

Tamil Arasu

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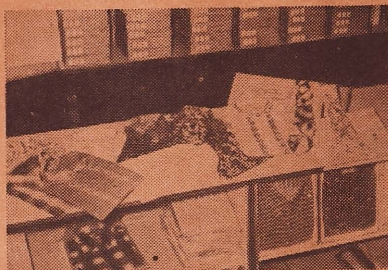
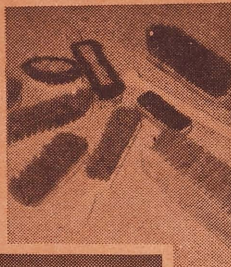


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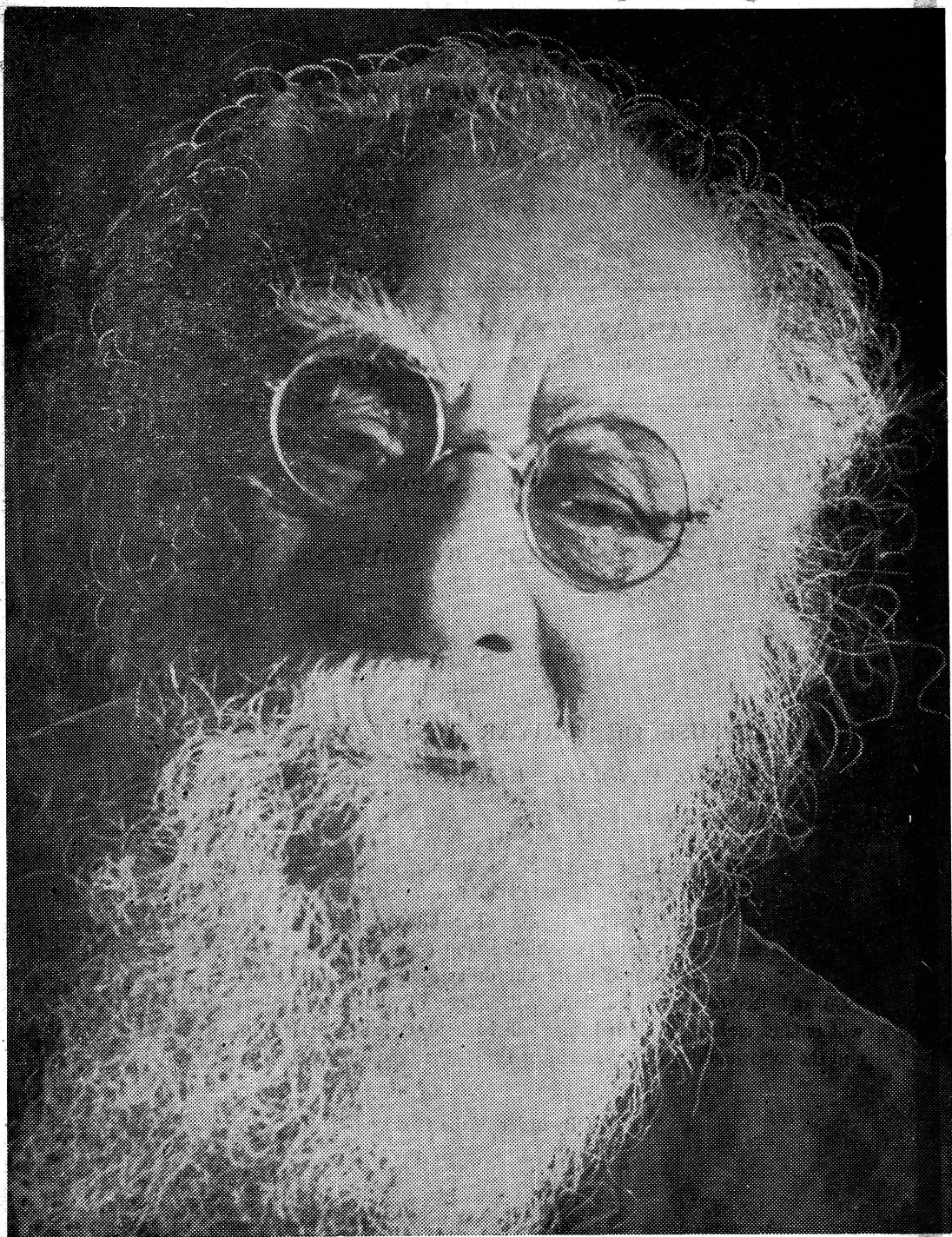
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2008



TAMIL NADU GOVERNMENT GAZETTE

EXTRAORDINARY

PUBLISHED BY AUTHORITY

No. 392. MADRAS, MONDAY, DECEMBER 24, 1973
[MARGAZHI 10, PIRAMATHISA (20001—THIRUVALLUVAR ANDU)]

PART II—SECTION I

NOTIFICATIONS BY GOVERNMENT

—oOo—

PUBLIC DEPARTMENT

(Political)

DEMISE OF PERIYAR THIRU E. V. RAMASAMY,

[G. O. Ms. No. 3398, *Public (Political)*, 24th December 1973]

II-I No. 6237 (e) of 1973.

The Government of Tamil Nadu deeply regret to announce the demise of Periyar Thiru E. V. Ramasamy, India's foremost Social Reformer, in Vellore at 7-40 a. m. on 24th December 1973. The Government place on record his yeoman services in eradicating social disabilities and cast distinctions. As a mark of respect to the departed leader, the Government order State mourning today, 24th December 1973 and declare it as a holiday. All offices of the State and educational institutions will remain closed. National flags will be half-masted for today (24th December 1973) and the following day (25th December 1973) when the funeral will be held.

(By order of the Governor)

P. SABANAYAGAM,
Chief Secretary.

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CHIEF MINISTER'S CALL TO THE PEOPLE

Thanthai Periyar has passed away. The great leader, who kindled the flame of self-respect in Tamil Nadu, has left leaving us all in unbearable sorrow. His 60 years' public life out of the 95 year life span was full of agitations. Those agitations were conducted by Periyar for the upliftment of Tamilians in the times ahead and to kindle the passion of self-respect among them. He courted imprisonment many a time. He conducted countless numbers of agitations to put an end to the practice of untouchability. He plunged into serious activities to abolish untouchability to such extent that they earned him the title of "Vaikam Warrior."

He participated in the freedom struggle and earned the appreciation of Mahatma in rightful measure. His sincere and selfless service to the country made Nayudu, Naicker and Mudaliar as the only shining stars in the political horizon of the country. He founded

PERIYAR'S LIFE— A SYNONYM FOR SERVICE GOVERNOR'S TRIBUTES

The passing away of Thiru E.V. Ramaswamy affectionately called Periyar by the people of Tamil Nadu, is a great loss to Tamil Nadu. Starting his political career as a disciple of Mahatma Gandhi, he did yeoman service to the National Reconstruction Programmes like Khadi and abolition of Untouchability. By virtue of the pivotal and prominent role he played in the agitation against Untouchability staged in the citadel of orthodoxy, Vaikom in Kerala, he earned the title of "Vaikom Warrior". All through his 95 year-long life, he travelled far and wide to every nook and corner of Tamil Nadu, carrying the message of social reformation to the village folk. He ceaselessly and tirelessly fought for a better deal to the oppressed and depressed classes of people, as also for the emancipation of women so that they could play their rightful role in all walks of life. In short, his life has been a synonym for Service.

the Self-Respect Movement and took keen interest in the Justice Party which worked for the uplift of the non-Brahmins. During that period the victories he garnered were many and many, many more are his enduring achievements against heavy odds.

His life is an elixir to those who wish to serve humanity.

He toiled tirelessly without rest and he has gone to take eternal rest.

His journey may be said to have come to a close but it is for us to carry on.

Long live Periyar !

Long live Periyar !

Let his rationalistic ideals spread far and wide !

And let his ideals live long !

THE VETERAN OF MANY WARS

LEAVES MILLIONS IN GRIEF



IN LIFE
HE TOOK NO
REST
AND
GAVE US NO
REST.

LEADERS' TRIBUTES TO THE DEPARTED LEADER.

The passing away of Thanthai Periyar E.V. Ramaswamy has been condoled by many. A few of the condolence messages are given below :

The President's Condolence

President, V.V. Giri, in a message to Governor K.K. Shah, said : "I am grieved to learn of the demise of Periyar Ramaswamy. A colourful leader, he was always a fighter. In the 20's he took a prominent part in the national struggle for freedom and later devoted himself to social reform according to his light. Please convey my sympathy to his wife and other members of the bereaved family."

P. M.'s Message

In a condolence message addressed to the Chief Minister, the Prime Minister, Thirumati Indira Gandhi said : "I am grieved to learn of the death of Thiru E.V. Ramaswamy. He was a colourful personality who revelled in controversies. He challenged many accepted notions. My condolences to his co-workers and followers."

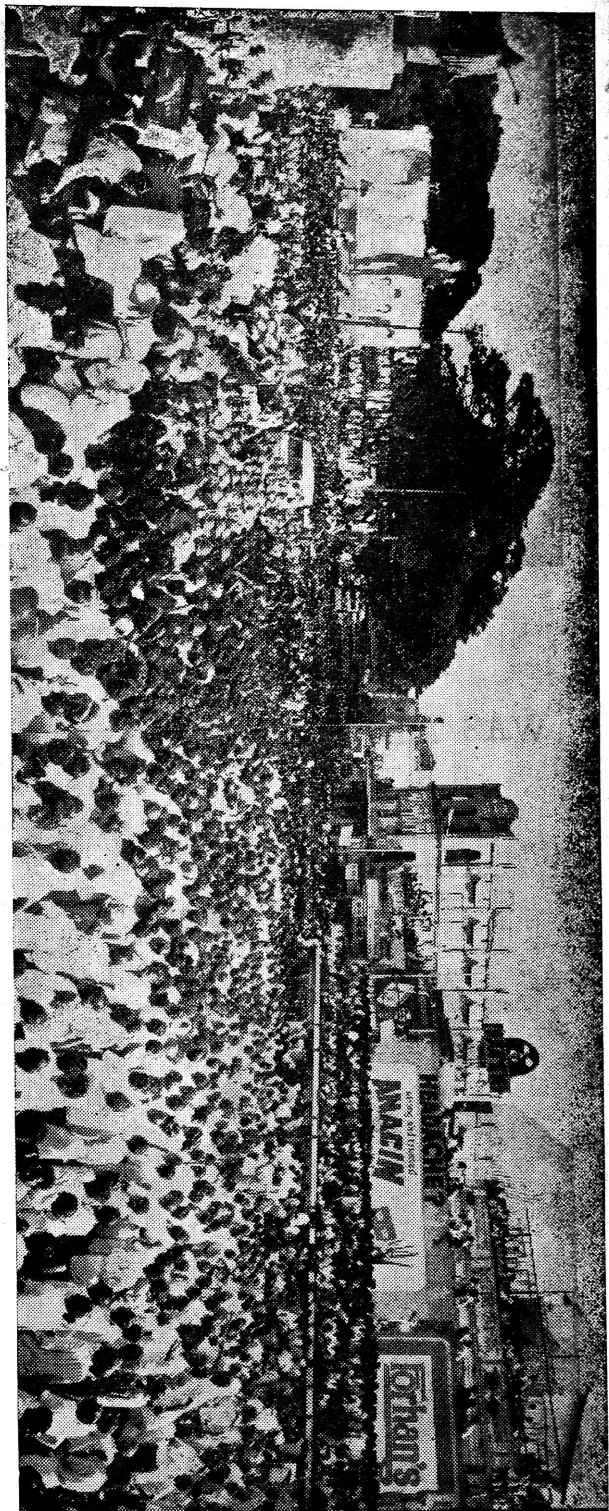
Governor's Message

Tamil Nadu Governor, K.K. Shah, in a message sent from Bombay, said EVR was "an ardent social reformer. I am extremely grieved over his sad demise."

Chief Minister's Message

Chief Minister Dr. M. Karunanidhi, the first to receive news of the death at Madras, expressed his sorrow in the following words :

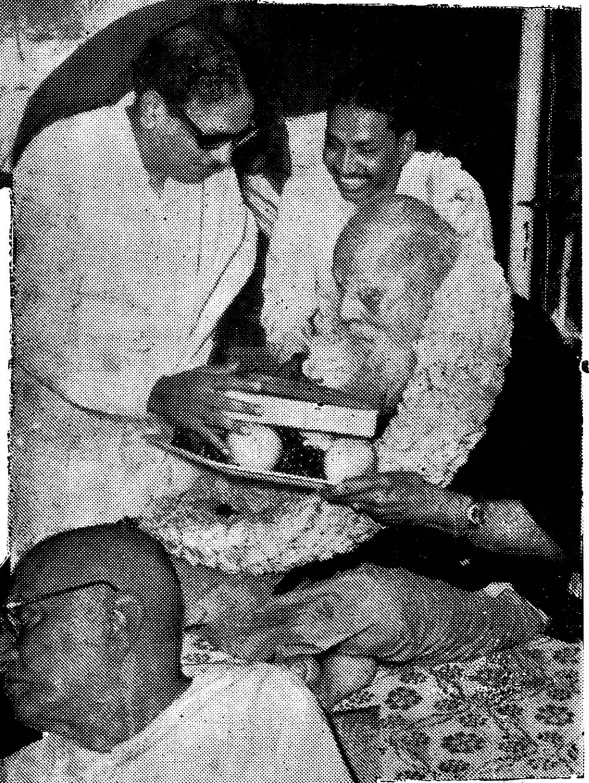
"Periyar has ended his journey. The country cannot forget the great saga of this 95-year-old rationalist lion's fight for social reform till his last breath. He was the great leader who enabled Tamils to stand upright with a sense of self-respect. The lakhs and lakhs of the backward and downtrodden people, who secured a social status because of Periyar, cannot bear this loss. I am unable to put in words my great bereavement in the loss of this great man who was a guide to all of us, and who made us real men. We have lost India's great social reformer. He has ended his journey. But we shall continue it."



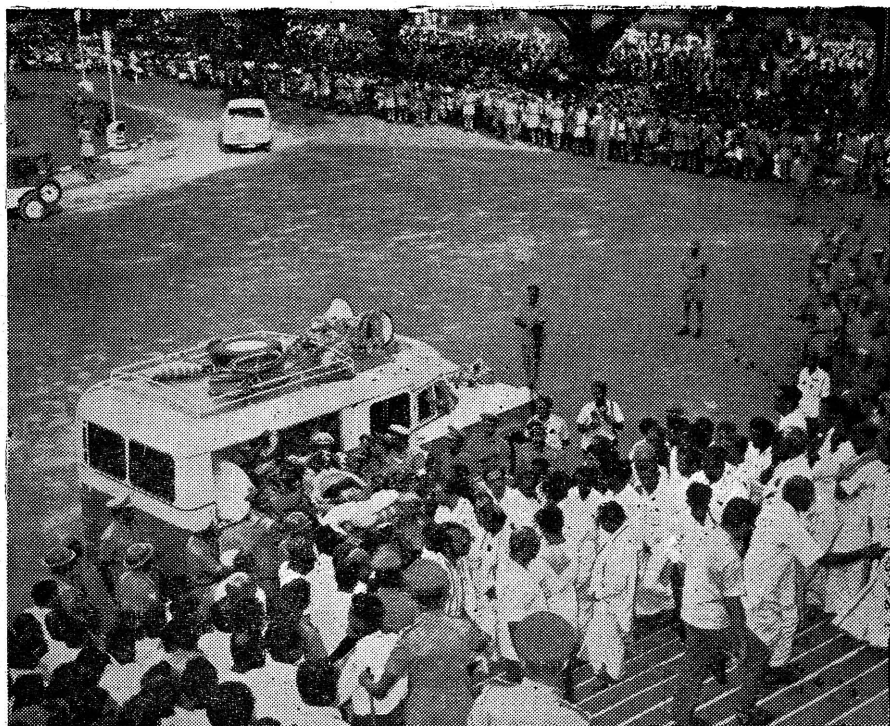
**IN
LIFE
AS
IN
DEATH**



**PERIYAR
WAS THE BELOVED
OF
ALL LEADERS**

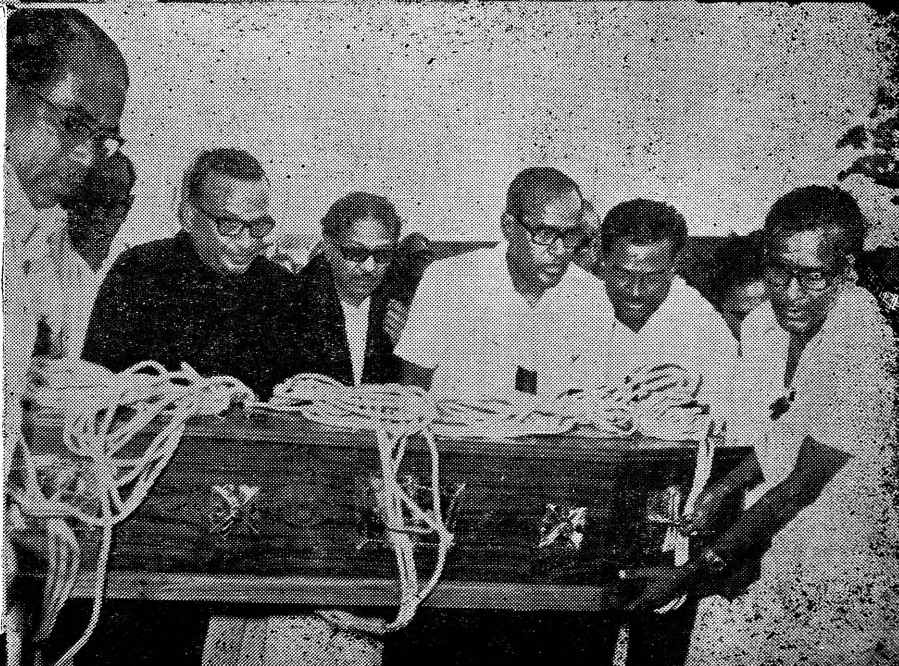


THE END OF A MOMENTOUS JOURNEY



The Periyar's Body was brought to Rajaji Hall by afternoon on 24—12—73. Already a long line of mourners were there in a long Queue formation.

The Capsule of our era is being lowered to its ultimate resting place.



AT POOMPUHAR

*The land of ancient civilisation
and gateway to Dravidian Culture
Tamil Nadu is a land of temples—
These veritable treasure houses
Depict our glorious art and culture.
The five great epics—Silappathikaram,
Manimekalai, Valayapathi, Kundalakesi
and Seevaka Chinthamani—blossomed forth
in Chaste Tamil, mirroring the
Tamil Way of life, under the
Patronage of the three Royal Houses,
the Cheras, the Cholas and the Pandyas,
The Sangam Age—A Golden Era,
when learning and fine arts flourished
And Valour and Chivalry were the order of the Day.
The Land of the Tamils prospered
With Industry and Trade.
Vessels from lands beyond the Seven-seas
Visited the Chief Ports-Puhar, Korkai and Vanchi
Laden with Merchandise.
Today, a great step is taken
to recapture the ancient glory and
grandeur of the Tamils at Poompuhar.
As a first step towards its resuscitation,
the Silappathikaram, the story of the
Immortal Lovers, Kovalan and Madhavi
and the Divine Kannagi—of the Sacrifice
of true love and triumph of chastity
are chronicled in Stone for posterity.
Today, we restore the heritage
of the Tamils by not only reviving
the art and culture of the Tamils,
but what is more important,
revive the prosperity in
The Land of Tamils.*

Selvi. Rajalakshmi.
Public (I. & P.R.) Dept.

Above is a poem to elucidate the cover page.



RAJAJI.....

.....The Great Indian

*Tributes to the memory of Rajaji by
Thiru K. K. SHAH, Governor of Tamil Nadu*

A life which radiates lustre and provides guidance, when extinct, leaves a void sometimes for generations. Rajaji's passing away is keenly felt and sincerely mourned because the voice of wisdom and the prophet of dissent as he was in every minute, is today missing in all walks of life, especially when we are struggling to strengthen norms of democracy. When sometimes upsurge of emotions betrays national interest, when uninformed criticism gets the better of reason and when personal frustration is inclined to neglect common good, a fearless and respected voice, as that of Rajaji, serves as a most valuable asset.

RESPECTED BY ALIENS AND INDIANS ALIKE

Whether we agreed with Rajaji or not, we were in the habit of reading Swarajya wherein Rajaji's reactions and advice could be had. Rajaji is a mighty example and a demonstrative proof, if any proof were needed, of an intellectual of high calibre accepting the existence of God. If one goes through the writings of Rajaji, there is an undercurrent of mature philosophy and high scholarship. It is very difficult for intellectuals to get out of the walls built up by them as they are afraid of being inconsistent. Rajaji

had the courage to modify his earlier views if circumstances demanded and had the ability and honesty to explain.

The outstanding example of his approach to life being practical is provided by what is known as a shooting incident. It took place on his way from Namakkal to Salem. Luckily the man was not killed. It was his integrity and honesty which stood by him and even though he was prosecuted, he was exonerated. Even the licence that was taken away was restored and the permanent District Magistrate, an Englishman, had to say that he should not have been prosecuted. How many, on such occasions, have the courage to tell the truth? He was so confident of his ability to stand by what he thought to be right that he could neither be cornered nor could he be swayed either way.

Be that as it may, to earn such encomiums even from Gandhiji is not only rare but a real achievement. On 10th September, 1938, Gandhiji wrote in *Harijan*—"I have boundless faith in his (Rajaji's) wisdom, his uprightness and his unsurpassed ability as a parliamentarian. He has to his credit no mean achievements. We have in our ranks no abler fighter in Satyagraha." On the 10th February, 1946, Gandhiji

wrote in *Harijan*—"Rajaji is one of my oldest friends and was known to be the best exponent, in word and deed, of all I stand for. That in 1942 he differed from me, I know. All honour for the boldness with which he publicly avowed the difference. He was a great social reformer never afraid to act according to his belief. His political wisdom and integrity are beyond question." What greater tribute can be paid?

RIGHT TO REBUKE US

Rajaji earned the right to rebuke us and his classical wisdom was accepted to be a national asset. It was Rajaji who always emphasised that dogmatism is a mark of intellectual immaturity. The Gaya Congress of December 1920 was typical. Mahatma Gandhi was in jail. It was given to Rajaji along with his colleagues to fight hard against such intellectual giants as Deshbandhu Chitta Ranjan Das, Pandit Motilal Nehru and Sri Vithalbhai Patel for acceptance of Gandhiji's programme by the Congress. There were endless round-the-clock speeches on the banks of the Phalgu and ultimately Rajaji won.

In good manners, nobody could beat Rajaji. He believed that our culture embodied highest norms of

personal behaviour and provided an ideal for others to follow. At the Gaya Congress when Rajaji was speaking, some members requested him to come a little forward. His typical reply was "How can I turn my back towards the President." He observed highest courtesies. "Good manners" he said "are like oil that keep the machine of human relations moving smoothly and satisfactorily."

When Rajaji was born, his mother was worried about his health. He suffered from this handicap all his life but got over this handicap by sheer strength of will. He regulated his diet, took proper exercise and maintained his ability to put in hard mental and physical work.

LEFT US HIGH TRADITIONS

Even long before power was officially transferred into his hands as the first Indian Governor-General Rajaji's Prime Ministership of Composite Madras State in the years of Provincial Autonomy had provided ample proof of his unparalleled administrative capacity, vision and far-sightedness and not only convinced the British rulers

that India was fit for self-Government but also earned their admiration for the remarkable ability with which he steered the Ship of State. In all the high offices, he occupied in free India—as Home Minister at the Centre or Governor of West Bengal or again as Chief Minister of Madras—he left his special mark on the administration and earned the love of the people in those turbulent and formative years of our democracy. He has left high traditions which it is not easy for others to follow. His greatness was that he saw far ahead of the times while others were carried away by momentary impulses.

In conversation and arguments, he had few equals. He invariably impressed others and made them listen. President Kennedy was so deeply impressed that though he had set apart only a few minutes for Rajaji, he insisted on Rajaji remaining with him for quite a long time, necessitating cancellation of other engagements.

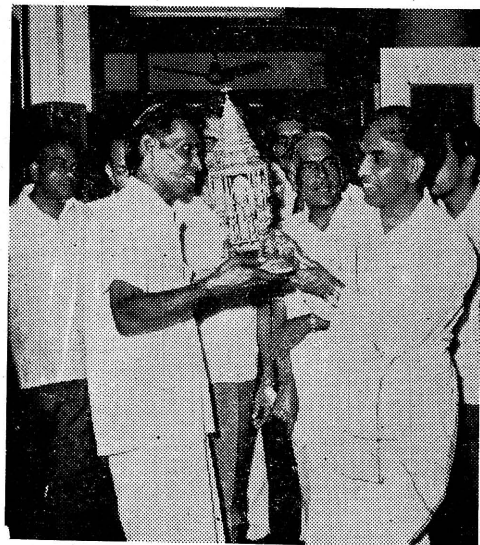
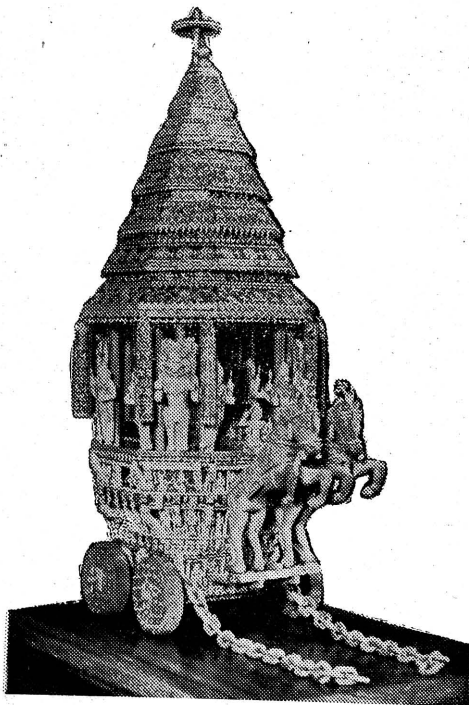
BALANCED PERSONALITY

Like Pandit Jawaharlal Nehru, Rajaji was a forerunner in stressing

even in the days of our Freedom struggle that India should concentrate on scientific and technical education for wiping out poverty. The same Rajaji pleaded for ban on nuclear weapons. These instances present Rajaji as a balanced personality, avoiding extremes and preferring the golden mean for the benefit of humanity.

As a true democrat, Rajaji turned down the idea of starting special schools to encourage talent. He boldly said—"India wants equality; not excellence." Rajaji's sympathy for the poor and the downtrodden found concrete expression in his Harijan uplift work and agriculturists' debt relief measures. Plain living and high thinking were his hall marks. I learn from his old friends that when they wanted to see him, he would go to them himself, much to their embarrassment. This shows his humility and simplicity.

I pay my humble homage to the great Indian who inspired us and played a leading role in India's liberation and growth. May we perpetuate the memory of Rajaji by spiritualising our public life and make democracy a mode of living.



Thiru V. Kalastri of Thirumazhisai, village near Madras has carved a miniature temple car and won the First prize, in the Mahatma Gandhi Centenary Award for the year 1973. The Sandalwood Car has been decorated with exquisite figurines. Thiru S. Madhavan, Minister for Industries distributed the prize on 26—11—73 to the deft craftsman.



