalese, and the next application will be for creating a botanical file of Food Plants of Sri Lanka. It is possible to use such a method for many other alphabets, and for many others applications.

A NEW TOOL FOR COMMUNICATION

The development of exchange of information is an important step for economical, social and cultural progress. In many countries of the world, especially in Asia, it is rather difficult to deal with data research, field survey, and general information work as languages and writings are very different.

It works are in progress for finding a link between latin letters and various Asiatic alphabets, the use of local writings is still the best support for communication, It, very often, avoids a lot of mistakes, especially in scientific fields.

But in one country various languages and writings may be found, and it is not an easy task to realise quickly multilingual documents.

Various kinds of typewriters must be used, which can be found only in the country, or in an area of this country. Working with a printer is not a good solution for working papers or provisional documents, and it costs time money and energy.

Thus it may be useful to find a way of writing automatically, in various alphabets, with an easy-to-find equipment.

We think that the minicomputer (desk computer) could be used for that purpose. These machines, which are now more and more common, and cost less than an average car, are used for scientific or management purposes. They can calculate print and draw: Connected with a TV screen and/or a printer, they can be taught to write any character.

This idea came to light with the following problem:

How could it be possible to realize a file of the food plants of SRI LANKA (Ceylon) mentioning Sinhalese and Tamil names, scientific names, etc ..... all on the same page? It is better to avoid Latin transcription of Sinhalese and Tamil names to avoid confusion, and it is not convenient to always refer to an index printed in one language.

Furthermore, all data, collected in Sri Lanka, were to be studied in France; for checking information with data from other countries, and type writers in Sinhalese and Tamil were not easily available.

A program has been conceived, on a minicomputer (Hewlett Packard 85), written in BASIC language, for using its screen and thermal printer as a Sinhalese typewriter.

This paper explains the specific example of the Sinhalese language, but it is rather easy to adapt the same program to any alphabetical languages.

For languages using ideogrammus, the memory capacity might not be enough. In such case, increase of capacity or choice of equipment must be studied with specialists and computer dealers.

In its present state, the program (on 1-7-1981) can only be used for writing Sinhalese as a typewriter would do, but it is possible to consider the following developments and applications:

- If links between a Latin and non Latin alphabet are firmly established transcription programs could be easily conceived.

  The program could be educational: Some grammatical mistakes could be checked and manually or semiautomatically corrected. (In Sinhalese, the use of the wrong vowel sign with a consonant).

  According to the memory capacity of the computer, various languages can be written at the same time.

- The method and the program are more likely to be used with Asiatic languages, as there are many alphabets used in that area of the world, but it enables any one in any part of the world (who can use a minicomputer) to write in any characters or alphabet. For example in the archeological field, surveys and studies of various languages could benefit or be helped: cuneiform characters, hieroglyph in Egypt etc...

Readers of this paper are kindly invited to inform the author of any other uses and of the various languages for which such a program could be useful) (Jean-Pierre SCHAEFER, 163, Digue de Mer, 59240, DUNKERQUE, France). It might be possible

In the above connection, it is proposed that the Big Towns be incorporated in such a strategy with the active promotion of Galle and Trincomalee for entry into the big league.

The adoption of a Colombo-Trincomalee development axis combined with multi-polar urban growth focussing on Galle, Jaffna and Kandy is recommended as a framework of the National Urban Growth strategy.

It is further recommended that development plans for defined macro-regions of the Big Town be formulated so as to realise the full potential of such regional areas and also to relate same to the national development plan.

It is also recommended that resources necessary for development in the Big Towns be raised as far as possible through domestic sources, and supplemented with external resources where viable.

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7. Urban Investment Promotional Planning, PLG Gunadasa, Project Submission for Post-Graduate Diploma in Urban Development, University of Moratuwa, September 1981.

that manufacturers of minicomputer would develop such applications if the demand is important.

This table has been conceived from a mnemonic system of letters mentioned in the Carter's Dictionary under the name of [illegible] and it could be used if various specialists agree, as a basis for operating the program.

Therefore for keeping the letters 10, 13, 33, 39 and 40 in their traditional places, their lower part must be stored separately in the last section of the table.

Vowels have been placed in the empty cases of the table, (letters 26 to 30) at after the place number 39, signs and symbols useful for writing vowels.

It will be very easy to add any other sign, to change any place or any shape of letters according to the remarks and critical issues made by the readers of this paper. Some letters, made with two others might be added, various punctuation signs as well, like [illegible].

This alphabet has been designed according to the following documents:

English—Sinhalese dictionary
— Carter
Sinhalese through English
— D. G. Wijeratne
Sinhalese, the spoken idiom
— D. Garusinghe
Say it in Sinhala
— D. Dahanayake.
and some writing models by
— R. Samarawickrema.

