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and Not to Compete"**

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MADRAS INFORMATION

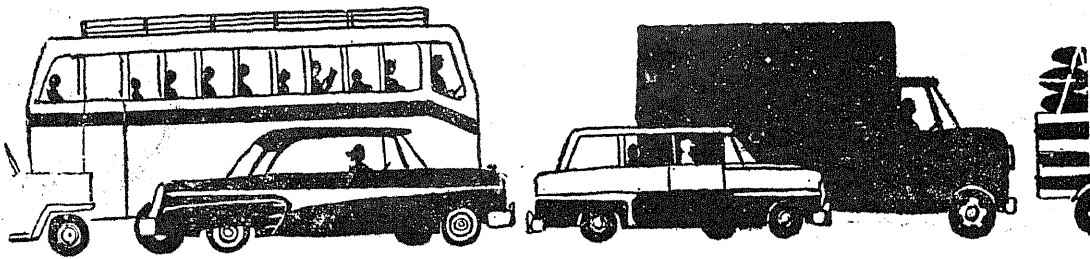
NOVEMBER 1961

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This month's cover

This month's issue is brought out as a Children's Number in celebration of Children's Day falling on November 14. Naturally our cover theme is the child of to-day, diligent and studious, who will develop into the ideal citizen of tomorrow.



**Road Transport Services maintained
in spite of tyre shortage**

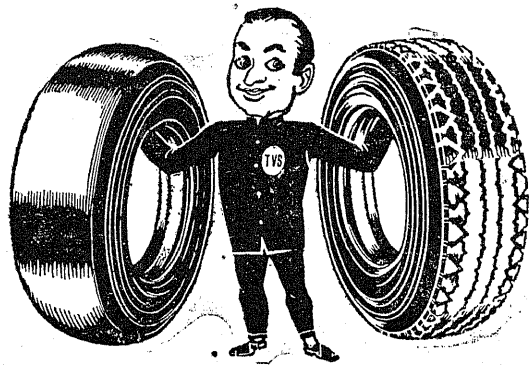
TYRE RETREADING HELPS TO KEEP VEHICLES MOVING

Certain categories of truck tyres are in short supply. With the present volume of tyre manufacture, it may not be possible to meet in full even the replacement needs of Road Transport. Shortage of new tyres has become inevitable.

Today the retreading industry has assumed national importance. It is estimated that last year over 400,000 tyres were retreaded in India saving road transport operators nearly Rs. 21 crores.

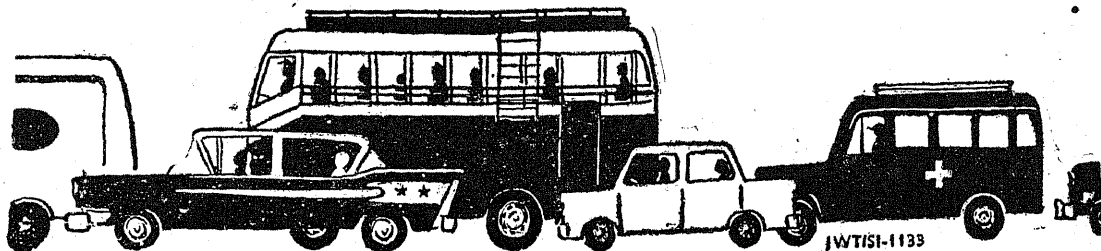
Retreading can do much more: If tyres are retreaded in time, that is, when the tread is just wearing smooth, they can be retreaded over and over again; many truck tyres can be retreaded as many as three times. Retreading will not only save money for the

operator, but may avert rationing and control of tyre supply.



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To The Citizens of Tomorrow

SRI JAWAHARLAL NEHRU

[The Prime Minister Sri Jawaharlal Nehru is very fond of children and has very great faith in them as the citizens of tomorrow. It has become customary to celebrate his birthday as Children's Day and in connection with his birthday falling on November 14 this year selected passages from some of his writings addressed to children are compiled and offered for their benefit in this article.]

Our own country is a little world in itself with an infinite variety and places for us to discover. I have travelled a great deal in this country and I have grown in years. And yet I have not seen many parts of the country we love so much and seek to serve. I wish I had more time, so that I could visit the odd nooks and corners of India. I would like to go there in the company of bright young children whose minds are opening out with wonder and curiosity as they make new discoveries. I should like to go with them, not so much to the great cities of India as to the mountains and the forests and the great rivers and the old monuments, all of which tell us something of India's story. I would like them to discover for themselves that they can play about in the snow in some parts of India and also see other places where tropical forests flourish.

A voyage of discovery

Such a trip with children would be a voyage of discovery of the beautiful trees of our forests and hillsides and the flowers that grace the changing seasons and bring life and colour to us. We would watch the birds and try to recognize them and make friends with them. But the most exciting adventure would be to go to the forests and see the wild animals, both the little ones and the big. Foolish people go with a gun and kill them and thus put an end to something what was beautiful. It is far more interesting and amusing to wander about without a gun or any other weapon to find that wild animals are not afraid and can be approached. Animals have keener instincts than man. If a man goes to them with murder in his heart, they are afraid of him and run away. But if he has any love for animals, they realize that he is a friend and do not mind him. If you are full of fear yourself, then the animal is afraid, too, and might attack you in self-defence. The fearless person is seldom, if ever, attacked.

1A

Perhaps, that lesson might be applied to human beings also. If we meet other people, in a friendly way, they also become friendly. But if we are afraid of them or if we show our dislike to them, then they behave in the same manner.

These are simple truths which the world has known for ages. But even so, the world forgets and the people of one country hate and fear the people of another country; and they are afraid, they are sometimes foolish enough to fight each other.

* * *

I like being with children and talking to them, and even more, playing with them. For a moment I forget that I am terribly old and that it is a very long time ago since I was a child.

This beauty and life

I hope you will be more sensible and open your eyes and ears to this beauty and life that surround you. Can you recognize the flowers by their names and the birds by their singing? How easy it is to make friends with them and with everything in nature, if you go to them affectionately and with friendship. You must have read many fairy tales and stories of long ago. But the world itself is the greatest fairy tale and story of adventure that has ever been written. Only, we must have eyes to see and ears to hear and a mind that opens out to the life and beauty of the world.

* * *

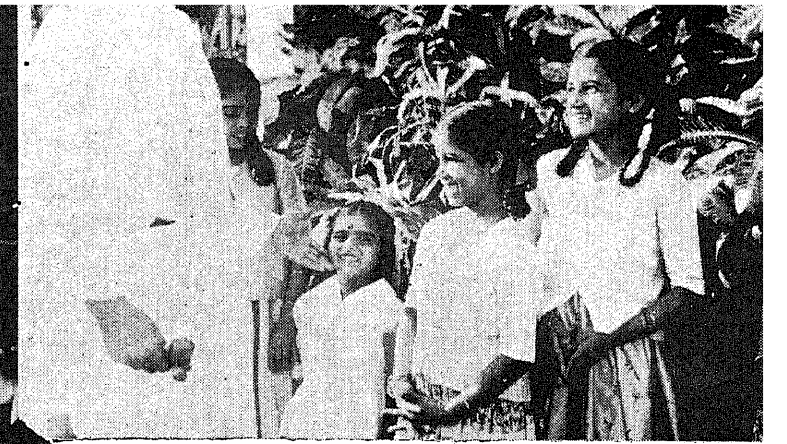
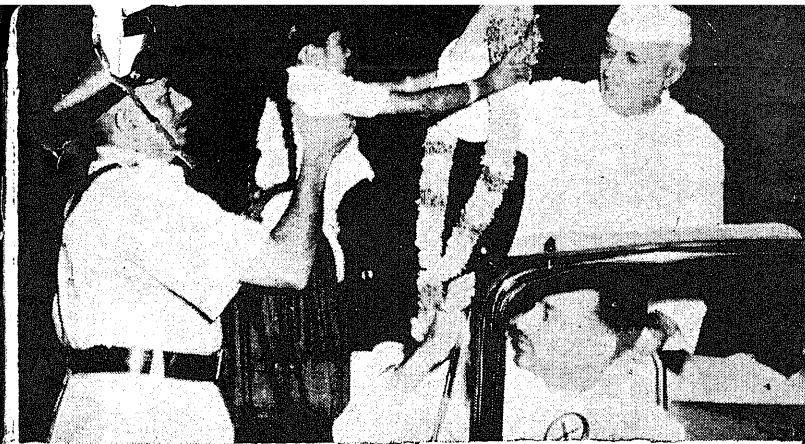
I know you are all fond of stories. But I would like you to be acquainted also with the story of India. This story was not written in ink, but by the deeds of great men. It was later that some authors collected facts and wrote the stories of leaders and their activities.



GAMES



DRAMA



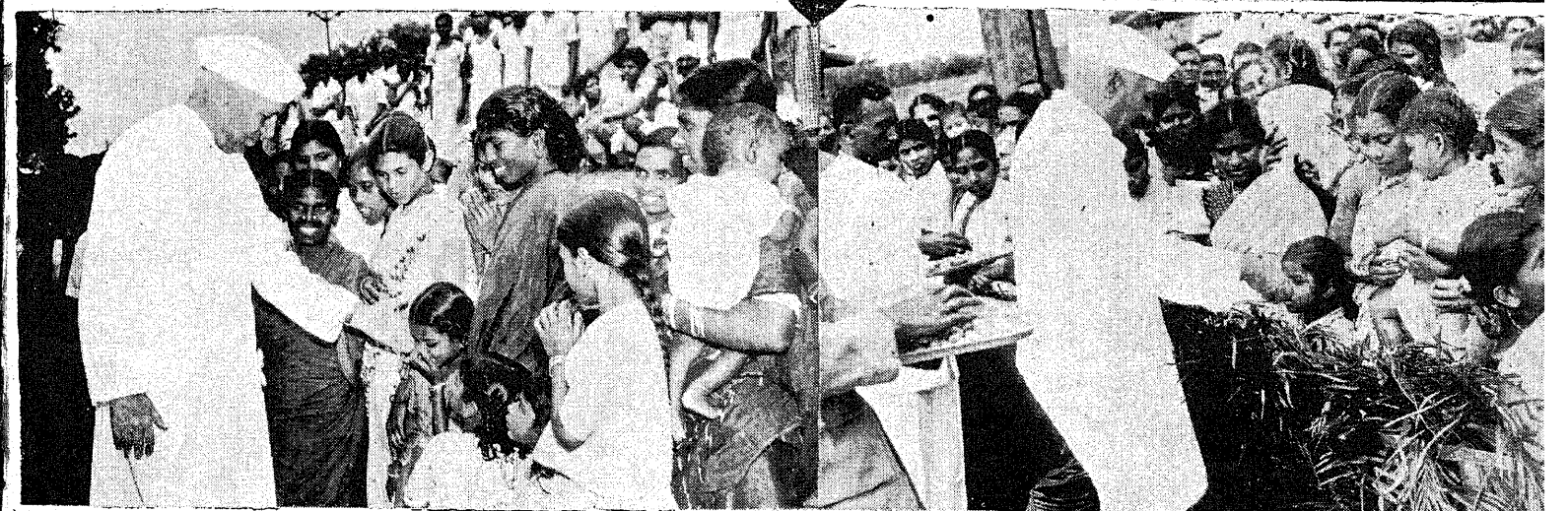
THE PRIME MINISTER WITH



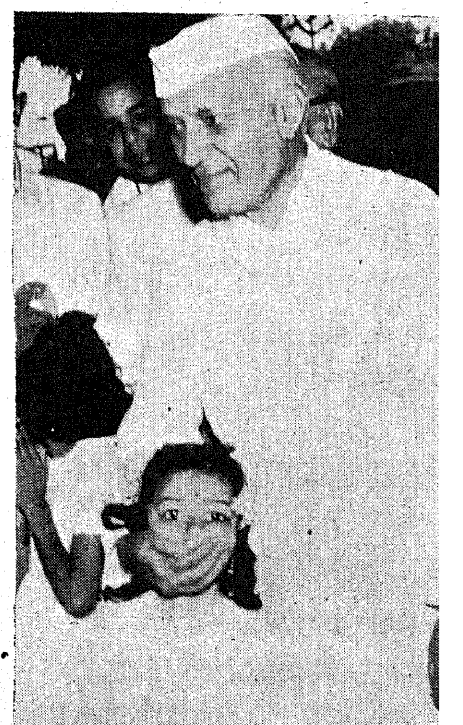
PAINTING



DANCE



Children



Prime Minister Nehru, who is 72 on November 14, 1961, seems to grow younger with the passage of time. Providing in himself a perennial example for every child to emulate, the Prime Minister seldom misses an opportunity, in the course of his crowded engagements, to pause and exchange a joke with children or demonstrate his affection for them. Pictures show the Prime Minister happy in the company of children whom he met during his recent visit to the South.

THE WORLD OF CHILDREN





SRI BISNURAM MEDHI, *Governor of Madras.*

The change in the organizational structure brought about by the close link between the Panchayats and the Panchayat Unions in the new system of local administration brought about by the Madras Panchayats Act, 1958, is of great significance says Sri Bisnuram Medhi, Governor of Madras. The text of his presidential address in connection with the historic two-day conference of panchayats recently inaugurated in the City forms the subject matter of this article.

Ever since Independence, it has become the nation's gigantic task to build a new India by formulating and implementing successive Five-Year Plans in order to achieve a balanced development of the country in all spheres of activity and to give a better life to everyone by raising the standard of living of the common people. The main aims that have guided our planned development are the building up by democratic means of a rapidly expanding and technologically progressive economy and the ushering in of a social order based on justice offering equal opportunity to every citizen. Everyone in this country is both a witness to, and a partner in, the great revolution that is taking place now in every field of human endeavour. Apart from establishing basic industries and undertaking large scale projects, high priority has been given to agricultural production with a view to achieving not only self-sufficiency but also much higher production in order to meet our demands even during years of unfavourable seasonal conditions.

