I I T

EIGHTH ANNUAL NUMBER 1966-67

INDIAN INSTITUTE OF TECHNOLOGY

MADRAS

Institute days (Gymkhana)

1966—67

Handed over to
Alumni Association
by
Prof. C. S. Swamy
Chemistry (1961-98)

C S Swamy
13.6.2011

EIGHTH ANNUAL NUMBER

Published by the Publications Committee
Institute Gymkhana

CONTENTS

* * *

Members of the Board of Governors

1. Dr A. L. MUDALIAR, Chairman, Board of Governors, I I T, Madras, 'Kensington' Kilpauk, Madras
2. Prof. B. SENGUPTO, Director, I I T, Madras–36
3. Shri T. R. DOSS, Director of Technical Education, Government of Andra Pradesh, Hyderabad
4. Shri T. MUTHIAN, Director of Technical Education, Government of Madras, Madras
5. Shri B. L. SHANTHAMALLAPPA, Director of Technical Education, Government of Mysore, Bangalore
6. Shri S. RAJARAMAN, Director of Technical Education, Government of Kerala, Trivandrum
7. Shri P. M. REDDY, General Manager, Hindustan Aeronautics Ltd. Bangalore
8. Dr S. DHAWAN, Director, Indian Institute of Science, Bangalore
9. Dr K. S. G. DOSS, Director, Central–Electro Chemical Research Institue, Karaikudi
10. Dr D. S. REDDY, Vice-chancellor, Osmania University, Hyderabad
11. Dr W. KOCH, Professor, Department of Physics, I I T, Madras–36

Shri C. V. SETHUNATHAN, Registrar, *Secretary*

Indian Institute of Technology

MADRAS-36

Eighth Annual Number

Phalguna 1888
March 1967

As the curtain comes down on another year we can look back with pleasure, and a sense of achievement, at the events that have occured.

This year is a milestone in the progress of the Institute as the second Indo-German agreement has been signed. This agreement provides for the services of Professors, Senior Technical Assistants, Foremen, and Visiting Professors from Germany, training for Indian Teachers in Germany, the completion of 20 laboratories and the setting up of 5 new laboratories.

Collaboration on an active basis has started with the universities of Aachen, Berlin and Brunswick.

* * *

On the Sports front our performance was consistant though not outstanding save for our rowing team. Two noteworthy events were the selection of our "senior fours" team to take part in the Asian Regatta in Ceylon, and the Inter-IIT meet at Bombay. The enthusiasm shown for the meet was good but many felt that by removing the cultural aspect from the meet an irrepairable dent had been made on the spirit of the meet.

Though we did win some events we could finish only fifth in the overall Championship.

This year the Outdoor Club of the Institute carved a name for itself in the annals of mountaineering history when they

provided three members of the team led by R. Jaikumar which successfully climbed many peaks including the virin peak Mt. Shilla.

* * *

In the literary field, it was a normal year for the IIT. We won our usual quota of trophies though there were a few upsets both internal and external. The Annual Literary and Cultural Week was a success and went of smoothly. A record number of entries was received for the All India Debate, Quiz and Entertainment competitions.

* * *

This year we saw a new trend in the celebration of our Hostel Days in that most of them combined in pairs. Much can be said for and against this system but as results have shown, it was not successful organisation-wise.

On the Administration side Prof. S. Sampath took over the newly instituted post of Deputy Director.

The Editorial Board take this opportunity to bid farewell to Professors Krishnamurthy, Ramaseshan and Valluri who left the Institute to take up new posts elsewhere, and to welcome in our midst Professors T. C. Seshadri, H. E. D. Zurn and B. S. Murthy and Messers F. G. Rohde, W. Rohrbach and H. D. Henkel. We wish them success in their new ventures.

* * *

This Annual Number as usual has been a race against time and if it had not been for the concentrated efforts of Sri Ramabhadran of Sremati Printers and Sri V. John of Klein and Peyerl it would not have been brought out in time. The Editorial Board wishes to thank them for their unstinted help.

There are others who deserve our thanks, many who spent their time and energies on this venture. Our sincerest thanks go out to them.

* * *

SECOND INDO-GERMAN AGREEMENT

Mr G. K. Chandiramani, Additional Secretary, Ministry of Education and the West German Ambassador to India H. E. Baron von Mirbach signing the Agreement on the 7th June, 1966 at New Delhi

I I T CONTRIBUTES TO NATIONAL DEFENCE FUND

Prof. B. Sengupto, Director, I I T, Madras, presenting a cheque for Rs. 10,236·05 towards National Defence Fund to Shri M. C. Chagla when the Honb'le Union Minister for Education visited the Institute on 17th June, 1966

Indian Institute of Technology, Madras

THIRD CONVOCATION

30th, July 1966

Address by Sir C. V. RAMAN

NATURE THE GREAT MENTOR

I have been at many Convocations but I have never seen an assembly that impressed me so much as the one that I am privileged to address now. I have been on a joy-ride through the Campus and was thrilled to see the wonderful, old banyan trees, the wild grass, the thorns here and there and the occasional buildings. Study, lectures, books and examinations constitute a small part in a man's or woman's education. The greatest teacher of all is Nature herself, the supreme artist who creates forms of beauty, loveliness and colour that have been unsurpassed since the beginning of time. She has been the inspiration not only of artists, painters and sculptors but men of Science as well. She should inspire the new graduates. Technology and Industry are usually associated with dust and smoke, squalor and ugliness; this ought not to be so. Life is not merely a matter of getting food, clothes and shelter. Its finer aspects are to be found in music, flowers, colour and beauty and the aesthetic sense and satisfaction that are derived from an enjoyment of all these. I was privileged to be shaken by the hand by your prize-winners, hefty young fellows with plenty of grip in them. This is as it should be, because physical strength and energy form the basis of all engineering activity.