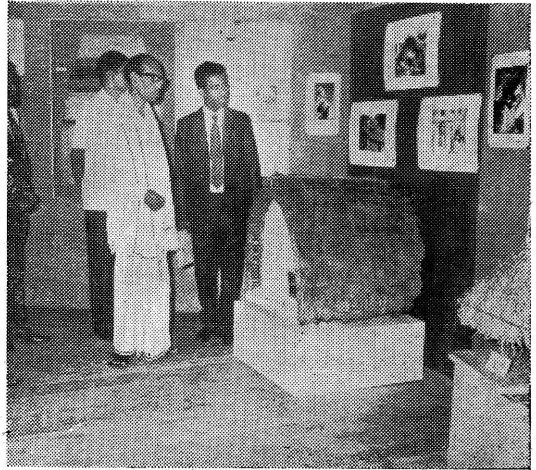
Tamil Nadu Tribes



- *** Their Life
- *** Their Religion
- *** Their Health
- *** Their Welfare



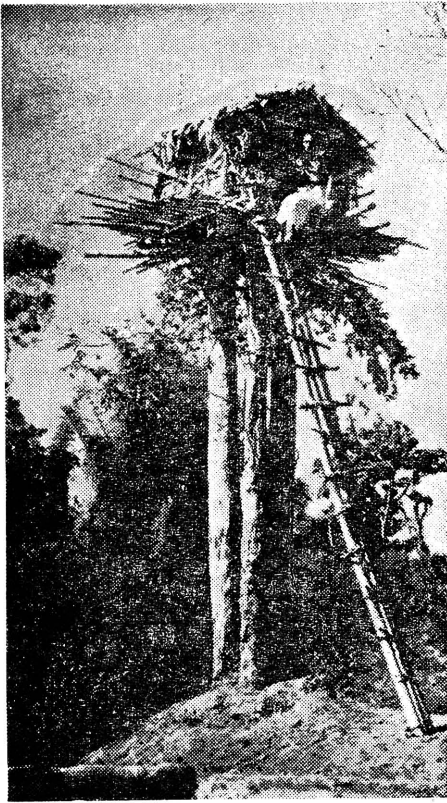
Dr. Edgar Thirston, Superintendent, Anthropologist,
(1885—1908)
Tamil Nadu Government Museum.



Top : The Kota Tribes at pottery making.

Above : At the Tamil Nadu Tribes Exhibition at Government Museum, Thiru V. Devasahayam, Curator, Anthropology Section explaining exhibits to Minister for Backward Classes Thiru N. V. Natarajan.

OUR TRIBES ARE ALONE ALOOF ALOFT



URALI tree tribes of Coimbatore.

The tribal population of the Tamil Nadu State as per 1971 Census is 3.30 lakhs which is only 0.78% of the total population of the State. The largest concentration is in the Salem District (39.89%), followed by North Arcot (23.53%), Chingleput (10.45%), Coimbatore (7.99%), South Arcot (5.37%) and the Nilgiris (5.14%).

The Malayalis form the biggest tribe with 53.7% and next to it, is the Irular with 33.9%. The Sholagas, Kattunayakans, Pariyans and Pulayans are also fairly appreciable in strength. The wellknown tribes of Toda, Kota, Kadar and Mudugar are seen to be minor ones from the point of view of their numbers. They are each less than 1,000 in number.

Regarding the literary standard of the tribes, the Kurumbas, Todas, and Kotas rank foremost. The

tribes having low literacy figures per 10,000 are Sholagas (391), Malasars (399), Malayalis (493) and Irulars (629). Passing of the S.S.L.C. or the Matriculation is a definite stage in education. In the next educational level, viz., matriculation and above, Kotas and Todas stand ahead. The Kadars, Kanis, Malasars, Mudugars, Paniyans and Sholagas are reported not to have any Matriculate among them.

Out of the total population of 2.52 lakhs (1961 Census), 1.09 lakhs are non-workers and out of 1.43 lakhs of workers, 58.22% are cultivators, 20.65% are agricultural labourers, 7.35% are engaged in other works like fishing, forestry, etc.

The welfare measures taken up by the Government to uplift the tribes are varied. They include the opening of the Labour Contract Societies, Co-operative Market Societies, Multipurpose Co-operative Societies, Cottage Industrial Centres, Tribal Residential Schools and Hostels, Mobile Medical Units and Dispensaries, Tribal Housing Colonies, Industrial Training Centres and the Tribal Development Blocks. Apart from these, the tribes are privileged to avail themselves of the schemes to have agricultural implements and seeds, to sink irrigation wells and drinking-water wells.

The Tamil Nadu Tribes exhibition presents at a glance the various appliances of the food gatherers, hunters, fishing folk, cultivators and nomads. It also includes the Arts and Crafts including the handicrafts, household articles, jewellery, habitations, health practices, burial systems, etc., pertaining to Tamil Nadu Tribes with the help of objects, models, diagrams, charts and photographs. The exhibition, which is organised by the Anthropology section of the Government Museum, Madras, will be thrown open to the public from 10th December, 1973 till 30th December, 1973 (10-30 a.m. to 5-00 p.m.) in the Centenary Exhibition Hall of the Museum.

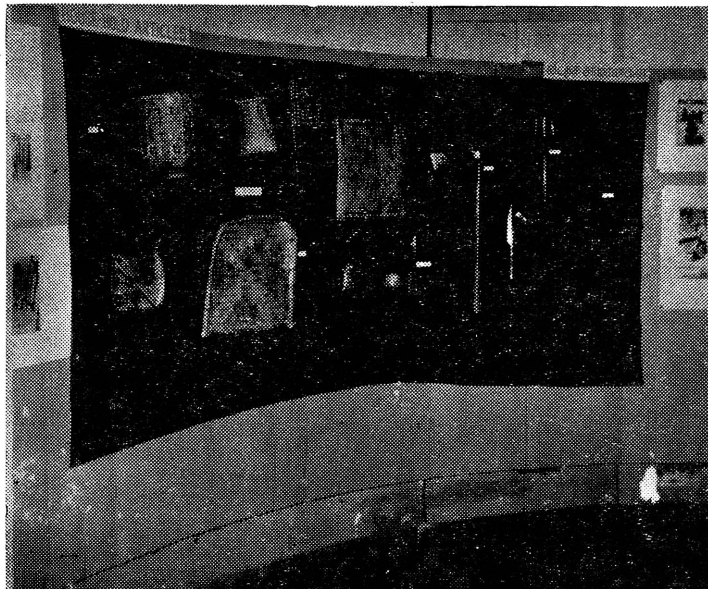
THE TAMIL NADU TRIBES

The word "Tribe" is defined as a social group possessing a distinctive culture which marks it out from other groups having different cultures. The term "Adivasi" has become popular in India, since they are presumed to form the oldest ethnological sector of the population. Etymologically "Adi" means original and "Vasi" means inhabitant.

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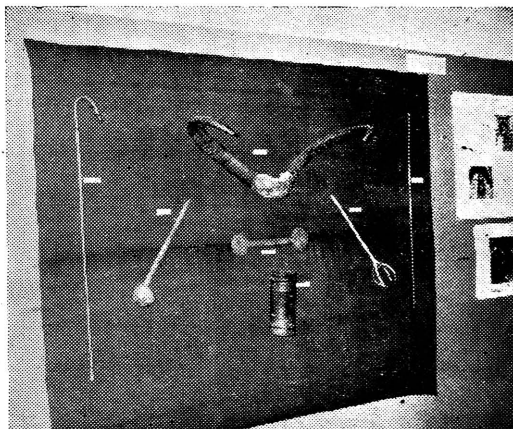
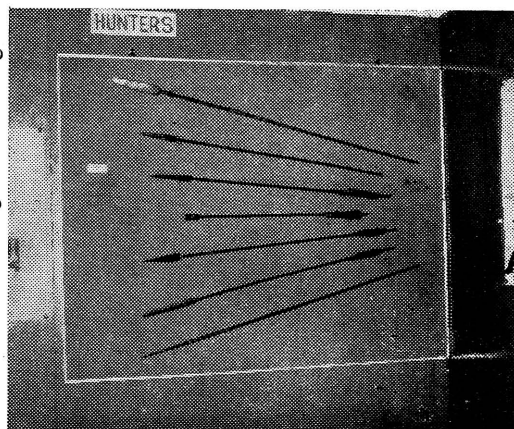
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According to the Census 1961, it is recorded that there are about 630 tribes in India, constituting a population of 30 millions. It is also noted that the highest number of Scheduled Tribes is found in the State of Mysore which has 63 tribes and the lowest figure is one which comes from the Union Territories of Laccadive, Minicoy and Amindivi. In India it is recorded that tribal population forms 6.87% of the total population of the country.

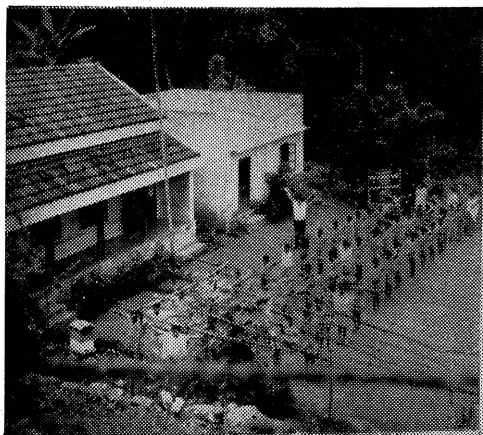
The State of Tamil Nadu is included under the medium area of concentration with 42 tribes scattered at different district levels. They are :—

1. Adiyen
2. Aranadan
3. Eravallan
4. Hill Pulaya
5. Irular
6. Kammara
7. Kattunayakan
8. Konda Kapus
9. Konda Reddis
10. Koraga
11. Kota
12. Kudiya or Melakudi
13. Kurichchan
14. Kuruman
15. Kadar
16. Kaniyan or Kanyan
17. Kurmbas
18. Kani or Kanikaran
19. Kochu Velan
20. Maha Malasar
21. Malasar
22. Malaye Kandi
23. Mudugar or Muduvan
24. Malakkuravan
25. Malai Arayan
26. Malai Pandaram
27. Malayali
28. Malai Vedan
29. Malayan
30. Malayarayar
31. Mannan
32. Muthuvan
33. Palliyan
34. Paniyan
35. Pulayan
36. Palleyan
37. Palleyar
38. Sholaga
39. Toda
40. Ulladan
41. Uraly
42. Vishavan

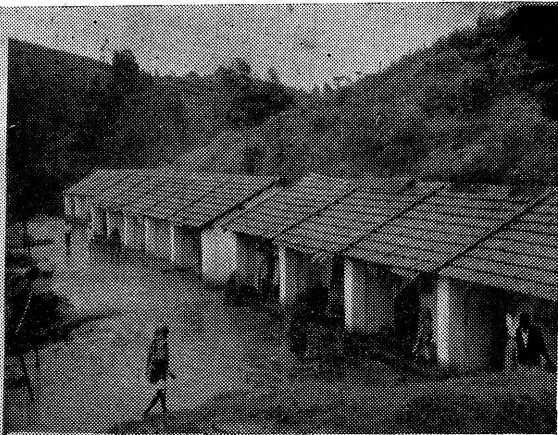


Pictures

alongside and at the end of the page are some of the exhibits displayed at Government Museum, Madras, to explain the Tribal ways of life.



A tribal residential school Kargudy.



The New Tribal dwellings.

There is no satisfactory definition either in the constitution or anywhere, for the term "Tribe." To an administrator, the term 'tribe' means group of citizens who are the special responsibility of the President of India. To an anthropologist, it means a special field for a study of a social phenomenon. But, however, all these impressions are correct. These groups are presumed to form the oldest ethnological sect and therefore, they are called "Adhivasi", which means an earlier inhabitant. The International Labour Organisation has classified such people as 'Indigenous.'

The tribal population of the Tamil Nadu State, as per 1971 Census, is 3.30 lakhs, which is only 0.78% of the total population of the State. The largest concentration is in the Salem District, (39.89%), followed by North Arcot (23.53%) Chingleput (10.45%), Coimbatore (7.99%) and South Arcot (5.37%). There are 42 Tribal communities in Tamil Nadu. The more important among them are Malayalees, Irulars, Kattunaickens, Paniyans and Pulayans. The tribals live scattered in hilly areas and forest slopes of hills and their socio-economic development is solely conditioned by their environment. Since they live in interior forests and mountains, they are far away from the centres of civilisation and are not aware of the amenities of towns and cities. The very existence of the tribals has depended, during these centuries of their forest and mountain existence, upon the principles of challenge and



Malasar woman, Coimbatore.

WELFARE MEASURES FOR SCHEDULED TRIBES IN TAMIL NADU

By
Thiru M. K. Gomethagavelu, I. A. S.,
Director, Harijan Welfare Department,
Government of Tamilnadu.

response. Rigours of climate have not driven them away from their home lands nor obliged them to abandon their way of life. The tribals are "open, frank, simple, trusting, tough and hardy and convinced of wholesomeness of the way of life and ready to change, if convinced and necessary." The point for decision is whether to allow them in their existing way retaining their present identity or to change their habits and way of living.

As already stated the tribal population of the State is only 0.78% of the total population. The tribal population of the State is scattered, sparse and in isolated groups, except in Kolli Hills and Yercaud in Salem District, where two Tribal Development Blocks at the rate of one each were started during 1965. Except in these areas, there is no tribal concentration. Therefore, the "area concept" cannot be applied to the tribals of our State. The Scheduled Tribes are very backward, socially, economically and educationally.

SHY AND RESERVED

The tribals are generally primitive in nature. They have their own characteristics, customs, habits and manners. They are shy and do not easily mingle with others. Their birth rate of females during the last 40 years is greater than the males. It is only through social and moral education, they are to be encouraged to have intercaste marriages with non-tribals. The question here again

is whether it would be possible unless the tribals are educated to realise their rights and responsibilities, in society, we cannot be content and complacent that we have done anything for their welfare. The welfare schemes so far undertaken for improving the down-trodden section of the society are as follows. No area in the State has been declared as Scheduled area since the tribal population is scattered. As there are no scheduled areas in Tamil Nadu, it is not mandatory for the Government of Tamil Nadu to establish a Tribes Advisory Council with reference to the provisions of the Fifth Schedule of the Constitution of India. However, it was considered desirable to have an Advisory Council at State Level to advise the Government on matters relating to the advancement of the Scheduled Tribes. Accordingly, a State Tribal Advisory Council to advise the Government on the implementation of the welfare schemes for Scheduled Tribes has been constituted. The Chairman of the Council is the Minister for Harijan Welfare. The Council meets once in 4 months and discusses and takes decision on the suggestion put forth by its members.

LITERACY LEVEL

The level of literacy among Scheduled Tribes, according to 1961 Census, is 5.91% against 31.41% for the entire population (1971 Census details are not available). The literacy among the tribal males is 8.93% and females is 2.73%. Therefore it is clear that the tribals are lagging far behind the general population in literacy. Though the country's growing education consciousness has reflected among the tribals also, it cannot be said that they have attained the normalcy in education. The educational backwardness of the tribals has bearing on their environment and educational background and economical soundness of the tribals. For a tribal family, to send its grown-up children to school is an economic preposition and entails dislocation and loss to the family labour force. Girls help their mothers in their household chores and the boys their fathers in the field in agriculture. Further, the tribals are not in a position to send their children to the schools with proper clothings, books, slates, etc. Therefore, unless the tribals are provided everything free of cost, they cannot be brought

into the educational fold. With a view to achieve this object, the State Government with whom "Education" lies as one of the primary responsibilities, are taking all efforts to educate the tribals. The Government are running 74 Residential Schools, 1 Non-Residential School and 15 hostels for the tribals in the State. About 5,000 tribal boys and girls are benefited by these institutions. In the tribal residential schools and hostels, the tribal students are provided with free books, slates, clothings, (two sets per year), food and shelter. In short, the Government have taken complete charge of the education of the tribal students.

VOLUNTARY AGENCIES

In addition to this, voluntary organisations which show interest in doing welfare work for Scheduled Tribes are running residential schools for which financial assistance are advanced by the State Government. In Tamil Nadu, 4 residential schools and 1 hostel run by voluntary organisations as detailed below are receiving assistance to maintain the schools and hostels.

1 and 2. Tribal Residential School for boys and girls run by Sri Sarguru Sarva Samarasa Sangam at Coonoor.

3. Takkar Baba Gurukulam at Nirgacimund run by the Servants of India Society.

4. Tribal Residential School at Kallar in Coimbatore District run by Sri Sarguru Sarva Samarasa Sangam, Coonoor.

5. The Palanimalai Adivasigal Seva Sangam at Thandigudi in Madurai District (Hostel).

To shed the shyness of the Scheduled Tribes and to allow them to mix with others, the following ratio is adopted in admitting boarders in the Hostels :

Scheduled Tribes—60%

Scheduled Castes—30%

Backward Classes—10%

The development of Scheduled Tribes has a bearing on their physical and mental development. To ensure both mental and physical development, the Scheduled Tribes staying

and/or studying in Government Tribal Residential Schools and Hostels are supplied with milk, mutton and eggs.

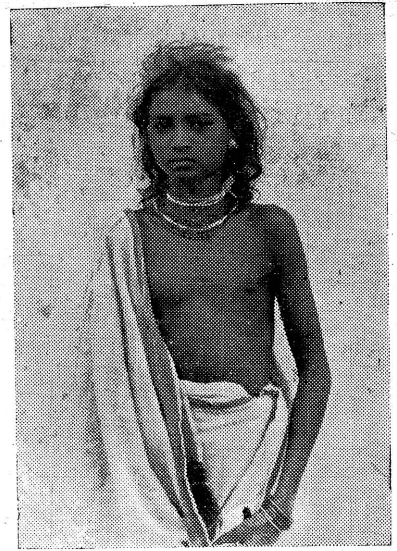
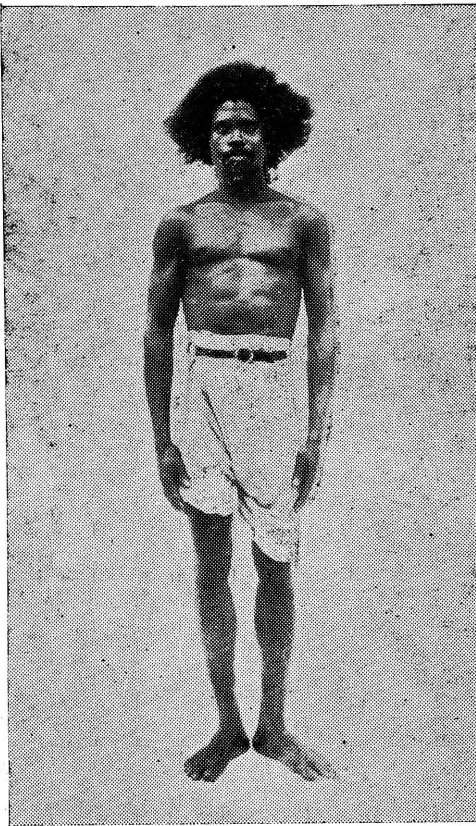
In the field of primary and secondary education, there is visible but slow progress. The Scheduled Tribes receive education only from recent years. There is therefore paucity of Scheduled Tribe students at collegiate level. The position is expected to improve only in due course. All the Scheduled Tribe students studying in colleges are granted scholarships irrespective of their parents income and irrespective of the religion which they profess. In spite of the liberal concessions, only a few Scheduled Tribe students have pursued college studies and availed the concessions. During 72-73, a sum of Rs. 1.10 lakhs was spent for granting scholarships to Scheduled Tribe students. The tribal day scholars in the schools run by Forest Department are provided with midday meals.

ECONOMIC DEVELOPMENT

A Pre-Examination Training Centre is also functioning in the State from 1966 onwards to train Scheduled Caste and Scheduled Tribe candidates for I.A.S., and I.P.S., etc. examinations conducted by the Union Public Service Commission. At present 38 Scheduled Caste and 2 Scheduled Tribe candidates are undergoing training in the Centre. To educate the tribals of the State, the Government spends about Rs. 27 lakhs annually.

So far 5 Scheduled Tribe candidates trained in the centre have got selection in the All India Services and allied services.

The efforts and expenditure on educating the tribals can only be an investment which cannot produce immediate economic results. Agriculture is the main stay of the tribal population. 60.49% of the tribals are depending upon agriculture either as cultivators or as agricultural labourers. Out of the total population of 2.52 lakhs (1961 Census), 1.09 lakhs are non-workers; out of 1.43 lakhs of workers, 58.22% are cultivators, 20.65% are agricultural labourers, 7.35% are engaged in other works like fishing, forestry, etc. The average land holding of a tribal is 2.5 acres in Kolli Hills and 1.3 acres in Yercaud Block in Salem District. To prevent the tribals



Irula girl.

(Left)

A member of the Kadar Tribe,
Coimbatore.

from being exploited by the middlemen, multi-purpose co-operative societies have been started for the tribals in the forest areas. At present, 7 co-operative marketing societies, 6 multi-purpose co-operative societies are functioning in the State for their benefit. To augment their income, cottage industrial centres are also run. Work centres for the benefit of tribal women are also maintained. These institutions are either under the control of the Registrar of Co-operative Societies, Khadi and Village Industries Board, Director of Industries and Commerce or Director of Women's Welfare, but financed by the Harijan Welfare Department.

To promote the standard of living of Scheduled Tribes whose main stay is agriculture, the following assistances are given :—

Scheduled Tribe agriculturists are supplied with a pair of plough bulls and agricultural implements and

seeds free of cost at a cost not exceeding Rs. 500 per individual. The scheme was implemented in the Second and Third Five Year Plans and also in 1966-67 and 1967-68 with a subsidy of Rs. 400 per individual. The amount has been increased to Rs. 500 per individual from 1970-71. Scheduled Tribe agriculturists are also granted a subsidy of Rs. 2,000 per individual for sinking of irrigation wells. The schemes was implemented in the Second and Third Five Year Plans and also during 1966-67 to 1970-71. The rate of Rs. 1,500 was increased to Rs. 2,000 from 1970-71. For this purpose a sum of Rs. 3 lakhs is spent every year. Government cultivable poramboke lands are assigned to Scheduled Tribes for cultivation. In hilly tracts 3 acres of dry or 1.5 acres of wet lands are assigned free of cost to Scheduled Tribes. The Scheduled Tribes and Scheduled Castes are given second preference in the assignment of lands.

HORTICULTURE TRAINING

The above schemes help financially weak Scheduled Tribes to stand on their own legs by sinking irrigation wells of their own and by purchasing plough, bulls, seeds, etc. As already mentioned the Scheduled Tribes live in forests and hilly areas.

There is ample space for the development of Horticulture. In Attur Taluk of Salem District, one Horticultural Assistant is working for giving technical advices for improving both the horticulture and income of the Scheduled Tribes. For the development of horticulture in Kolli Hills, the Government spends about a lakh of rupees annually.

The Scheduled Tribes who are trained in skilled works like carpentry, blacksmithy, etc., are supplied with tools and implements worth Rs. 300 to 350 each to enable them to stand on their own leg. In addition, the tribal artisans like

carpenter, blacksmith, barber are supplied with the tools and implements to carry on with their trades with advanced tools, etc.

SURVEY OF INDEBTEDNESS

It has been felt, any amount of economic development cannot have the effect of redeeming the Scheduled Tribes from the strangle holds of the money-lenders. The attack on the indebtedness among the Scheduled Tribes should be two pronged, i.e., they should be relieved from the strangle holds of the money lenders by giving long term loans and by augmenting their income. To achieve this, as a first step, a door to door survey on the indebtedness in Kolli Hills and Yercaud Blocks has been taken to ascertain the depth of indebtedness of the tribals. The following laws are in force in the State to control money lending, debt redemption and abolition of debt-bondage :

1. The Tamil Nadu Debt Conciliation Act, 1936.
2. The Tamil Nadu Pawn Brokers' Act, 1943.
3. The Tamil Nadu Indebted Agriculturists (Repayment of Debts) Act, 1955.
4. The Tamil Nadu Money Lenders' Act, 1957.

BONDED LABOUR

Indebtedness has led to the emergence of a system of Bonded Labour which is known by different names in different States. Under this system a tribal pledges his persons and some times members of his family, against a loan. He is released when the loan is repaid. Until then, the tribal or his family is required to work for his creditor, the period of services varies from area to area and in some case families work from generation to generation at master's house. The tribals have no wherewithal to repay the loan amount, he remains a debtor for life and his life is a life of perpetual serfdom under one master or another. In Tamil Nadu, it is learnt there are very few cases of Bonded Labour in the interior parts of Coimbatore and Nilgiris districts. Eventhough there are very few cases of bonded labour, they could not be checked since the tribals are not courageous enough to reveal this fact either to the Police or to other officials to do the needful. This system has not taken

the shape to cause concern as in the case of other States. The Director of Harijan Welfare has proposed to make a personal study in this matter.

HEALTH AND NUTRITION

The tribals live in interior forests and on hills. Therefore, they are far away from the civilisation and amenities available in towns and cities. They are fortunate in living in forest areas. But, they suffer from chronic diseases, the most prevalent are waterborne. Therefore, there is imperative need to provide drinking water supply. Drinking water wells are sunk at Rs. 5,000 wherever necessary, in the tribal areas. For providing drinking water facilities to the tribal hamlets a sum of Rs. 2.25 lakhs is spent annually.

Due to malnutrition, the Scheduled Tribe children are physically weak with poor resistance. In order to give them nutritious diet, the Scheduled Tribe children studying or staying in the Government Tribal Residential Schools and Hostels are supplied with eggs, mutton and milk. The other tribal children are also provided with nutritious feed through centrally sponsored scheme. This scheme is being implemented by the Social Welfare Department. Multi-Vitamin tablets are supplied to the tribals free of cost.

Yaws used to be common among the Todas of the Nilgiris District and is rampant amongst tribals in the Kolli Hills. The incidence of T.B. is also high. In order to give relief to the Scheduled Tribes, seven mobile medical units in Madurai, the Nilgiris, North Arcot, Dharmapuri and Coimbatore Districts are functioning in the State, i.e., in areas where there is heavy concentration of tribals. And it has also been proposed to start one more mobile medical unit for giving medical assistance to the tribals of Kolli Hills. In addition to this, hospitals and dispensaries are run by the Government, and Local Bodies, State Forest Department, Private Practitioners, Co-operative Societies in the plantation areas and also by other voluntary organisation. Financial assistance is given to the deserving privately managed institutions wherever necessary. For instance, the Nilgiris District Adivasis Welfare Association, Coonoor is getting assistance to the tune of Rs. 10,000 per annum for running dispensaries for tribals.

In Madurai District, where the tribals are in some concentration, anti-malaria tablets are supplied to the tribals.

The students studying and staying in the Government Tribal Residential Schools and Hostels are periodically checked by the medical officers to arrest the development of chronic diseases and to maintain good health.

HOUSING

The problem of housing is complicated by its enormous difference in climate, poverty of the tribals, etc. This has to be viewed in the aspects on shelter, sanitation and comprehensive cost. The plight of the Scheduled Tribes is miserable. They live in ill-ventilated huts put up in unhygienic conditions. They are also not economically sound to provide themselves with good houses. Unless they are provided with houses for their own and made to feel that they have got some interest, it will be very difficult to improve their lot. Therefore, houses are constructed and assigned to them. The cost of a single house comes to Rs. 1,600 in plains and Rs. 2,000 in hills of which 3/4th is subsidy and the rest as interest free loan, recoverable in 100 monthly equal instalments. During the Fourth Five Year Plan period, 1,200 houses at a cost of Rs. 12 lakhs were constructed for Scheduled Tribes. Ten per cent of the house sites allotted by the Tamil Nadu Housing Board are for Scheduled Castes and Scheduled Tribes in the new colonies coming up.

ELECTRIFICATION OF TRIBAL COLONIES

The tribal colonies of the State are being electrified wherever the adjoining villages have been electrified. To meet the capital expenditure on this, the State Electricity Board is being given subsidy every year. The programme of electrification of all villages in the State was obstructed by the financial unsoundness of the Panchayats or pay the consumption charges of the street lights in the Scheduled Caste and Scheduled Tribe colonies. To overcome this, and to speed up the process of electrification, the Government have undertaken the task of meeting the current consumption charges in respect of Scheduled Caste and Scheduled Tribe colonies electrified from 1970-71 onwards. This has paved the way for the quick electrification of tribal colonies.



Toda girls are famous for their skill at embroidery.