HOW TO OPERATE THE PROGRAM:

In its present state, according to user's choice, the program selects first the chosen alphabet and prints it if required. For writing the user has to choose the position of the "pencil": Going forward, backward, up, down, skipping of one line, blank space etc ..... For the Sinhalese an automatic carriage advance has not been chosen as it is very often useful to stay on the same "place" (that is to say, close to the considered consonant for adding the vowel signs.

For the first program ("RANI 1") it has not been planned as yet to program the various combinations of each vowel with each consonant. By using floppy disks, it could be possible.

The next step just consists in choosing the letter to be written by inputting a number (from 1 to 57), with the help of the above mentioned table.

The correction is very easy as it is just necessary to type again at the same place the wrong letter or sign: as 1+1=0, according to binary system, the place is cleared of sign. When the text is corrected, the entire page can be copied on the thermic printer or any available printer.

WRITING A NON-LATIN LANGUAGE: EXAMPLE OF THE SINHALESE THROUGH A MINI COMPUTER:

The program has been developed on a HEWLETT PACKARD 85, with a memory capacity of 32 Koctets. This computer using cartridges for data and program storage, with a TV screen and a small printer (width of paper: 10,5 cm).

For writing the Sinhalese alphabet, we use the screen which is composed of 191 lines of 256 points. Each Sinhalese character is designed in a rectangle of 12 lines including each 16 points. A coding with 0 and 1 is done for getting for each lines, two binary numbers, each of 8 digits. Such numbers are stored as their decimal equivalent in the memory.

40 letters have been coded, following such a method. They were all designed in a rectangle of 12 x 16. Each letter is now stored by a group of 24 numbers. It is very easy to change the design of any letters by changing those numbers.

7 symbols (vowels symbols and a blank space) have been coded after design in a 12 x 8 rectangle because of their small size.

10 symbols or signs, coded in a 8 x 16 square, are to be added above or under the consonant.

Two symbols (56, 57) must be added to letters 10 and 13 on one hand, and to letters 33, 39 and 40 on the other. These 5 letters are too large to be written in 12 x 16 rectangle. Thus they have been "split" in two parts for the following reasons:

The programm (called "RANI 1") enables us to write the letters just by typing a number, chosen in the following table:

The blank space can be written with a 0 letter (listed under number 47) for saving time when writing or in case of mistake in the carriage position.

A special order (called LABEL in BASIC language) enables to write a text in Latin letters on the screen.

For writing at the time with other languages (alphabets) the same coding must be realised for the chosen languages. It is planned to develop Tamil writing, and perhaps the Hindi as well for the next step of this program.

The equipment used for developing this program costs approximately, in France, (at the date of the 1/4/1981) 30,000 French Francs (inclusive taxes) that is to say 90,000 Ceylon Rupees.

The blank cartridges cost 150FF (450 Rs.) and have a capacity of 210 Koctets (the programm with the datas using 10 Koctets). Equipped with a good printer, the set costs less than a motor car (Peugeot 504) and consumes less energy than a 100 Watt bulb.

APPLICATION FOR EDITING A BOTANICAL BILL

The below mentioned examples of some botanical names of plants of Sri Lanka show how such a system could be used. If enough people come to the conclusion that such a system could be useful, the work will go on, with the help of any willing specialist. Thus it could be possible to realise easily a data bank of plants of Sri Lanka, with names of plants in various languages.

WRITING VERNACULAR LANGUAGES

Writing languages using non Latin alphabets is rather difficult as there are few typewriter available, and printing is not of much use for documents dedicated to a small audience. It is often useful to use the appropriate alphabet for writing names and words of a definite language.

Therefore it might be useful to use a desk computer as a type-writer: With Hewlett Packard computer (HP 85), using the order BEPLOT, it is possible to draw *any letter of any language*. Each letter gets a code number, according to its place in the traditional alphabet. An alphabetical table is printed, gathering letters, symbols and others useful signs.

By using the code number mentioned in this table it is very easy to write any letter, thus any words. Orders for moving the "pen" over the "paper" (either TV set or printer) can be entered with the numbers from 60 to 64. At any moment of the writing, it is possible to add any text in Latin letters.

There is an automatic "carriage" advance, from left to right or from right to left, according to languages.