Our targets in agricultural production have to keep pace with the growth of population and meet the increasing demands for more food and better food. It is necessary to rouse the consciousness of our peasants and cultivators and enlist their willing and active co-operation in the matter of reaching our targets of food production and also in the matter of controlling the rapid growth of population. It

is also essential to mobilize public participation in our development programmes under the Five-Year Plans in an integrated manner along with the National Extension Service Scheme of Community Development. It has been increasingly felt that these can be achieved only by a major change not only in the organizational structure of local administration, but also in the entrustment of functions and resources therefor. Thus, the scheme of progressive democratic decentralization has taken shape and the Panchayat has become the self-governing unit of local administration which can play a very important role in the implementation of the vital sectors of the National Five-Year Plan.

Roots in the Past

Panchayats as units of local self-Government have been known in Tamil Nad from ancient days. The Vaikunthaperumal temple in Uttiramerur in Chingleput district contains the most valuable documents on the wall of its plinth throwing a flood of light on the system of Village Government and village administration by the assembly, the qualifications for membership, etc. It will be evident from the contents of this inscription which is more than one thousand years old that the system of administration by the 'Sabha' with its various committees was more ancient than the date of the inscription itself. The inscription is a

Royal Order received by the village regulating the constitution and administrative set-up of the 'Sabha' and its committees and setting forth in detail the procedure for election of members.

It would be interesting to know that the village was divided into twelve hamlets and there were further divisions into wards and the residents of each ward elected representatives through the 'pot-tickets' system. The inscriptions throw light on the rules relating to the conduct of elections, qualifications and disqualifications of candidates, the manner of their choice, appointment of committees, maintenance of village accounts, etc. From these, it is clear that village panchayats had their roots in the hoary past and flourished as centres of corporate life and culture.

Seeds of Democracy

These institutions which, has elements of incipient democracy in them, were destroyed during the early years of the rule of the East India Company. The credit for realizing the importance of shaping new measures towards revival of these institutions goes to Lord Ripon whose resolution of 1882 regarding the association of non-officials in the administration of local institutions led to the passing of the Local Boards Act, 1884, which provided for the constitution of "union boards" for small towns and large villages mainly for the purpose of looking after village roads, sanitation and lighting. Though about 400 union boards were established, it must be remembered the members of these union boards were all nominated.

Subsequently after the visit of the Royal Commission on decentralization, one thousand informal panchayats were established but the position of these panchayats was weak and unsatisfactory as they had no statutory basis. The introduction of simple and elastic legislation to call these panchayats into existence was advocated and election of members to the panchayats was provided in the Madras Village Panchayats Act of 1920 which was the next important measure in the history of local self-Government in this State. The Panchayats were supervised by a Registrar-General and the late Sri N. Gopaldaswami Iyengar who became the first Registrar-General played a very significant role in bringing about this enactment. The number of Panchayats by 1928 rose to three thousand.

Background of legislation

By an Act of 1930, the panchayats were brought initially under the Taluk Boards and subsequently under District Boards on the one hand and the Government on the other. The year 1950 saw the passing of the Madras Village Panchayats Act and this was in effect a step towards the implementation of Article 40 of our Constitution which enjoins that the State shall take steps to organize panchayats and

endow them with such powers and authority as may be necessary to enable them to function as units of self-Government.

The future of local administration in Madras State became a subject for further discussion with a view to raise the general standard of efficiency of Panchayat administration and also to cover the entire State with panchayats. The individuality of the village panchayat and its organic contact with the people of the village should be continued and it was felt that at the same time another common organization should be set up for a larger area to take over functions which could not be performed by individual panchayats and to provide other services effectively.

In 1957, a Cabinet Committee was appointed to consider the matter. The Committee recommended, among a number of major changes, the setting up of Panchayat Unions at the development block level. The process of democratic decentralization became the subject-matter of study by a team appointed by the Committee on Plan Projects set up by the Planning Commission which discussed with the State Government its conclusions regarding the future pattern of local administration in this State. The need for a vigorous democratic institution to take charge of all aspects of development work in rural areas was keenly felt. There was a large measure of agreement between the conclusions of the Study Team and those of the Cabinet Committee.

Enlarged functions

The proposal for the abolition of District Boards and the setting up of Panchayat Unions at Block level were embodied in a revised White Paper and placed before the Legislature which set up a Joint Committee of both the Houses of the Legislature with adequate representation to all parties. A draft Bill embodying the proposals after detailed discussion was approved by the Committee, and was passed by both the Houses of the Legislature by active

Sri V. V. Giri, Governor of Kerala, who presided over the 274th Inauguration Day of the Madras Corporation recently is seen in the picture distributing a prize on the occasion.



support from all political parties. Thus emerged the Madras Panchayats Act, 1958, and I may mention here that Madras is the first State to enact the panchayat reform on the basis of the new concepts arising out of the recommendations of the Committee on Plan Projects which were adopted by the National Development Council in 1958.

I have referred to the long tradition of panchayat administration in Madras, but it has to be appreciated that the Panchayats and the Panchayat Unions constituted under the new Act of 1958 are different in conception from the Panchayats, Taluk Boards and District Boards which were in existence till recently. These local boards were meant to discharge only what are commonly known as civic or municipal functions such as village sanitation, street lighting, maintenance of village communications, drainage, health and primary education. With the limited resources available these local bodies were functioning in an unrelated and isolated fashion without any organic link between the village panchayat and the district board.

The New System

In the new system of local administration introduced by the Act of 1958, the Panchayat Union which is a successor to the district board is formed as a co-operative union of the village panchayats, the Presidents of Village Panchayats forming the Panchayat Union Council which is the governing body of the Union. This change in organizational structure which is brought about by the close link between the Panchayats and the Panchayat Unions is of great significance. More important than this aspect is the far-reaching change in the functions and resources of these bodies which are now designed effectively to participate in the planned development of the country in their own right as local self-governing institutions.

Community Development Scheme envisages that the village people themselves should take part in the formulation and execution of the various improvements undertaken under the scheme and every village is to become a participant in successive Five-Year Plans by which the nation as a whole is marching in step to achieve the aims embodied in our Constitution. Since Panchayats have acquired special significance and importance in the context of the National Extension Service Scheme of Community Development, a Panchayat Union has been so devised that it will be a co-operative association of the Panchayats of all villages situated in the Block and provide individual representation on it for every panchayat in the Block. The Village Panchayats and the Town Panchayats are now the local units of the federal structure organization of panchayat administration.

The preamble of the new Panchayat Act lays down the main purposes of the Panchayat reform. The progressive increased production of food and other agricultural produce essential for industrial development, from year to year, is of paramount importance as also the control of the growth of population. These national purposes depend for their successful implementation on their being undertaken as part of a comprehensive programme of measures designed to promote rural employment, to improve rural living conditions, to provide cultural and recreational facilities in rural areas and thus to raise the standard of living of the rural people.

Such a comprehensive programme of measures has been framed and is embodied in the National Extension Service Scheme of Community Development, and in pursuance of the scheme various services are organized, works constructed and other facilities provided in rural areas and the Act makes statutory provision for the setting up of local administrative organizations which will be capable of undertaking and discharging the responsibility for efficient maintenance and further progressive development of the services, works and other facilities. Thus, the new reform seeks to change a traditional society into a dynamic one through peaceful and democratic means and with the active consent of the people by synthesising the Local Administration with the Development Administration so that the Panchayats and the Panchayat Unions can participate directly and effectively in the planned development of the country.

Momentous steps

Even though the Act became law in January 1959, it has taken another 32 months to complete the task entrusted to the Government by the Legislature. The task of bringing into existence in an orderly fashion 373 Panchayat Unions involves a considerable amount of reformation of procedures and re-orientation of thinking and approach at all levels. The completion of this reform was phased into three stages over a period of one year.

On the Gandhi Jayanthi Day 1960, seventy-five Community Development blocks were formed into Panchayat Unions; on the Tamil New Year's Day 1961, one hundred and twenty-nine Community Development blocks were constituted into Panchayat Unions, and on the Gandhi Jayanthi Day recently, the rest of the Blocks numbering one hundred and sixty-nine were constituted into Panchayat Unions. It must be remembered that the process of entrustment of the work of Community Development to the Panchayats and Panchayat Unions, thus enabling them to participate in the planned development of the country in their own right as local self-governing institutions under the Panchayats Act, is of great significance.

The functions include improvement of agricultural production, implementation of programmes relating to village industries as well as the expansion of normal civic services, the universalization of primary education, development of a comprehensive service of maternity assistance and child-care, assurance of protected water-supply and development of village roads and other similar tasks in the fields of culture and welfare. The Panchayats and Panchayat Unions being in direct touch with the rural people, have thus become administrative units for planning and development of all schemes which can be planned and implemented at Block and Village level. A Panchayat Development Schematic Budget has been prepared which serves as a financial framework and the funds earmarked in different plan schemes have been pooled and along with local resources the share of the Plan funds and matching grants for the successful implementation of all schemes have been indicated.

Panchayat Raj

With the completion of this new reform of local administration and development administration, the State is covered by 12,540 Panchayats and 373 Panchayat Unions, thus ushering in Panchayat Raj which was the dream of the Father of the Nation. The last Gandhi Jayanthi saw the completion of the task of the establishment of Panchayats and Panchayat Unions. Panchayat Raj would make the rural people develop self-reliance in social and economic

spheres of activity and rouse their enthusiasm for participating in all activities for the welfare of the country and help in harnessing human and other resources in our march towards prosperity. The constitution of the Community Development blocks into Panchayat Unions and the abolition of the District Boards are very important phases of our programme of decentralization and devolution of powers for effectively carrying on the developmental activities in our march towards prosperity and for realization of the Peoples' Raj; so that every one, particularly those living in rural areas, may feel that it is their own country in whose making they have an effective voice. It is up to us to strive for the fulfilment of this objective by putting our whole-hearted efforts to crown this measure with success, so that the people living in villages may feel the glow of swaraj.

The experience of the last one year has brought a conviction that this State can look forward with assurance to sustained progress in the rural areas and to constructive leadership in villages. I would like to commend the part played by the members of Panchayats and Panchayat Union Councils in going to the help of the people at the time of the last floods in some of our districts and in relieving distress. These are signs of right leadership emerging from the new reform. We have embarked on this new voyage, and I have every confidence that we will reach our destination, namely, the goal of a Welfare State with faith and courage, and all of you are equal partners in this historic voyage.

Fish Canning Industry

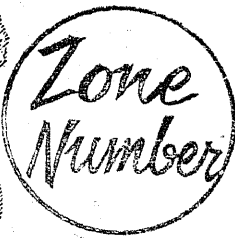
As an impetus to the fish canning industry in industry and to promote exports, the Union Ministry of Food and Agriculture has introduced a scheme to give a subsidy on tin plate used for the manufacture of open top sanitary cans and 'Dingley' type cans for wet packing of various types of fish and prawns. The step is intended to help the industry, which is at present in the early stages of development, to increase its production and at the same time keep the quality of the products high and the cost of production sufficiently low. The industry will thus be able to offer its products to the internal market at reasonable prices and compete favourably in foreign markets.

Canning factories have to submit in prescribed forms details about their factories to the Fisheries Development Advisor, Ministry of Food and Agriculture for registration under the scheme. The State Directorate of Fisheries and the Joint or Deputy Chief Controllers of Imports and Exports will, after verifying the facts recommend the cases to the Fisheries Development Adviser.



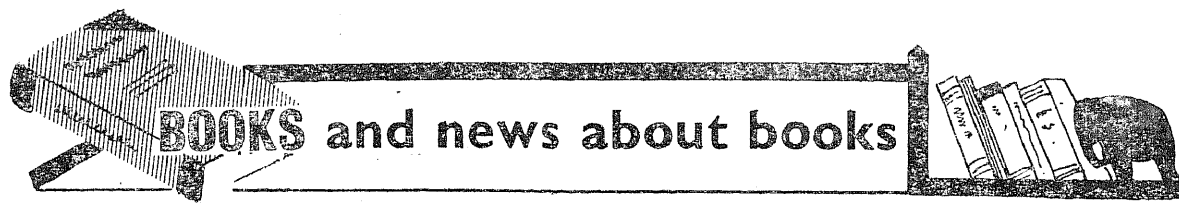
Large towns are usually divided into postal delivery Zones, to speed up sorting and delivery of mail. Give wings to your letters; address them fully, showing the zone number.

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To meet the need for finding in one place the main lines of India's foreign policy, the Publications Division of the Ministry of Information and Broadcasting, has brought out a book entitled "India's Foreign Policy".

The book is a compilation of selections from official records of the Prime Minister's speeches and statements in Parliament, replies at press conferences and addresses elsewhere in India and abroad. It covers a period of 15 years from September 1946, when the Interim Government was formed, to April 1961. The majority of speeches and addresses are extempore. In the case of a few, translations from the original Hindi have been used.

The speeches are grouped in thirteen sections. The first ten outline the basic concept of the country's foreign policy and trace the evolution of a specific policy in consonance with these concepts and to meet emerging situations. The last three deal with India's relations with individual countries in Asia and Africa, Europe and America.

The foreign policy of India, according to the Prime Minister, is not of his making but is rooted in her geography, history and culture, as well as the manner in which she attained freedom under the leadership of Mahatma Gandhi. He also points out that the emergence of India from long dependence into freedom is of major significance to Asia and to the struggle for freedom elsewhere. For this reason and because of her schooling in non-violence, India stands for co-existence and opposes war, which in the nuclear age, would be fatal to mankind.

"Peace has been said to be indivisible, so is freedom, so is prosperity now, and so also is disaster." If India keeps herself away from power blocs and military alliances, she is, nevertheless, second to none in her love of liberty. "Where freedom is menaced or justice threatened or where aggression takes place, we cannot and shall not be neutral."