To improve the communication facilities in tribal areas programmes of link roads are undertaken. Two major road works costing Rs. 7.50 lakhs in Pachamalai Hills in Tiruchi District are in progress. The works are executed by the State Forest Department. Further, it cannot also be taken for granted that the tribal pockets are completely isolated and inaccessible. Many of them are connected by Jeepable roads and the rest with atleast bridle or foot-paths. For providing communication facilities, about Rs. 2 to 3 lakhs is spent every year.

INDUSTRIAL TRAINING

To train the tribals in skilled trades like carpentry, blacksmithy, etc., 6 Industrial Training, Training-cum-Production Centres are functioning in the State. The trainees of the Centres are given stipend.

The tribals in forests are given rights to take free of charge fuel and timber of unclassified species and bamboos. They are allowed to graze their cattle in the forest areas freely, since they rear their cattle. The tribals are employed on payment of daily wages for carrying out works like sandalwood extraction, constructions, etc. They are also employed as elephant men, watchers and foresters. Minor forest produces are leased out to the forest labour co-operative societies at concessional rates. They are also encouraged to take up 'Kumri' cultivation in Salem District.

BONDED LABOUR AMONG TRIBALS

Though the system of Bonded Labour is not of such dimensions as in other States, the Director of Harijan Welfare, Tamil Nadu has been asked to make a personal study of the pernicious practice.

TRIBAL DEVELOPMENT BLOCKS

Among the Tribal Development Programmes, the Tribal Development Blocks are the most important and more significant. The aim of these blocks is to bring about a rapid improvement in the economic and social standards of the tribal people by selecting specially undeveloped but compact areas for multisided development. In our State there are two Tribal Development Blocks in Salem District, one is at Yercaud and the other is at Kolli Hills. During Fifth Five Year Plan, it has been proposed to have special Tribal Development Blocks in Kodaikanal Hills of Madurai District, Pachamalai Hills of Tiruchi District, Gudalur area of the Nilgiris District and Chinnakalrayan Hills of South Arcot District where the tribals are in some concentration.

TRIBAL MODEL VILLAGES

There are three model villages in this State as detailed below, with all basic amenities :—

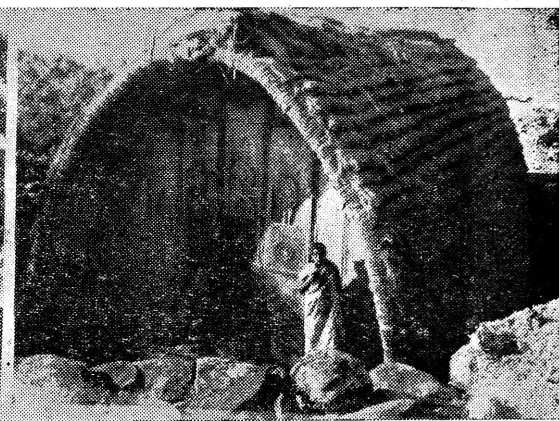
1. Nedungalacombai—Nilgiri District.
2. Aggal
3. Kunjaparai.



Todas present a majestic appearance.



Toda women accord reverential treatment to male elders.



A toda temple whererituals are performed.

The primitive man attaches much importance to religion and religious conceptions which have their impact on all his activities. Unlike the modern man who deals with things in a scientific and logical way, the primitive man is governed by dogmas based on beliefs which in their turn have an emotional basis. This is why the primitive man's problems are secretive or occult whereas the modern man always approaches problems with an objective mind.

RITES AND RELIGION

The religious life of any people is understood by manifestations of their beliefs and in doing certain rites. In fact to refer to Durkheim religion is composed of 'beliefs' and 'rites'—beliefs about sacred things and rites addressed to them. It is in fact rites which give life to religion. According to Max Schmidt religion can be classified into its component parts 'cultus' and 'rites.' Cultus refers to the acts of men, which they themselves think, brings them into contact with the powers that are the objects of their religious faith. Schmidt defines art as "representation of ideas that afford an outlet for human emotion" and brings within art the various representations of religious ideas and makes one think that worship is through art. And this is how we find dancing, music, architecture, etc., as indispensably connected with worship.

The essence of primitive religion is a belief in an impersonal power; the idea or concept of power varies from group to group. These powers

Tamilnadu



Tribes



Religious Aspects

By
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M. A., M. LITT., Ph. D.
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which are deemed to influence human life act both favourably and unfavourably and are differentiated. The good ones are worshipped while the bad ones are propitiated. Primitive man's wrong idea of reality has confused his thought and this had led to errors of action. But in the case of the modern man experience and knowledge have made him view things differently and in a realistic way. This difference between them is not **organic** but **circumstantial** and should be thoroughly understood.

MAGIC AND RELIGION

Magic and religion are much interrelated and one can even say that much of magic is on a par with religion. Both are based on intellectual attitudes which resemble one and the same. While magic explains "the ways in which things happen in terms of hidden force," religion achieves this through deities, spirits and powers. Both the artistry of the magician and the rituals of religion are aimed to "create an atmosphere of suggestibility" and both employ the same means. Both follow a set form and traditional order the adherence to which is vital for success.

Primitive man views magic as important to understand the mystery of nature and life unlike the modern man. When the element of chance in day to day life upsets his calculations he is led to believe that some evil forces control the processes of nature and in turn he wants to control this through magic. Magic is different from religion in the way

in which the mystery of the world is viewed. Magic denotes an inflated notion of man's power whereas religion admits man's helplessness and his resignation to his destiny. In spite of the advance of science and general knowledge man will continue to live adapting himself to both magic and religion. Both magic and religion are complimentary and they serve the same purpose of restoring confidence in times of danger or crises. Where magic fails religion helps to tide over social and economic difficulties.

Magic assumes a uniformity of nature which brings it in line with science. To say with Frazer, "the magician does not doubt that these same causes will always produce the same effects, that the performance of the proper ceremony, accompanied by the appropriate spell, will inevitably be attended by the desired results, unless indeed his incantations should chance to be thwarted and foiled by the more potent charm of another sorcerer." The magician strictly follows what he considers to be the laws of nature ; so also the scientist and both assume a regular course of events in a well planned way which is their opinion are determined by those unchangeable laws which according to them they can calculate and determine correctly. Magic assumes occult causes while science deals with matter of fact causes. This is the reason why as Frazer says, all magic is barren and false, for, were it otherwise, it would no longer remain magic but would be science. While magic tells us the ways by which things happen in the background of hidden forces, religion explains and interprets things in terms of spirits and Gods.

ANIMISM

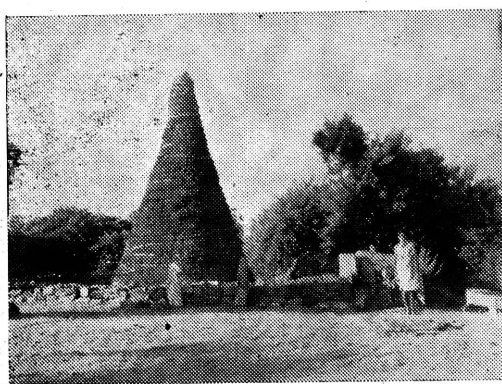
The word 'animism' has been used to describe the tribal religions in India. "Animism is that exceedingly crude form of religion in which magic is the predominant element." According to this form, man's life is supposed to consist of powers, elements, ghosts, etc., which are impersonal in character, and also "shapeless phantoms of which no image can be made" and no definite idea can be formed. These are thought of to preside over various spheres of life and in this sense we have a spirit presiding over cholera, another over small pox, etc. and spirits existing in rocks and mountains and those associated with rivers. The primitive man diligently offers prayers and propitiates these to ward off the dangers associated with their influence. In this place we should bear in mind the fact that the primitive man not only cares for malevolent spirits but worships also such things as stones, feathers and symbols as also plants, trees, the sun, the moon, and the stars. The sun god is considered to be benign and expected not to do any wrong. Viewed from this point, we can say that 'animism' has been replaced by "tribal religions" as such. In fact tribal religions are considered to come in line with popular Hinduism in the near future. Dr. Hutton has remarked that "tribal religions represent, as it were, surplus material not yet built into the temple of Hinduism." We can also refer to Elwin who is of the view that distinction between tribal religions and Hinduism or "the previous classification into animism and Hinduism is meaningless." We can conclude

that tribal people have no objection to worship Hindu Gods provided it will benefit them.

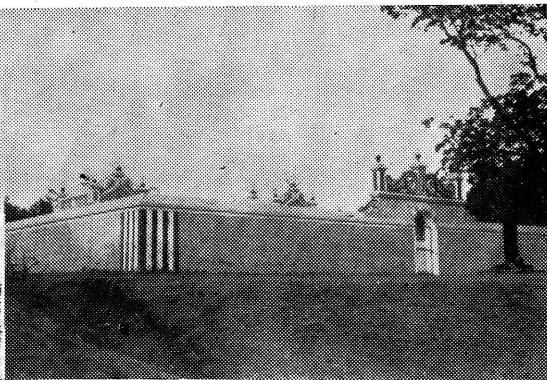
RELIGION IN TAMIL NADU TRIBES—KOTAS

We can now study the four tribes of Tamil Nadu, viz., the Kotas, the Todas, the Kanikkars and the Kadars from the point of view of religious aspects.

The villages where the Kotas live lie on a plateau in the South of India, the area which is now the Nilgiris District of Tamil Nadu. The town of the people called Kokal is a little away from the city and near the forest. In the town there are two temples at the eastern corner of the place dedicated to the father god and the mother goddess. There is one Chief Priest and two assistants to help him. These priests also conduct the main festival of the Kotas called Kambat-rayan therv. The Kotas have no particular figures of their god. At the end of the year the Kotas celebrate a festival called Varldav which has a bearing on the performance of funeral rites. At this time the people make small cots which are used for carrying dead people depending on the number of the dead in the year. Those things which were used by the dead are put in small baskets and placed in the cots. In the evening these cots with the things are taken to the place called Davnat. Here the bones of the dead which are kept hidden somewhere are brought out and put in the cots and then the people start weeping. Finally all the cots are burnt. Thereafter food is prepared in the same place and



Toda Temple (Mund).



Kota Temple.

SOME TRIBAL DANCES



Top : The Kotas at dance.

Middle : The spiritual dance of Toda.

Bottom : The dummy horse forms part of all religious processions.

distributed to those who have come there. During the night two relatives of the deceased will stay in the same place Davnat and return to their home the next morning. The belief underlying the whole ritual is that only if this is done the dead will go to heaven. And also only after the performance of this a man or woman can remarry.

After the performance of this death ceremony the Kotas celebrate their famous festival Kambatrayan therv, the biggest ceremony for them, for a period of twenty one days. Even women participate. However, as a rule women never appear before the priests nor they approach anywhere near any of the sacred things. People prepare different varieties of foods and these are offered to god. The chief priest will participate in the eating and then only others take their food. After the celebration of the function some kind of sports takes place in which all men and women should participate without fail. Otherwise they are fined by the local panchayat the next day. The priests who perform the ceremony get possessed and make certain utterances about the coming events. Because of mixing with Hindus to a certain extent, the people now celebrate Hindu festivals like Sivaratri and Krishna puja.

AMONG TODAS

The Todas who inhabit the areas in Nilgiris District along with other tribes are said to have lived there for a number of centuries. The Todas give great importance for the buffaloes which are part and parcel of their life in every sphere of activity. There are different theories with regard to their origin. According to Dr. Rivers, Todas should have come from Malabar, the present Kerala. It can definitely be said that the Todas have been brought up in the Nilgiris. The Todas have great respect for their elders. The Todas believe in a large number of spirits, gods and goddesses particular among them being Teikirzi and on. Teikirzi is the supreme goddess which rules the people on the earth. On the youngest brother of the goddess rules over the world of the dead. We have also to note that the Todas have various river gods and also hill deities each being associated with a special hill top. The places where the buffaloes are kept are

considered very sacred by the Todas and the people who manage the cattle yards are the priests for them. In these sacred places special vessels, bells, lamps, etc., are used and kept separate from other ordinary things. Prayers are offered here but the words used are unintelligible. Though the Todas do not care much for omens they believe in divination. The diviners who form a separate class by themselves always work in pairs. They always give the decision in a particular matter, when they are in a semi-hypnotic state. The Todas also give importance for sacred days and sacred numbers. Among numerals three and seven are considered very important.

The Todas believe in the concept of spirit. After the death of a person, the spirit is supposed to travel to the other world. And according to them this other world is in the west and below the earth. Here the Sun shines while it is night on this earth. The concept of incarnation is also in vogue among the Todas and according to them after a considerable period of stay in the other world the spirit is reborn in this world as a new individual. Magic and sorcery are also practised by the Todas and they practice two types of magic, viz., homoeopathic magic and contagious magic. As regards the religion of the Todas, Rivers has observed that "worship has been transferred from gods not to stocks and stones but to bells and dairy vessels." Thus we find that the religion of the Todas is moving farway from reality because there is more of ritualism than religion and in fact religion is overshadowed by ritualism.

ABOUT THE KANIKKARS

The tribal people known as Kanikkars are to be found in the Kanyakumari District in Tamil Nadu in forest areas like Keeripparai, Pechiparai, Kothayaru, etc., They are also found in the Kerala border particularly in the Neyyankankara forests. There are about 4,000 of these in Tamil Nadu alone.

We cannot say with certainty what religion the Kanikkars follow. There is evidence to show that they worshipped Lord Siva, Parvathi, Vishnu and also Satan. The Kanikkars worship this Satan as a hill god. The stories prevalent among these tribal people bear testimony to these. They also believe in

animism, magic, sorcery, etc. Apart from the deities mentioned above the Kanikkars worship many other minor deities. The watch god of the area is worshipped first. This is supposed to guard the land of the tribals. Then comes Satan the hill god. Among the smaller deities come also the forest deities which are expected to protect the people when they go for hunting. Another particular deity worshipped by the Kanikkars is the Madan. The figure of this deity is prepared in mud. This deity is worshipped on all occasions. The Sun god is also worshipped as an important deity and in all ritual practices first worship is offered to the Sun god. Food is offered after prayers. In an open space the food is prepared and placed in a plaitain leaf. The whole thing is then offered to god.

The festivals celebrated by the Kanikkars are many. On these occasions, prayers are offered for particular deities. Thus before sowing and starting the agricultural operations the Kanikkars clear the land destroying the forest. In order not to offend the god of the land they make offerings to the forest deity. After the harvest also they make offerings to the deities and celebrate the same in an elaborate fashion. This function starting in the early hours of the morning goes on till midday. Rice is then offered. Music

and dancing also take place. Finally the offering of fruits, coconuts and other things is made. After the offering the things are distributed among the members. In order to avoid harm while going out for hunting the Kanikkars worship certain forest deities. Worship of the Sun god takes place first in the morning. The actual prayers for the forest deities takes place in the forest itself where a big pit is made and fire lit in it. The instruments of hunting are then placed before the fire and certain words are said in prayer. After this the hunting takes place.

Lastly the Kanikkars make special prayers on occasions when there is no rain and when disasters come to them in their place. This is also an elaborate ritual starting in the morning and going till the end of the day. In an open place the important among the tribal people assemble and put a pandal with coconut leaves and plaitain leaves and also flowers. Then they improvise the deity by making a small dwelling place inside the pandal and placing there the dress, the weapons, etc., supposed to belong to the gods. Then elaborate offerings of rice, paddy, tender coconuts, fruits, etc., are placed in a number of leaves. Songs praising the deity are then sung. At about twelve the puja takes place. A prominent

THE SUMMING UP

"Our analysis of the beliefs and practices relating to the supernatural being among the tribals in general, reveals that whatever be the way of life, whether gathering are hunting or cattle herding the tribal enacted his myths through rites and rituals, dances and songs, fear and taboos thus confirming his belief in the supernatural, invisible, imperceptible force not individually but collectively. What matters to him is social survival."



The Buffalo Pen among Todas is a place of veneration.

member among those assembled gets hypnotised and utters some words supposed to come from god himself. This man later dances on a platform of fire and drinks the blood of a fowl after its head is cut. Then the man falls down. The function now comes to an end and everybody assembled shares the offerings placed there.

THE KADARS AND THEIR WORSHIP FORM

The Kadars are a food gathering jungle tribe of South India spread in the Nelliampathy and Kadacheri mountains situated in the erstwhile Cochin State now part of Kerala. They are also to be found in Anamalais Hills in Coimbatore District of Tamil Nadu, Kollegal Taluk and South Kanara forming part of Mysore State. The Kadar religion is basically primitive polytheism. However, Hindu religion has crept in here also as in the case of other tribes to bring about notable changes in the traditional religion of the Kadars. The important deities of the Kadar are Ayyappan, Goddess Kali, Maruti and Malavashi. The

According to Frazer
 "While magic tells us the ways by which things happen in the background of hidden forces, religion explains and interprets things in terms of spirits and Gods."

Kadar have faith in the existence of spirits, particularly nature spirits. Rising Sun is worshipped among the Kadars and there are small temples also in their area for worship. The Kadar attach much importance in the matter of being blessed by spirits, demons and deities and also ancestral spirits. This can be seen during celebrations of festivals and ritual and social undertakings. On all occasions considered important the Kadars make fire in the belief that it is necessary to invoke the blessings of deities and ancestral spirits. Usually the village headman is the priest. From all this we find that Kadar religion has become more intermixed with Hindu forms of worship and other things.

Our analysis of the beliefs and practices relating to the supernatural beings among the tribals in general reveals that whatever be the way of life, whether gathering or hunting or cattle herding, the tribal enacted his myths through rites and rituals, dances and songs, fear and taboos thus confirming his belief in the supernatural, invisible, imperceptible force not individually but collectively what matters to him is social survival.

TRIBES OF TAMIL NADU-THEIR HEALTH PRACTICES

This report is an attempt to study the Social Cultural aspects and mainly the health problems among the Tribes of Tamil Nadu. The report is based upon the visit of the Officer to the Kanyakumari District and Madurai District. The Kanis of Kanyakumari District and the Adivasis of Madurai were visited in order to study their living conditions and the health practices.

The Adivasis of Madurai District live in the Palni Hills. They live in twentytwo places of Kodaikanal and Palni Taluks. The Tribes of these hills consist of Mannadiyars, Kunnas and Puliyars.

The Kanikkars of Kanyakumari District believe that their ancestors should have lived in the same hilly areas where they find themselves now. The existence of these Kanikkars come to be known when Maharaja of Moolanthirunai took shelter in this thick forest of the hills under enemy attack and the secular leader of this tribe Muttakani protected the Maharaja.

The tribes live in eighteen hills of four taluks of Kanyakumari District namely Kalkulam, Thovalai, Vilvancode and Andipothai. Since, the Kanikkars are located mainly in the forest and hilly areas, their main occupation is agriculture.

HEALTH FACTORS

Now, coming to the health factors of these tribes of Tamil Nadu, they have very little knowledge regarding health and health practices. Practice of medicine is in the crude form. They get the cases treated through their tribal leader. Local herbs are used for ordinary ailments.

The tribes do not bathe daily and soap is rarely used. They use dry coconut fibre to rub the skin. For ceremonial occasions dry flower powders are used. Cutting of nails, combing of hair is not done regularly. Brushing of teeth is done with neem stick or with powdered charcoal. Defecation is done in the open space by children as well as by adults. Drinking water is got from the small rivulets which are present in all the villages as natural source. There is no well at all. The stream water is used for all purposes.

It is interesting to state that the tribes who are working for the Harijan Welfare Department and Forest Department seem to have contracted some healthy habits like brushing of teeth, bathing and combing from the Plains people.

Knowledge on health and diseases are fairly poor. Though the tribes are not fully aware of the diseases and the mode of spread etc., they are frightened of certain diseases like Cholera and Small pox. When these two diseases break out in an area, the entire community leave the area and they settle down far away from the infected areas. The diseased are also left all alone uncared for and if by chance they survive they rejoin the other tribes later (actually such instances were also witnessed by the Author). The tribes name the diseases in their own language and it is mostly related to the usual definition of the Tamilians. The tribes have often diseases like Cholera, Small pox, Whooping Cough and worm infections among children. Diarrhoea and Dysentries are also very common. There is no problem of skin conditions but majority of the tribes suffer from Venereal Diseases. The attack is in equal percentage among men and women. In general, they know very little about the diseases mentioned above. Knowledge about the communicable diseases is very limited. They are not aware of the mode of onset, spread, causative agent and treatment, prevention, etc., of such diseases are not known to them. They believe that these diseases are set on them by the Hill Gods and Goddesses as a curse or as a punishment for any dead or offering not acceptable to these Gods.

Normally, the tribes get treated by the head or leader of tribal people. They also get treatment by Pachamalai Vaidyam and Moolakashayam. Practice of medicine by herbs and leaves are commonly present and there are persons specialised in this field. In cases where the condition becomes serious then they take such a case to the plains and to the nearest hospitals.

All the Hill Tribes believe that the Hill God and Goddesses are giving all kinds of protection to them against diseases and evil spirits.

They strongly believe that propice offering to the deities and sincere worship will keep them in good health. They also believe in natural cure method. If they come to know that an individual cannot be cured then they do not pay any attention to the diseased except the offer of prayers to the Hill God.

To conclude, the Tribes of Tamil Nadu (whom so far the Author has seen) generally look healthy. Among children protein deficiency seems to be common and among adults Vitamin 'A' and B2 deficiency. They rarely suffer from fever, scabies, etc.

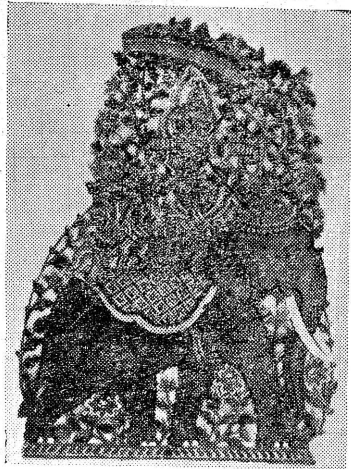
Tribes are found with common nutritional problems. Their main staple food is tapioca. Fish and flesh from hunted animals are also eaten, use of spices and condiments are very little. Vegetables are used very sparingly. No oil is used for cooking purposes. During festivals they may use of Rice, Maize, Honey and Coconut.

It is interesting to note that the tribes have limited number of family members. An average size of the tribal family is three to four only. The children are born on spacing method but natural. They believe that repeated pregnancies will not occur if a married woman regularly offers offerings to the hill goddess and take regularly a species of herb available in the hills.

Though the Tribes of Tamil Nadu living in different parts of the State in different districts from the study it appears all have similar practices of Social, Cultural and Health factors. The studies undertaken by the Author has clearly shown the superstition and primitive beliefs that are still lingering with the tribes whereas their counterparts in the plains have made progress in all aspects in leaps and bounds. They need a good educational and publicity programme regarding the various health problems. This is being considered by the author and arrangements are being made in a planned phase to educate the tribes on health practices.

By

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Kumbhakarna Indo-China Leather Puppet

Puppetry had its inception long back dating to the Prehistoric culture of human beings in the world. In fact Prehistoric man was using twigs or pieces of bones to focus shadows on the walls of his caves or rock-shelters. Thus, the primitive type of entertainment was first started by the early man.

India—a Pioneer in Drama

India has been a pioneer in the field of drama right down through the ages. Inscriptions from the Sitabenga and Jogimara caves in the Ramgarh hills in South Bihar reveal the existence of a developed dramatic art in ancient India. The native Indian Sanskrit drama thus flourishing was brought to suppression by the Turks when they conquered India. But isolated scholars all over contributed to the existence of this esteemed art of drama. When Sanskrit drama was lost as a living form under the enormous pressure from the invading muslims, the Indian or Hindu culture and way of life were both modified and attempts at literary self expression were made after 1200 A.D. through all types of literature. The two great Indian Epics, the **Ramayana** and the **Mahabharata** and various Puranas were translated into both North Indian and South Indian languages during this age and these puranas form the basis for the selection of characters and plays for the leather shadow play figure art.

LEATHER PUPPETRY COLLECTION AT THE GOVERN- MENT MUSEUM MADRAS

N. DEVASAHAYAM,
*Curator for Anthropology,
Govt. Museum, Madras-8.*

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The modern leather puppetry has developed into a well-defined and well-controlled shadow play figure art from the rudimentary form of entertainment of Prehistoric man using twigs or pieces of bones to focus shadows on the walls of his caves or rock shelters. India has been a pioneer in this art though it now lags behind some of the European countries in this art.



Rajasthan string puppets

The **Purana Kalashepamu** at the Gramachavadi and the **Bhajana** form of congregational worship expressed in song and dance were the earliest forms of entertainments in Tamil Nadu and Andhra Pradesh. This rudimentary form of primitive drama was replaced by better planned **Padas** and **Geyakaiyas**. Later, poetically narrated stories of episodes from Shrikrishna's life interpreted in dance accompanied by music which was popularly known as **Bhagavatamu** or **Bhamakalpamu** were introduced. About the same period the shadow play art had made its appearance, thus becoming the precursor of the early Telugu drama, which was written and flourished in the form of **Yakshaganams** and **Veedinatakams**. In Andhra Pradesh the coloured shadow leather puppetry has made special attempt in primitive dramatic art within the rural areas.

Simple method

The method of manufacture of the leather puppet figures is simple and interesting. The wet skin of a goat or deer is dipped in warm water and the hair is completely removed by means of a sharp knife. Especially in Andhra leather figures, the skin (membrane) must be thin and uniform. No process of tanning is involved while preparing the skin. On the next day, the cleaned skin is allowed to dry for a day or so. Thus the dried skin looks very clear, white, translucent, thin and

of about 1/32 inches in thickness. The skin should be devoid of any smell or odour. Each wet skin costs about Rs. 5. This skin is now ready for being cut into the shape of the required figure. Generally three dried skins are required to complete a figure with the moving parts, namely the head, trunk and the limbs. The puppeteer with his skilled artistic capacity draws the outline of the figure on the dried skin from which he has to produce a figure. At times, he traces old figures and their main lines either by pencil or by charcoal or by means of a sharp edged tool.

Process of making of Puppetry Figure

After the outline of the figure is drawn and cut, the inner design of the figure to represent the jewellery and the clothing is marked in delicate outline by means of a sharp tool. The next stage starts with the punching of holes in the skin figure to represent jewellery and this is effected with the help of small sharp and delicate chisels.

Generally the artists select the figures from the famous ceiling paintings of Lepakshi temple which is about 12 miles away from Hindupur in Anantapur District. Not only the forms, but also the colour scheme adapted is copied or derived from these paintings. In fact, it is also argued that the paintings of Narasimha Avatar were very helpful to the artist to punch the leather figures to show the decorative nature of the jewellery. In Andhra Leather play figures, colouring is very important which is quite alike the Mysorean leather figures. Usually chemical dyes are used for the purpose. Older figures have two or three prominent colours, mostly red and black while blue, green, violet, pink, yellow, black and white are also used in modern figures which look gaudy but are popular among the rural folk. The colours are mixed in water and spread on the skin on both sides with a piece of cloth or rag. The general convention is that for particular characters, definite colours should be used.

The technique of performing the show has taken its own course of evolution. In the earlier types the entire figure was of a single piece

with immovable limbs as a result of which the entire figure was tilted downwards or upwards or to the sides. This difficulty was overcome by a new method of animating the figures by making the neck and joints of the limbs flexible by joining independent pieces together loosely. In olden days in Andhra Pradesh burning wicks dipped in castor oil were used to throw illumination. Gradually in rural areas petromax lights have replaced the castor oil lamps. But from practical experience, castor oil lamps have a better effect than petromax lights and electric bulbs or fluorescent lamps.

The Bommallattam troupe consists of three to six members, chief among them being the leather figure operators and articulators, a couple of accompanying singers and a few musicians. In villages the show starts at 9 or 10 p.m. in a specially erected stage and lasts till 4 to 5 a.m. the next morning. The show commences by singing an invocation to Lord Vigneswara and Goddess Saraswati by the performers.