ARTOCHRPUS MOBILIS

OLHN ZEYLHNICH

CELOSIH ARGEETER

TRIANTHEMA PORTULRORSTRUM

TRIANTHEMA DECANDRH

NYMPHAEA STELIATA

SESBHNIA GRANDIFLURH

MUXUMA PFUPITA

FICUS PACEMOSA

CITRUT ORENATIFOLIA

BRIDELIA PETUSA

As at October, 1981, the following languages can be written:

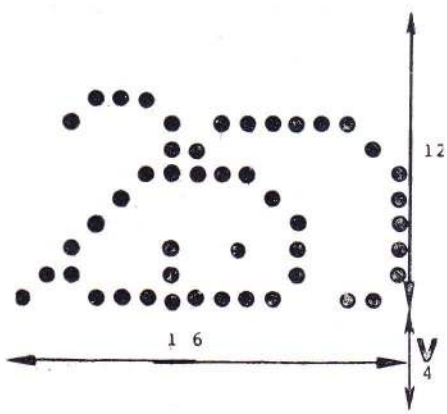
Sinhalese:
40 Letters
(matrix 12 x 16 points)
6 symbols
(matrix 12 x 8 points)
10 symbols
(matrix 16 x 16 points)
Maldivian:
24 letters
(matrix 21 x 16 points)
12 symbols
(matrix 10 x 16 points)
the Maldivian language is written from right to left).
Cyrillic:
46 letters
(matrix 7 x 8 points)
(apart from the Russian alphabet, letters used in Serbian Ukrainian languages etc.. have been added)
6 signs
(matrix 9 x 8 points).

The programm should be extended for:

- Filing texts written in any language.
- Switching from one alphabet to another, either automatically or partly automatically.

Zone reservée aux voyelles
Area reserved for voyels V

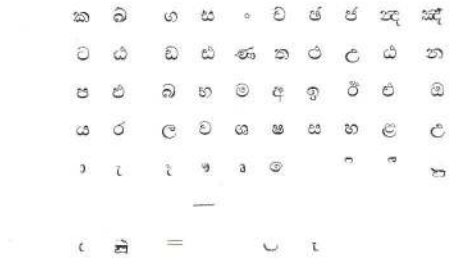
Cinghalais/Sinhalese



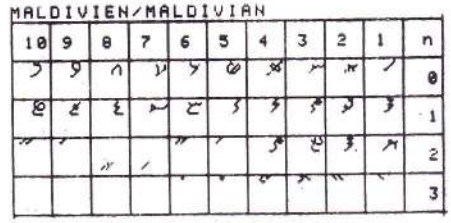
12symbols
Sinhalese.

40 Letters (matrix 12 x 16 points)
6 symbols (matrix 12 x 8 points)

Such method can be applied to many alphabetical languages (including languages no more in use). It is rather simple and economical, as one machine can be used for writing many languages. It can be expected that a special computer will be designed just for writing languages.



SINHALESE ALPHABET -
ALPHABET SINGHALATS

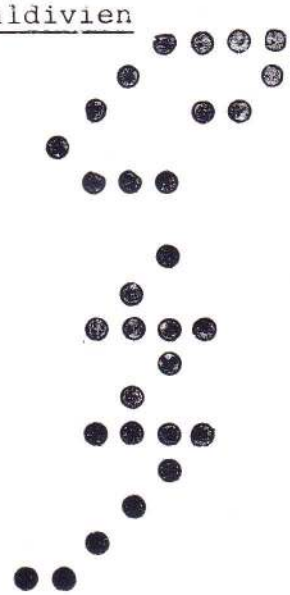


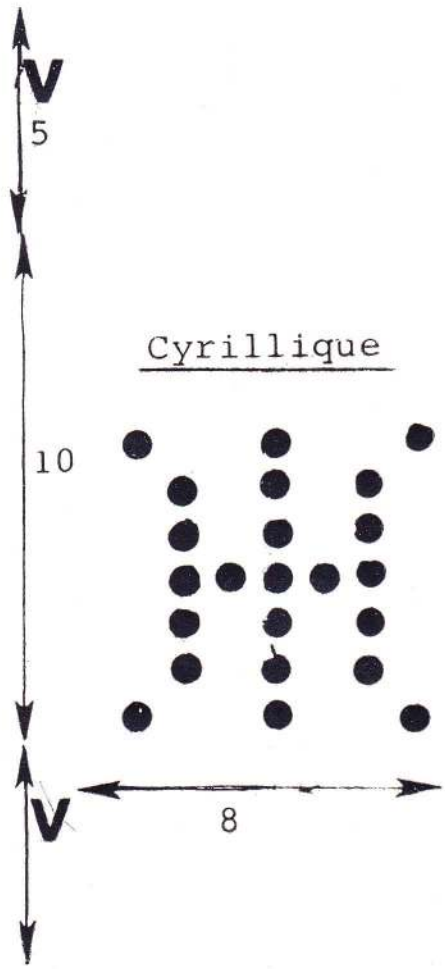
(Any advice or comments will be welcome by the author).

Other languages where work is in progress are HINDI, TAMIL and other Indian languages.

The diagrams show the various alphabets already available. The following drawings show how the letters have been designed, according to the languages: Sinhalese, Maldivian, Cyrillic.

Maldivien





but until such equipment is available on the international market, such a method could be of some use for a research or documentation center.

It is now possible to communicate easily while respecting other languages and writings. Computer technology can help to keep alive many different cultures, instead of providing more power to dominating ones.

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