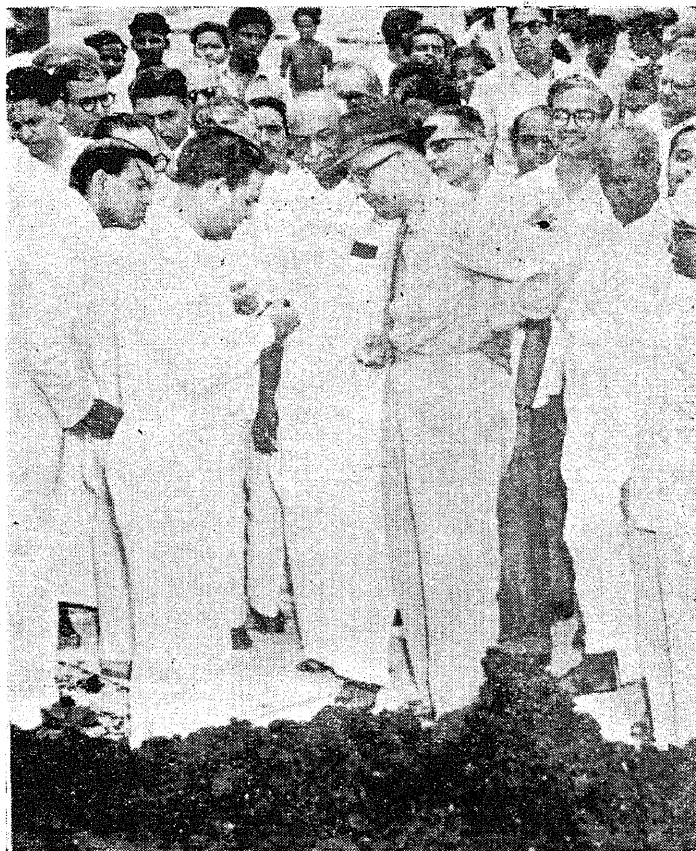
On Higher Education

Comprehensive information about the courses of study and various other details about colleges in India are

available in the 1961 Directory of Institutions for Higher Education brought out recently by the Union Ministry of Education.

The Directory provides up-to-date information, as at the beginning of this year, about all institutions offering post-matriculation courses of at least two years' duration.

The publication describes the jurisdiction, Departments of Studies and academic terms of the universities in India together with the medium of examination used



Bulk sample extraction of 2,000 tons of lignite for large scale tests abroad was commenced recently at Neyveli in the presence of Chief Minister Kamaraj and Industries Minister Venkataraman. In the picture, the Chief Minister is being shown sample of the lignite extracted.

General information about the total intake, reservation of seats for backward classes and for different States, the fees charged, the last date for submitting applications for admission and the date of announcement of the session etc., in engineering, technology, medical and pharmacy courses has been revised and brought up to date for the session 1961-62.

Travelling Book Exhibition

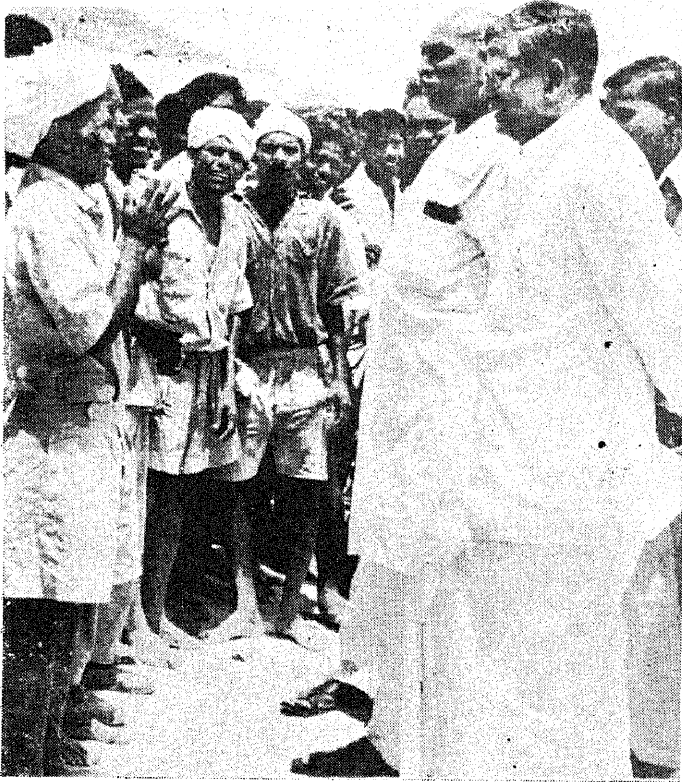
An exhibition of British books on India which will later tour other cities of this country, was recently inaugurated at the All-India Fine Arts & Crafts Society's Theatre in New Delhi. The exhibition has been arranged by the British Council.

This is a collection of some 1,400 books and documents collected by the British Council over a period of several years. The exhibition is designed to give what must be only a small indication of the great wealth of books on all aspects of India published in Britain, most of them between the last decades of the 18th century and 1960—the majority by Britons, but with a liberal selection by Indian authors.

Earliest in the collection is an extremely valuable edition of Philip Baldaeus' *True and Exact Description of the Most Celebrated East-India Coasts of Malabar and Coromandel*, printed at Amsterdam in 1672. The most recent publication is *The Common Law in India*, being the Hamlyn Trust lectures delivered last year in London by the Attorney-General of India.

The exhibition includes in its wide range books on agriculture and forestry; art, architecture, and archaeology; communications and civil engineering; economics, commerce and industry; education; ethnology; law, constitution, and administration; linguistics; literary studies; medicine and medical history; religion and philosophy; science and natural history; sports; topography and travel. There is a section on English novels with an Indian background.

Largest section of the exhibition is that on the history of India including a first edition (published between 1829 and 1832) of Tod's *Annals of Rajastan*. The works of W. G. Archer and Mortimer Wheeler are notable among books in the fascinating field of art, architecture, and archaeology.



Chief Minister Kamaraj and Industries Minister Venkataraman with workers at Neyveli.

in each. Similar information about colleges affiliated to Boards of Intermediate Education as well as non-affiliated educational and research institutions are contained in the Directory.

The Directory, which enters the seventh year of its publication, covers the academic session 1960-61. Special attention has been given to institutions providing professional and technological courses. These institutions have been classified according to subjects and the minimum admission requirements and the duration of the first degree courses in each subject have been indicated.

Cotton Production

The All-India final estimate of cotton for 1960-61 puts the current year's area and production at 18,971,000 acres and 5,394,000 bales of 392 lb. each of cotton lint respectively. As compared with the partially revised estimates for 1959-60, the estimates for 1960-61 show an increase of 167,000 acres or 0.9 per cent in area and 1,716,000 bales or 46.7 per cent in production. The yield per acre for the current year works out at 111 lb. as against 77 lb., last year, thus marking an increase of 44.2 per cent.

MODERNIZING THE MADRAS Museum

SRI S. T. SATYAMURTI, *Superintendent, Government Museum.*

Thanks to the countrywide movement for the reorganization of museums launched by the Union Government a couple of years ago, the Madras Museum has secured substantial grants both for buildings and equipment. It has made considerable headway in implementing schemes for the modernization and expansion of the Museum. In this article, the Superintendent details the lines on which the public galleries of the Museum have been modernized during the past two years and the work ahead.

The Madras Government Museum is the largest and oldest of the State Museums in India. It was founded in 1851 as a museum of practical Geology and Natural History, but later, sections on Art, Archæology and Anthropology were developed and the Museum came to be recognized as the main centre of research in all these fields in South India. After an unparalleled record of valuable service in the field of popular education and scientific research, the Museum celebrated its Centenary in 1951, when the National Art Gallery devoted to Indian art, was organized on modern lines and annexed to the Museum.

One of the primary functions of the Museum is the proper display and interpretation of its collections to the visiting public. But although the collections of the Madras Museum are rich and varied, and in some fields (for instance, Pre-history and Archæology), almost unique, yet lack of adequate finances has stood in the way of their effective display and presentation for a considerably long period, ever since the time of its inception.

Difficulties

Till recently, the annual allotment in the State Budget under the head of "Furniture and Fittings" for the entire Museum was only about Rs. 4,000 and for a large, multi-purpose museum with seven expanding technical sections (Art, Archæology, Numismatics, Anthropology, Zoology, Botany and Geology), each having its own galleries,

laboratories, storage rooms and Curatorial offices, this was indeed a low and inadequate provision, and all that could be done was just to construct one or two show cases for the most outstanding exhibits acquired during each year, and to maintain the existing show cases in a state of good repair.

This plan of making display cases piece-meal proved to be most unsatisfactory, and inevitably resulted, in course of time, in the galleries getting cluttered up with as most heterogeneous assemblage of show cases, with all possible variations in shape, size and pattern. Thus, no systematic programme for modernization and standardization of the display cases was possible with the limited finances. As each exhibit was acquired, a show case was made just to suit that particular exhibit in shape and size so that no uniformity in size or pattern could be maintained. It was this lack of uniformity that proved to be one of the main reasons for the unimpressive display, in spite of the fact, that the collections in themselves were of great intrinsic value.

A Serious Problem

In addition to financial stringency, the very nature of the existing museum buildings (parts of which are more than hundred years old) posed a serious problem while attempting to modernize the exhibition halls, for although larg

and spacious, they are not architecturally suited for the introduction of the latest methods of display. For instance, there are too many large windows resulting in excessive glare and admitting direct sunlight into the galleries. This is not only highly injurious to the exhibits, but also interferes with their proper display by considerably reducing the available wall space for exhibition and rendering the entire display quite ineffective.

However, if windows are eliminated or reduced, ventilation becomes a problem especially in a hot country like ours. Air conditioning will be the ideal solution, but its prohibitive cost rules it out as a practical proposition at least for the present. The presence of large, clumsy, masonry pillars is another undesirable feature, hampering the uninterrupted view of the exhibits and depriving visitors of that feeling of spaciousness which is so essential for the aesthetic appearance of the gallery. Ways and means had therefore to be devised for adapting these old buildings to suit modern needs if the galleries were to be effectively modernized.

Modernization begun

Fortunately, in recent years, with the increasing momentum of the museum movement in India, and the fresh impetus that museums have been receiving all over the world through organizations like the UNESCO, the Government of India began to realise the needs of Indian museums, and about a couple of years ago, a countrywide scheme for the reorganisation and development of museums was launched. Under this scheme, at least most of the larger multi-purpose museums of the various States in the country became eligible for liberal financial assistance from the Centre. The Madras Museum was also fortunate enough to secure reasonably substantial grants under this scheme during the last two years, both for buildings and equipments, and it has therefore been now possible to start implementing comprehensive schemes for the modernization and expansion of the Museum.

The baby elephant gifted to a Canadian company in connection with "A Salute to the Commonwealth Show" was seen off at the Madras Airport by Home Minister Bhakthavatsalam.



I have briefly indicated below the lines on which attempts have been made during the past two years in modernizing and reorganizing the various public galleries of the Museum under the Centrally-sponsored scheme for the Reorganization and Development of Museums.

Although all the galleries of the Museum stood badly in need of thorough reorganization and modernization, yet the work could be carried out only by convenient stages, owing to financial considerations and limitations of staff and materials. Those galleries in which the display was most unsatisfactory and which therefore needed modernization most urgently were taken up first for the implementation of our reorganizational schemes. Fortunately, the Government Wood-Working Unit at Guindy, to which these items of work have been entrusted, is managing them with commendable skill and efficiency, equipped as it is with up-to-date machinery and a staff of trained technicians.

Economic Botany Gallery

This is one of the two large and spacious Botanical galleries on the first floor. But in spite of its rich and varied collection of economic products derived from plants, it failed to attract sufficient attention from the visiting public on account of the dull and unattractive manner in which the exhibits were hitherto displayed. The exhibits (many of which, by their very nature, are rather drab-looking objects) were spread out in monotonous rows in flat, desk-like cases with sloping glass tops. These cases, with their horizontally exhibited specimens, were occupying the greater part of the available floor space in the gallery, resulting in unsightly congestion and allowing very little moving space for the visitors.

But, with the introduction of the modernized method of display, an almost miraculous change has taken place and this has now become one of the most attractive galleries in the Museum. A series of uniform, built-in cases have been constructed and installed all round along the four walls within a straight, continuous wooden panelling curved at the corners, and with the large single-plate glass fronts of the cases appearing as neat, rectangular windows in this panel. The interior of the cases is spray-painted with a pleasing sky-blue, and provided with concealed daylight fluorescent illumination. The exhibits and labels are mounted directly on the background panels of the cases, thus dispensing with shelves altogether. The old sloping, desk-like cases are thus being gradually eliminated, leaving the entire central floor space in the gallery free for the visitors to move about.

Ventilation has, of course, been necessarily reduced, but arrangements have been made to allow a continuous, easily

accessible passage behind the cases all round the hall, close to the outer walls, so that the windows could be still kept open, admitting fresh air. In course of time, this hall will be equipped with exhaust fans and air circulators to add to the comfort of the visitors. The entire scheme relating to this gallery cost about Rs. 28,000.

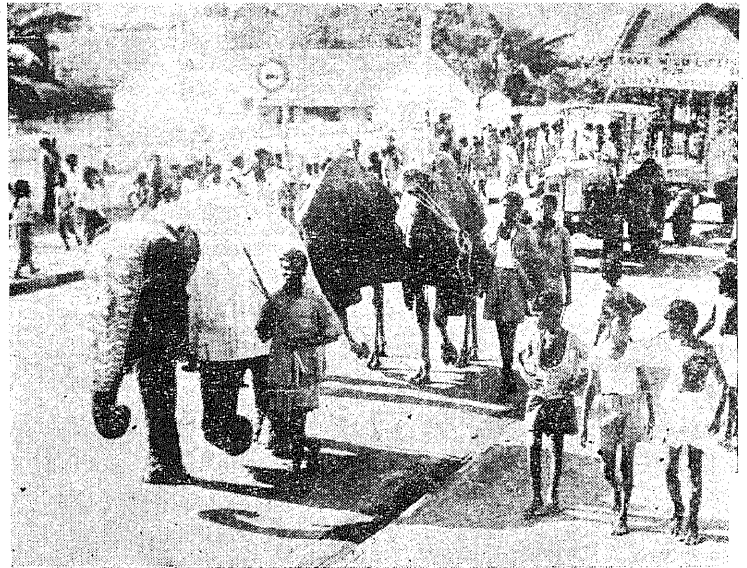
The Birds Gallery

Birds have a great aesthetic appeal to the common man by virtue of the exquisite beauty of their colour and form, and the Madras Museum possesses one of the richest collections of birds in India, systematically very complete and representative of the entire avifauna of South India. Yet, unfortunately, their display, casing and arrangement had been somewhat disappointing till recently. There were no habitat groups at all worth the name, and even the show cases for the few nesting groups had glass on all the four sides or on three sides, without any pictorial background painting or modelled foregrounds to suggest the habitat of the birds. The systematic or classificatory series of birds were displayed in straight, awkward rows on shelves in large, old-fashioned, inconveniently deep show cases with unwieldy glass sliding doors which had numerous wooden cross frames hindering the unobstructed view of the exhibits.