Rich Collection in Madras Government Museum

The Madras Government Museum has got a rich collection of about 270 leather shadow play figures, representing a good variety from Andhra, Mysore, Kerala, Tamil Nadu, Malaya, Indo-China and Java. Collected in course of its long history by means of purchase and exchange, only a few select leather puppets are on display in two wall cases in the Anthropological Galleries. Schemes and plans are ahead to have a series of new built-in show cases to accommodate leather, string and glove puppets on modern display techniques. The rest of the leather puppets which form the reserve collection for the purposes of study and research by the visiting research scholars and workers are conveniently arranged one above the other in rows in specially designed movable drawers in the cupboards of the gallery. A special type of packing wooden boxes with partitions are also made now and then for sending the leather puppets for exhibition purposes to different institution in different parts of the country and abroad. The leather puppets of this Museum are preserved by applying chemicals like D D T and the mixture of

castor oil with rectified spirit in suitable proportions periodically.

For the benefit of the visiting public, students and research workers connected with Leather Technology, the museum is bringing out a bulletin on the "Puppets in the collection of the Madras Government Museum" by Thiru N. Devasahayam, Curator for Anthropology of the Museum. The Part I of the bulletin contains brief notes about the puppets and puppeteers from different parts of the country and abroad and the Part II portion deals with the catalogue of the puppets in the collection at the Museum. The literature is supplemented by 35 photographs of leather, string and glove puppets drawn from different parts of India and abroad.

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SERICULTURE IN SALEM DISTRICT

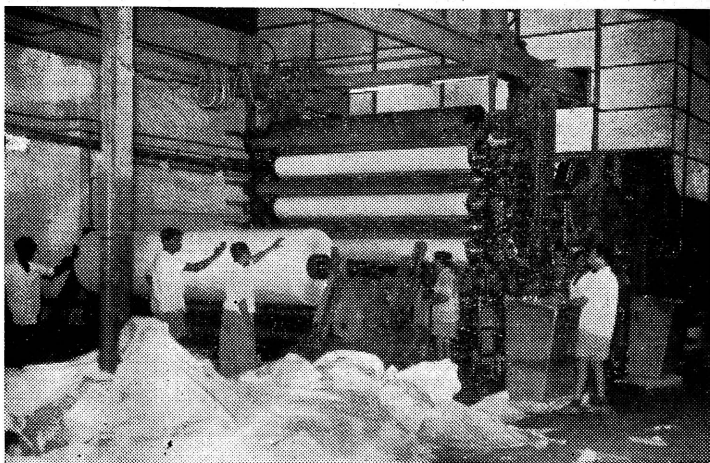
Sericulture has broken two barriers of climate and elevation. Promising signs in Sericulture Cultivation exists in Salem District. Thiru Shanmugam of D. Perumalpalayam in Salem Taluk, an enthusiastic farmer, developed mulberry plants in his one acre plot in which he got cocoons worth Rs. 5,214 within ten months, which is a notable profit. This goes only to prove that Shervaroy, Chitteri, Kalrayan, Pachamalai and Kollimalai Hills belt area of Salem Region have the highest potential for sericulture development in the State. The existing mulberry garden in this belt area have been acclaimed the best among their counterparts in the other districts.

At present, statistics reveal that there are about 5,000 handloom silk weavers in Salem District. Their requirement of raw silk will be 25 Kgs. per loom per annum. On an average, the raw silk production per acre will also be roughly 25 Kgs. per acre per annum. Therefore, it will be enough if we have 5,000 acres planted with mulberry in the hill belt for solving the shortfall of silk supply in this district.

—FIELD PUBLICITY OFFICER,
SALEM.



BRIGHT PROSPECTS FOR PAPER INDUSTRY IN TAMIL NADU



A view of the Seshasayee Paper Mill.

There are at present 57 Industrial Units in India engaged in the manufacture of different varieties of paper and paper boards. Besides, there is one unit in the Public Sector which manufactures newsprint. Out of 57 Units in the country, about 18 Units can be considered to be big sized units, whereas the rest of them are either medium or small scale units. The current total production of finished paper is about 7,58,000 tonnes per annum, consisting of cultural paper and other varieties; e.g. writing and printing paper (4,50,000 tonnes), packing and wrapping paper (1,61,000 tonnes), special varieties (23,000 tonnes to 24,000 tonnes) and boards (1,30,000 tonnes). As against this output, the current demand in the country for different varieties of paper may be put at 9,00,000 tonnes. Thus, there is a shortfall to the tune of 1,42,000 tonnes.

This shortfall is likely to assume acute proportions if the expansion programmes of the existing big units and already licensed units take time to fructify. It is expected that the implementation of the expansion programmes will take atleast 3 years from now and during that period the demand for paper will continue to grow resulting in an accentuation of the shortfall.

PAPER INDUSTRY IN TAMIL NADU

In the light of this analysis, this industry will have to play a very important role in Tamil Nadu during

Vth and VIth Five Year Plans. It is really gratifying to observe that the working group on Agro-Industries in the State Planning Commission headed by Thiru A.S. Padmanabhan, I.A.S., has brought out clearly the distinct role which the paper industry has to play in Tamil Nadu in the next decade.

OUR ADDITIONAL REQUIREMENTS

This will necessitate an additional output of 54,000 tonnes of printing and writing paper, 39,000 tonnes of packing and wrapping paper and 30,000 tonnes of paper boards.

Considering the long term nature of the present plan, it will be safe to provide for a 5 per cent margin in production capacity so that the actual production may result in achieving an additional quantity of 130,000 tonnes which is necessary if the State is to reach self-sufficiency in the matter of paper boards by 1983-84. The total requirement of the different raw materials would be of the order of 3,82,000 tonnes (air dry) or roughly 4,00,000 tonnes per annum.

In order that the paper industry may develop on sound lines, it is necessary to allocate a sum of Rs. 120 crores for achieving the objective of establishing an additional production capacity of 98,000 tonnes of writing and printing paper, packing and wrapping paper and paper boards. It will be of

V

By

Prof. C. S. MAHADEVAN,

advantage to the State if it establishes at least one unit of not less than 300 tonnes per day production capacity as early as possible. Action will have to be taken either to procure pulp from up-country mills which produce only pulp or to import pulp from abroad with the permission of the Government of India. Also, it may be necessary to think in terms of developing raw materials other than bagasse for utilisation in the paper industry. Mesta, otherwise called as Kenaf or Deccan hemp, can be thought of as a valuable raw material for the paper industry. The crop is capable of giving excellent pulp for making superior quality of paper and the Tamil Nadu Government have already obtained a letter of intent for setting up a paper unit in the co-operative sector for using this item as raw material. Mesta yields pulps which are equal to most soft wood pulps and are superior to most hard wood pulp. The paper made out of mesta pulp have good bursting strength, tensile strength, folding endurance and surface finish. Mesta grows well as a Khariff crop in areas having a rainfall of 15 to 75 cms distributed over 4 to 5 months. It is usually grown on light black soils, sandy, alluvial loams and even lateritics and gravelly soils. It is mostly grown mixed with Bajra, Jowar, Ragi, Pulses and Khariff, cotton and sometimes on the borders of irrigated sugar cane. In some areas it is grown alone in rotation with different cereals, pulses and other crops. As a mixed crop it may form a sprinkling in the main crop, or may be grown in single rows planted after every 5 or 6 rows of the major component in the mixture.

For the pure crop, the land is ploughed, cross ploughed and harrowed two or three times, to get a well pulverised seedbed. Manure is seldom applied, though the crop gives a good response to an application of 25 to 35kgs. of N in organic or inorganic form. Grown as a mixed crop, it shares in the preparatory tillage, manuring, interculture and irrigation given to the principal crop.

PRICE POLICY

It will be totally unrealistic to believe or proceed on the assumption that the price per tonne of paper should remain pegged at the present level or the increase in prices should

be only nominal from year to year. In fact, the rise in the price of paper when compared to the rise in the prices of other basic items such as rice and wheat has been remarkably low. If the Units in the paper industry are to be viable, it is inevita-

ble that the price of paper should be so adjusted as to make the operations of the industry gainful and also to enable it generate internal resources for supporting its expansion and diversification programmes.

A NUTSHELL ACCOUNT OF PAPER INDUSTRIES AND THEIR PRODUCTION CAPACITIES IN TAMIL NADU AND ITS PRESENT CONSUMPTION AND FUTURE DEMAND

According to the report of the Working Group, Tamilnadu is currently producing about 42,000 tonnes per annum of finished paper and the Industrial Units which contribute this output are :—

	<i>Tonnes</i>
(i) Seshasayee Paper and Boards Limited, Pallipalayam. (including 7,000 to 10,000 of duplex board)	33,000
(ii) Sun Paper Mills Ltd., Tirunelveli	.. 5,000
(iii) Venkateswara Paper Mills, Udumalpet	.. 4,000
Total	.. 42,000

It is estimated that the present consumption of paper and paper boards is as follows :—

	<i>Tonnes</i>
(i) Writing and Printing Paper (including special varieties)	30,000
(ii) Packing and Wrapping Paper	.. 10,000
(iii) Paper Boards (Duplex, Triplex and Pulp Boards)	.. 10,000
Total	.. 50,000

In view of the increase in population and rise in the standard of literacy, the demand for different varieties of paper and paper products in the State is sure to go up, and the likely pattern of demand in 1984 will be as follows :—

<i>Item</i>	<i>Demand (consumption) in 1983-84 (in tonnes).</i>
Printing and Writing Paper	.. .. 80,000
Packing and Wrapping Paper	.. .. 40,000
Paper Boards (Duplex, Triplex and Pulp Boards)	45,000
Total	.. 1,65,000



THE QUTAB HOTEL GIVES LURE OF

The new Qutab Hotel of India Tourism Development Corporation, situated in south Delhi, is now ready to welcome tourists. It is the sixth hotel of I.T.D.C. in the capital and an important addition to India's fast developing tourism industry. Overlooking the 13th century Qutab Minar, the Hotel is a unique reflection of Delhi's blend of tradition and modernity. Its facilities include service apartments, which provide all amenities of a private flat. Qutab Hotel is a straight run from the airport and 20 minutes drive from the heart of the town. Built in 1971 as a hotel and residential complex for the United States Agency for International Development, it consists of a main block of 18 double rooms and five apartment towers with 30 apartments.

APARTMENT LIVING

The facilities for apartment living, now a range in foreign countries and introduced in India for the first time, coupled with the lure of the historic surroundings in which the hotel is situated, may make it a star attraction for the discriminating tourists. The Qutab

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Service Apartments offer complete privacy and are particularly suited for those planning a long stay in Delhi, who need the convenience of a hotel as well as the atmosphere of a home. Every apartment has attached baths, a living dining room, study and kitchenette with a refrigerator and a private balcony and channel music in rooms. The east-west orientation of the apartment buildings and tinted glass in all windows reduces heat radiation and eliminates glare. Of the 30 apartments, 18 have two bed rooms each and 12 contain one bed room. The entire complex is centrally air-conditioned with individual temperature control in rooms. The decor of the Qutab Hotel is a subtle blend of Indian fabrics and American furnishing. A unique service offered at the Hotel is a four-lane semi-automatic bowling alley, the only one in India. Other hotel services include channel music in rooms, swimming pool, party and meeting rooms, gourmet restaurant and bar, lounges, tennis courts, car rentals, money changer, laundry and dry cleaning, safe deposit and parking space.

HIGH-YIELD MILKERS

Research on the upkeep of milch animals and breeding are very much restricted in India and perhaps the only institution carrying out such investigation of a fairly large scale is the National Dairy Research Institute with its head quarters at Karnal, Haryana and the three regional stations at Bangalore for the south, Bombay for the west and Kalyan for the Eastern Zones. Many research projects on both fundamental aspects and applied aspects during the past 49 years have been taken up at NDRI but more recently greater emphasis is laid on cross breeding using exotic bulls. At Bangalore, cross breeding of Tharparkar cows with Jersey bulls followed by F1 intercrossing has given satisfactory results. The hardy Tharparkar and the high yielding economic exotic Jersey breeds have thus been brought together and the final release of the blend may be expected to be something that will be suited to all types of cattle growers in the south. The blend Karan Swiss that has already been evolved by using Sahiwal and Red Sindhi as the indigenous base for a cross breeding programme using imported frozen semen from outstanding progeny-tested Brown Swiss bulls from USA. This has been a real breakthrough as the Karan Swiss averaged more than 3,000 litres of milk per lactation and more so because it produced milk at 72 paise per litre (with imputs calculated at current prices in Karnal) as against the Sahiwal indigenous improved breed with an average of 2,000 litres of milk per lactation and a cost of Rs. 1.10 per litre of milk. The Institute has now taken up another exotic breed Holstein Friesian for breeding programme. The target is to produce a new strain of cattle averaging more than 3,500 litres of milk per lactation and to bring down the milk price further to 69 paise per litre.

With all the awareness regarding the importance of animal science (relating to breeding, feeding and management) this aspect is yet to gain sufficient emphasis in the Agricultural Universities. The Tamil Nadu Agricultural University has started an animal science department, but it is too early to create an impact on the economy.

The need for development of milk production on scientific lines and realisation of the vital role dairying plays in the country's economy led to establishment of the dairy training institute at Bangalore in the year 1922. Over the years, the objectives and facilities at the disposal of the institute have been enlarged. Now the NDRI is one of the few International Research Centres, exclusively devoted to the study of the various phases of dairy science and technology. The Institute also gives graduate, post-graduate and specialised training in all branches of dairy science. These facilities are often made use of by scholars from neighbouring countries. The development of NDRI has been on a pattern of an integrated approach between research, teaching and extension. Institute's *alumni* continue to be associated with every phase of dairy development throughout the country.

National Dairy Research Institute, KARNAL

The headquarter at Karnal has a fodder farm of about 411 hectares along with herds of Red Sindhi, Sahiwal, Tharparkar and Brown Swiss crossbred cows and Murrah and Surti buffaloes. At the Southern Regional Station, Bangalore, crossbreeding native cattle to Jersey and Holstein breeds has helped the development of high producing crossbred cattle suited to that region. The Eastern Regional Station at Kalyani and the Western Regional Station at Bombay have herds of Red Sindhi cows together with some crossbreeds for feeding trials.

Research on cattle improvement

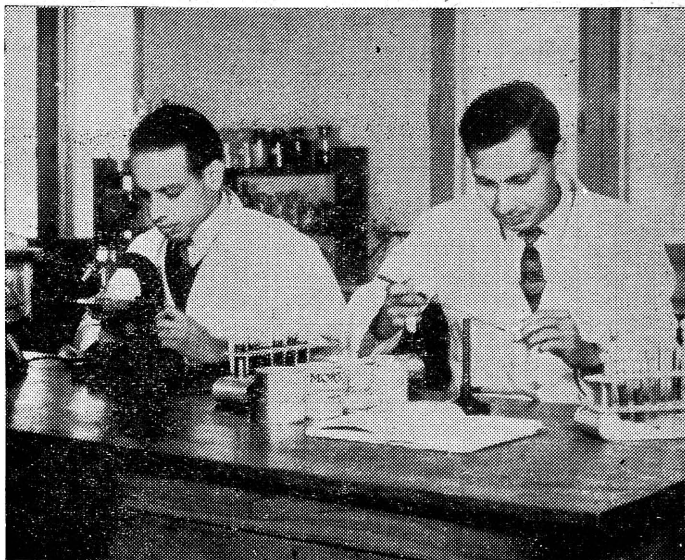
Over the years, the Institute has been an important source for the supply of improved animals to various farms all over the country, specially for the Sahiwal, Red Sindhi and the Tharparkar breeds. The institute demonstrated the benefits of crossbreeding for commercial milk production in early twenties by having high yielding progeny

from Haryana cows crossbred with Ayrshire bulls. The present day popularity of the crossbred cow in the South owes its origin to this pioneering work. Similarly, the institute was the first to introduce artificial insemination in a large scale in cattle in rural areas around Bangalore. In 1962, a new ground was broken when frozen semen was imported from USA for crossbreeding Red Sindhi and Sahiwal cows in Karnal with Brown Swiss semen.

As a result, a new strain of Dairy Cattle 'Karan Swiss' has been developed in Karnal incorporating exotic inheritance from Brown Swiss and Zebu inheritance from Sahiwal and Red Sindhi. A nucleus herd of 140 Karan Swiss cows along with 187 female followers and bulls are available for providing germplasm for increasing milk production. The Karan Swiss female calves weighed 27 kg at birth-range 16 to 41 kg. These were 25 to 30 per cent heavier than their contemporary pure bred Zebu. The crossbred calves grew at a faster rate, by additional 100 grams a day, compared to the Zebu. At six months of age, crossbred female averaged 127 kg as against 100 kg for the Zebu base. The weight at first service for the Karan Swiss was 270 kg as against 247 kg for the Zebu and weight at first calving was 377 kg as against 322 kg for the Zebu. The average age at first calving for the Karan Swiss also had a better reproductive efficiency. It took 1.4 services per conception as against 1.7 in the case of Zebu.

During the last five years the first generation of Karan Swiss averaged 3,196 kg milk per lactation, whereas the Indian cows during this period averaged 1,808 kg milk per lactation. Among the crossbred cows, some animals have recorded over 5,600 kg of milk in a lactation of 305 days as against 3,814 kg for Sahiwal and 3,996 kg for Red Sindhi. A Karan Swiss cow No. 65 produced the record production of 43 litres of milk in a day in four milking and this is probably the highest per day milk yield for any cow in India.

The technique of handling, preserving and transport of semen have been standardised and applied under field conditions. In recognition of the initiative taken by the Institute in this important phase of



Students testing the quality of milk and milk products

cattle improvement, the Indian Council of Agricultural Research established its Central AI Centre at the Southern Regional Station which has now been merged as a normal activity of the NDRI. Buffalo semen is known to be fragile and has a shorter storage life. Attention has been paid to study its various properties and characteristics so that semen can be kept over longer intervals facilitating transport over long distances. Recently, a new diluent for preserving buffalo semen has been formulated. This is prepared by mixing cows milk with citric acid and the citric-acid-whey. This found is at present being successfully used in preserving and freezing of buffalo semen. Whilst semen for long storage has to be preserved in liquid nitrogen around -178°C , work is in progress to standardise a technique whereby semen would remain active over 8—10 days at room temperature so that it is transported to interior rural areas for AI work.

Import of proper feeding

Cultivation of different nutritious forages for feeding cattle and their preservation are a pre-requisite for dairy farming. In the absence of proper nutrition animals cannot show their genetic potential. For lowering cost of production of milk, reliance of home grown fodder is

essential. From the initial work on growing perennial fodders like Guinea, Napier and Hybrid Napier grasses with the help of town sewage, work has now been extended to relay cropping under irrigated conditions so that by feeding 30-35 kgs. of fodder, requirements of adult milch animal giving up to 6-7 kgs. of milk per day are met eliminating the use of costly concentrates.

In one intensive rotation two crops Maize and Cowpea and Maize and Cowpea Teosinte in Kharif season and followed by Oats and Mustard in Rabi season produced 150 tonnes of green fodder per hectare which was found to be sufficient to maintain 10 milch animals the year round assuming that each animal is fed at the rate of 40 kgs. green fodder per day. In another rotation multi-cut crops like Sudan grass, Towar, Bajra and Teosinte together with Cowpea in kharif season followed by Berseem, Mustard and Oats in rabi season produced 200 tonnes of green fodder per hectare.

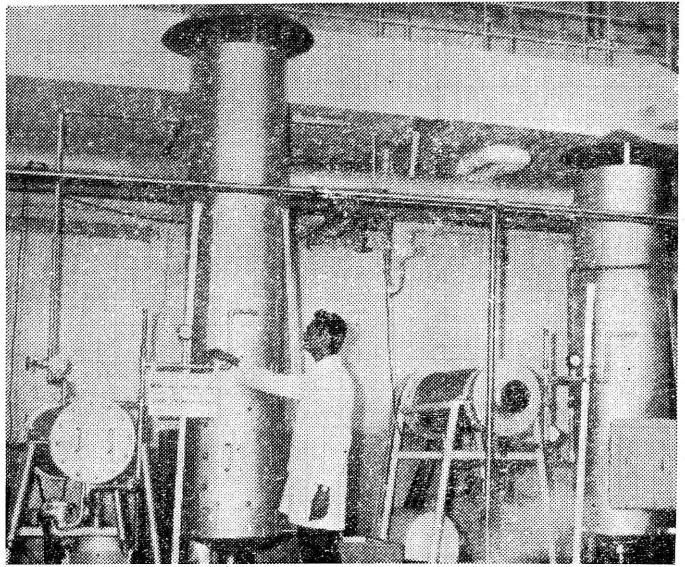
By maintaining high yielding cross-bred cows and adopting relay or intensive cropping of fodder crops, profit of Rs. 6,000 and above can be obtained per hectare per year.

The fodder grasses which generally thrive in summer and monsoon

seasons are inter-planted with legumes which grow better in the cold season. Thus the land is utilised to the maximum throughout the year and a system of taking 4—5 different crops in rotation, or 7—8 crops in rotation combined with combinations is a practical feasibility.

Surveys of feeding practices and rations used in different parts of the country have been made. It has been demonstrated that even when adequate supply of green fodder is not available, the farmer could keep animals in maximum production by using straw sprayed with urea and molasses, 4—5 kgs. of shark liver oil, supplemented with only 4—5 kgs. of green fodder.

The digestability of different feed constituents in the rumen of the cow, the buffalo and the goat are being studied with the help of fistulated animals. The differences noted are being correlated with the types of micro-organisms present in the rumen of different species. This could enable greater use of agricultural and industrial waste materials and non-protein substances like urea to be used for routine feeding to lower the cost of milk.

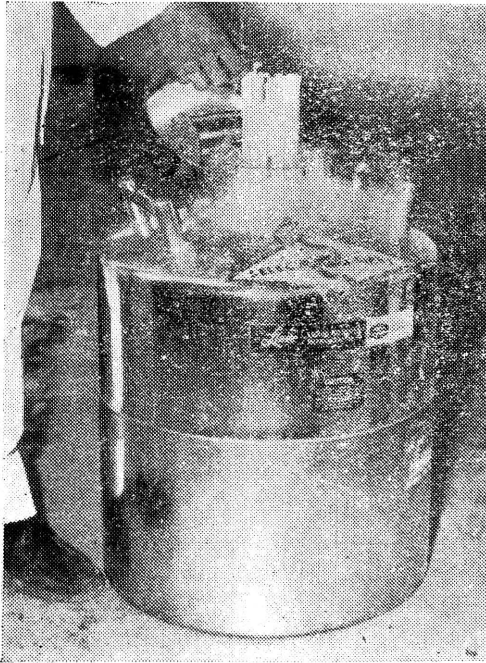


The continuous Ghee making equipment

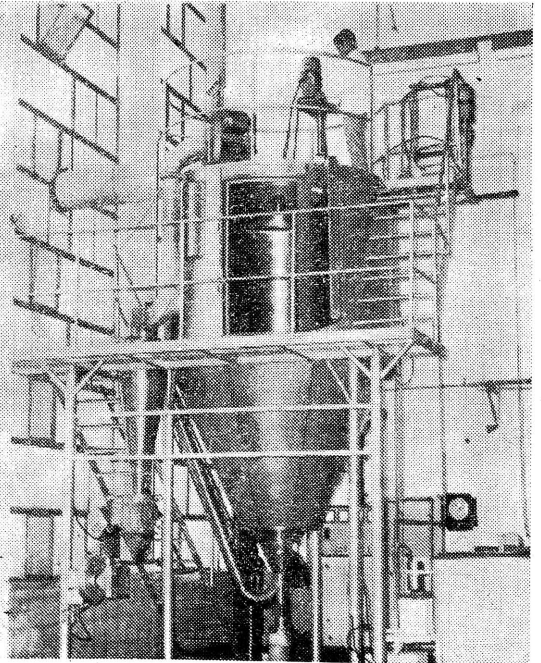
Improved management practices

A dairy animal takes about 3 years to come into milk and start giving returns to the farmer. A

constant effort is being made to reduce the age at first calving, through better management practices and also to reduce the cost of rearing young stock by replacing



Frozen semen ampoules from outstanding Brown Swiss Sires.



Spray drier used for manufacture of milk, etc.

milk used for feeding with equally nutritious "Calf starters" prepared from cheaper materials like cereals, fishmeal, deoiled cakes, etc.

Studies on composition of buffalo milk

Balanced feeding has been shown to be important not only for maximising production, but also in maintaining the composition of milk to the same level throughout the year. Cow and buffalo milk, though containing the same constituents, differ markedly in their properties. This leads to difficulties in utilising established manufacturing practices for preparing products like condensed milk, sterilised milk, cheese, etc., with buffalo milk. Methods for studying in detail the reasons for observed differences were standardised and the components which give rise to these differences identified and isolated. This understanding has enabled the manufacture of as good products from buffalo milk as from cow milk.

Quality control of milk and milk products

The high cost of production of milk and the large unsatisfied demand for milk and milk products often leads to negligence of hygiene and adulteration. A constant check is needed on quality. Rapid bacteriological and chemical tests have been devised to check hygienic quality as well as freedom from presence of extraneous substances like water in milk, cheaper fats in ghee, etc.

Studies have been taken up to see how milk produced in rural areas differs from the produce obtained from animals in well managed organised farms. With the help of the Hansa Test, presence of as little as 5 per cent of buffalo milk can be detected in cow milk. With the same sensitivity, the freezing point of milk detects added water in milk and chromatographic methods foreign fats in ghee. Intensification of milk production brings certain problems in its wake which have to be continuously watched and corrected. Recently an effective, simple, rapid and inexpensive platform tests were evolved to detect extraneous urea, ammonium sulphate and glucose in cow or buffalo milks, which were alleged to be used as adulterants in milk supplied to

various milk plants in the country. In high milk producers, the prevalence of mastitis infection is one such problem and each test of animal has to be tested at each milking with rapid tests. A rigorous routine for sanitation has to be evolved. In selecting the equipment for storage and processing, care has to be taken for their proper design to facilitate easy cleaning and eliminating areas where bacteria thrive.

Adulteration of ghee with vegetable fats and animal body fats is another challenging problem which has received considerable attention. Paper and thin layer chromatographic techniques have been developed for the rapid detection of adulteration of ghee with vegetable fats. An opacity method for detecting the addition of animal body fats in ghee has also been developed at the Institute. The NDRI has associated with the Indian Standard Institute in evolving suitable formula for sanitizers and formulating code of desirable practices.

Dairy Technology

A problem of considerable importance in handling milk is its rapid transport from the place of production to the dairy. The work at the Institute suggested the feasibility of concentrating milk for long distance transport and this innovation has been adopted by the Delhi Milk Scheme in getting its supplies from Gujarat. Methods for the manufacture of products with long storage life are under constant review. With a view to find new outlets for surplus milk, researches have demonstrated the feasibility of keeping Dahi over long intervals at room temperature, preparation of cheeses with various combinations of condiments and fruits, "Complete" coffee, ready-made tea in powder form, sterilised cream, preserving butter milk and preparing refreshing drinks from milk and sour milk.

In view of the fact that buffalo milk is the most suitable raw material for dairy manufacture. Considerable attention has been paid towards the development of technology for production of condensed, dried and coagulated milk products from buffalo milk.

A new bio-manufacturing section has been set up to prepare a semi-commercial scale of some of the materials which have shown promising results in the laboratories. One such material is animal and microbial rennets. Animal rennet is prepared in the Western countries by slaughtering young calves. The NDRI has shown that rennet can be prepared from living calves by putting a later date without any ill-effects on the subsequent growth of the animal. At present, there is a shortage of rennet even in European countries, and the finding has good commercial potentials. Process for the manufacture of microbial rennet has also been standardised and rennet from this source could also be prepared on a commercial scale.

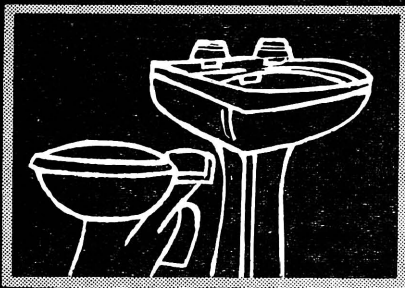
Two machines for Ghee Production

Many dairy products are susceptible to microbial attack which lowers the keeping quality and produces toxic substance. It has been shown that some of the organisms, which grow in dahi, have got the property of secreting anti-biotics which in turn could be utilised for incorporating in milk products to enhance their self-life. The isolation of such anti-biotics, which are non-toxic, also holds good promise. Greater emphasis has been laid on the study of indigenous milk products to standardise the methods of manufacture and packaging. Recently two machines have been devised, one for the continuous manufacture of khoa and another for continuous manufacture of ghee which dispenses with considerable amount of manual labour required now. The packaging of milk products is a subject which has hardly been touched in India. A dynamic marketing programme is closely related to packaging. Emphasis will be given to this aspect which will also include gamma rays for sterilising the material. Side by side, fundamental studies on the synthesis of milk proteins by the cow, the nature of mineral balance in milk, the associative effect of various micro-organisms on their growth and flavour production in dairy products, etc. will also be further intensified.

By

C. A. THOMAS

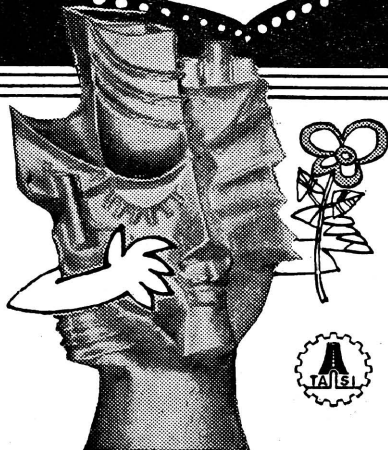
*National Dairy Research
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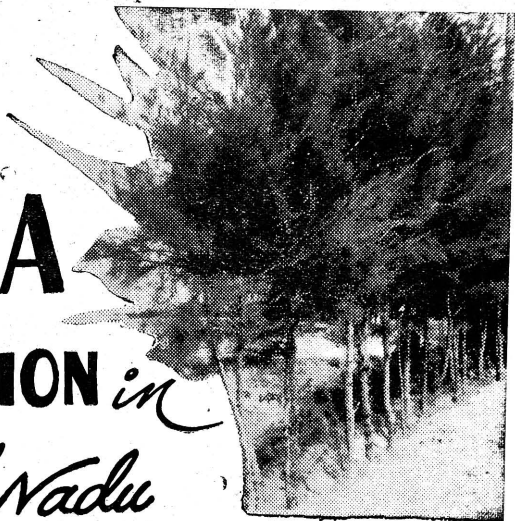
LOVE ME
TOO, DEAR



CASUARINA

CULTIVATION *in*

Tamil Nadu



The graceful pine-like trees that we encounter along the eastern sea coasts are known to have been brought to India from Australia for its beauty as Avenue Trees. Now they have been grown more for their economic value as a fuel-wood than for their orchard value. It is also grown as a forerunner in plant succession, as a check to shifting sand dunes and also as a wind-breaker. All along the sea coast, casuarina plantations are maintained both by private entrepreneurs and in some areas by the State Forest Department.

The trees are capable of growing to a height of 130—140 feet easily and the trees live for 40—50 years under favourable conditions. Normally they grow to a height of 80—100 feet and live for 25—30 years. Most of the areas where casuarina is grown, the annual rain-fall ranges from 35 to 100 inches. Sandy soil is ideal for planting. If the sand covers a rich alluvial arable soil, the tree grows profusely and in record time also. The trees flower during March to April and then during September to October. The fruits become ripe and the seeds are dispersed after a lapse of two months. The fruits borne of female flowers look like the cones of the pines and the seeds are very light and membranous that they are easily carried away by wind.

PARADOXES IN CASUARINA LIFE

Although many millions of seeds are produced by a single tree in one season, the establishment of natural seedlings is unexpectedly very poor. Just like many other paradoxes in life, the adult tree is resistant to adverse seasons and conditions but its seedlings are very delicate and require much care and tending.

SEEDLINGS PROCESSES

The seedlings are raised in flat beds of varying length and size, normally of 25 feet by 3 feet by private ryots. But the Forest Department adopts raised beds of at least 6' high, 48' wide and 45 to 48' long. In all the cases, pure sandy-soil is filled in the bed and the seeds are broadcast. After

ing seeds from severe sun, a shade is provided by spreading thin twigs of casuarina or straw. Normally germination occurs within eight to ten days at the end of which the shade is removed. Watering is continued regularly, once a day or even twice a day depending on the drying of the seed bed. Always fresh seeds are used as they do not retain viability for more than a few months. One year old seeds may show only about 5% viability while eighteen month old do not germinate. A farmer will sow three litres of seed per bed resulting in the development of 20—25 thousand seedlings. Regular weeding of the beds is necessary. The seedlings are retained in the same bed for 6—8 months and by a process of elimination, the faster and vigorous growing seedlings are removed first whenever there is a demand. But, in the Forest Department Nurseries, the seedlings from the mother bed are removed and planted in a transplant bed giving 3—4 inches spacing between seedlings. Consequently the latter method provides healthier and vigorous seedlings. The seedlings in this case may remain for 5—8 months in the transplant bed. Manuring is normally not advocated for the seedlings since those seedlings that receive manure of course look healthier and greener but once they are removed to actual sites of planting they wither very quickly and the chances of future establishment are comparatively poor. A

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broadcast, fine white sand is gently sieved over the seed to cover it to nearly 1¼" to 1½" thick. Watering is immediately followed with a rose-can. To protect the germinat-

ryot will commence planting the seedlings in the field during the rains of July or October months. Usually he digs a hole in the ground with a crow-bar and puts the seedling in it. However, digging a pit of 12"×12"×12" is a recommended procedure which will enable the seedling to put forth a good deal of lateral roots.

POT WATERING PREFERRED

Once the seedlings are planted in the field, pot watering for a week in the ryots field has to be made in the absence of monsoon rains. The spacing adopted differ from place to place. Most frequently 3'×3' is the common spacing adopted by the ryots resulting in 4800 to 5000 seedlings/acre. The Forest Department maintains 2 m. × 2 m. spacing with a stand of 1000 seedlings per acre. Soil work around the seedlings or inter-ploughing the interspace are normally done by progressive farmers. Depending on the vigour and growth of the seedling, pruning of the low lying lateral branches is done from second year onwards. These pruned lateral branches are also in good demand as fire wood. After this pruning, no successive pruning is advocated by the ryot whereas repeated pruning at specific interval is done by the Forest Department. Under normal cultivation practices, an acre of casuarina yields 20 to 40 tons of wood at the end of five years. This depends on the fertility status of the soil, population and also the care bestowed on them after planting in the field. The felling of the trees may commence from the 5th year onwards ; the Forest Department recommends a ten year standing of the crop for felling. Normally a well-grown casuarina tree would easily give 50 lbs. of dry wood per cubic feet.

ANTS AND GRASSHOPPER- MAIN ENEMIES OF SEEDLINGS

Ants are major pests in the seed bed as they carry away the seeds. Similarly, crickets (*Brachytrypes achatinus*) and grasshoppers cut off the young seedlings. Dusting the seed bed with sulphur or BHC may be attempted to prevent ant damage ; clearing all the vegetation

around the seed bed area would effect the control of these insects. Damage from small crabs are also mentioned by farmers ; the crabs may be killed by manual operations.

The wood, which is white with a brown core, is very hard, and splits easily by cracking. It burns readily whether wet or dry, because of the resins it contains. The ash retains heat for a long time. The bark is used for tanning skins and hides. The bark is also readily utilized as an useful 'astringent' in the treatment of chronic diarrhoea and dysentery. Fishermen dye their fishing nets brown with the juice of the bark.

STUDENTS WORK FOR THE SILVER JUBILEE INDEPENDENCE HAMLET

The Social Service League of Government College of Technology, Coimbatore and Coimbatore Institute of Technology have rendered their valuable services by connecting an isolated hamlet with a nearby town panchayat by laying a road. Panaimarathur is a small hamlet in Kumarapalayam Town Panchayat under Perur Panchayat Union and it is the village adopted by the Union under Silver Jubilee of Independence Scheme for development.

DIGNITY OF LABOUR EXPLAINED

About 220 volunteers of Social Service League of Government College of Technology and Coimbatore Institute of Technology joined together and arranged a 3 days camp at Telungupalayam from 29th September 73 to 1st October 1973 under the guidance of Staff Adviser of Government College of Technology. On these three days the 220 student volunteers, who were divided into 10 batches, had taken up the road laying in a planned

manner. When the camp was inaugurated, they were told about the importance of dignity of labour. They were also informed that their hard work and readiness for service will definitely fetch colours in their profession.

NEW ROADS LAID

The place selected for the road laying was originally sugarcane fields in part and thorny bushes inter-mixed with ditches and boulders. In other words, the latter part was inaccessible to human beings and even animals were not dare enough to enter there for grazing. The industrious and enthusiastic young volunteers changed the scene of the place into a road running to a length of 5.5 furlongs—slightly greater than a kilometre. The width of the road is about 8 metres. Channels of about 0.6 metre width and depths varying from 0.5 metre to 0.1 metre were formed on either side of the road.

WORK

COMPLETED

IN TIME

Among the many visitors to the camp to encourage and guide the students, the visits of the Principal of the Coimbatore Institute of Technology, Thiru P. Ramakrishnan and the District Collector, Thiru J. Shivakumar were very much useful to the volunteers in understanding the rural conditions. The Collector stated that the road laid by the social service student volunteers will be metalled very soon so that their aim will be fulfilled.

The spirit and enthusiasm of the volunteers remained high throughout the three days, unmindful of their loss of sweat and blood. They have also faced the hot sun and poisonous reptiles and insects with courage and humour. The solubrious aspect of their camp was that the work was carried out and completed according to the plan.

—FIELD PUBLICITY OFFICER

Coimbatore-12

—oOo—

Seed technology covers a broad range of agricultural and business fields in producing high quality of seed stocks and delivering them to the ultimate consumer.

Seed multiplication;

Seed drying and conditioning;

Seed processing, sizing, treating and packing, storage,

Distribution and marketing and

Quality control are the several phases which need to be modernised to make available quality seed to the ultimate consumer.

Seed production

In the past, seed production has been scattered on small fields in many areas. Today, it is beginning to centre around specific locations where facilities exist for production at a less cost, with high quality and more efficiently. The development of new varieties made for specific conditions is advancing through excellent breeding programmes. No single variety can be more efficient for all varied growing conditions. Highest yields will be obtained when we have specific varieties for specific conditions. The technique of seed production is becoming more and more complicated with the advent of hybrids. Certain minimum requirements have to be met with by any seed crop to be eligible for seed production. These requirements are called the minimum seed certification standards. These standards vary from crop to crop and from one class of seed to the other. However, it is encouraging to note that more seed growers are beginning to specialise in a narrower range of seed crops which in itself result in greater efficiencies. The development of seed growing areas, use of more efficient tillage equipments, use of fertilisers based on recommendations designed for specific soil condition, use of weedicide for effective weed control, improving the irrigation and drainage facilities, provision of processing and storage and facilities will greatly improve the quality and production efficiency. The increased use of threshers will enable to get better quality seed with less mechanical damage to the seed.

Seed Drying

Drying seed is a critical problem in our country. High moisture is the

greatest single cause of loss of germination in seeds. For this reasons, we must know about the dangers of high moisture and how to control or eliminate these dangers.

Seed is often too high in moisture, when it comes from harvest. Even sufficiently dried seed in storage may gain moisture to unsafe level during periods of humid weather. Thus we need to know what are safe moisture levels and how to dry it these levels and then how to store or package it to keep it at the safe moisture levels.

The amount of moisture in seed, affects many processes and the same can be explained as follows :

Seed Moisture above 45-60%—
Germination occurs.

Seed Moisture above 18-20%—
Heating may occur.

Seed Moisture above 12-14%—
Molds grow on and in seed.

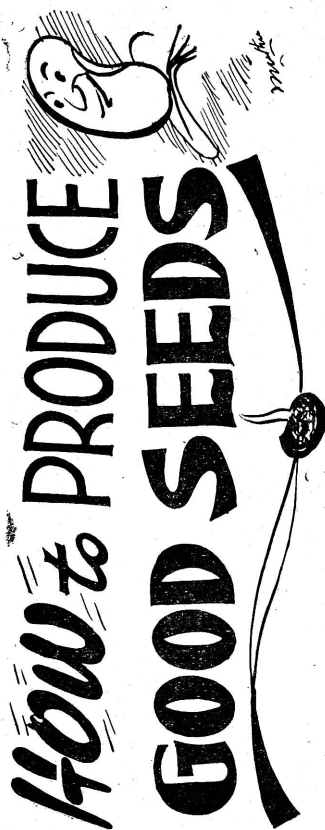
Seed Moisture above 8-9%—
Little or no insects activity.

Seed Moisture above 4-8%—
Sealed storage is safe.

From this we can see that higher the seed moisture, the greater is the danger to the seed. Therefore, we should decide how dry we want the seed. Certainly, we would want the seed dry enough that mold will not grow and so we want it drier than 12-14%. Even sealed storage below 4 % for seeds is not necessary and extreme dryness induces dormancy in some seeds. Some need the moisture content of the seed somewhere between 14 and 4% depending on the kind of seed, how long we want to keep it and how we want to store it. For open storage for one year 12-14% is satisfactory. For open storage for longer times 8-10% is better and for storage in moisture proof containers 4-8% is necessary.

Seed Processing

Seed processing is an integral part of the technology as by the genetic engineering of the plant breeder we get the improved seed. It encompasses all steps involved in preparing harvested seed for marketing, handling, shelling, pre-conditioning, drying, cleaning, size grading, upgrading, treating and packaging.



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The quality of the final product, regardless of its inherent capacity to produce, is directly related to the processor's ability to remove contaminants and low quality seeds to size-grade for precision planting, to treat the seed effectively and to prevent mechanical mixtures of the seed with those of other varieties or hybrids. In turn, the processor's ability to render these services efficiently and effectively is affected by the types of processing and handling equipments available to him, their arrangement within the plant, his skill in operating them and his knowledge of seed characteristics and how they relate to processing.

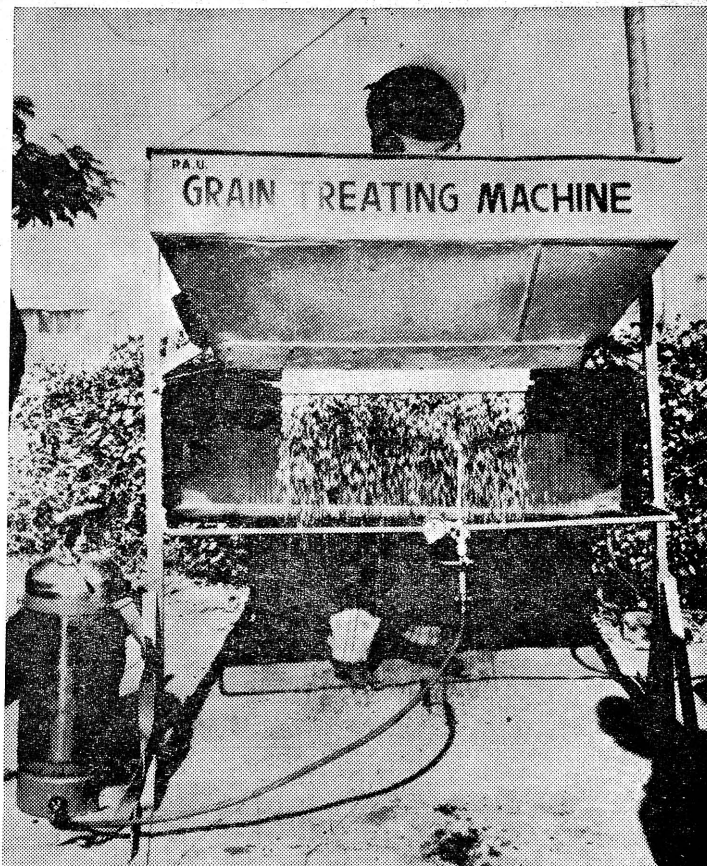
The seed processor is interested in five things. (i) Complete separation :—Removal of all contaminating or undesirable materials from the seed. (ii) Minimum seed loss:—Some good seeds are removed along with contaminants in almost every processing operation. But this loss must be kept at a minimum. (iii) Upgrading quality :—Improving seed quality not only through removal of contaminating seed, but also removal of rotten, cracked, broken, insect damaged or otherwise injured or low quality crop seed. (iv) Efficiency :—The highest capacity consistent with effectiveness of separation and (v) Minimum labour requirements :—Labour is a direct operating cost and should be used only to bring into and remove it from the processing line.

Steps in processing

Seed processing operation can be broken down into definite steps that follow in a specific sequence. The first step is *receiving*—seed arrive at the processing plants in bags or bulk. From receiving station the seed may go into *storage* to be held for later processing, or directly into the processing line for cleaning.

The next step in seed processing is *conditioning and pre-cleaning*. This includes removal of appendages, large pieces of trash, debearding to remove awns etc.,

The first actual cleaning and/or upgrading step is *basic-cleaning*. The air screen machine is probably the most common basic cleaner. Seed lots may come from the field in good condition with few contaminants and will require cleaning only on the air screen machine. It is however often, necessary to send the seed through one or more special



separating or upgrading machines to remove two specific contaminants. These special machines separate contaminants from crop seed by differences in specific physical characteristics.

When all possible contaminants have been removed, the seeds are ready for *bagging*. Sometimes a fungicide or insecticide *treatment* is applied before they are bagged. The seed may then be moved directly to other stores, or held in storage until they are needed.

Seed processing is based on differences in physical properties between the crop seed and the contaminant. There is a wide selection of machines that separate seed differing in size, length, shape, weight, surface texture, colour, affinity for liquids or conductivity. A single machine cannot separate seeds that differ in all these characteristics. In most instances a different machine must be used to make separations based on each of these characteristics.

To use the machine effectively the processor must know the principle of each machine used to separate seeds, how to adjust them and their proper places in the overall processing operation. The processor must also know the physical properties of the crop seed he is processing and of contaminants in the crop seed.

Seed storage

Good seed storage is an important phase of processing and is essential to successful seed marketing. Proper storage preserves seeds viability from harvest to sale and protects the producer, the processor and the user. Storage must be provided for seed from the time of harvest until planting time. Storage must also be provided for seed which may be carried over until the planting season in the next or a subsequent year. There must also be long term storage for lots of foundation and breeder seed to preserve valuable germ plasm.

—oOo—

NEW INSECTICIDAL FORMULATION TO CONTROL PADDY LEAF ROLLER

By

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The paddy leaf roller (*Cnaphalocrocis medinalis* G) is a pest having world wide distribution. In India it was first reported by Lefroy in 1909. Earlier research workers have reported that this is a minor pest on rice in Andhra Pradesh, Assam, Bihar, Kerala, Maharashtra, Mysore, Orissa, Tamilnadu, Uttar Pradesh and West Bengal, occurring during certain seasons on transplanted crop. Consequently on the introduction of high yielding varieties of paddy, this minor pest has assumed the status of major pest causing serious damage. In cases of severe damage, the loss in yield has been estimated up to 50 per cent. The importance of this pest has been felt from the year 1968 in Tamilnadu with the large scale introduction of high yielding varieties of paddy and research work on the life history and control measures have been taken up in detail since then.

Description of the pest

The adult is a small moth, slender, yellow in colour and with a dark brown border along with the margin of the fore and hind wings. Two dark grey wavy lines extend from the fore to hind wings with a small broken line in between the lines in the forewing.

Eggs can be seen mostly on the upper surface of the leaves in between the veins of the leaf, either singly or in groups of 4 to 6. Eggs are oblong, oval or broadly rounded and measure about 0.6 mm long and 0.37 mm wide. They are uniformly pale yellow in colour smooth and have glistening surface. Just before hatching they turn black.

Immediately after hatching from the egg, the caterpillar is pale white in colour and after it starts feeding, it appears greenish due to the presence of plant tissue within the gut. Slowly the colour of the body turns dark green on subsequent moultings.

NEW TECHNIQUES FOR HIGHER RICE PRODUCTION

In crops like rice, which are grown from sea level up to nearly 3,000 metres altitude, considerable variations naturally exist with reference to adaptation for different agro-climatic conditions and consumer preferences and hence an intensive programme of minikit demonstrations-cum-trials have been initiated.

Agriculture is becoming an increasingly sophisticated occupation. With the growing awareness of the ecological dangers arising from the inappropriate and unscientific use of agricultural inputs like pesticides, fertilizer and water, steps are under way to develop techniques like integrated pest control, watershed management, etc., which will ensure enhanced productivity continuously without any danger to the long term production potential of the soil.

Modern agriculture rests upon four major revolutions : (i) agronomic (including genetic), (ii) chemical, (iii) engineering and (iv) management. It is only when all these four revolutions are synchronized in a perfectly co-ordinated manner that agriculture becomes highly efficient and competitive. —Ed.

The full grown caterpillar is yellow in colour with a light brown head and it turns pinkish before pupation. The full grown larva measures about 15 mm.

The pupa is pale yellow in colour and gradually turns light brown. The pupal stage is spent inside the leaf roll itself. The average length of the pupa ranges from 6 to 7 mm.

The total life cycle from egg to adult emergence varies from 30 to 39 days.

Habits of the pest and symptoms of damage

The months of this pest are usually seen after sunset. They become active and are attracted to light. They are active fliers but during day time, they cling to the stems or leaves of paddy and when disturbed, fly from one plant to another for a short distance in large numbers.

The caterpillars become very active on hatching from the eggs, secrete a silken thread with which the edges of the leaves are fastened and the ends brought together to form the characteristic "leaf roll". Four types of leaf rolling are observed :—

(i) the edges of the leaf are fastened together in the middle region;

(ii) the tip of the leaf is fastened to the middle portion of the leaf blade;

(iii) Similar to the second type except that the leaf is fastened in a twisted manner and

(iv) adjacent leaves are fastened together after rolling each leaf.

The caterpillars start feeding on the chlorophyll by scraping and they become voracious feeders as they

grow up. The affected leaves show white streaks in the beginning and when the damage is severe, the leaves get completely depleted of chlorophyll and appear scorched and distorted. In case of severe infestation, the fields exhibit scorched appearance. The caterpillars wriggle out of the leaf rolls when disturbed and quickly fall down.

More severe damage in shady areas

The pest also causes damage to the seedlings in the nursery. It has been reported that the damage by the leaf roller was more severe in shady areas, particularly near the bunds and also whenever there was heavy crop growth due to heavy manuring. Studies conducted on the incidence of the pest in relation to crop growth have indicated that there was no appreciable infestation up to 40 days after transplanting and the incidence increased progressively with the maximum infestation recorded 80 days after transplanting. Thereafter, there was no further increase in the extent of damage.

Control

Studies have been conducted at the Agricultural College and Research Institute (Tamil Nadu Agricultural University) Coimbatore and Regional Agricultural Research Station, Aduthurai and the All India Co-ordinated Rice Improvement Project, Coimbatore and Aduthurai for the control of this pest with different insecticidal formulations. Of the different insecticides tested, the following formulations have given encouraging results in reducing infestation and in giving increased yield.

From the statement above, it may be seen that any one of the above insecticidal formulations will be effective in controlling the paddy leaf roller. It is suggested that spraying may be taken up when stray incidence of the pest is noticed and repeated 2 to 4 times at 15 day-interval depending on further intensity of the pest. In the case of granular insecticides, 2 applications may be necessary on the 15th and 45th day after transplanting.

Statement showing the list of insecticides found effective against paddy

Sl. No.	Name of the Insecticide	Quantity of Insecticide required.		No. of applications given in different trials (*)
		Per acre	Per hectare	
EMULSIFIABLE CONCENTRATE (E.C.)				
1	AZODRIN 60% (Monocrotophos)	167 ml 334 ml	417 ml 834 ml	D
2	DIMECRON 100 (Phosphamidan)	110 ml	275 ml	C
3	DURSBAN 40% (Chlorpgriphos)	310 ml 634 ml	775 ml 1585 ml	B,C
4	EKALUX 25% (Quinalphos)	200 ml	500 ml	A
5	EPN 45%	450 ml	1125 ml	B,D
6	FOLITHION COMBI (Febitrathion+DDT)	1600 ml	4000 ml	A,D
7	HELIOTOX (Texaphene+DDT)	1000 ml	2500 ml	C
8	METACID COMBI (Methyl parathion +DDT)	1600 ml 1120 ml	400 ml 2800 ml	A,B,D, C
9	PARATHION 50%	200 ml	500 ml	A,B,C,D
10	PHOSVEL 35%	630 ml	1575 ml	A,B,D
11	VALEXON 50%	400 ml	1000 ml	A
WETTABLE POWERS (W.P.)				
1	SEVIN 50% (Carbaryl)	400 gm	1000 gm	C
2	FURADAN 75% (Carbofuran)	1000 gm	2500 gm	D
GRANULES (G)				
1	CYTROLANE 10%	6 kg	15 kg	E
2	DIAZINON 10%	6 kg	15 kg	E
3	FURADAN 3% (Carbofuran)	12.5 kg	31.5 kg	E
A : Four rounds at 15 days interval, the first application commencing when stray incidence is noticed.				
B : Four rounds on the 15th, 30th, 45th day after transplanting, and in the shot-blade stage.				
C : Four rounds on the 45th, 60th, 75th and 90th day after transplanting.				
D : Four rounds on the 15th, 30th, 45th, 60th and 75th day after transplanting.				
E : Two applications on the 15th and 45th day after transplanting.				

HOW PADDY FARES WHEN THE SOIL BEGINS TO DRY UP

When the soil begins to dry out, the survival of a rice plant depends in part on how fast it reduces the loss of water vapour from its leaves. The opening and closing of stomates on the leaves are the plant's chief means of controlling the passage of water vapour.

In preliminary work on a test for resistance to drought, IRRI physiologists found that stomates of some rice varieties close quicker than those of other varieties. Of 12 varieties studied, MI-48, IR. 5, and OS 4 had the fastest closing stomates after moisture stress was created. IR. 20 and Taichung Native 1 had the slowest closing stomates. Based on field observations, MI-48, IR. 5 and OS 4 are generally regarded as more drought tolerant than IR. 20 and Taichung Native 1.

HEAT TEST

Because the leaf temperature rises when stomates close, heat tolerance is an important aspect of drought resistance. When the internal temperature of the leaf reaches about 48°C the cells begin to die. The destruction can be measured by a conductivity test. Electrolytes in dead cells can be extracted with water, so comparing the amount of extractable electrolytes at a specific leaf temperature with the amount when all the cells are killed indicates the degree of destruction.

Using this method the physiologists rated the heat tolerance of the 12 varieties at a leaf temperature of 53°C. When the varieties were grown without moisture stress, all had about the same heat tolerance. But after being subjected to moisture stress all varieties were "hardened" and while the over all level of heat tolerance increased, the differences between varieties became more distinct. OS 4 and IR. 5 were among the most tolerant to heat, IR. 20 was among the least.

In a study of stomatal closure in the field, the physiologists found that in plants under severe moisture stress, the stomates begin to close early in the morning. Stomates of plants in flooded paddies remain

open until the late afternoon, however. Since carbon di-oxide which is necessary for photosynthesis can enter the leaf only when stomates are open, photosynthesis takes place in plants under moisture stress only during the morning.

PLANT DESIGN AND DROUGHT

This finding has implications for the design of rice varieties. Erect leaves are desirable in varieties grown in irrigated paddies. Stomates of irrigated plants stay open throughout the day so photosynthetic activity is governed primarily by the amount of sunlight that strikes the leaves. Since sunlight intensity is greatest at noon erect leaves are the most efficient arrangement for high rates of photosynthesis because sunlight can reach even the lower leaves. For this reason, modern rice varieties like IR. 8 have been bred for erect leaves. In plants with droopy leaves the upper leaves shade the lower leaves.