Under the present scheme of modernization, two very impressive series of attractive, built-in show cases have been installed within a continuous panelling on the extreme left and right sides of the hall along the walls to begin with. Each of these series consists of nine large cases, among which cases containing classificatory displays alternate with dioramas (i.e., cases depicting birds in their natural haunts, with scenic painted backgrounds). The interior of the classificatory or systematic cases are spray-painted with a pleasing pale-green, while the alternating dioramas are much deeper and have curved backgrounds painted with appropriate scenes suggestive of the natural habitat of the birds. This method is now being increasingly employed in all the larger museums of the West.

Touch of Realism

All the modernized show cases now installed in the bird gallery (both dioramas and systematic cases) have been provided with concealed internal fluorescent illumination and have large, single sheets of plate glass in front, affording a clear and uninterrupted view of the exhibits. The birds in the systematic cases are fixed directly to the background panel of the case without any shelves, taking care to see that they are well spaced out and not arranged in straight, artificial rows. The shelfless method of exhibition has been highly commended, and is very effective in helping to break the monotony which invariably results when birds are perched upon shelves in straight rows.



Picture taken during the Wild Life procession in the City during Wild Life Week celebrated recently in the City.

So far, four habitat groups of birds in this modern style have been successfully prepared and installed in their appropriate places in these modernized units, namely, storks and egrets, night herons, gulls and terns and the grey jungle fowl, and two more are expected to be completed shortly. They look so impressive in their natural settings created by the painted backgrounds and modelled foregrounds with appropriate vegetation and other accessories that they lend a touch of realism to the entire gallery. In course of time, it is hoped to extend the installation of such modernized built-in cases over the entire gallery of birds, introducing several new habitat groups and completely eliminating the old unsuitable cases with shelves and clumsy wooden partitioned glass fronts. The cost of the two modernized built-in units constructed so far, consisting of eighteen cases, inclusive of six dioramas, is estimated to be about Rs. 26,000.

Ethnology and Industrial Arts

Similar modernized, built-in cases, with concealed internal fluorescent lighting, but with different interior colour schemes have been constructed in the Ethnology and Industrial Arts Galleries. In the Ethnology Gallery, the modernization of the display has been most effectively accomplished by the installation of a series of large, capacious, fairly deep, built-in illuminated cases within a uniform continuous front panelling, and spray painted inside with a warm, creamy-yellow colour which shows up to the best advantage in the white fluorescent illumination that has been used in these cases in combination with daylight fluorescent tubes.

The weapons, ornaments, musical instruments, models of tribal dwellings and other objects pertaining to the material culture of the various tribal folk are attractively

displayed in these cases, supplemented by enlarged photographs of typical men and women of the respective tribes, each case being devoted to a separate tribe. The cost of modernization in these two galleries amounts to more than Rs. 50,000. Eventually, it is proposed to extend the modernization in similar lines to all the galleries in the entire museum, introducing exhaust fans and air circulators, as far as possible, to solve the problem of ventilation.

The Children's Gallery

Another outstanding development effected in the recent past at the Madras Museum partly with the aid of Central financial assistance is the newly organized Children's Gallery. It is a particularly colourful section of the Museum meant specially to cater for the needs of children. It consists of a series of uniformly constructed, modern, illuminated show cases containing a simplified series of exhibits of special appeal to children. An attempt has been made to present the child with a glimpse into the entire panorama of life, though on a greatly abbreviated scale, and, as far as possible, each exhibit has been designed, arranged and captioned so as to tell a connected story.

The series begins with an impressive portrayal of the story of the origin of the solar system and the earth, followed by displays illustrating the mineral wealth of India, miniature models of extinct animals set in their natural haunts in attractive dioramas, the story of early man and his tools, and the variety and sequence of animal forms on this earth. Models illustrating the various organ systems of man and other animals, costumes of India; and the story of the evolution of human transport are also graphically displayed in suitable settings.

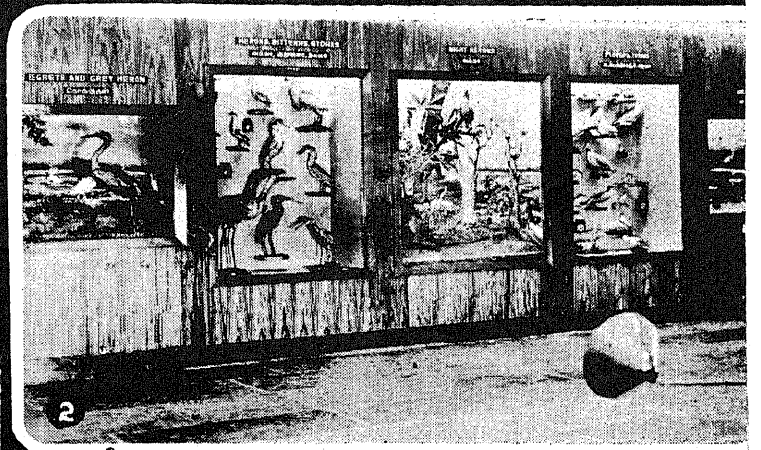
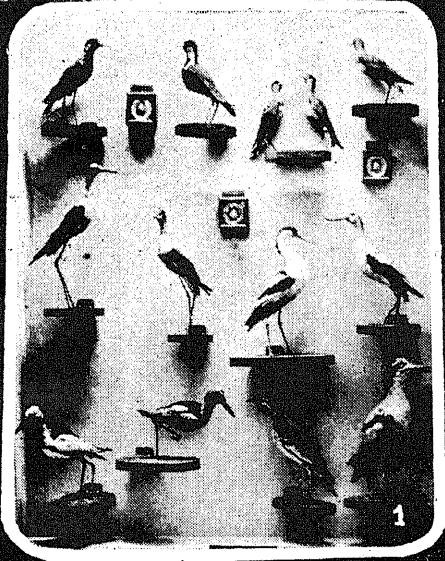
The Museum possesses a well equipped Chemical Laboratory for the conservation of antiquities by various chemical and electrolytic methods, and during the past year, this Laboratory has been expanded, with Central aid, by the addition of a two-storeyed extension to the existing block which was becoming congested and inadequate to meet the requirements of a large and growing institution. The newly built extension of the Laboratory is now being equipped with suitable furniture and fittings and arrangements are being made to equip it with up-to-date apparatus such as metallurgical microscope, analytical balances, spectrophotometer and an X-ray unit for large scale analytical and conservatory work so that the Laboratory could be made a centre not only for the routine preservation and conservation of antiquities, but also for research and experimental work on problems of preservation and restoration of Museum objects. Two new buildings—a Natural History Block, and a modern gallery for the Museum's well known collection of South Indian Bronzes are also under construction to accommodate the ever increasing collections.

The past two years have, therefore, witnessed an unprecedented record of progress and activity in the Museum by way of expansion and modernization. During the years of the third and subsequent plan periods, the schemes that have now been so successfully commenced will be continued and implemented in convenient stages according to a phased programme. When the entire Museum is completely modernized and expanded, it may rank as one of the most dynamic and up-to-date centres of research and popular education in the country.

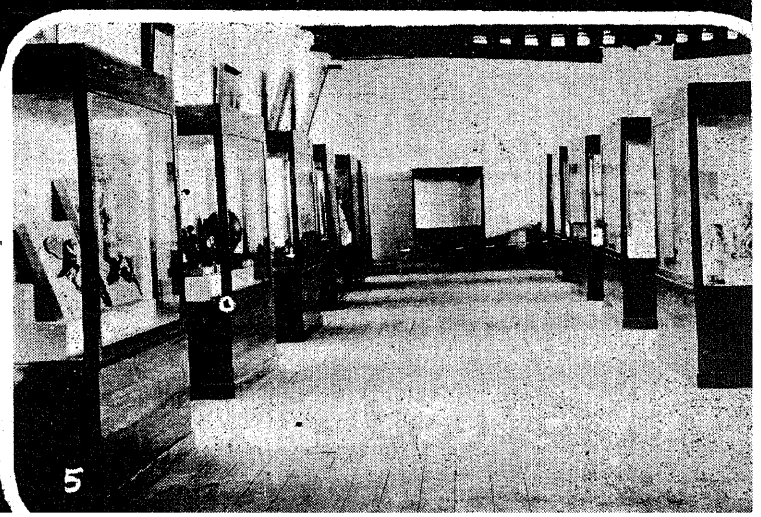
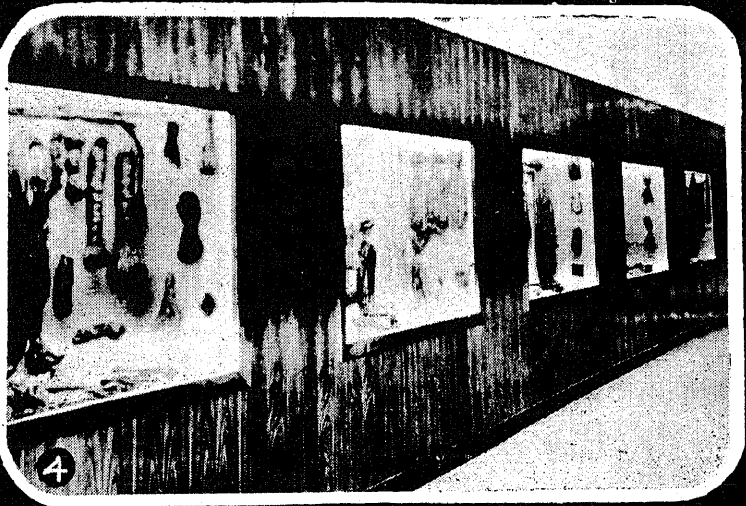
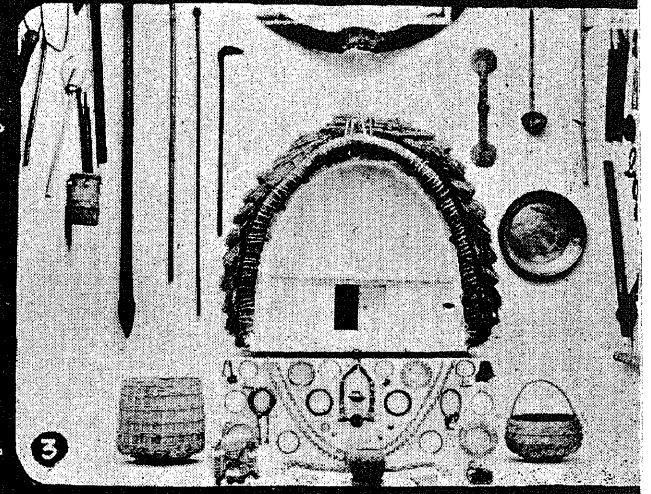
Teachers' Training in Tribal Dialects

The Central Government proposes to start an Institute to train teachers in tribal dialects and prepare textbooks in tribal languages. A sum of Rs. 5 lakhs is likely to be set apart for this purpose in the Third Plan. It is also proposed to open during the Third Plan about 450 Special Tribal Blocks at an estimated cost of Rs. 25 crores to cover almost all the tribal population. These Special Blocks are aimed to spur the ordinary programmes, in the fields of education housing, cottage industry, etc. A Special Study Group has already been constituted to report on the progress made by the "Backward Classes", particularly the Scheduled Tribes, in the field of co-operation in the First and Second Five-Year Plans. Another Study Group has also been set up to study the question of ensuring an adequate share of the benefits under all the development programmes for the weaker sections.

Museum Wears



New Look



1. Single modernized case in the bird gallery.
2. The series of modernized cases in the bird gallery.
3. Modernized display of ethnological exhibits showing Toda huts, ornaments and weapons.
4. General view of the modernized show cases in the Economic Botany gallery.
5. General view of the newly organized Children's Gallery.



Prime Minister's Visit

During his recent visit to the South, the Prime Minister fulfilled a crowded round of engagements. Pictures show: (1) With Chief Minister Kamaraj at the A.I.C.C. Session at Madurai. (2) Madurai State Drive. (6) Madurai Public Meeting. (8) Having a Panoramic view of the Parambikulam Project site. (9) Arrival at Madras. (12) Addressing the Panchayat conference. (3) At the Women's welfare conference. (11) At the Cancer Institute. (10) Marina Public meeting. (4) and (5) Unveiled Chief Minister Kamaraj's statue. (7) Inaugurated ECAFE Seminar on Road Passanger Transport. (13) Farewell at Meenambakkam airport.

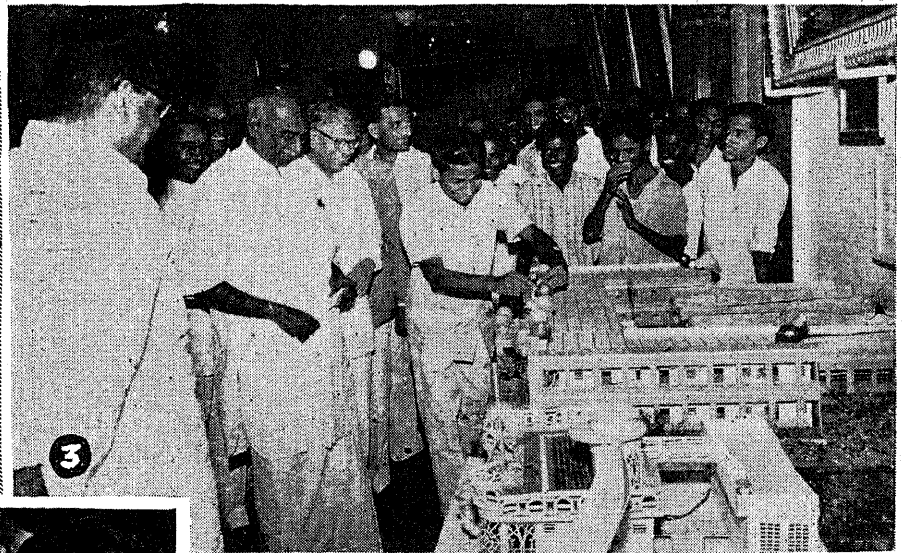
Technical Training Week



1. Technical Training Week was celebrated in the City recently as part of the All India Technical Training Week. Chief Minister Kamaraaj inaugurated the celebrations at the Rajaji Hall.