But plants under moisture stress are photosynthetically active only during the morning when the sun is rather low in the sky. To make efficient use of sunlight coming in at an angle, less erect leaves might be desirable.

Closure of stomates is not a clear cut indicator of drought resistant varieties. The stomates of a variety whose root system is highly efficient in extracting water would remain open under moisture conditions that would cause the stomates of other varieties to close. Thus IRRI physiologists are planning to look at the water potential of the leaf. This is the best indicator of moisture stress in the plant. When the stomates are open a high water potential in the leaf shows that the plant is highly capable of extracting water from the soil.

UNLOCKING THE SECRET OF TKM. 6

A few years ago, an outbreak of brown planthoppers devastated a trial of early maturing lines at the IRRI farm. Only two of 55 lines survived. One of the lines, IR.

747B-2-6, is from a cross between TKM. 6 and Taichung Native 1. The other line, IR. 1154-243, is from a cross between Zenith and IR. 8. None of the parents is resistant to brown planthoppers. The breeders suspected that the two lines might have accidentally escaped damage from the insects. But to be sure, they put the lines through a standard screening test for brown planthoppers in the greenhouse. The test confirmed that both lines were resistant. Where did the resistance come from?

The breeders made a series of crosses involving IR. 747Bz-6 and several resistant and susceptible varieties. The progeny of these crosses were subjected to the standard screening test so that the resistant and susceptible seedlings could be distinguished.

Based on the proportion of resistant and susceptible seedlings from each cross, the breeders were able to rule out the possibility that complementary genes were at work. Complementary genes would convey resistance when two or more occurred in the same genotype but would be ineffective when only one occurred in a genotype.

Similarly, based on the segregation data, the breeders excluded the possibility that IR. 747B2-6, was a mutant with resistance to brown planthoppers.

The most reasonable explanation was that TKM. 6 contains a dominant gene for resistance, but that it also contains a dominant gene which inhibits the expression of the resistance. When TKM. 6 is crossed with another variety some of the progeny lose the inhibitor gene and retain the resistance gene. Such progeny, like IR. 747Bz-6, are resistant to the brown planthopper.

Although IR. 1154-243 was not completely tested, the breeders suspect that Zenith, one of its parents, also has a resistance gene plus an inhibitor gene.

Rice breeders already use TKM. 6 as a source of resistance to tungro virus, bacterial blight and stem-borers. The hidden gene for resistance to brown planthoppers makes TKM. 6 even more valuable as a parent of new varieties.

Source —

The I.R.R.I. Reporter.

RAGI

VARIETIES

SUITABLE

FOR

DECEMBER

AND

MAY

SOWINGS

IN

SOUTH

ARCOT

DISTRICT

Ragi (*Eleusine coracana* G.) forms one of the important staple food crops and occupies 2.35 million hectares in India and 0.32 million hectares in Tamil Nadu. It comes up well in varying agro-climatic conditions. The colour of grain is brown or pearly-white. The brown types are high yielders but poor in protein-content, whereas the white types are poor yielders but rich in protein-content.

An experiment in split plot design was laid out at Agricultural Research Station, Palur, in the May-sowing season of the years 1969-70, 1970-71 and 1971-72 and in December-sowing season of the years 1970-71 and 1971-72 to find out suitable varieties for the respective seasons and optimum NPK schedule of manuring for ragi. Four varieties of ragi, Sarada, Co. 7, PLR. 1 and Co. 9 (white) were compared under four levels of NPK manuring. Half of N and entire quantity of P and K were applied basally at planting and remaining half of N on the 20th day of planting. Young seedlings were transplanted at spacing of 23 cm. x 15 cm. Weeding, irrigation and plant-protection were done properly. The recommended dose on resulting yield are furnished below :

During the May-August season performance of Co. 7 was superior to PLR. 1 in two years and superior to Co. 9 in all the three years. Again, Co. 7 yielded on par with Sarada in two years and was superior to it in one year. The mean yield of Co. 7 was 2,452 Kgs. per hectare for the three years and the highest among the varieties compared. Therefore, it is concluded that Co. 7 is a suitable ragi strain for the May-sowing in the tract.

During December-March season of 1970-71, the performance of Sarada was superior to Co. 7 and Co. 9 but on par with PER. 1. In the following year, the differences in yield between varieties were not significant. However, Sarada and PLR. 1 maintained their better performance, compared to Co. 7 and Co. 9. On the average, the recorded yield of PLR. 1 was 4,617 Kgs. per hectare. This was slightly higher than Sarada and not less than 10% higher than Co. 7 and Co. 9. In local parlance PLR 1 is known as 'Perumragi' and appears to be an outstanding variety for the Decem-

ber-sowing in the tract. The ear-head of PLR. 1 is first-shaped and weighty.

The grain yield data revealed that the differences between NPK levels were significant in both seasons. Application of NPK, at 90 : 45 : 45 Kgs. per hectare increased the grain yield of ragi significantly over the lower levels whereas NPK level at 110 : 55 : 55 Kgs. per hectare yielded on par. Therefore, NPK at 90 : 45 : 45 Kgs. per hectare is found to be an optimum dose for ragi for both the seasons.

The differences in yield due to interaction between varieties and manures were not significant in both the seasons for all the years.

*

STUDIES ON TIME OF APPLICATION OF NITROGEN TO RICE KURUVAI.

The trial conducted during 1971 Kuruvaï with the varieties Karikalan and Kannagi revealed that for Karikalan top dressing 10 kgs. Nitrogen per acre at all the three stages of viz. max. tillering, panicle initiation and heading over a basal dose of 10 Kgs. Nitrogen/acre gave the highest yield of 2522 during 1971 and 2381 kg/acre during 1972 with the increase of 17.60% and 14.72% over the general mean for the two year respectively. For Kannagi top dressing 10 Kg/acre at all the above three stages over a basal dose of 40 kg nitrogen/acre gave the highest yield of 3039 kg nitrogen/acre with an increase of 16.34% over the general mean although application of 20 kg nitrogen/acre with the above dose of top dressing was the optimum economic dose for economic return. During 1972 the highest yield of 2525 kg/ac was obtained by top dressing nitrogen at 10 kg Nitrogen/acre at all the three stages over a basal dose of 30 kg M/acre with an increase of 22.72% increase over the general mean.

EFFECT OF FUNGICIDES ON THE CONTROL OF RAGI BLAST

By
1. K. Sivaprakasam,
2. K. Pillayarswamy,
3. S. Iyemperumal of Regional
Agricultural Research Station
Koilpatti.

Ragi plants develop heavy infection of blast caused by *Pyricularia Setariae* every year. When the disease appears in an epidemic form, the loss of grain may range up to 50%. Blast infection occurs in all stages of the crop both in the nursery as well as the transplanted crop. In the nursery spindle shaped leaf spots are formed and in severe outbreaks, the leaves dry up. In the transplanted crop, the infection is found as leaf spots as well as blackening of the nodes, neck and fingers. The affected earhead dries up and becomes chaffy resulting in heavy loss in yield. In view of the absence of resistant varieties, the chemical control of the disease is an imperative need. The present study reports the efficacy of certain fungicides and an antibiotic on the control of blast disease. The experiment was carried out at Regional Agricultural Research Station, Koil-

patti, Tamil Nadu during 1972-73 in randomised block design on Saradha ragi. The treatments were replicated thrice, the plot size being 5.00 x 3.64 metres. The fungicides were applied four times, the first one in the nursery stage (a fortnight, after sowing) and the rest at fortnightly intervals from three weeks after planting. The spray formulations were applied with a hand operated rocker type sprayer at 1,000 litres per hectare and the dust formulation was applied by means of muslin cloth bags at the rate of 22 Kgs. per hectare. The leaf infection was recorded prior to each round of applications and finally 15 days after the last round of treatments, with the help of a numerical scale from 0 to 4 (no, hypersensitive, light, moderate and severe disease development, respectively) by examining 25 selected plants in each treatment. The per-

centage of node, neck and finger infections was recorded from the same plants prior to harvest.

It is seen that all the chemical treatments were effective in reducing the disease incidence to the varying degrees of intensity and increasing the yield. However, Ceresan lime dust was outstanding in giving the maximum yield by 36.87% over control besides effective control of blast disease. Bla-s, Zineb and Hinosan were also superior in reducing the disease incidence and increasing the yield by 26.3, 23.5 and 16.9% respectively over control.

In case of non-availability of Ceresan lime dust and Bla-s, Zineb and Hinosan can effectively be employed for increasing the grain yield of ragi, besides controlling blast disease.

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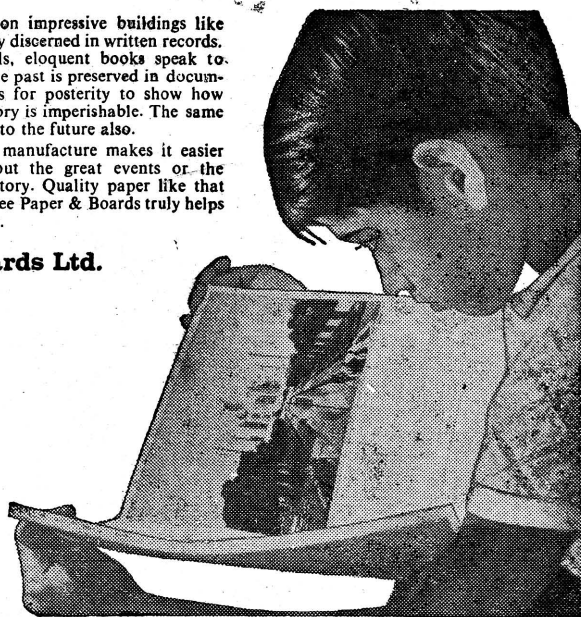
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DAIRYING AND MILK SUPPLY IN TAMIL NADU

There are two large scale Government milk projects in the State, one in Madras and the other in Madurai. Besides these projects there are 1,129 milk co-operatives and 23 milk co-operative unions in the organised sector, leaving the distribution of a large share of the total milk production to the private vendors.

The various Dairy Development Programmes in the State aim at narrowing down this gap by means of producing and supplying adequate and quality milk to the consumers in an organised manner. With an outlay of Rs. 534 lakhs for Dairy and Milk Supply Schemes, the Fourth Plan has laid emphasis on the extension of dairy and milk supply schemes to rural areas. A noteworthy feature of dairy development is the formation of the Tamil Nadu Dairy Development Corporation during the year.

MADRAS CENTRAL DAIRY

The Central Dairy at Madhavaram is intended for the supply of milk to Madras City. With effect from 1st July 1972, the Tamil Nadu Dairy Development Corporation has taken over the management and control of the Central Dairy at Madhavaram together with its trans-

port and distribution units, its feeder plants at Erode and Vellore and also the allied chilling centres located in different places. At the instance of the Dairy Development Corporation, the Marketing Research Corporation of India, New Delhi, recently conducted a market survey in Madras City and this survey has brought into hold relief the fact that the estimated aggregate consumption requirement of liquid milk for the household sector in Madras City is 4.13 lakh litres a day as contrasted to 85 thousand litres of milk a day distributed by Madhavaram Dairy. However, the present distribution itself signifies a distinct improvement over the previous years—41 thousand distributed during 1968-69, 49 thousand during 1969-70; 57 thousand during 1970-71 and 66 thousand during 1971-72. This increase has been made possible because of the scheme called "Operation Flood" being implemented now with the assistance of World Food Programme. Under the first phase of this scheme, the original installed capacity of the Central Dairy which was 50 thousand litres a day has been raised to 90 thousand litres and it is expected to handle 1.25 lakh litres a day by March 1973 to most the growing requirement of the City.

The Tamil Nadu Dairy Development Corporation has proposed to set up a second dairy with a handling capacity of two lakh litres a day near

the Industrial Estate, Ambattur. This is expected to be commissioned by December 1973. In order to step up the collection of milk at the Ambattur Central Dairy, the Dairy Development Corporation is contemplating to locate a feeds dairy at Erode to handle one lakh litres of milk a day and another dairy near Jolarpet in North Arcot district to handle sixty thousand litres a day. The chilling plant at Sathuyacheri is also being converted into a pasteurisation plant.

MADURAI MILK PROJECT

The Madurai Dairy established with the assistance of UNICEF has a handling capacity of fifty thousand litres of milk a day. After meeting its local requirements which come to about twenty-three thousand litres a day, the surplus milk is sent to Madhavaram Dairy. In order to conserve the surplus milk for utilisation during lean season, there is a proposal to set up a milk powder plant at Madurai with a capacity of ten thousand litres per hour.

MILK CO-OPERATIVES

Twenty-three milk co-operative unions and 1,126 milk co-operative societies are engaged in the collection and distribution of milk in most of the urban areas. The total quantity of milk produced by these milk co-operatives has increased from 823 lakh litres in 1970-71 to 980 lakh litres in 1972-73.

PUBLIC HOLIDAYS FOR THE YEAR 1974

The Government of Tamil Nadu declared the following as Public Holidays during the year 1974.

Tuesday	the 1st January	New Year's Day
Saturday	the 5th January	Bakrid
Monday	the 14th January	Pongal
Tuesday	the 15th January	Thiruvalluvar Day
Saturday	the 26th January	Republic Day
Monday	the 4th February	Muharram
Friday	the 5th April	Meelad-un-Nabi
Friday	the 12th April	Good Friday
Wednesday	the 1st May	May Day
Saturday	the 29th June	Half-Yearly Closing of Bank Accounts.
Thursday	the 15th August	Independence Day
Thursday	the 19th September	Vinayaka Chathurthi

Wednesday	the 2nd October	Mahatma Gandhi's Birth Day.
Friday	the 18th October	Ramzan
Thursday	the 24th October	Ayudha Pooja
Friday	the 25th October	(2 days)
Wednesday	the 13th November	Deepavali
Wednesday	the 25th December	Christmas Day and Bakrid
Tuesday	the 31st December	Annual Closing of Bank Accounts.

NOTE :—As Bhogi festival, the Telugu New Year's Day and the Tamil Years Day fall on Sunday the 13th January 1974, Sunday the 24th March 1974 and Sunday the 14th April 1974 respectively, they have not been shown in the above list of holidays. As 30th June 1974 falls on Sunday, Saturday the 29th June 1974 is declared as holiday for half-yearly closing of Bank Accounts.

New Agricultural Strategy in Tamil Nadu

By

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As a unilingual state, Tamil Nadu came into existence on November 1, 1956. It is situated at the south-eastern tip of the Indian Peninsula. During the last five or six years Tamil Nadu holds an important place among the economically developed states of India. It ranks second in respect of urban population and literacy. It stands third in respect of percapita power consumption and fourth in industrial production and employment, percapita income, density of population and food grains out put. It accounts for 7.5 per cent of the country's population and 4 per cent of the area.

Tamil Nadu has mostly fertile soil, generally assured rainfall and largely irrigated area. Agricultural in the state is dynamic in growth. The state occupies the seventh place, accounting for 6.2 per cent of the total value of the agricultural out put in the country. A notable feature of the state's agriculture is that it provides employment to 60 per cent of the working population and it contributes 42 per cent to the state income. On the other hand, agriculture in the national economy absorbs 69 per cent of the working force by generating about 50 per cent to the national income. Here an attempt is made to show that how far Tamil Nadu has made a rapid progress in the agricultural field particularly during the last five-years.

The wide index of agricultural production over a period of time bears testimony to the concentrated attention paid on the growth of agricultural sector in the state. The following table portrays the index numbers of area, production and productivity of all crops in Tamil Nadu :

The agricultural indices set above bear ample evidence to the fact of remarkable progress in the State's agricultural field. The agricultural

production showed an impressive growth during the last five years. The general index of agricultural production in 1965-66 stood at 97.8 which rose to 118.7 in 1969-70 and further to 127.4 in 1970-71.

Tamil Nadu has made a spectacular achievement in the production of foodgrains. In 1969-70 the index of foodgrains production was 117.9 which has steadily increased to 133.8 in 1970-71. By means of absolute terms in 1966-67, the total production of foodgrains stood at 54.58 lakh tonnes which rose to 70.34 lakh tonnes in 1970-71. Tamil Nadu Government have completed various agricultural production programmes to attain a production of 72.02 lakhs tonnes as against 70.45 lakh tonnes in 1971-72. The target fixed for 1972-73 is 79 lakh tonnes.

Thus it is clear that food grains alone account for half of the total value of the agricultural production in the state.

Rice accounts for the three-fourths of the total foodgrains output in the state. Accounting for 11 per cent of the rice production in India it ranks second after West Bengal. During 1965-66 rice production in Tamil Nadu was only 35.24 lakh tonnes which has risen to 45.32 lakh tonnes in 1969-70 and to 55.00 lakhs tonnes in 1972-73.

The state occupies the third place by accounting for about one-sixth of the total groundnut output in the country. During 1966-67 groundnut production stood at 883 thousand tonnes which rose to 1,148 thousand tonnes in 1971-72. During 1968-69 to 1970-71 the state's average yield stood at 930 Kgs. per hectare which was much better than 707 Kgs. in Gujarat.

Indices of area, production and yield of all crops in Tamil Nadu.

(Base . 1961-62=100)				
Year	Area	Production	Yield	
1962-63	101.9	105.9	103.7	
1965-66	97.5	97.8	98.4	
1966-67	105.1	102.4	101.3	
1967-68	99.5	103.7	102.6	
1968-69	93.9	101.8	108.4	
1969-70	103.7	118.7	113.6	
1970-71	103.7	127.4	110.8	

(Source :—Tamil Nadu—An Economic Appraisal—1972, Part I—p. 15)

The state accounts for 9 per cent of the total sugar-cane grown in the country. It stands third in respect of sugar-cane growing states after Uttar Pradesh and Maharashtra. During 1968-69 peak level production (gur) was 1,514 thousand tonnes and the target for 1970-71 is fixed at 1,144 thousand tonnes.

Tamil Nadu accounts for 7 percent of cotton grown in the country. It ranks sixth among the cotton-growing states. During 1965-66, cotton production was 301 thousand bales (of 180 Kgs. each) which rose to 397 thousand bales (of 180 Kg. each) in 1969-70 and further to 345 thousand bales (of 180 Kgs. each) in 1970-71.

Dry chillies, coconut and tobacco are other important cash crops in the state. It occupies the third place providing about quarter of the country's dry chillies. The state is the largest producer of coconut and it accounts for 6.5 per cent of tobacco in India. The three important plantation crops raised in Tamil Nadu are tea, coffee and rubber. There is surplus in rice, groundnut, sugar and coffee. So Tamil Nadu earns too much by exporting these commodities to other states. Pulses, raw cotton and raw jute are the shipping list of agricultural commodities. Tamil Nadu, on the whole, has a favourable interstate trade.

Causes for this rapid progress in agriculture :

A large number of factors including of course seasonal and climatic conditions lead to increased production in the farm-front. Stable government and efficient public administration play a dominant role in the economic development of Tamil Nadu. Since the new ministry under our beloved late Anna in 1967, they have contributed a great deal to the state's economic growth. Tamil Nadu is a pioneer state in introducing a separate Planning Commission at State level. In the recent collector's conference our Chief Minister said "that the officials in the belt areas of the state should be vigilant and apprise the Government from time to time of the situation and take all measures to avoid shortage of foodgrains and to arrest the price rise. The police officials should effectively check smuggling of foodgrains to the neighbouring States." Tamil

Nadu administration is being appalled as the best in the country due to its prompt and swift action.

Further, Green Revolution or New Agricultural strategy or High Yielding Varieties Programme is nothing but a technological breakthrough in agriculture which is composed of the introduction of high-yielding varieties of seeds, pesticides, fertilisers, provision of adequate and timely credit to the farmers and the creation of more irrigation facilities. "Revolutionary changes have been brought about in the agronomic practices, the dosage of manure applied and cropping pattern in Tamil Nadu. The main principle underlying this programme is to provide all the required inputs such as seeds, fertilisers and plant protection chemicals in time to the farmers."

"If you are late in doing one thing in agriculture, you are late in all things." Realising agriculture as the backbone of the State's economy Tamil Nadu Government have launched various novel and progressive schemes for developing agriculture. During 1966-67 the High-yielding varieties programme was introduced in Tamil Nadu in order to step up the production of rice and millets. In 1966-67 the coverage was 5.27 lakh acres which has steadily risen to 64.16 lakh acres in 1971-72. Farmers are being educated by the radio and farmers training centres.

Irrigation is the first essential for developing agriculture in the State. "What you need most"

Lenin stressed, "is irrigation, for more than anything else it will revive the area and regenerate it, bury the past and make the transition to socialism more certain." In Revised Estimate 1972-73, a sum of Rs. 12.23 crores and in Budget Estimate 1973-74 Rs. 12.44 crores have been allocated for capital outlay on irrigation works under various heads. Thus the state has allotted nearly Rs. 55 crores for the growth of agriculture.

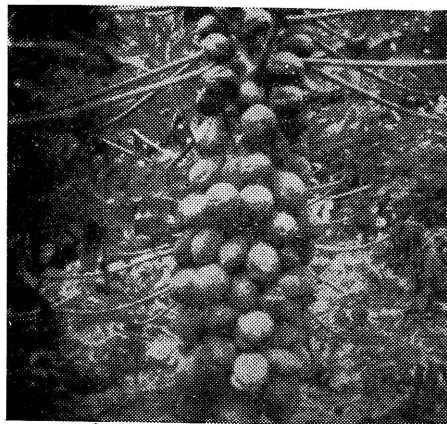
Multiple cropping has become possible with assured irrigation facilities in the state. The programme was launched in 1967-68 with a view to introduce crop varieties of shorter duration than conventional ones. In recent years, the area covered under the programme stood at 0.87 lakh hectares in 1967-68 which has rapidly increased to 2.23 lakh hectares in 1968-69 and to 4.0 lakh hectares in 1969-70 and further to 5.25 lakh hectares in 1970-71. 6.06 lakh hectares will be covered at the end of the Fourth Plan.

The farmers get the provision of credit facilities through co-operative societies and commercial banks. There were 6,058 primary agricultural credit societies at the end of 1970-71. Up to the end of December 1972 Tamil Nadu Government have sanctioned Rs. 57.27 crores by way of short, medium, and long term loans. A sum of Rs. 40 crores as loan will be sanctioned for the rest of the year. Under all these heads, for the year, 1973-74 a total sum of about Rs. 100 crores is to be sanctioned by the Government. Tamil Nadu has a well developed

A NEW PAPAYA FROM COIMBATORE

A new variety of papaya that bears 53 fruits in the first 5 months has been released by Tamil Nadu Agricultural University. This has been evolved from Hawaii varieties and are called Sunrise Solo and Line 8 Solo.

The "Solo" varieties are bi sexual i.e., they bear both male and female flowers on the same plant, unlike other varieties. Thus there are no barren plants in this variety.



banking system and consequently commercial banking system provides the advance to the agricultural sector in the state Rs. 56 crores by the end of December 1971.

With the introduction of Green Revolution, the state had laid a great emphasis on the use of fertilisers. In recent years, consumption of various fertilisers has been rapidly increasing as we could see from the following table:—

**Consumption on fertilisers
in Lakh tonnes.**

	(N)	(P)	(K)
1968—69	1.13	0.35	0.31
1969—70	1.48	0.42	0.33
1970—71	1.73	0.72	0.51
1971—72	2.14	0.72	0.61

To overcome the shortage of fertilisers the state has taken vigorous steps for allotment from the Government of India. It takes earnest efforts to get adequate supplies from the Central Fertiliser Pool to meet the needs of ryots. Strict quality control measures are being adopted by the Government.

The farmers in the state have fully realised the necessity of taking adequate steps to prevent their crops from the attack of pests and diseases. The government have supplied adequate pesticides to the farmers in time. Pesticide samples from all depots are analysed in Pesticides Testing Laboratories with a view to maintain quality control on the chemicals. There are five such laboratories at Coimbatore, Madurai, Aduthurai, Koilpatti and Kanchipuram. The state has distributed hand operated sprayers and dusters to the peasants with a subsidy of Rs. 25.00 and Rs. 35.00 respectively. With the introduction of High yielding varieties programme there is a necessity for stocking of more agricultural inputs which are to be supplied immediately to the farmers. For this, 150 depots have so far been sanctioned at the rate of 50 depots each year.

The establishment of Agricultural Productivity council is a novel

and progressive step taken by Tamil Nadu Government. This has been constituted for creating productivity consciousness among farmers, animal breeders, extension workers, entrepreneurs and research bodies associated with agriculture and allied fields. Eleven market committees have yet been constituted in order to provide better marketing facilities and to make the producer get the optimum share in the consumer's rupee by reducing the price spread. Further, twenty-eight grading centre, have been opened for increasing the incomes of the farmers and inducing them to increase the quality of their produce. Till 1972-73 twelve grading laboratories have been set up.

Besides these factors which are responsible for the rapid progress in agriculture, Tamil Nadu is a state keenly conscious of its role in the development of human resources and the improvement of welfare activities. Investment in man and his development as a creative and productive resource is called human capital formation.

Further, Tamil Nadu Government have launched upon social welfare schemes for establishing an egalitarian social order based on science. These include abolition of beggary through Beggar Rehabilitation Homes, Youth Service Corps for unemployed graduates, Free Eye Camp Campaign, Slum Clearance Scheme, relief for weavers, distribution of cycle rickshaws for hand pulled, poor homes etc. Recently the backward class people have been given due priority in respect of getting admission in colleges, few concessions, scholarships and government jobs. For improving the living standards of this section recommendations of the Backward Classes Commission are to be implemented very soon by the Government. The state follows socialistic ideas for uplifting the masses who are socially and economically backward. "Socialism does not mean making the rich poor, but providing equal opportunities to all and strive for the uplift of the poor and the middle Class."

The trials conducted during 1971 and 1972 Kuruvai have revealed that planting done in the 1st week of July gave the highest mean yield of 1,850 and 2,736 Kgs. per acre during the two years respectively.

States's Rice Revolution as seen in Economic Survey by Finance Department.

—oOo—

The new strategy followed in recent years to step up agricultural productivity has, yielded fruitful results. The yield of foodgrains which stood at 1,075 kgs. per hectare in 1968-69 rose to 1143 kgs. in 1969-70 to 1,312 kgs. in 1970-71 and to 1,362 kgs. in 1971-72. Correspondingly, the total production of foodgrains showed an increase from 50.62 lakh tonnes in 1968-69 to 57.31 lakh tonnes in 1969-70 to 67.06 lakh tonnes in 1970-71, to 69.94 lakh tonnes during 1971-72 and to 72.02 lakh tonnes during 1972-73. During these years, there has been very little change in the area under cultivation and in some years there has been a decline in the area.

Among the foodgrains, the increase in the productivity of rice contributed significantly to the overall increase. Tamil Nadu ranks seventh among the major rice producing States in the country in respect of area under rice cultivation; but, holds the third position in rice production because of its high productivity rate. In spite of the fact that Tamil Nadu secured relatively a higher yield of 1,410 kgs. per hectare as early as 1966-67, it has substantially improved the position in the succeeding five years breaking its own record year after year to reach an yield of 1,973 kgs. in 1971-72. Thus it is a legitimate claim that if wheat revolution is going on in Punjab, rice revolution is going on in Tamil Nadu.

There are 55 State Seed Farms in the State including the large scale Anna Pannai at Kudumiyanmalai which aim at multiplying seeds for ultimate distribution to farmers. These farms serve also as model farms.

So far as paddy production is concerned, the existing farms are able to meet the entire seed requirements. However, in respect of millets, the production of seeds was only 200 tonnes as against the requirement of 500 tonnes.

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TAMIL NADU GOVERNMENT

SERVANTS' FAMILY BENEFIT

FUND SCHEME

The State Government has issued orders in G.O. No. 1515, Finance, dated 3rd December 1973 for setting up of the **Tamil Nadu Government Servant's Family Benefit Fund Scheme**, keeping in view the various suggestions made by the Third Central Pay Commission as well as by the representative of the Non-Gazetted Government Officers Union and others.

Accordingly, all Government servants under Tamil Nadu Government including those in temporary and non-pensionable service, persons on foreign service and on deputation, menials paid from contingencies and persons borne on provincialised work-charged establishment and the All India Service Officers belonging to Tamil Nadu Cadres shall be required to pay a uniform rate of contribution of Rs. 10 per month, which will be deducted from their monthly pay bills and be credited to Government. No separate account will be kept in this regard for each employee as the deduction will be on a uniform basis. The contribution so made will be credited to a separate fund in the deposit section. In the case of death of a Government servant while in service, a sum of Rs. 10,000 alone (Rupees ten thousand only) will be paid to his nominee who shall be his wife/husband, minor child or children, mother or father (in that order) or in the absence of a nominee to the legal heirs of the deceased. In the case of an employee retiring on superannuation or otherwise by demitting office earlier for any reason, he will be paid the actual amount contributed by him till then together with Government contribution representing the element of interest. These amounts will be calculated in accordance with the number of years of service. The deductions shall continue throughout an employee's service except during the period of extra-

ordinary leave. The Scheme shall come into force with effect from the 1st January 1974, i.e., after the first subscription for the month of January 1974 or for the month in which an employee is recruited in the case of future recruits.

Mode of collection

A monthly contribution of Rs. 10 shall be paid by the Government servant commencing from his pay for January 1974 and it shall continue till the end of the calendar month preceding the date of his superannuation. No Contribution shall be made during the period of extraordinary leave. If a Government servant is on extraordinary leave for 15 days or more in a month, no contribution need be recovered. In respect of future entrants, contribution will commence from the beginning of the calendar month following the date of entry in service and shall continue till the end of the month preceding the date of his superannuation. The deduction shall be made from the monthly pay bills.

The pay drawing officers will be held responsible for the prompt recovery of the contribution. In the case of self drawing officers, the Pay and Accounts Officers and the Treasury Officers should watch the recovery. In respect of Government servants on deputation or on foreign service, the foreign employer should effect the recovery.

Refund of contribution

In the case of superannuation or if an employee demits office for any other reason, he shall be paid 80 per cent of the actual amount contributed by him till then at the rates indicated in Schedule I. The balance of 20 per cent will be paid after verifying the period of extraordinary leave availed of by him. In the case of Government servants work-

ing purely under emergency provisions, the repayment will be based on the schedule as in other cases. For the purpose of refunding the contribution, the total amount payable should be notionally worked out from the beginning of the calendar month in which the contribution was first commenced and the end of the calendar month prior to his date of superannuation after deducting the period spent on extraordinary leave.

Sanctioning authority

In the case of non-gazetted officers, the head of the office shall be the sanctioning authority for the refund of contribution on superannuation or payment of lumpsum benefit in the event of death of the Government servant while in service, while in the case of Gazetted Officers, the immediate superior officer and in the case of Heads of Departments the Government will be the sanctioning authority.

Persons entitled to receive family benefit:—

If a Government servant dies while in service his/her nominee who shall be his wife/husband, minor child or children, mother or father (in that order) shall be paid Rs. 10,000/- in a lumpsum in lieu of his contribution. If none of the nominees are alive, this lumpsum amount shall be paid to the legal heirs of the deceased Government servant. The nomination shall be countersigned by the Head of Office and pasted in the Service Book of the Government servant after making entries in it. It is the duty of the Government servant, thereafter to keep this nomination up-to-date. No Government servant shall be paid his/her first full month's pay after joining the service unless he/she files his/her nomination.

Table of Benefits Payable at the Time of Retirement.

Number of completed years to be calculated with reference to the inception of the scheme or the date of entry whichever is later.

Number of years of completed service at the time of retirement.				Contribution of the employee.	Government contribution	Total.
(1)				(2) RS.	(3) RS.	(4) RS.
1 year	..	..	..	120	4	124
2 years	..	..	..	240	16	256
3 years	..	..	..	360	36	396
4 years	..	..	..	480	64	544
5 years	..	..	..	600	100	700
6 years	..	..	..	720	144	864
7 years	..	..	..	840	196	1,036
8 years	..	..	..	960	256	1,216
9 years	..	..	..	1,080	324	1,404
10 years	..	..	..	1,200	400	1,600
11 years	..	..	..	1,320	484	1,804
12 years	..	..	..	1,440	576	2,016
13 years	..	..	..	1,560	676	2,236
14 years	..	..	..	1,680	784	2,464
15 years	..	..	..	1,800	900	2,700
16 years	..	..	..	1,920	1,024	2,944
17 years	..	..	..	2,040	1,156	3,196
18 years	..	..	..	2,160	1,296	3,456
19 years	..	..	..	2,280	1,444	3,724
20 years	..	..	..	2,400	1,600	4,000
21 years	..	..	..	2,520	1,764	4,284
22 years	..	..	..	2,640	1,936	4,576
23 years	..	..	..	2,760	2,116	4,876
24 years	..	..	..	2,880	2,304	5,184
25 years	..	..	..	3,000	2,500	5,500
26 years	..	..	..	3,120	2,704	5,824
27 years	..	..	..	3,240	2,916	6,156
28 years	..	..	..	3,360	3,136	6,496
29 years	..	..	..	3,480	3,364	6,844
30 years	..	..	..	3,600	3,600	7,200

MORE COMPENSATION FOR LAY-OFF SUGGESTED

The 24th session of the Labour Ministers' Conference unanimously recommended increased rate of compensation to workers for lay-off due to power cut and relaxation of the conditions for payment.

It suggested amendment of the Industrial Disputes Act to raise the rate from the present 50 per cent to 60 per cent of the wages and dearness allowance.

The compensation is now available only to those who had put in 240 days of continuous service in the 12 months preceding the lay-off. The conference recommended that this should be reduced to 200 days of service, not necessarily continuous.

It also agreed to the creation of a Central Gratuity Fund and set up a Committee to work out details.

The conference agreed to raise the present wage limit of Rs. 400 per month to Rs. 500 for purposes of the Payment of Wages Act.

It accepted the demand for setting up a welfare fund for beedi workers. The money will come from a cess on employers at the rate of 25 paise per Kg. of beedi tobacco.

The conference generally approved the recommendations of the Committee on automation that it could be introduced in education, research and scientific institutions. In the case of industries, if there is no agreement on introduction of automation between the management and workers, the matter should be decided by the State Government.

The Centre would have this power in the case of industries having units in more than one State. The Centre was also authorised to widen, in consultation with the States, the list of industries where automation could be introduced.

The conference expressed concern at the growing rate of accidents in industrial units and stressed the need for greater attention to safety measures.



BEWITCHING FESTIVALS

OF

TAMIL NADU

By R.L.



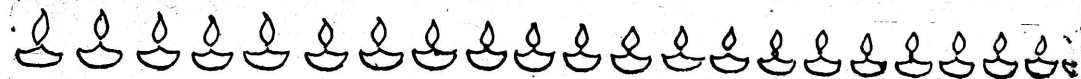
The Tamil Calendar is studded with festivals. Almost every month some festival or other is being observed in temples and households. Most of the communities and religious groups observe them with great zest. Festivals enliven the social life and provide opportunities for artistic expression. They are occasions when women prepare artistic designs (kolums) on their doorsteps and in their courtyards. Flowers of variegated hues are strung together with astonishing artistry which adorn the pretty coiffures of graceful women. They embellish their hands with lovely patterns made of Renna paste. Lamps in copper and bronze in wondrous shapes and sizes, revealing superior craftsmanship are taken out and lit on these occasions which add an enchanting beauty.

The festivals of Tamil Nadu are as variegated as they are enchanting. Yet, no two festivals are alike. Some of them are purely pastoral reflecting as they do the simple joy of peasant life. Some others are rooted in tradition and are woven around interesting episodes in our mythology.

A festival is an occasion for gaiety and mirth. It may be a harvest festival like Pongal celebrated in January (Thai) or the floating festival or car festival or the Navarathri which is a colourful event. The idols of Gods and Goddesses and other dolls are arranged in tiers with an aesthetic sense. It provides an occasion for a social meet. Women and children dressed in their best impart colour and enchantment to the festival. Tamil Nadu is converted into a fairyland during the nine days of this festival.

Rooted
in
Tradition
and
woven
Round
Mythologies.





Karthigai Deepam, the festival of lights, celebrated in November-December is a festival of great beauty and charm. Hundreds of little earthen lamps are placed in a row in every house, the village turned into a little fairyland of lights. Little tongues of flame dancing before the gentle breeze leave an enchanting impression in the mind. Friends and relatives dressed in their best visit each other's houses to exchange greetings. Sweets are exchanged and songs sung and dances held to enliven the event.

Take in a festival when you come to India, No land demands so much of its legends, or, in celebrating the past bedecks the present so marvellously.

PONGAL

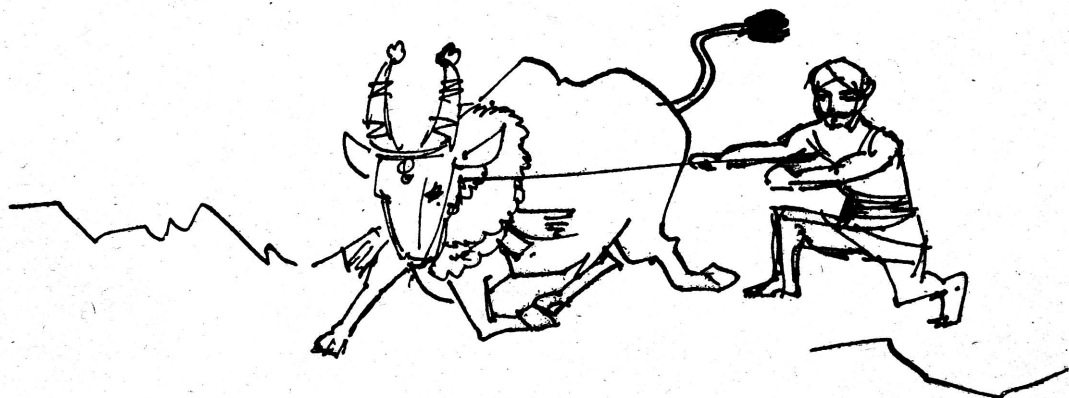
Pongal is the national festival of Tamil Nadu. Celebrated for four days commencing from the last day of Margazhi, Pongal is a festival of thanks giving when the peasant worships the Sun, the Earth and the Cattle for all their bounties. The first day of the festival called Bhogi is spent in feasting and merry making. On the second day which is Pongal, he worships the Sun. Sugarcane and turmeric, sheafs of paddy and newly prepared jaggery, vegetables and dhals are all devoutly offered, the members of the family joining in the worship. On the third day the cow is worshipped. The farmer paints the horns of his bulls and cows in rich colours and covers the horns with shining metal caps and decorates them with gay coloured beads and bells. The cows

EERIE FLAMES OF KARTHIGAI LAMPS

and bulls which are thus gaily decorated are led out in procession to the beat of drums, pipe horns and music. In Madurai and Ramana-nathapuram, a kind of bull fight, called the "JALLIKATTU" is held. Bundles of currency notes are tied to the horns of ferocious bulls and unarmed young men try to rest the bundles. In days of old rich mirasdars would rear bulls especially for this occasion and whoever tames the bull would get the hand of his daughter. This practice is no more now. Rice made into coloured balls are left in open terraces and courtyards for the birds.

On the last day, "Kannum Pongal" men, women and children of all ages dressed in colourful clothes visit the elders to pay their regards and respects. In villages, the families go to the river banks, cook and eat the meals in the open. They sing and dance the Kummi and the Kolattam and enjoy themselves. In towns and cities, dressed in their best, they throng the cinema houses, exhibitions and museums. In general it is an outing for the entire family more or less a picnic.

What Pongal means to the Tamils will be seen from the way he prepares for it. He cleans the house, white washes it which gives a new look. He buys new clothes for all the members of his family. On the third day, he greets the elders. In villages, the peasant takes the vegetables from his land to his landlord and greets him and receives a token sum in return.



TAMILNADU ENDORSES FIFTH PLAN OBJECTIVES

It is my privilege to present the views of Tamil Nadu on the draft Fifth Five Year Plan. I recognise that the Fifth Plan denotes an important stage in the development of the nation and its economy. The wealth of details contained in the document and the variety of suggestions made therein, cannot obviously be fully discussed in a meeting like the one we are holding today. In my view, it would have been more appropriate, if the National Development Council had been given adequate time and opportunity to discuss the various sectoral outlines that have been brought out in the draft Plan. As it is, we have necessarily to concentrate on some of the broader issues of policy only.

Tamil Nadu endorses the objectives of the removal of poverty and the attainment of self-reliance put forward in the Plan. In the achievement of these national objectives, the Fourth Plan has not been as much of a break-through as we had anticipated earlier. We should learn the lessons of the failures of the Fourth Plan, before we embark on the Fifth Plan. The actual annual rate of growth of the Fourth Plan was only 3.7 per cent, as against the target of 5.7 per cent. I hope that in the Fifth Plan atleast the target will be realised through more effective means of co-ordination and implementation.

DON'T CONTINUE ERRORS

I have always been urging that targets and plans have no meaning, so long as implementation is defective. There is a full chapter in the draft Plan devoted to implementation. But, what we look for is the physical means to implement our plans. Steel, cement, coal, fertilisers—the basic goods which we need to implement our plans are all in short supply. To assume a large Plan and not to ensure these essential goods being available is to continue the errors of previous plans.

Today, we do not have enough fertilisers in the country. How are we then to achieve our targets of food

Full
Text
of
Chief Minister's
Speech
At
N. D. C. Meeting
On 8-12-73.

production? Either we should make our fertiliser factories produce more or import more fertilisers. Our fertiliser plans are producing only 11.62 lakh tonnes of nitrogen as against an installed capacity of 22.84 lakh tonnes. We recognise the problems that the Government of India faces in running these plants to full capacity; but should that mean that the farmer is to be denied fertilisers?

Steel also presents the same picture. It is difficult to get steel in the market. Supply of coal is also a problem. Many cement plants run with low stocks of coal. Is it not time that we look into the causes for these shortages of basic goods and remedy them when we talk of higher rates of growth and removal of poverty?

WHY ENCROACH?

We are told that resources are scarce and therefore crucial sectors like power have to be cut down and the States' plans are also reduced. At the same time, large outlays have been set apart for the Central sector for subjects such as Agriculture, Education and Health. In respect of agriculture, Rs. 1,946 crores amounting to forty per cent of the outlay of Rs. 4,730 crores is proposed to be in the Central sector. As against this, in the third Plan, only 16 per cent i.e. Rs. 110 crores out of a total of Rs. 690 crores was in the central outlays. Afterall, agriculture is a subject in the State list and the increase in the Central sector is inexplicable. Similarly, in Education, nearly Rs. 500 crores out of Rs. 1,700 crores is now in the Central sector. I cannot also

understand how in a subject like Health, there should be nearly Rs. 250 crores or thirty per cent of the total outlay in the Central sector. When there is a planning process and the State Governments and the Central Planning Commission work together, I do not see why there should be Central schemes and Centrally-sponsored schemes in areas which are part of State responsibilities. I plead most emphatically that these outlays should be transferred to the State plans and that there should not be any Central Sector Schemes in subjects which are definitely of the nature of State Plan Schemes.

I now quote from the memorandum of West Bengal Government to the Finance Commission. I quote "The sharp increase in Union expenditure on State subjects shows how Central control over State subjects is increasing in extent and intensity, and how the State Governments are being correspondingly deprived of the money to perform their Constitutional responsibility..... Such control over State schemes is now exercised in such great detail that the execution of schemes is greatly hampered..... This is introducing diarchy, pure and simple, in the administration of State subjects. In fact, it is worse than diarchy because, the Central Government does not assume any responsibility in the matter which remains under the Constitution and also in fact squarely on the State Government." I am quoting not my friend Thiru Sidharth Sankar Ray, but Dr. B.C. Roy writing in 1956. The trends have worsened over the years with the growth of Central sector and Centrally-sponsored schemes.

CAUTION ON POWER PROJECTS

I now turn to the core of the Plan, namely, Power, Irrigation, Mining and Manufacturing, Transport and Communications. We believe that the provisions made for these sectors are in totally adequate. Specifically, in the field of power, there has been a serious crisis in recent years which has hampered all economic activities in the country. In

the light of this, we have to review the provisions made for development of power in the Fifth Plan. Unless more power projects are immediately approved and implemented in time, there will continue to be shortage of power for the next ten years. It has to be pointed out that decision making in this sector has always been slow and has to be reviewed. So far as Tamil Nadu is concerned, the only new thermal project, which has been cleared, is Tuticorin. Our projections show that even with Tuticorin, we will continue to have a shortage of nearly 25 to 30 per cent of our demand during the next ten years. In spite of repeated requests, the Government of India and the Planning Commission have not seen it fit to give us clearance for the Mettur Thermal Project or for another nuclear project; Nor has any provision been made in the present draft for the Neyveli second mine-cut and the associated 1,000 MW station. This is a matter of great concern to us.

The various projections that have been put forward regarding the resources would seem to assume that prices and wages would remain constant. Even between the time of publication of the approach document and now, there has been nearly a twenty per cent. increase in prices. While we are talking about the same monetary magnitude of the Plan, the real Plan is getting smaller. If we do not succeed in controlling the increase in prices during the Fifth Five Year Plan, our real rate of growth will be substantially lower than what we are projecting. I would earnestly plead with Planners to concentrate on stabilising prices in the economy. The various monetary and fiscal measures at the Centre indirectly lead to increase in prices. But it is we in the State Governments who have to face the consequences of the price rise. We do not have any of the attendant benefits which Centre gets through deficit financing or increased excises.

One of the factors responsible for price increase is the very high excise imposed by the Centre. The way in which excises have been increased by the Central Government from time to time, increasing prices of basic goods like petrol, steel, cement, is also instrumental in worsening the price spiral. One cannot help feeling that the Government of India has been ignoring the impact of its taxation on the present price

situation. Recently, for the ostensibly good purpose of containing the consumption of petrol, the Government of India increased its excise. The direct impact of the price increase was large, but even more disturbing was the indirect price increases which were set in motion. The draft Plan before us points out that the increase of taxes proposed in the Plan will contribute to not more than a three per cent of increase in prices. I am afraid this is an under-estimate. While this may be the direct increases in prices, there is a multiplier effect and the ultimate increase of prices at the consumer level is bound to be far larger. I would like to urge that the scope for reducing the price level by reduction of taxes, especially indirect taxes on commodities of mass consumption, should be explored by the Government of India. For this purpose, I had suggested in the last meeting that there should be an enquiry body. I would like to reiterate the suggestion.

Taxation as a means of raising resources has led us to a contradiction. More taxes lead to higher

prices and higher wages and a cycle of further increases. Tax evasion also goes on increasing. We must, therefore, look at the whole problem of raising resources for a larger plan from the point of view of a radical transformation of our economy. We should adopt a socialist approach to this question and bring all production of basic consumer goods under the commanding control of Government.

There is no indication in the draft Plan about the criteria on the basis of which Central assistance is to be distributed between States. The decisions of the Government of India on the recommendations of the Sixth Finance Commission are also not yet known. In the absence of these, it is difficult for us to assess what our plan profile will be. **I can only express the hope that the unfair treatment meted out to our State in the previous plans will no longer continue and fairness and justice restored in the financial allocations to Tamil Nadu.**

C. M. Greets President During Delhi visit.



TAMIL NADU STEEL PLANT

.....Guess What?

The Continuous Steel Casting Plant at Arkonam near Madras is Tamil Nadu Steels. It is a testimony to the benefit of an essentially socio-economic co-operation without any strings. Arkonam Steel Plant was established with the Soviet collaboration by Tamil Nadu Industrial Development Corporation Limited (TIDCO), an entirely Government-owned concern. This "House of Steel" at Arkonam portrays what Indo-Soviet collaboration in socio-economic spheres can contribute to the industrial future of the country. TIDCO is a dynamic institution sponsored by the Government for the purpose of accelerating the development of industry in Tamil Nadu. TIDCO took a right decision to build a plant for making billets to meet the growing demands of the 37 re-rolling mills in Tamil Nadu. These re-rolling mills were working far below their capacities owing to the shortage of billets.

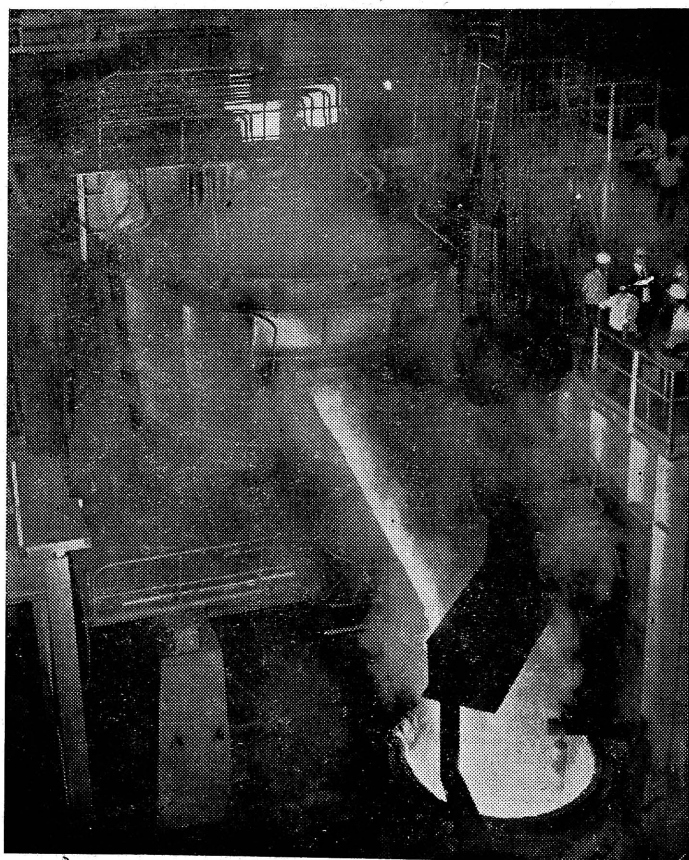
Technology, Most Modern for adaptation in India :—The search for collaboration on the part of TIDCO in setting up a Steel Plant to manufacture billets was quite meaningful. After visiting various countries the team, which went in search of collaboration, found that Continuous Steel Casting was the modern method and that Soviet Technology was most suited for this. Soviet technology and expertise in the field have won worldwide appreciation. This finding of the delegation led to an official approach to the Soviet Union for collaboration in establishing a continuous Steel Casting Plant. Soviet Union agreed to assist in setting up this plant and contracts were signed with M/s. "MACHINEXPORT" of Moscow for the supply of basic machinery required for the plant and to provide the technical know-how.

Distinguishing Features and Benefits:—How the Soviet specialists worked hand in hand with the ordinary workers at the Steel Plant impressed the Indian workers and the comradeship between the qualified Soviet experts and the ordinary workers

was something that excelled the concept of socio-economic equality. The first steel was smelted in the Electric Arc Furnace on October 14, 1971, which was the starting point of the continuous success of the plant. It is noteworthy that the concast installation was commissioned in record time.

The Arkonam Steel Plant was inaugurated by the Chief Minister of Tamil Nadu on 14th April 1972. It is encouraging to note that commercial production in this unit started from 1st July 1972. Arkonam Steel Plant has many special features. This plant is able to use

scrap steel that normally goes to waste. It is pertinent to mention that the Electric Arc Furnace with a capacity of 25-30 tonnes used at Arkonam Plant is the biggest fully automated and mechanised Arc-Furnace in India. This can produce 50,000 tonnes of billets a year and this can be doubled to one lakh tonnes per year with the addition of one more 25 tonne electric furnace. What is more, the 4-strand concast installation used here is the only one of its kind in India. This is equipped with allround automation and instrumentation. For operational facilities, there is also a closed circuit TV. Quality tests are conducted



at several stages of the production of the billets in the well equipped laboratory attached to the Plant.

The benefits which flow from the operations of this Steel Plant at Arkonam are obvious in the context of the rapid development of industries in Tamil Nadu. Particularly for the re-rolling mills, the Arkonam Steel Plant provides a great assistance. This plant also serves the development of the industrial complex in this area. Soviet assisted projects in Tamil Nadu like Neyveli Thermal Power Station, Mettur Hydro-power Station and the Surgical Instruments Plant at Madras, provide a striking evidence of the benefits of Soviet assistance to develop the basic and essential sectors of the industrial economy.

A Promising Outlook :-—The present programme of the Directors of TIDCO to expand the production and also to change the product-mix with addition of high value added items provides an indication about the bright potentialities that lie ahead before this vital plant in a vital sector. The proposed expansion will double the melting capacity to one lakh tonnes which is in keeping with the casting capacity. The resiliency of the plant is obvious from the fact that within a month of the lifting of the power cut in Tamil Nadu, the Arkonam Steel Plant had been working at 50% of the rated capacity as against 35% achieved during January-February 1973. That the break-even point of this plant will be reached when the plant works at 60% of its rated capacity is an important fact worthy of note. The production of high carbon billets which are in great demand at reasonable prices is a promising prospect. What is more, it will be easier to reach the rated capacity production after reaching the break-even point, when profitability will be quite impressive. There is already good demand reported for the products of this Arkonam Plant.

The observations made by the Chief Minister of Tamil Nadu on the occasion of the commissioning of the Arkonam Plant have spotlighted the outstanding benefits of Soviet collaboration. The distinguishing features of Soviet assistance are the low rates of interest on the credit offered under deferred rupee payment, the absence of any foreign exchange problem, and the absence of any political strings. It is obvious that in a rapidly rising cost-structure of

projects everywhere, India's industrial development would receive greater fillip with more and more projects coming up with Soviet aid on a relatively low cost and easy payment system. Quality with low cost and easy rupee payment, constitute the distinguishing features of Soviet cooperation for India's Industrialisation.

—By A. R. SUNDARAM.

INTENSIVE CAMPAIGN FOR THE DEVELOPMENT OF SMALL SCALE INDUSTRIES IN DHARMAPURI DISTRICT.

The Directorate of Industries and Commerce, Government of Tamil Nadu, conducted an "Intensive Campaign for the development of Small Scale Industries in Dharmapuri District," from 10—12—1973 to 16—12—1973 in collaboration with the Small Industries Service Institute, Government of India at Madras. The Tamil Nadu Small Industries Development Corporation Ltd., Madras, the State Bank of India and other Nationalised Banks. The object of the campaign was to make available all the assistance rendered by the above mentioned agencies to the Small Scale Entrepreneurs, on the spot under one roof.

During the Campaign, the officers of the above mentioned agencies rendered all assistance, such as giving advice for starting suitable small scale industries in the district, registration, technical advice and guidance, processing of applications for financial assistance, hire purchase of machinery, issue of essentiality certificates for import of scarce raw materials and machinery, etc. The officers of these Institutes will also visit the existing small scale units in the district and offer technical assistance for expansion, diversification, etc. This campaign is expected to boost industrial development of Dharmapuri District which has been classified as Backward Area. Industries set up in the district are entitled to the central subsidy of 15 per cent on the fixed capital investment, and financial assistance on concessional terms.