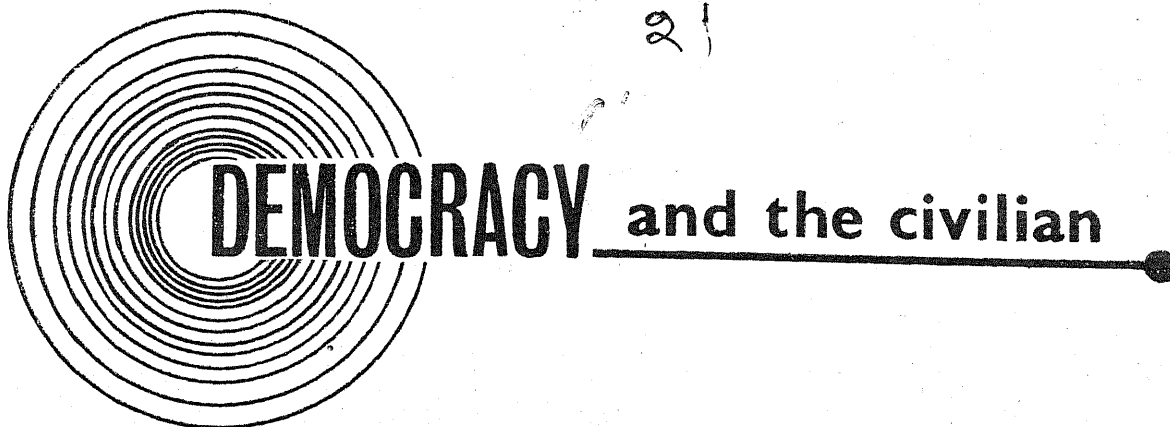


2 and 3 In connection with Technical Training Week, an exhibition was also organised. Pictures show Chief Minister Kamaraaj inspecting sections in the exhibition.



4. The nurse and the teacher, like the technician in the factory, are also technicians, in a broader sense. In the picture the Chief Minister is seen in the section relating to the Medical services.





DEMOCRACY and the civilian

SIR PAUL GORE-BOOTH, *British High Commissioner in India.*

In this article, extracts from the lecture in the Feroze Gandhi Memorial Lecture series recently delivered by the British High Commissioner in India at New Delhi on "M.P.'s and Civil Servants" are given. Sir Paul deals with the relationship between the public servant or official and the elected representatives of the people. An essentially heavy subject has been dealt with in a style that is at once diverting and illuminating.

My great disadvantage in speaking to you is that, since I left the University, nobody has ever elected me to anything. I must hasten to add that this is at least partly because I have never asked anybody to elect me to anything. I do not wish you to think of me as a perpetually unsuccessful candidate. I have, however, as a public servant, had the privilege all the time of working for the Queen in Parliament. Put less technically, this means that the affairs in which I have had any part have always derived from the policy of Government, and therefore in the last resort have necessitated the approval of Parliament. It seemed to me, therefore, that the small contribution I could make to this occasion might be to say something, essentially in British terms, but with a few comparisons from abroad, about the relationship between public servants or officials and Parliament.

There are, of course, all sorts of extremes in this relationship. One recalls them with a certain amusement, because either they do not happen very often, or they are not entirely true. One which concerned me very personally was an occasion in which I sat in the officials box in the House of Commons and listened in agony to the, unfortunately, not extremely successful efforts of a Minister to explain and defend an agreement which a delegation led by me had just negotiated with a foreign Government. The agonising thing was that the Minister nearly got it all right, but failed to have one or two details on the tip of his tongue. There was no method of briefing him from the box in time.

But these agonies are rare. The day-to-day relationship is less dramatic, but even within this less dramatic daily work, there are still some extremes. There is always, in London, a certain amount of mutual banter between Ministers and officials. The extreme of the Ministerial view is something like this. It is alleged by politicians in moments of frustration that, if officials decide that they do not like a Minister, they employ one of two stratagems. Either they give him no work at all and simply say, "Well Sir, there really is nothing which demands Ministerial attention", or alternatively they send every file in the office to the Minister until he asks them to take the things away.

Constructive Relationship

The Civil Servant's supposed standing grievance is of a different order. It consists in the dry proposition that any policy success is due to the genius of the Minister while any failure is directly traceable to the bungling of his officials. So you see that both sides have material with which to tease the other. But these are only the amusing fringes of a serious and constructive relationship.

The relationship is not, of course, the same in all countries. I understand, for instance, that in the Peoples' Republic of China there is something of a reversion, in Communist terms, to the old Chinese tradition of a unified structure of policy and administration, in which all individuals are carefully allotted precise grades, and there is no worthwhile distinction between what, in most democratic countries, would be called the legislature and the executive.

In the U.S. you have an interesting compromise. Since the members of the Cabinet (who, by the way, are not called Ministers) cannot, under the Constitution, be members of the legislature, the American system produces at top levels a band of people who are neither exactly politicians, nor exactly Civil Servants. They normally belong to the party in power (though occasionally non-party people are used; a striking current example is that of Mr. Douglas Dillon, who has been Under-Secretary of State in the State Department under a Republican Administration, and is now Secretary of the Treasury in a Democratic Administration).

In British eyes, and indeed in Indian eyes, this situation contrasts strangely with the strict distinction we draw between Civil Servants and elected politicians occupying public office. It is, however, fair to say that the advantages are not all on one side. The American system permits the Administration to use people of high standing in the community who are not accustomed to, or normally occupied with, party political matters, to contribute directly to the work of governing. They bring freshness into the bureaucracy and expertness into politics. We know, of course, the objections—the risk of discontinuity not only in policy, but also in administration, the risk, much less than it used to be, of merit losing out to the spoils system and the danger that people may be chosen who will prove, in their contacts with individual Congressmen and Congressional Committees, not to possess even the minimum of political sensitiveness or sagacity. But I am only concerned to note that there are more ways than one of conducting relationships between the executive and the legislature.

Absolute loyalty

The essence of a Civil Service is that one cannot half work for the government. One can have mental reservation on individual points. One has the right, and indeed the duty, to make one's objections to and criticisms of policy known and felt until such time as a decision has been taken. But from that moment on, as in the Armed Forces, obedience must be absolute.

There is the more subtle counterpart to this loyalty, which is the loyalty of Ministers to their Civil Servants. It is more subtle, because it is not actively called upon all the time. But demands on it do arise. Discipline must be maintained within a Ministry, but a divided house cannot efficiently serve the country. People often ask why the late Ernest Bevin evoked a quite extraordinary devotion and affection among those who worked for him. He had many qualities which inspired admiration, but the quality which inspired affection was his readiness at a difficult time publicly to defend those who worked for him from attack and innuendo from outside.

The personal relationship between a Minister and his senior advisers is a fascinating one. It is, or can be one of close personal friendship. But this personal friendship, which can become uninhibited, for instance, after retirement, is always tempered in active life by two reservations. The Minister, having almost certainly been a Minister far less time than his senior Civil Servants have been Civil Servants, is bound to have a certain slightly impatient respect for the experience and caution of his advisers. The advisers, while realising that they may know more about the subject than the Minister, will, if they are wise, always remember that the Minister represents the final authority of democracy, namely, Parliament. The Civil Servants may be objectively wise and well-informed; but the Minister is the instrument of finally getting the things done or prevented from being done, because he is part of that done final resort of democracy, the voice of the people.*

Practical Politics

The personal relationship is well described in Lord Morrison's excellent book "Government and Parliament", as follows: "It is my general experience that if the Minister-in-charge knows what he wants and is intelligent in going about it, he can command the understanding co-operation and support of his Civil Servants. The kind of Minister who is most tiring to the officers of a Department is the Minister who does not know his own mind and cannot make it up. If the policy of a Department is hazy, vacillating, and ineffective, it is, after all, the responsibility of the Minister; it is quite as likely to be his fault as that of his Civil Servants."

It is time now to look a little more deeply beneath the surface of the personal relationship I have described. The Minister, as I have already suggested, must be the judge whether a particular policy or piece of legislation is going to be acceptable to Parliament, and therefore whether it is practical politics to undertake it. The Civil Servant's job is to know the history of the question, the pros and cons in the national interest of taking a certain line, and the effect which it is likely to have on the policy or economy of the country, abstracted from purely emotional and party political considerations. However, the two points of view clearly cannot be wholly separated. If the Minister has a series of policies which are most attractive, but impossible to administer, obviously his department will end in a hopeless muddle.

Equally, if the Civil Servant insists upon producing ideas which are admirable in theory and which Parliament or public opinion would not look at for five minutes, he is not doing his job, he is simply enacting a parody of it.

* I am aware that under constitutions which provide for appeal to a Supreme Court in constitutional matters, this is not absolutely accurate, but it is accurately descriptive.

Therefore, the Minister must have some sense of administration, and the Civil Servant some sense of politics.

From the relationship between Civil Servants and Ministers, which is fairly clearly definable, we come to the less definite field of the relationship between Civil Servants and private members. Here we must surely be guided almost entirely by common sense. On the one hand there is clear advantage in personal contact. It is important that politicians should realise that Civil Servants are not all troglodytes or cave-dwellers, and that Civil Servants should understand that politicians are not all charlatans or gas-bags. Personal acquaintance in this sphere in almost all cases heightens mutual respect—respect for the objectivity and knowledge of the good Civil Servant, and respect for the quickness of apprehension and versatility of the good politician.

But clearly there is also a need for caution. The right person to explain policy to politicians is the politician on the particular job—in other words, the Minister, his Deputy Minister, or Parliamentary Under-Secretary. Therefore there is a moment beyond which the private member should refrain from asking questions of the Civil Servant and the Civil Servant if asked, will have to refrain from answering and refer the questioner to the Minister.

Summing up

If I can now gather the threads together, it would be something like this. A proper relationship, official and personal, between the Civil Service and politicians is a vital element in the smooth working of democracy. It needs good sense as well as good fellowship on the part of all concerned. In so far as we are speaking of the relationship between Ministers and officials, it exists, so to speak compulsorily, and therefore the rules of conduct are now fairly clear and well known, though both sides need constantly to refresh their memories about

what these rules are. Between private members and officials the rules are less clear, if only because such relations are optional rather than compulsory and so much depends on individual backgrounds and personal as opposed to official contact. But practice makes as perfect as you can make anything, and what might be called a “comfortable” relationship between the two groups is a sign of efficiency and maturity.

What really matters

There is a story which is probably now forgotten, which deals with the time in the 1920's when the first Labour Government took office in the United Kingdom. Up to that time the Minister in a particular Department had been accustomed to summon his Private Secretary by ringing a bell at a respectable hour, whereupon the Private Secretary came in and stood respectfully to attention, until the Minister looked up from his work and addressed him formally as “Mr. So and So”. The story goes that when the first Labour Government came in, the Minister, used to factory hours, arrived long before his office staff, who sat in some trepidation next door wondering when they would be summoned and how. Eventually the door between the two offices was pushed slightly open, a head appeared round it, and a good factory voice said: “Ere!”

It does not in the least matter whether the relationship is on the basis of “Mr. So and So” or “Ere!”, as long as there is an atmosphere of co-operation, a certain renunciation of egotism, and a feeling by each side that the other, whatever its difficulties, is doing its best to ensure that democracy will work. If this feeling does exist, and mutual respect is enhanced by a reciprocal sense of humour, the relationship can be a very happy one—Perhaps I am saying that despite the haste and strain of modern life, a degree of happiness in Government is necessary to its health and welfare and that of the country—Courtesy: B.I.S.

Fellowships for research in Nuclear Physics

The Department of Atomic Energy has decided to award a few junior and senior research fellowships of the value of Rs. 250 p.m. and Rs. 400 p.m. respectively, for study and research in nuclear physics and cosmic rays at the various universities and research institutions in India. In addition, the fellows are entitled to get a grant not exceeding Rs. 1,000 per year for purchase of special equipment and materials. The Universities will be paid 15 per cent of the basic value of fellowships for meeting expenditure on overheads. The fellowships are tenable for a period of two years and may be extended for a further period of one year, in special cases.

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The strategy of planning

SRI P. S. LOKANATHAN.

In connection with the Asian Economic Planners' Conference recently convened by the ECAFE Organisation at New Delhi and inaugurated by the Prime Minister, this feature article on Planning in India discussing the 'strategy' adopted in the light of the objective of bringing about a socialistic pattern of society is presented. The author not only examines the nature of the strategy of development that has been adopted but also deals with points about which doubts have been expressed.

During the last few years there has been a lot of discussion about the strategy of development that India should adopt in her planning. Within the country as a whole there has emerged a general agreement on the strategy of development implicit in the First, Second and third Five-Year Plans. However, there are still one or two groups of opinion that believe that the strategy of development adopted is inimical to the survival of democracy and also implies an undue burden of the costs of development on the present generation, as opposed to the future generations. In this article we propose to examine the nature of the strategy of development that has been adopted and consider whether the doubts that have been expressed about are correct.

The term strategy refers to the means and the order of priorities in general that should be followed to achieve the desired ends. The First Five-Year Plan contains no clear cut formulation of any strategy of development. (It does contain a long run incomes projection but this does not rest on a specific strategy of development.) The Second Five-Year Plan marks the first attempt to work out such a strategy and to relate it to long-term economic growth. In the Third Five-Year Plan the strategy is expounded in clear cut terms.

The objective

The nature of our strategy for development rests on the ends aimed at. The objective is the establishment of the socialist pattern of society in which the social objectives laid down in the Directive Principles of the Constitution could obtain.

"The State shall in particular direct its policy towards securing, (a) that the citizens, men and women, equally have the right to an adequate means of livelihood, (b) that the ownership and control of the material resources of the community are so distributed as best to subserve the common good, (c) that the operation of the economic system does not result in the concentration of wealth and means of production to the common detriment".

These objectives are to be achieved within a democratic social order in which justice, social economic and political, shall inform all the institutions of the national life".

Our strategy of development takes a long-run perspective of 25-30 years instead of one of five years. Each Five-Year Plan is not a unit in isolation but part of the total process of development in which the priorities and targets of each period should link up with a longer perspective.

Perspective needed

The importance of such a long-run perspective is that policies have to be adopted which from the short point of view appear to be wrong and costly. Alternative policies, which give superior results in the short run should, however, be compared by considering their long run consequences. The objective is not to obtain maximum increase in output over a short period of five years but to obtain the maximum rate of growth of output over a period of say, 30 years. The pattern of investment which would give the maximum short-run increase in output is not the pattern of investment which gives the maximum rate of growth. Many of the critics of the strategy of Indian development confuse

between these two. Their proposals would probably result in a greater increase in production in the immediate future but would ultimately result in a smaller rate of growth of the economy over any extended period of time.

The question arises: Is it proper on the part of our planners to choose a long-run perspective? A look at the Directive Principles of State Policy immediately shows that it is so. The objective therein laid down cannot be fulfilled by any policy that leads to a mere maximisation of income over, say, five years. An accelerating rate of growth over a period of, say, 30 years would appear to be necessary for any significant rise in the standards of living and decline in the degree of unemployment in our country.

Basic Element

It can be shown here from relatively simple models of economic growth that a pattern of investment that concentrates on the development of an investment goods sector in the initial period leads to a more rapid rate of growth of investment (and ultimately of output) over the long run. Thus, given the long-run perspective, it immediately follows that the rate of growth may be maximised by a relatively rapid development of basic and heavy capital goods industries in the initial periods. This is the basic element in the strategy of our Plans, and it appears to be fundamentally sound.

The second plank of our strategy for development is related to the first. The effort to develop basic and heavy industries and machine-building capacity is also justified by the fact that the development of these industries is an essential condition for a self-sustained growth. For industrialisation of the type that is envisaged leads to structural change in the economy and imparts a momentum for development.

Imports Saving

In the transitional period the development of the capital goods sector, however, involves a deficit balance of payment. The machinery, basic raw materials and other

commodities necessary for the building up of capital goods industry cannot be produced at home and have to be imported. India's major export commodities, tea, jute, cotton textiles, do not possess much scope for expansion and therefore there is no way in the immediate future of increasing export earnings fast enough to match the rise in demand for foreign exchange. This leads to an emphasis on the development of imports-saving industries. The essential idea is that capital goods which have got to be imported now should ultimately be produced at home. India should be self-sufficient in her production of capital equipment and basic raw materials.

In the transitional period reliance on external assistance is necessary because of the gap between requirements and earnings. Ultimately, however, the development which takes place as a result of this external assistance would itself remove the need for such assistance.

A Question

The question may be asked whether it might not be better to develop the export sector of the economy first, and then use the increased foreign exchange earnings to finance the development of a capital goods industry. However, it is obvious from the considerations that have been outlined earlier that given the structure of the Indian economy with its very narrow and limited industrial base, the development of the export sector of the economy before the development of a capital goods producing sector would lead to a slower rate of growth in the long run.

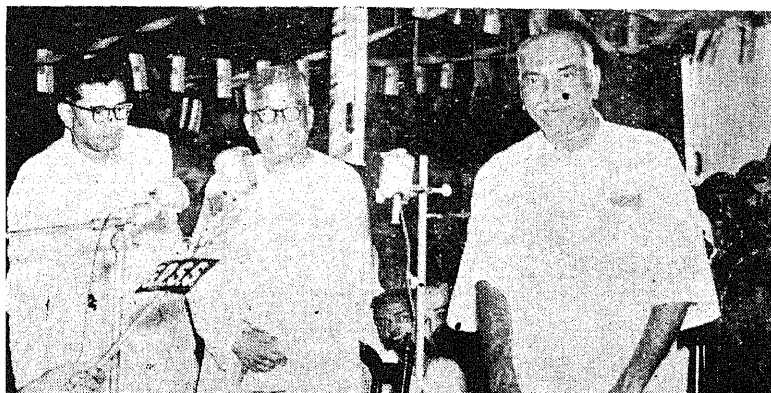
The maximisation of the rate of growth over the next two or three decades required the initial emphasis on basic industry. Ultimately, of course, these basic industries themselves and the industrial development with them would give rise to the growth of new types of exports. The development of the export goods sector, therefore, will succeed and not precede the development of heavy industry.

Reliance on aid

Thus the heavy reliance on foreign assistance that is assumed in our strategy of development appears to be justified in the long view. This is particularly so if we also remember the change in international social outlook during the last two decades. The development of underdeveloped areas has been recognised and accepted to be a major responsibility of the developed nations of the world. The flow of developmental aid during the last ten years has been of such a magnitude that a plan strategy based on foreign assistance does not appear to be misconceived.

For instance, there was a feeling of pessimism when the Draft Outline of the Third Five-Year Plan was published that the magnitude of foreign aid that would be required for the implementation of the Plan was quite unrealistic.

Chief Minister Kamaraj recently opened a bridge at Tirukkoilur.



However, the way in which the developed nations of the world have joined together to ensure the flow of the required quantity of foreign assistance to India for the initial years of the Third Plan is heartening and augurs well for the future.

Of course it is a basic objective of the strategy of development to create conditions in which dependence on external assistance will disappear as early as possible. The development of new lines of exports takes some time. A beginning is being made and a strict policy of export promotion to go with a policy of restraints on domestic consumption has been taken up for the first time in the Third Plan.

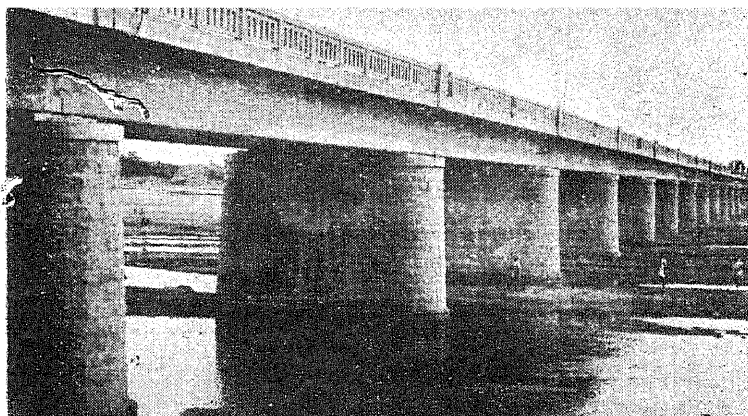
Food Self-sufficiency

A third element in the strategy of Indian economic development is the emphasis on the attainment of self-sufficiency in foodgrains. Development of agriculture is given the top priority. Agricultural production is sought to be increased through various measures. The emphasis on self-sufficiency in agriculture does not flow from any narrow ideas. It is merely a recognition of the fundamental importance of sufficiency of food grains in any attempt to raise the standard of living of the masses. Famine, food shortages and scarcity have to be completely wiped out and the reliance on imports of foreign foodgrains, which have perforce to receive priority over the basic commodities required for the rapid industrial development, has to be eliminated. Once the power to produce enough has been firmly established, reallocations within the agricultural sectors will become easier.

In addition to these purely economic elements in the strategy of development affected in India, there are a number of other factors which have to be considered. As has been indicated, planning has both social and economical objectives. The social objective cannot be obtained simply by maximisation of the rate of growth. Actually it is conceivable that there is some conflict between the achievement of the economic and the social objectives. This conflict is particularly important in the short run. There are elements in our strategy of development which seek to reconcile this conflict.

Public Sector

Since our objective is a socialistic pattern of society, one important aspect of our strategy of development is the development in the public sector. The public sector is developing not only in the interests of rapid growth but also with the idea of preventing undue concentration of resources in private hands. Particularly in industry, the Industrial Policy resolution of 1948 and 1956 chalked out certain guide-lines for the development of the public sector and the Plans show an advance roughly along these lines. It is estimated that the public sector which is responsible



The recently opened bridge at Tirukkoilur.

for about ten per cent of the net output of manufacturing industry in 1961 would be contributing 25 per cent of the net output by 1966. However, in this field the approach of the State has not been dogmatic but pragmatic. The elasticity and adaptability that mark the policy are indicated by the approval to fertiliser plants in the private sector.

Another factor in our strategy of development is the emphasis on regional economic development. From the Second Plan onward the concept of regional balance has played an important part and special attention is being paid to the development of depressed regions. The concept of regional economic growth of course may conflict with maximisation of total growth, but again a balanced and pragmatic approach has been adopted.

Small Scale Industries

Emphasis is also laid on the development of small-scale industries. These industries are encouraged for several reasons, none of them relating to the maximisation of the rate of growth. In the first place they lead to the creation of more employment. Secondly, they are permitted in the interest of decentralisation of economic activity. And thirdly, they are expected to lead to the development of entrepreneurship. It is of course true that these objectives may not have been attained to the fullest extent. However in the strategy of economic development, the development of small-scale industries plays an important part and its significance must be recognised.

One may conclude that on the whole the strategy of development adopted in India is correct and likely to lead to the attainment of the declared objectives. Not only are the basic ideas sound but the absence of dogmatism and rigidity is a desirable feature. It will not be any mistake in strategy that would create difficulties as much as a failure to face the normal and attendant problems of growth emerging from time to time, including those of administration and implementation.

—Courtesy "Yojana"



Sidelight on PANCHAYAT Conference

SRI V. SIVASUBRAMANIAM, *Senior Entomologist, Corporation of Madras.*

Far too often a comfortable situation is just taken for granted and no thought spared for possible labours that might have gone into its preparation. Among the responsibilities for making the arrangements for the Panchayat Conference as thorough and perfect as possible, one particularly heavy assignment fell to the lot of the Madras Corporation. And that was to free the camp and conference site on the banks of the Cooum river and elsewhere completely from insect nuisance of any type—a big assignment indeed. How the Entomological Unit went about this business and succeeded, forms the subject matter of this article.

The Island Grounds and the areas around the Loyola, Pachayappa's, Queen Mary's, Presidency, Engineering and Teachers Colleges were affording a place of quiet and peaceful retreat to the insect world of that area of Madras, when this peace was rudely shaken by the orders that went forth from the Commissioner and Health Officer, Madras Corporation, that all these areas should be subjected to "Operations—Extermination". The orders were "You have ten days; there should be no flies, no mosquitoes, no insects of nuisance". This was in connection with the two-day Panchayat Conference inaugurated by the Prime Minister of India on 8th October 1961.

Measures were immediately commenced and intensive and extensive operations to exterminate the flies, mosquitoes and other insects from the areas concerned taken up. A buffer zone was drawn around each area and this zone as well as the concerned areas were brought under the scope of control. Quite early during the operations, it was noticed that so far as the Island Grounds area was concerned the biggest problem was not the extermination of flies and mosquitoes—which in itself was a large order—but one of exterminating the small insects called "Chironomes".

These insects resemble mosquitoes to the common eye, but are non-biting. While they are harmless they are of utmost nuisance value. They are found to be breeding in millions in the Cooum River. The entire Island Grounds area was full of these insects. As a matter of fact, anybody walking through the grounds even during day time, had these insects crawling all over his body. Put a light on and they clustered around in millions.

The operations

Since the conference was not a conference of Entomologists who could be expected to say "Oh, Chironomes, they are absolutely harmless" and since it was decided as a policy by Government to serve only vegetarian food to the delegates, it was decided to exterminate them and see that they food did not become non-vegetarian on account of these insects getting mixed up with the food.

The "Operations—Extermination" was a four-pronged drive: (1) Against flies; (2) Against mosquitoes; (3) Against Chironomes; and (4) Against other insects.

Flies.—The control and extermination of the house fly which is all pervading, was attempted by eliminating dung

and garbage heaps and other situations which are the breeding places of flies. Wherever such breeding places of flies could not be removed or destroyed, they were sprayed with insecticides to kill all the maggots (stage in the life of flies from which adult flies emerge). Along with this, killing of all the adult flies already present was also taken up.

Mosquitoes.—Mosquitoes are everywhere, and they were there also. By means of extensive and intensive operations, against the larval stages and the adult mosquitoes, complete eradication of these was achieved.

The Biggest Problem

Chironomes.—These insects posed the biggest problem since they were there in millions, and extermination of these had to be achieved in the short time of a week. The larval breeding places of these insects were traced and were treated with larvicides to kill them. The adult chironomes were crafty. They refused to rest in places sprayed with D.D.T. and climbed to the roofs of the thatched sheds; many rested on the ground itself. How to kill them was the problem. To achieve this, night squads were organized and these night squads were given the work of killing these insects which came flocking around the lights. Work was carried up to 12 o'clock midnight and further, and the Corporation staff put forth 18 hours of continuous

work from early morning every day. In spite of these measures, it did not appear as though the numbers were being diminished. The more we killed and we killed them in billions (not millions) the more seemed to be there, and just when we were losing heart, the measures began paying dividends. The number of chironomes came down considerably by 4th October. Coupled with the day and night operations of killing them wherever they rested and flocked, and the anti-larval operations, we seemed to reach a comfortable stage by 5th. On 6th a few were noticed. On 7th the entire ground was free of these insects.

All types of other insects, biting and non-biting, spiders etc., were also completely destroyed in the process of carrying out the measures against flies, mosquitoes and chironomes.