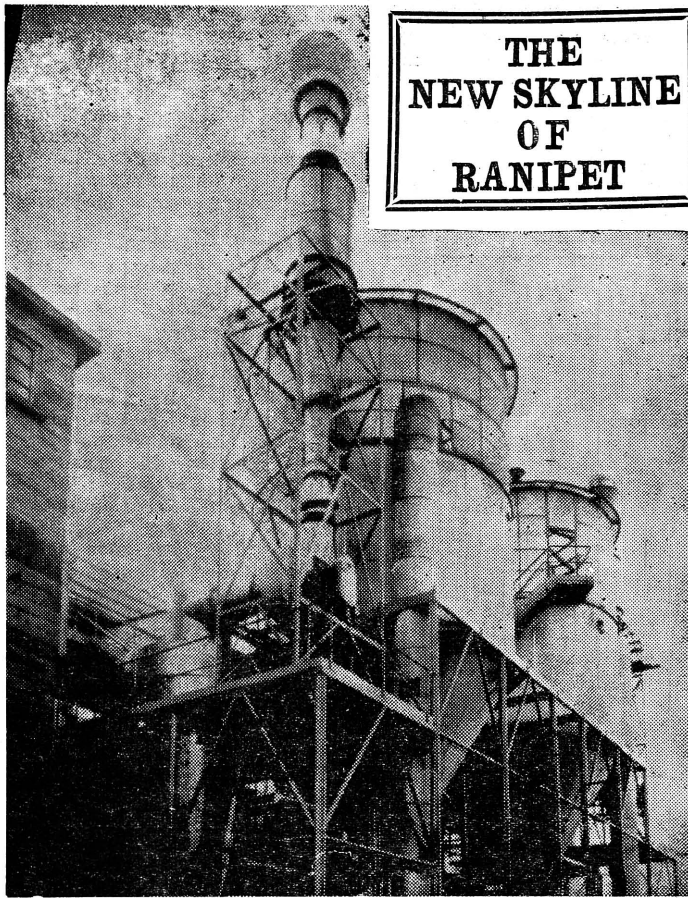
The campaign was inaugurated by the Collector of Dharmapuri District at 10-30 a.m. on 10—12—73 at Dharmapuri. On this day cases relating to Dharmapuri and Palacode taluks were covered. Similarly on subsequent days the other Taluks were covered till 15—12—1973.

The Tamil Nadu Agro-Industries Corporation.—The Tamil Nadu Agro-Industries Corporation was established in 1966 with the twin objectives of encouraging industries which will help the growth and modernisation of agriculture, animal husbandry, pisciculture and poultry farming and encouraging food processing industries. It is now the sole agency for distributing imported tractors. The Corporation has already sold 2,145 tractors so far besides taking up the distribution of power tillers recently. A modern workshop at a cost of Rs. 5.82 lakhs is being constructed at Guindy for the manufacture of farm implements. This unit is expected to commence its production from 1973-74. With the idea of regulating the quality and price of the pesticide chemicals marketed, the Corporation started the formulation of certain chosen chemicals in the current year. Another important contribution of the Corporation is the relief it is giving to the unemployed technical graduates and diploma holders. Under this scheme, the Corporation is giving training to the employed but technically qualified persons to enable them to start Agro-Service Centres.

ELECTRON CONDUCTS SEARCH FOR INFORMATION

Leningrad. The collection of seeds at the disposal of the All-Union Plant-Growing Institute, situated in this city, is a real treasure for selectionists. But how to select quickly the needed specimen with strictly definite features, if there are 300,000 specimens and the number of features, in the description of each specimen amounts to 200. Leningrad mathematicians have entrusted the role of a pilot in this ocean of informative combinations to a computer which makes the selection in a matter of minutes. This gave a start to the creation of a single computing centre in Leningrad with an automated system of search for information accumulated by the city's agricultural research centres. Computers will collect and store information on most different problems as, for example, on methods of protecting plants against pests, genetics, selection of farm animals, etc.

THE NEW SKYLINE OF RANIPET



With the promotional assistance provided by Tamil Nadu Government through its State Industries Promotion Corporation, Ranipet, 80 miles from Madras, bids fair to become a beehive of industries. With an authorised capital of Rs. 5 crores, the SIPCOT, as it is familiarly known, is an amalgam of senior officials of the Government of Tamil Nadu Industries Department and reputed industrialists of the State. Around the "know-how" of this team a layer of competent team of technicians, engineers of various branches, Chartered Accountants, Cost Accountants and administrators has been formed to make the SIPCOT truly dynamic.

The motto of this Public Limited Company is to speed up the formation of medium and major industries in Tamil Nadu, particularly in the backward and most backward areas of the State in partnership with the progressive entrepreneurs. Indus-

tries Minister Thiru S. Madhavan, after his extensive tour all over the world and after seeing many industrial complexes in various places, has decided to develop "growth centres" all over Tamil Nadu, particularly in the most economically backward areas in the State. Ranipet is one among the selected industrial locations to start with.

GROWTH CENTRES

As far as Tamil Nadu is concerned, the industrial development so far has been concentrated in a few centres like Madras, Coimbatore, Salem-Mettur belt area and more recently, Tirunelveli and Tuticorin areas. As a result, vast areas of the State is mostly neglected and a trauma of imbalance is steadily creeping up in these neglected areas. The infrastructure facilities and package of concessions offered attract some of the most sophisticated industries

to choose these "growth centres" for their expansion projects and new ventures.

The inauguration of SIPCOT industrial complex at Ranipet on 15th November, 1973 will mark a significant era in the annals of history of industrial growth in Tamil Nadu. The diversification of industries all over Tamil Nadu is not only balancing the economic growth of the country; but at the same time also acts as an attracting agents for entrepreneurs outside our State to come and invest their capital and entrepreneurial skill in our soil. The industrial complex now emerging at Ranipet in North Arcot District is located in an area of over 712 acres site, just 2 Kms. away from Ranipet Town. It is situated in the Walajapet Municipality on the north bank of Palar river, comprising a population of few thousands of people. Once it was a British Contonement and large Cavalry section was maintained there. Once a place of minor importance has now received a greater prominence by the setting up of this huge industrial complex.

Ranipet, once a tiny dot on the industrial map of Tamil Nadu, has now become a key place of industrial vision. It is one of the constituents of a town group consisting of Ranipet, Arcot and Walajapet municipalities and is centrally located and well served by a network of roads and rail communication. The site located for industrial complex is right on the National Highway from Madras to Bangalore. This site was bought in the year 1963 and was kept idle for a long time. This Industrial Estate apart from enjoying road and rail connections, is also under the confluence of Palar and Ponnai rivers which has a potential of 4.5 million gallons of water per day. A sum of Rs. 46 lakhs has been spent to tap an initial potential water resource of 2.5 million gallons and this will gradually be stepped up to 4.5 million gallons of water per day. A separate 110/11 K.V. sub-station is being constructed by the Tamil Nadu Electricity Board on a plot within the industrial complex to take care of power requirements for the industrial units. A separate 1.5 Kms. railway line will also be constructed along the industrial sight connecting with the Ranipet railway station.

To facilitate the workers who are working under the canopy of this growing industrial complex, the Tamil Nadu Housing Board has decided to start construction of housing colonies in a contiguous areas of about 52 acres of land. Provisions for constructions a hospital, school, Community Centre, play ground and Park have been made for the betterment of the people who are likely to reside at this housing colony.

Besides open services, drainage facilities have also been provided for the disposal of treated effluent discharged by industrial units. An administrative building is being constructed to house the Administrative Office of the SIPCOT. A post office; a branch of the bank, Fire Station, etc., will also be constructed within the area.

DIVISION OF INDUSTRIES

This industrial horizon is divided into many zones, one each for heavy industries, chemical industries, electronic industries, medium scale industries and small scale industries. There are 62 plots spread over an area of 514 acres. Entrepreneurs will have a wide choice of plots of varying sizes depending upon their requirements.

An area of 72 acres has been set apart for the development of an Industrial Estate for Small Scale Industries Development Corporation (SIDCO) planned to construct 150 sheds which will be made available to small scale industries on easy payment terms.

To start with, the foundation stones are being laid for 5 major industries. Among them is Tamil Nadu Chromates and Chemicals Limited as a joint sector project promoted by TIDCO in collaboration with Thiru K. K. Mohideen and his associates at an estimated cost of Rs. 1.7 crore. This project will manufacture B.C.T. powder, sodium dichromate and sodium sulphate required for tanning industry.

In the implementation of this project, the services of a highly qualified Project Manager with over 12 years' experience in the manufacture of Sodium Dichromate, Basic Chromium Sulphate Tanning powder, Sodium Sulphate and other chromium compounds have been secured; technical equipment requirements determined, design drawing

and specifications and raw materials requirements worked out and a detailed, techno-feasibility and viability report prepared for the appraisal of the Project by the Financial Institutions.

Binny Limited, Madras, which is already in the manufacturing field of the above chemicals for its captive consumption, has been appointed consultants and on its experts' certification, orders were placed with reputed indigenous manufacturers for the technical equipment.

Sodium Dichromate is largely used in the finished manufacturing units, for the processing of chrome tanned leathers for footwear, clothing, gloves, etc. India is very rich in animal population being the single largest holder of livestock in the world. India's leather industry's exports occupy the fifth place in the exports from India and Tamil Nadu's share of it is more than 70%. Since a decade, with the demand for wet blue skins and hides increasing, chrome tanning of hides and skins has considerably increased and with it has increased the consumption of Sodium Dichromate and Basic Chromium Sulphate in liquid and powder forms. The patterns of exports in view of the declared policy of the Government of India, is now rapidly changing from semi processed leathers such as wet blue and E.I. tanned skins to finished leathers, chrome tanned of high quality.

This has also been recently emphasised by the Task Force on Small Scale Industries of the State Planning Commission. An export target for finished leathers for our

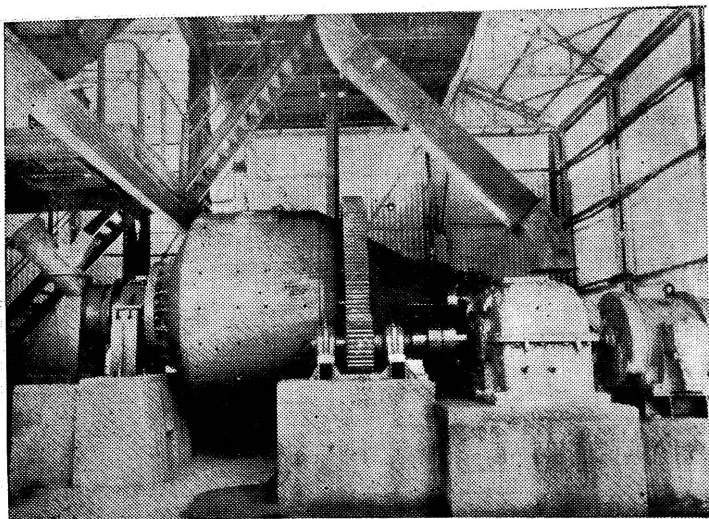
country as a whole and Tamil Nadu in particular for 1974-75 has been set at Rs. 100 Crores and Rs. 41.25 Crores respectively. Taking into account the finished leather production in the country and the increasing use of the chemical in other industries as well, there is great demand for Sodium Dichromate and the present production will be inadequate even to meet the needs of the industries in the country.

Sodium Dichromate is also used in mineral khaki dyeing (textile industry) corrosion inhibition in cooling towers, metal treatment, manufacture of chromium chemicals and pigments and synthetic detergents.

The anticipated demand of Sodium Dichromate during the Fifth Plan period of 1975-80 is estimated at 20,000 tonnes per annum and that of Basic Chromium Sulphate will be of the order of 19,000 tonnes per annum. Sodium Sulphate, a by-product of the Sodium Dichromate manufacturing process, is in short supply and its demand in Calcutta alone is expected to be of the order of 2,900 tonnes per annum.

Foundation stone was laid for Ultramarine and Pigments Limited to be set up at an estimated cost of Rs. 1.50 crores to produce synthetic detergents and five other industries.

Government has decided to start a series of industrial complexes throughout the length and breadth of Tamil Nadu in course of time with the able assistance of SIPCOT which will be an epoch making prosperity in industries in the annals of history of Tamil Nadu.





The deep sea harbour coming up at the site of the sheltered waters of the Tuticorin port will change of the Southern tip of Tamil Nadu. It will alter the economy of three districts, and Tuticorin itself has already attracted heavy industries costing nearly Rs. 300 Crores.

The history of Tuticorin Port dates back as early as 123 A.D. when Ptolemy of Greece described Tuticorin as a flourishing trade centre, engaged in maritime trade with Western and Eastern countries. The maritime trade expanded during the Portuguese and Dutch periods and finally during the reign of East India Company, it reached its zenith. Tuticorin Port is ideally situated, sheltered against cyclones by the island of Ceylon in the east and Adam's straits in the north-east, thus providing calm and tranquil sea with a tide range of three feet only.

FIRST PIER IN 1863

The first pier of Tuticorin port was constructed in the year 1863 and today, the port of Tuticorin is the largest intermediate port of India, handling over one million tonnes of cargo per annum. However, the port is an open roadstead, the anchorage being situated six miles off shore to the east of Hare island in deeper waters and cargo is handled by freighters plying

THE TUTICORIN PORT BECOMES A DEEP SEA HARBOUR

between ship and shore, which involves wastage of time and also material. Hence, the necessity of developing the port into a major harbour with alongside facilities was felt for a very long time for the economic development of the region and prosperity of the people. After detailed survey of traffic by National Council of Applied Economic Research and study by the Intermediate Ports Development Committee, it was decided to construct a deep sea Harbour, off Hare Island, six miles south of the existing port, which was found to be an ideal location for the harbour with minimum cost.

The Government of India sanctioned the preliminary project scheme in the year 1963 and provided an allotment of Rs. 5.00 crores in the Third Five Year Plan. But even at the end of the IV Plan, the harbour has not come into full use though the work has gone ahead with a provision of Rs. 21.76 crores since 1969.

CAN EARN ITS COST IN SHORT TIME

The harbour project envisages the construction of a four-berth deep sea, artificial harbour with 30 ft. draft at the first stage, with provision for deepening to 35 ft. draft at a later stage. It has been assessed that there will be a traffic of 2.235 million tonnes, on commissioning, consisting of :

Coal : 0—60 Million tonnes

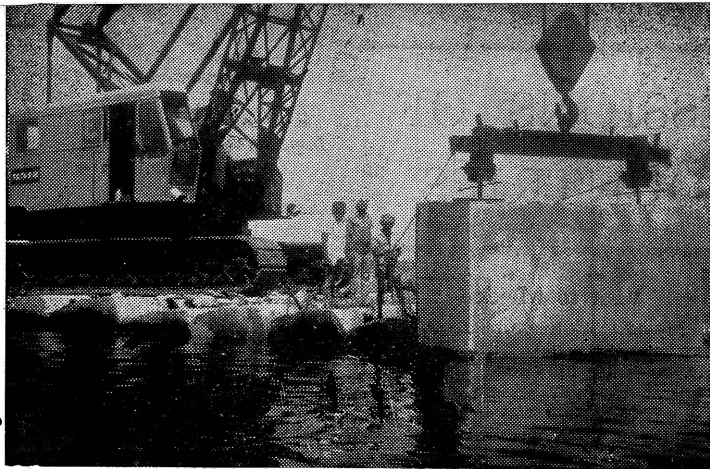
Salt : 0.55 Million tonnes

Cement : 0.45 Million tonnes

General Cargo—0.545 million tonnes

Fertiliser—0.090 million tonnes.

The traffic will build up to 3.510 million tonnes three years after commissioning and 4.420 million tonnes 8 years after commissioning and the project will be in a position to repay the capital with interest in a few years after the harbour starts earning.



Huge dressed stones are lowered for the long sea-arms of the Harbour.

The design of this major harbour at Tuticorin has been finalised based on the model studies conducted at the Central Water & Power Research Station, Poona. It will be an artificial deep sea harbour with rubble mound type parallel breakwaters, north and south, including eastern arm with a length of 4142 metres and 3797 metres respectively, projecting into the sea at a distance of 1275 metres apart with an entrance of 122 metres width.

The rubble mound type breakwaters are being constructed with core stones weighing 10 to 500 kg, wrapped with armour stones weighing 1 ton to over 8 tonnes. The core stones are conveyed by road from Thattapparai and other quarries at a distance of about 26 KMs. from the Harbour site and armour stones are conveyed by road and rail from Ambasamudram at a distance of 96 K.Ms. The marine terminals proposed will be in the form of alongside wharf adjoining the eastern arm of South Breakwater to cater to 4 berths located in the natural deeper waters at a distance about 3,000 metres, from shore and the connection between the wharf and the shore is by means of road and railway links laid over the reclaimed approach arm adjoining South Breakwater. In the initial stage, the harbour is designed to cater to 30' draft ships in all the 4 alongside berths. However, the foundations of the Wharf wall for the end two berths (salt and coal) will be taken deeper to accommodate 2 Nos. 35' draft vessels, if required, at a later date.

The shore works comprising construction of staff quarters, roads and bridges, water supply sewerage and electricity and railways access to harbour were completed by 1965. The North and South Breakwater have been completed to LS. 2954 metres and LS. 3696 metres in all respects. Orders have been placed for most of the port handling equipments and harbour crafts. An oil jetty is also coming up on the North arm at a distance of 2950 metres.

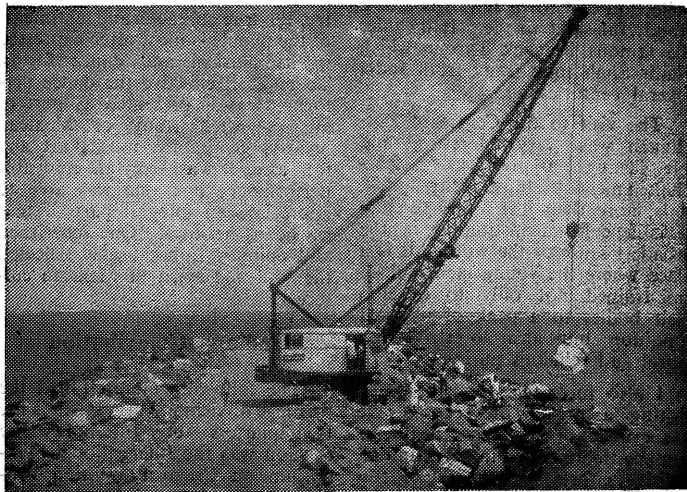
INDUSTRIAL GROWTH IN THE HINTERLAND.

Tuticorin has got a rich hinterland with the Districts of Madurai, Kanyakumari, Ramanathapuram, Tirunelveli and Southern Taluks of

Tiruchirappalli, to the extent of 16,000 sq. miles. Tuticorin is well connected by roads, radiating to all the important places and railway lines for 525 miles in these four districts. With record performance in the carriage of goods, the trade in the hinterland is brisk, energetic and quick. In view of the high concentration and purity of salt in Tuticorin, the possibilities of large scale manufacture of salt and export of salt to Japan are being explored and will be accomplished shortly. Setting up of salt-based industries and the location of Fertiliser unit as part of the Southern Petro-Chemical Complex which have already been started are to bring about rapid industrialisation of the area immediately. As on date, the Tuticorin Fertilizer Complex is the largest in the World and is coming up so fast that it will go on stream by middle of 1974. Once the Harbour is completed, further new industries in and around the area will develop by leaps and bounds and expand the trade to a great extent. The Atomic Energy Department is building a Heavy Water plant here. The area has attractive an industrial investment of more than Rs. 380 crores already.

With the completion of Sethusamudram Project, Tuticorin Harbour will gain importance all the more, being the first harbour nearest to Indian Ocean on the East Coast, with all the facilities of watering bunkering and repairing.

R.P.R.O.
Tirunelveli.



MY IMPRESSIONS OF OTHER COUNTRIES

F. V. ARUL I. P.,
Inspector-General of Police,
Tamil Nadu.

FOREIGN TOURS

I have had the privilege of visiting several foreign countries in the course of my work as Director, Central Bureau of Investigation, New Delhi and also as a Member of the Executive Committee of *Interpol*. My first trip abroad was in the year 1968 when I visited Teheran, the Capital of Iran, to attend the 37th General Assembly Session of *Interpol*. Teheran is a very modern city and is popularly called the Paris of the East. It has many beautiful buildings as well as the most modern supermarkets. The country's rate of economic growth has averaged 9 per cent each year. To any visitor there are visible signs of affluence and progress all round.

During my visit I took the opportunity of visiting the Golestan Palace, State Bank Vault where the Crown Jewels are kept and also the Centre for Zurkhaneh. The Golestan Palace is a magnificent structure and its interior decoration is breathtaking. The ruling dynasty in Iran is over 3,000 years old and they have over the years adorned the Palace in the most opulent manner. The collection of Crown Jewels is also a wonderful sight to see. It includes the famous Peacock Throne which Nadir Shah took away from India several centuries ago.

The visit to the Centre of Zurkhaneh was very interesting and left lasting impressions. Zurkhaneh means "House of Strength". It is more than just a sports club. It is a cultural institution in the broadest sense of the word. It is a place where the young men of Iran are trained not only to develop their bodies to a peak of physical condition but also to strive for moral and religious purity.

I also took the opportunity of visiting a prison in Teheran. It was a model of cleanliness, neatness, humane treatment of inmates and of positive efforts to rehabilitate the prisoners.

Visit to Mexico

My next visit to a foreign country was in October 1969 when I visited Mexico City to attend the 38th General Assembly Session of *Interpol*. This Session was held in the magnificent Government Conference Centre and was inaugurated by the Prosecutor-General of Mexico who said that crime constitutes a social problem both at the national and international levels, that the technical progress achieved by man in a noble effort to eliminate poverty has also served to make crime international and he hoped that *Interpol* will be of great assistance to all nations in checking such anti-social activities.

During the course of the conference I took the opportunity of visiting the Mexican Museum which is one of the best in the world and also attended a performance of Mexican folk dance. Mexico is a country that is rich in musical and dance tradition, each region having a distinct style in which its music and dances are performed. To really understand and appreciate the life and culture of a nation, a tourist must examine its music and dance, for in Mexico, as in any other country, the true character and sentiments of the people is most often expressed in its musical and dance forms. To make it effective the dance performance was presented as part of an integrated study of Mexican history, geography, music, art and folk lore. It was truly an enjoyable performance and one was able to appreciate an integral part of true Mexican heritage. One cherished and enjoyed it because it reflected the soul and spirit of Mexican culture.

India's Contribution

The following month I had the privilege of visiting Paris which is the Headquarters of *Interpol*. The occasion was the International Symposium on Crime Prevention Problems. The *Interpol* Headquarters

is accommodated in a new building at St Cloud which is 16 miles from Paris. In response to the request of *Interpol* Headquarters to all member-countries to make a contribution to the new building, I took the opportunity of presenting on behalf of the Government of India an exquisite representation in ivory of Sri Krishna's famous philosophic discourse on the battle field of Kurukshetra. The ivory model which was executed with superb artistry by an artisan from Trivandrum bears the following famous lines of the Geeta on the concept of duty and the suppression of evil :—

"For the protection of the good,

For the destruction of the wicked
and

For the establishment of righteousness,

I come into being from age to age"

Paris is of course one of the most beautiful cities in the world with scores of historic buildings. As one passes these buildings the past history of France comes up before one's mind. In this sense, Paris is an eternally fascinating city.

Nepal-A Synthesis of different ethnic and Cultural Elements

The following May I had a good fortune of visiting Nepal in order to co-ordinate police efforts to prevent the transport into Nepal of stolen motor vehicles from India.

Nepal is an ancient country with a rich cultural heritage. Its two great religions are Hinduism and Buddhism. It has always been an independent sovereign kingdom, cherished and protected by a galaxy of illustrious Kings. It runs for a distance of nearly 500 miles from east to west on the northern border of India and its breadth varies from 90 to 150 miles from north to south. It falls naturally into three zones,

the Southern Terai with large tropical forests, the central hilly region in which the valley of Kathmandu is situated and the northern part which is the culminating point of the Nepalese scene containing the mighty Himalayas which include Mount Everest and several other famous peaks such as Kanchenjunga, Dhaulagiri, Annapurna, Makalu and Lhotse. These are the most famous mountain ranges in the world, ever attracting mountaineers and sightseers from all parts of the world. Even as we conferred with our Nepalese colleagues a Japanese mountaineering team was in the process of making a successful bid to climb the world's highest peak.

Nepal has a population of nearly 11 million people consisting of a variety of races and tribes, speaking different languages and dialects. They wear different costumes and ornaments at different places. In the north and east live the Bhotias, Tamangs, Rais and Sherpas, in the centre the Newars, in the west the Gurungs, Kerantis and Magars and in the Terai, the Dhimals and Tharus. Nepal is in effect a synthesis of different ethnic and cultural elements woven together into a harmonious entity. Nepalese is of course the national language.

One appreciates the great beauty of the Kathmandu valley as one files into the Capital city. The latter of course is the biggest city in Nepal with a population of about half a million. The city is on an elevation of about 4,500 feet and has a salubrious climate. It is also

known as Kantipur and was established in AD 723 by King Gunakama Deva. The word "Kathmandu" is said to be derived from "Kasthamandap", a Pagoda structure which is believed to have been built from the timber of a single tree. Despite its ancient origin, the capital has assumed a look of modernity and is a great tourist centre.

At Brussels—The seat of the European Common Market

In October, 1970, I visited Brussels in order to attend the 39th General Assembly Session of Interpol. Brussels is the seat of the European Common Market and is also the capital of Belgium which is composed of two distinct regions, the northern known as Flanders where Flemish is spoken and the southern called Wallony where the people speak French. In the social sense, the Belgians are extremely polite and handshaking is their speciality which is said to have originated in medieval times as an assurance that one's right hand carried no weapon.

On the outskirts of Brussels is the battlefield of Waterloo where the Duke of Wellington defeated the French Armies under Napoleon. This battlefield is preserved as it was in 1815 and is a tourist centre.

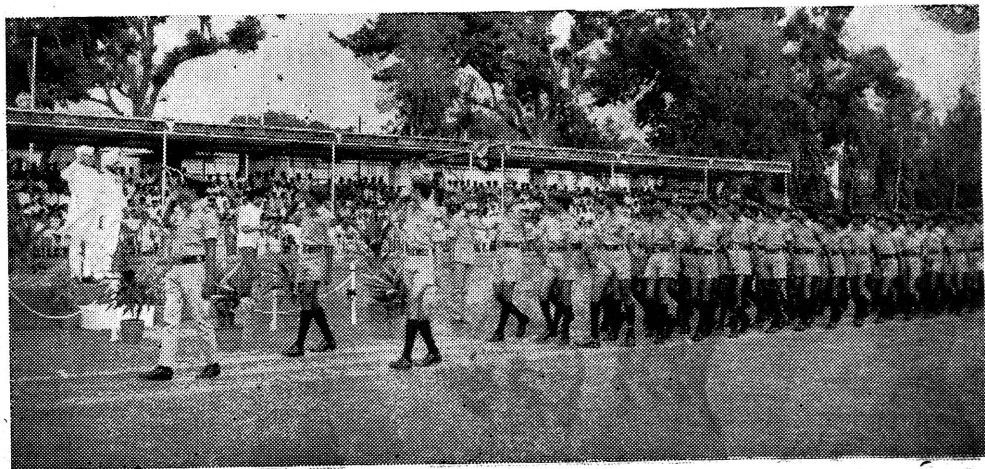
In October this year I visited Vienna in order to attend the 42nd General Assembly Session of Interpol. Vienna is the capital of the Republic of Austria and can look back on nearly 2,000 years of history.

Founded in AD. 50 as a Roman Army Camp, it suffered badly during the Dark Ages before being rebuilt. In 1276 the Habsburg dynasty came to power and ruled till 1918. During unsuccessful attacks by the Turks in 1529 and 1683 Vienna stood firm as a bulwark of the west.

Vienna a City of Arts

Vienna is a European metropolis with a great but living tradition of learning. The city, whose ancient University has produced no less than twelve Nobel Prize-winners, has made notable contributions to the advancement of science ; for example, the Vienna medical school, Viennese child psychology, the psycho-analytical work of Sigmund Freud and the technical discoveries of Viennese engineers. In addition to the University, Vienna has eight colleges and academies of university status that enjoy a world-wide reputation.

Vienna is perhaps even better known as a city of the arts. It harbours a contemporary school of painting, artists of international renown, a number of prominent authors and playwrights, as well as leading theatrical experts. The Viennese stage maintains a standard that bears comparison with the best anywhere else in the world. Life in the Austrian capital is influenced, above all, by music and this applies equally to the classics, to the dodecaphonic school, to the Viennese waltz and the sentimental local songs. Past and present melt into one when considering Vienna's role in the realm of music.



N. C. C. Day was celebrated throughout the State on 30—11—73. Governor takes Salute in Madras.



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