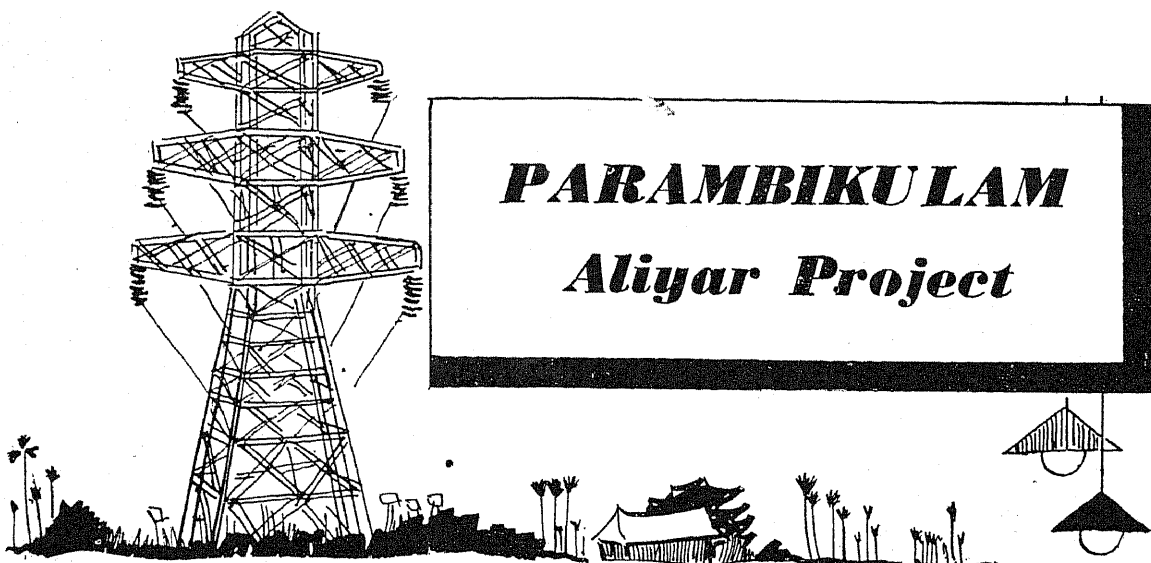
A Bouquet

Heard on the ground at Island Grounds during the Conference: "No flies, no mosquitoes; no other insects of nuisance also, how did they do it?"

A pat on the back is rare, and should not be expected for carrying out one's allotted duties. All the same, it gives courage and pleasure; more so, when the bouquet has been thrown by an unknown person. We grinned happily and felt amply rewarded.

National Scholarships Scheme

The Government of India have approved the National Scholarships Scheme formulated by the Ministry of Education for the award of scholarships to students of outstanding merit. Under the scheme, it is proposed to award annually 1,800 post-matric, 400 post-intermediate and 200 post-graduate level scholarships for five years commencing from 1961-62. Full scholarships will be given to students whose parents or guardians earn less than Rs. 500 per mensem and scholarships at half rates will be given to students whose parents or guardians earn between Rs. 500 to Rs. 1,000 per mensem. Students whose parents have an income of more than Rs. 1,000 per mensem will not be eligible for the scholarships, but they will be eligible to receive certificates. Subject to the application of the means test, the merit scholars in each State would be declared on the basis of the results of the annual examination conducted by the Board of at the University in the year of selection. A National Advisory Committee is to be set up at the Centre to review the working of the scheme and to make such recommendations as may be considered necessary. In due course the National Scholarships Scheme will be integrated with the various scholarship schemes that are already in force. The estimated cost of the proposed scheme is about Rs. 390 lakhs during the Plan period. A scheme of loan scholarships is also to be worked out by the Ministry of Education.



SRI U. ANANDA RAO, *Special Chief Engineer, Parambikulam-Aliyar Project.*

All the water resources of the State have been fully utilised. To meet the needs of the ever increasing population, the State would have to look to the rivers running on the borders of neighbouring States. The Parambikulam-Aliyar Project has been conceived in such a background. Thus stated Sri U. Ananda Rao, Chief Engineer of the Project, in his introduction to the detailed note on the Project read by him during the recent function when Prime Minister Jawaharlal Nehru formally inaugurated the Project.

The Parambikulam-Aliyar Project proposes to utilise the streams in the Anamalais, which traverse through both the States of Madras and Kerala and ultimately fall into the Arabian Sea. These rivers have thus become interstatal and the Project has been so designed as to serve the interests of both the States. The Project, in brief, contemplates integration of seven rivers, five on the Anamalai Hills and two in the plains by constructing reservoirs across them

A huge commemoration column to mark the historic occasion of the inauguration of the Parambikulam-Aliyar Project was unveiled on the occasion by the Prime Minister.



and inter-connecting them through tunnels. These tunnels carry water thus impounded in the reservoir to lower levels and ultimately to the plains of Coimbatore district.

Parambikulam represents the former group of five rivers, Nirar, Sholiar, Parambikulam, Tunakadavu and Thekkadi and the latter two rivers Aliyar and Palar. Thus the Project has taken the name Parambikulam-Aliyar. These rivers lie at various elevations ranging between +3750 and +1050, which incidentally enable us to utilise the drops between the rivers and develop power. The Project envisages irrigation to an extent of 240,000 acres in Coimbatore district and an addition of power to Madras grid to an extent of 180,000 KW. Kerala gets assured supply for the development of power at their Sholiar Power House and for stabilising irrigation of about 20,000 acres in Chittur area. Thus, the Project is both multi-purpose and multi-river valley project.

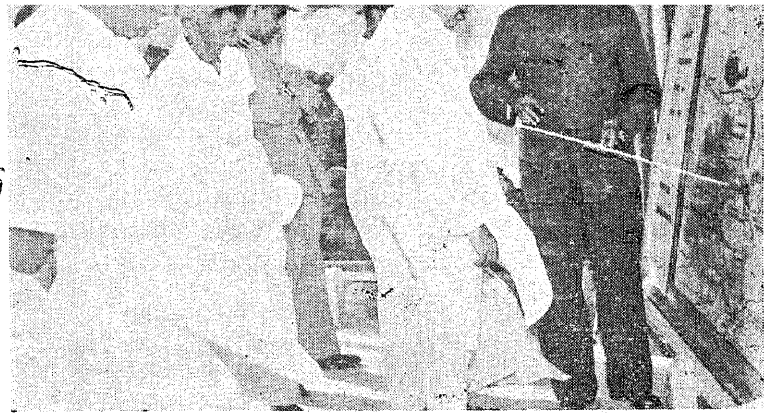
Six Major Dams

The Project provides for six major dams, two minor dams, 12½ miles of inter-connecting tunnels, 30 miles of lined Contour Canal, 120 miles of lined canals and hundreds of

miles of distributaries and field channels, etc. The first in the series is the one across Nirar, from where water will be diverted to Sholiar through a tunnel, 14,500 feet long. Sholiar will have a reservoir with a dam 320 feet high just above Kerala State limits from which a tunnel 10,000 feet long takes off to divert water to the lower Parambikulam Reservoir. The difference in levels of these two reservoirs is about 1,300 feet which will be utilised to develop power to an extent of 70,000 K.W. Sholiar dam diverts water not only to Madras but also to Kerala, whose power requirements at their power house at 380 cusecs are being ensured even during bad years. This is the first gain to Kerala. Parambikulam reservoir will be the largest reservoir in the series, whose gross capacity will be 16,800 M.Cft. with a net capacity of 9,000 M.Cft. The dam will be straight gravity masonry dam 180 feet high and 1,000 feet long at top. A major fault zone is met with at the foundations which is being treated in an appropriate manner. A tunnel 7,500 feet long conveys water from Parambikulam Reservoir to Tunakadavu Reservoir. Tunakadavu Dam will be an earthen dam 70 feet high. This reservoir will be a balancing reservoir and receives regulated supplies from Parambikulam Reservoir at the left flank and Thekkadi River on the right.

Power Development

From this reservoir, water is taken through an approach channel and a tunnel 13,000 feet long to Madras plains. A fall of 300 ft. at the end of the tunnel is being utilised for developing power to an extent of 40,000 K.W. at Sirkarpathi Power House. The tail water of this power house is taken along two canals to feed Aliyar and Thirumurthi reservoirs. One of the canals called Contour Canal is taken along difficult hilly terrain. It skirts the northern slopes of Anamalais, tunnelling through ridges and crossing valleys and streams over aqueducts and super passages. Aliyar and Thirumurthi Dams which are in the plains of Madras are intended to receive and store waters from Sirkarpathi Power House for distribution amongst



The Prime Minister is inspecting a chart as details of the Parambikulam-Aliyar Project are explained to him by the Special Chief Engineer in-charge of the project.

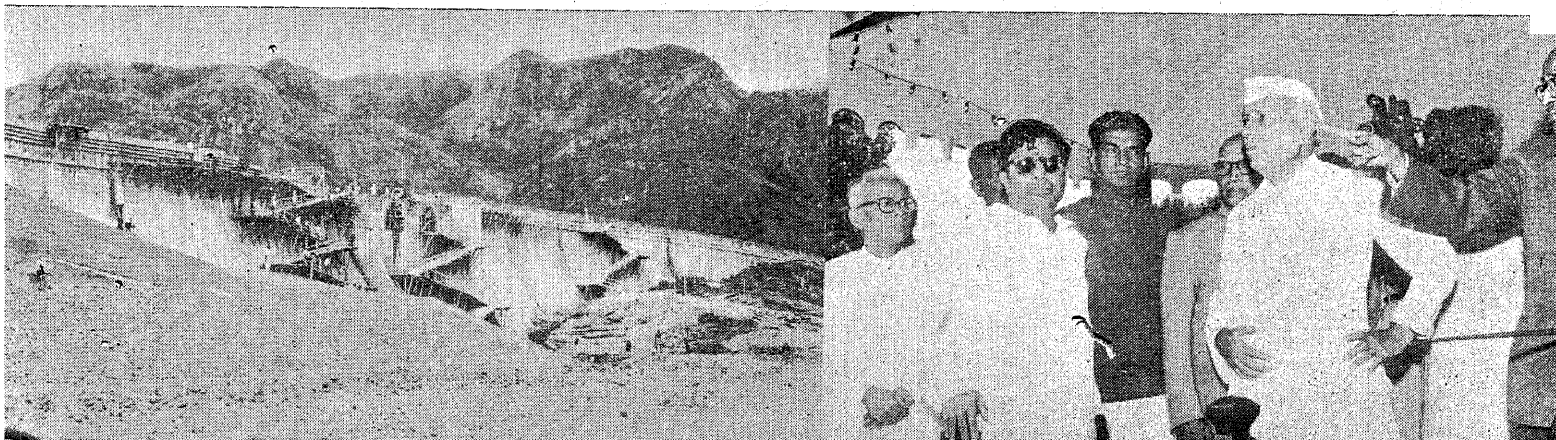
various canals taking off from them for catering to the needs of the ayacut of 240,000 acres mentioned earlier. Pollachi and Vettaikaranpudur Canals take off from Aliyar Reservoir and Parambikulam Main Canal and Udumalpet Canal from Thirumurthi Dam. Aliyar Reservoir will also store its floods and release them as and when required to meet the requirements of the existing irrigation of 20,000 acres in Kerala and 6,400 acres in Madras. Thus, the existing ayacut will get stabilised. This is another gain to Kerala.

One of the features of the Project is the full lining of all the canals and distributaries which will save not only water from seepage but also prevent any water logging. Even the little water that is lost from the fields is picked up at a few reservoirs built across the drainage courses and in turn bring further areas under cultivation. Thus no water is wasted.

Progressive Irrigation

Another feature is the Progressive Irrigation under the Project. To start irrigation it is not necessary to complete the Project in all respects. As soon as the reservoir at the lowest level is completed, some area can be thrown open for cultivation and this area can be progressively increased as and when additional reservoirs are constructed and connected to the first reservoir. Works have been already

Parambikulam-Aliyar Project: Prime Minister Nehru who recently inaugurated the project is seen having a panoramic view of the site of the Aliyar Scheme.



started on Aliyar Reservoir which is expected to go into commission by next year when an area of about 20,000 acres will be thrown open for irrigation. It is hoped to store substantial quantity of water in Parambikulam Reservoir by 1963, when further areas will be added.

So on, when further reservoirs such as Thirumurthi, Sholiar and Nirar are completed, additional areas will be brought under irrigation. With a view to complete all the canals, distributaries and field bothies simultaneously with the construction of dams and tunnels, works on them have been already started and they are in fair progress. This progressive irrigation will give the ryots sufficient time to level and bring their lands under the plough during successive years and not all at once, which may call for heavy capital investment on their behalf. It is believed that this progressive irrigation will ensure full development of irrigation after the completion of the Project in all respects without any time lag.

Prospects

This Project supplies water to much needed and famine stricken taluks of Pollachi, Udumalpet, Dharapuram and

Palladam of Combatore district. It is proposed to supply water in two seasons from June to middle of October and middle of October to end of January. Water will be mostly for dry cultivation, but an extent up to 20 per cent will be permitted wet to cover low lying areas which may become unfit for dry cultivation. It is expected to produce an extra 24,000 tons of paddy, 48,000 tons of dry crops and 7,400 tons of cotton, whose aggregate value will be in the order of 5.09 crores of rupees. The Project expects a realisation of Rs. 1.54 crores from the sale of power, and Rs. 27.24 lakhs from irrigation. The direct return to Government on the capital outlay, taking into consideration both Irrigation and Power Revenue will be in the order of 5.2 per cent.

The several reservoirs will be ideal places for fishing, games, sanctuaries and tourist resorts. There is no doubt that with the completion of this Project, employment opportunities will increase, more food will be grown for consumption and standard of living will go up considerably thus ensuring peace and plenty in the land.

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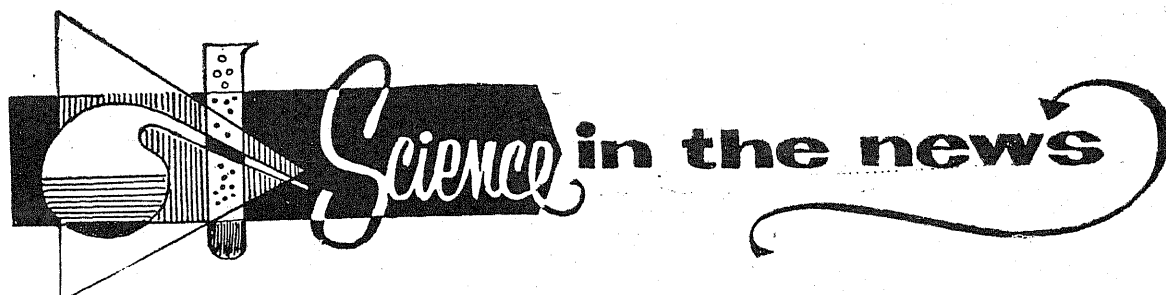
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Science in the news

Numerous scientific developments, new techniques and improved devices are daily emerging in this Age of Science to lighten the burden of the housewife, the common artisan, the small businessman and the big industrialist. This feature notes such developments. Apart from Indian scientific advances, interesting bits from the United Kingdom and the United States are also included.

About 95 per cent of the 100 million tons of fuel (in terms of coal equivalent) consumed in India for domestic purposes is made up of cattle dung, farm wastes, charcoal and firewood. Kerosene, coal and electricity constitute another 2.5 per cent of the total demand. Apart from coal gas, soft coke is recognised as a convenient form of fuel for domestic use in the urban areas.

Domestic soft coke requirements of the urban population in the next 10–15 years are estimated at 35 million tons; the demand in the States of West Bengal and Bihar alone is put at 2.5 million tons and 345,000 tons respectively. At present only 1.8 million tons of soft coke are produced in India by the open-stack burning method.

In this method, the valuable by-products of coal carbonisation are lost and the yields of coke are low. The quality of coke produced is not uniform, and poor combustibility and smokiness are other drawbacks of the product. Also, the open-stack method requires the use of sized coking coal, which is in short supply. There is need, therefore, for developing a more acceptable fuel by other economic methods.

Investigations on low temperature carbonisation of Indian coals have been in progress in the Central Fuel Research Institute and the Regional Research Laboratory, Hyderabad, for some years. Interest in this work stems not merely from inadequate availability of an acceptable domestic fuel but also from a more important angle—the recovery of the valuable by-products of coal carbonisation which are basic to dyes and drugs industry.

Coalsite

A pilot plant at the Regional Research Laboratory, at Hyderabad is producing and marketing soft coke

obtained from inferior non-caking coals and coal slacks under the trade name 'Coalsite', which has found ready consumer acceptance.

Pilot plant studies at Neyveli Lignite Corporation have established conditions for the production of smokeless briquettes from lignite for domestic use. Based on these trials, a 100 tons per hour plant is scheduled to go into operation in 1964.

A continuous process for the production of soft coke has been developed by the Central Fuel Research Institute on the basis of which a low temperature coal carbonisation pilot plant has been set up.

The plant, which recently went into operation, produces smokeless coke and is reported to have many attractive features. The capital outlay required for a unit is not large compared to a conventional low temperature carbonisation plant of comparable capacity. Both caking and non-caking coals can be employed. Since many cities in North India can economically support low temperature carbonisation plants with a processing capacity of 1,000–1,500 tons coal per day, it is considered an attractive proposition to put up such plants, equipped with by-product recovery units. The gas produced would find use in industry and the tar obtained could be pooled and processed in plants centrally situated.

Smoke nuisance in thickly populated urban areas is a matter for serious concern because of the health hazards attendant on it. The introduction of smokeless fuel would make for cleaner and healthier cities and towns.

In the manufacture of ceramic articles plastic clay is one of the essential requirements. Particle size and organic matter present in the clays affect the plastic properties of clays to a great extent. Ball clays and plastic fire clays contain appreciable amount of organic matter and the particle size of ball clays is finer than china clay. Unlike fire clay, ball clay burns white and is preferred in ceramic bodies. Ball clay improves the plastic and working properties and it also helps deflocculation in casting slips and increases the green strength.

The amount of organic matter present in clay varies. The maximum amount is found in ball clays. Considerable amount of work has been done on the nature and amount of organic matter present in ball clays. The organic matter present in ball clays is chiefly lignitic in origin and the main constituents are resins, fats, waxes, humic acid, cellulose and lignin. Cellulose, lignin and humic acid increase green strength.

Ball clays are rare in India and are imported in appreciable quantity from abroad. Studies were undertaken at the Central Glass and Ceramic Research Institute, Calcutta, to investigate if the plastic and working properties of clays could be improved by introducing organic matter like lignite powder, babul bark extract and moss. Ten parts of moss or five parts of babul bark extract (about 3 per cent concentration) to 100 parts of clay in ceramic bodies improved the plastic and working properties. The treatment of clays with moss resulted in an offensive odour and was not liked by many workers. The organic matter treated clays may be tried in place of ball clays which are not commonly found in India and which are mostly imported.

Glass-lined Equipment

Glass-lined vessels and equipments are now of common use in pharmaceutical and chemical processing industries. There is, at present, no production of such vessels in India despite their growing demand as a result of the expansion of the chemical and pharmaceutical industries.

It is estimated that during the course of next five years it will be necessary to import about 600 glass-lined reaction vessels ranging in capacity from 250 to 1,000 gallons at a cost of nearly Rs. 3 crores of foreign exchange. Besides there will be a sizeable expenditure involved in the replacement and relining of the glass-lined vessels now in use. It is desirable, therefore, that a source of supply of glass-lined vessels is developed in India.

It is not possible to trace the origin of the idea of applying glasses to metals. It was late in the 19th century that a German-American by the name of Casper Pfaudler

observed that vacuum accelerated fermentation of beer and tried several types of linings on metal containers. Ultimately, he succeeded in lining the steel with low melting glasses. This may be said to be the beginning of glass-lined vessels.

Originally intended for brewing industry it soon became apparent that glass-lined vessels were equally useful for other industries, especially chemical processing. Their main advantage is resistance to acids and corrosion and ease of cleaning. The use of glass-lined surface now extends to heat exchanges, high pressure pipes and reactors. Large-sized vessels with capacities up to 20,000 gallons are in use.

Work on the glass lining of vessels was taken up at the Sri Ram Institute for Industrial Research, Delhi, in the middle of 1959 and, since then, considerable progress has been made. The typical samples of imported glass-lined equipment have been analysed and fusion tests made on frit compounds.

Electro chemical polishing

A new electro chemical technique for rapid, scratch-free polishing of germanium and silicon wafers for transistors has been recently developed by scientists at the Bell Telephone Laboratories, New Jersey. The method is much faster and more efficient than conventional polishing methods. In addition to the anticipated savings of more than 50 per cent of the polishing cost, there is a distinct improvement in the electrical characteristics of certain types of devices.

One of the major problems in the manufacture of transistors is maintaining an undamaged surface on the semiconductor slice used for the active element of the device. In conventional manufacturing practice, these slices are prepared in four steps. First they are sawed from a cylindrical single crystal, then they are lapped with a coarse abrasive, and polished on optical lapping machines. These three operations produce a smooth, flat surface. In the final step, the slices are etched to remove all the residual mechanical damage to the crystal face caused by abrasive action. When there are deep scratches from lapping and polishing, the etchant cannot remove all the damage, and poor quality transistors result. In contrast, electro chemical polishing does not introduce new damage during processing.

Stainless steel aircraft

No fewer than nine completely new British aircraft are due to make their first flights before the end of 1962. Some of these new aircraft will form the spearhead of the British aircraft industry's export sales drive during the

1960s and early 1970s, while others will provide valuable information for the development of advanced aircraft in a few years' time.

One of these research aircraft, the Bristol T. 138, is scheduled to fly before the end of this year. Made of stainless steel to withstand the effects of thermal heating, it will be the fastest "conventional" aircraft in the world.

The Hunting H. 126 jet-flap research aircraft will be the first to explore the practical possibilities of a device conceived at the National Gas Turbine Establishment some years ago. If the jet-flap fulfils its designers' hopes, it could revolutionize air transport. Aircraft could be made with much smaller wings and higher wing-loadings than hitherto, yet needing relatively short take-off and landing runs. No first flight date has yet been announced.

New Design Switchgear

A British firm has introduced a new design of switchgear equipment to control electrical power supplies at voltages approaching that of lightning. Voltages of this magnitude are becoming necessary for feeding power economically over great distances, such as exist in India, Australia, and North and South America.

The new equipment was introduced to engineers at a conference held by the firm, English Electric, at Stafford, in the Midlands. The delegates saw multi-million-pound test machinery which has been installed to prove the reliability of the switchgear before it goes into service. This machinery also ensures that the gear can deal swiftly with faulty conditions, such as short circuits caused by birds or falling trees, which could impose on the equipment voltage surges of up to 1,500,000 volts, comparable to the full power of a lightning flash. The capacity of the test equipment has recently been doubled to prove very-high-duty switchgear, worth £1,500,000, ordered for Britain's new 400,000 volt Grid System.

In any electricity supply system, writes an industrial correspondent, means have to be provided for switchgear into and out of supply lines and for dealing quickly with faults that could cause severe damage to generating machinery if left uncorrected for a few seconds.

The main problem in switching off electrical power, particularly at the high currents and voltages common to-day, is to put out the electric arc that forms and keeps the current flowing even when the switch is pulled out. In high-voltage, high power switches, the arc is normally blown out by a powerful blast of air. This is done more quickly and reliably than before in the new

design by pressurizing the whole switch assembly with dry air, which ensures that the arc is not only blown out immediately but prevented from re-forming.

The new equipment is compact, makes use of reliable and cheap new high-strength materials, and is built from standard components to lower costs.

Revolutionary Plane

The revolutionary British aircraft, the Hawker P-1127, has successfully used the same engine to give the downward thrust necessary for vertical take-off and the rear thrust needed for forward flight.

Achievement of full transition from vertical rising and hovering to forward flight was announced on September 19, when the British Minister of Aviation, Mr. Peter Thorneycroft, saw speed performances and aerobatics at the Hawker airfield at Dunsfold, Southern England.

The new plane is powered by a Bristol Siddeley Pegasus lift-thrust engine. During the test flying programme, one of the two prototypes, at over 600 miles an hour, flew at a speed more than nine-tenths the speed of sound.

Full transitional flight was accomplished 11 months after the first hovering trials.

Meal by Radar

During the next few months, radar may be able to provide the British public with freshly-cooked meals at all hours of the day or night at a moment's notice.

A firm of electronic engineers has developed a simple radar heater, selling for around £500, which will heat pre-frozen foods in a few seconds. The company plans, with the co-operation of a frozen-food firm, to install the cookers in public houses and cafes which at the moment are unable to serve hot meals.

The food, frozen on plates, will be selected by the customer and placed on a moving belt which carries it through the cooker, emerging ready-to-eat at the other end.

The secret of radar cooker is that it heats the food uniformly throughout. The new idea is an advance on earlier radio-frequency heaters, the use of which was limited by the fact that at the much longer wavelengths used, some kinds of food heated much more quickly than others.

Two firms are already producing frozen main courses which have been on sale to the public for several months.

These are heated in the normal way in an oven for 20 to 25 minutes, but experiments with various types of radar and radiant-heat cookers are going on.

Aid to Art Visitors

Visitors to Manchester's City Art Gallery are now helped in their appreciation of art by recorded descriptions of paintings which they can hear privately through pocket-sized radio receivers. The scheme, which has just begun, is the first in Britain and has cost £7,000.

Fifty breast-pocket transistor sets, equipped with either clip-on or stick-type earphones, are available for hire at a charge of 1sh. each. Twelve-minute talks on paintings are transmitted from tape recordings. These cannot be heard by anyone not using the equipment, and commentaries on paintings in each room are automatically broadcast when a visitor enters.

The system is the result of two years' experimental work by a television company. It is at present available in five of 10 rooms, but is to be extended to all.

Slot Machine for Coal

The latest addition to the range of commodities which can be purchased from a vending machine is pre-packed coal and smokeless fuel.

The first production model of the new slot machine (developed by a Manchester firm) is going to the Coal Board in Scotland, but it is also hoped to install the machines on selected sites in the north-west of England, probably on housing estates.

A spokesman of the Manchester firm said: "We have quite a lot of orders in hand for the new machine. Large blocks of flats will probably get the first machines, but later we hope to see them installed outside supermarkets, garages, and perhaps railway stations."

Oil from Shale

Progress in tapping the trillion barrels of oil locked in vast Colorado shale deposit is reported by a U.S. Government chemist. D. L. Lawlor of the Bureau of Mines said the valuable oilforming portion (kerogen) has been freed from the tight-clinging shale for the first time without drastically altering the kerogen. He said pumping lithium aluminium hydride into the shale resulted in recovering kerogen with only one per cent impurities. The technique, combined with conventional methods, he said, may lead to exploiting the entire shale deposit which contains "several times more than all the natural petroleum produced in this country. . . . plus our present reserve of petroleum."

'Fresh' fish may be several weeks old when bought at the market about five years from now, yet taste the same as the day it was netted thousands of miles away. Dr. Donald A. Silow of the U.N. Food and Agriculture Organisation and Dr. Paul C. Aebersold of the U.S. Atomic Energy Commission feel that radiation is almost certain to become a valuable means of preserving perishable food in coming years. They told the recent meeting of the Pacific Science Congress here they base their prediction on tests which indicate that light doses of radiation can kill the bacteria which spoil food without altering the flavour or making it dangerous to eat.

Sintering of Dolomite

Comprehensive studies on the sintering of dolomite in shaft kiln have been carried out at the National Metallurgical Laboratory, Jamshedpur. Samples for the study were collected from different pits of Hirri and Hardi mines near Rourkela and from Baraduar in Madhya Pradesh.

Dolomite from Hirri mines, in which the distribution of silica is not uniform, does not appear to be suitable for sintering in shaft kiln unless selective mining is resorted to or some suitable means of separating the high silica dolomite is adopted.

The Hardi dolomite yields very good sinter and is free from the heavy dusting observed in the case of Hirri samples, but it has a slight tendency to stick inside the shaft at high temperature in the range of 1620-1720°C or above. The sinter obtained from Baraduar dolomite is free from dusting and sticking and hence appears to be the best of the three samples. However, on firing to 1650°C it does not yield as dense a sinter as the Hardi dolomite and consequently a higher firing temperature is needed to get equally good sinter.

Combustion Boats

A simple and inexpensive method of preparing combustion boats, an essential requirement of metallurgical laboratories for the estimation of carbon in steels, has been developed at the Central Railway Laboratory at Bombay. At present the requirements for these boats are met by imports.

The boats made by this process compare favourably with imported material, possess good strength, withstand sudden temperature reversals and resist corrosion. The process does not require costly equipment and an unskilled worker can make 100 boats per day; the cost of 500 boats being about Rs. 42.00 as compared with Rs. 85.00 for the imported product. Details of the process are published in a recent issue of *Vigyan Pragati*, a Hindi monthly of the Council of Scientific and Industrial Research.