THE GERMAN GIFT

It is right and proper that on this occasion I should speak of that great country, Germany. To me she is all the master-minds that have made her great-men like Herman von Helmholtz and Albert Einstein who have written their names in an inperishable way in the records of Science. Ten years ago, I attended a Conference at Lindau—a lovely little place on the edge of Lake Constance. This meeting was hosted by Count Bernadotte, and the minimum qualification for the invitee was that he should have won a Nobel Prize. I went on to the ancient University of Freiburg in Breisgau and then to Bonn. Here I was enormously impressed by the Museum of Mlneralogy and I marvelld at the way that a country so much davastated by the war could get together so swiftly such an amazing collection of rare and beautiful specimens. By a coincidence, our Prime Minister, the late Shri Jawaharlal Nehru, was also in Bonn at that time. We had lunch with the President of the German Republic. It was on this occasion that the German Government promised their gift of this Institute to India. And in a short span of ten years, a veritable jungle has been translated

into a place of learning with its nine buildings and equipment and bright, young people from all over India, and here such a magnificent assembly has been presented to me for my delecatation.

THE IMPACT OE THE ALMA MATER

This joyous and colourful scene should be a unique occasion in your lives. Fully sixty years ago, I came out of College in this very City. I find, to my astonishment, that my experiences of those four years have left an indelible impression on my mind; and what is even more remarkable is that all that I have done in the last sixty years was determined for me with mathematical precision by what I did in those four years. I want to stress this because in these three, four or five years that you have been here, you have been subject to the influenee of your teachers and also, I hope, of the old banyan trees around, which I do not regard as unimportant.

THE GLORIOUS TIME OF YOUTH

On the foundation of what you have learnt here, you must build your future. The most wonderful possession that we all have is the human body with the marvellous, absolutely incredible power of the human faculties. The habit of independent thinking must be applied to all the problems of life. It is the achievement of doing something of permanent value that will bring real joy. Only by realizing this, when you are young and energetic, when your blood is coursing strongly through your veins, that you will meet with success and advance the glory of India. Age is usually credited with wisdom. With all deference to the people around, I beg to question that proposition. As you grow old, you will find it difficult to summon up the enthusiasm and the fierce desire for achievement. It is for this reason that I regard youth as the most glorious time of all. Practically all the great discoveries of Science have been made by young people. It is not the experience or the wisdom of old age but the freshness of outlook and the indomitable desire to achieve, which are characteristic of youth, that make discoveries possible.

FEARLESS AND INDEPENDENT THINKING - NEED OF THE HOUR

There is a deep and ineradicable defect in us that is due to the inferiority complex that makes us think that we dare not question what comes to us from abroad. Whatever is said in a text-book must be right and we bow in fear and trembling because a great man has said it. This produces mental inhibition. I do not for a moment suggest that you should all become arrogant and contemptuous of all the great men of the past. But we should remember that no one is infallible, not even Herman von Helmholtz or Einstein. Time's new knowledge may upset what was done in the past, Fearless independence of thinking is our essential need today for our progress.

We are ruled by a Consortium of all the nations of the World except ourselves. It is bad to borrow money but much worse to borrow knowledge and to forget to think for ourselves. I consider that it is far better to work with our own imperfect, inadequate equipment than to shine in borrowed feathers. And it is my firm conviction that no country can become scientifically and industrially great without a foundation of real knowledge.

SCIENCE A PRELUDE TO TECHNOLOGICAL PROGRESS

Science comes first and Technology follows in its wake. Germany is great because in the nineteenth century she had a galaxy of men of Science, humble University Professors who sought knowledge for its own sake and who made their students seek knowledge. These were the springs from which knowledge gushed forth and fertilized all the Industries and raised the country's prosperity. It is only when we build up our own powerful schools of thinking in various fields, electro-technology, chemistry, metallurgy and the like, that we shall have a solid basis for teaching the technologists what they should do.

The finest and most sophisticated instruments are today to be found not in technological establishments but in the research labaratories where men try to explore the hidden secrets and discover the unknown. Not only is Science the fountain-head of technical knowledge, but in many instances it has set the problems which the technologist had to solve. The astronomers, for instance, have demanded instruments of the highest precision with which the heavenly bodies could be tracked. This led to the development of precision mechanics. The imposing two-hundred inch telescope at Mount Palomar, weighing hundreds of tons, moves with the precision of a Swiss watch. The demands of Botanists and Zoologists who wished to examine subtle structures paved the way for striking progress in the Optical Industry. It was a scientist who thought of the Electron Microscope, and it is in widespread use today.

THE NATURE OF SCIENTIFIC ADVANCES

What has made Science develop in the explosive, spectacular fashion that we have seen in the last sixty years? There are three distinctive causes. The first is that at the end of the nineteenth century and at the beginning of the present century came a succession of epoch-making discoveries in fundamental knowledge, the discovery by Planck of the quantum of action, the enunciation by Einstein of the corpuscular nature of light and the use of this principle by Neils Bohr and others to analyse the structure of the atom and to explore the chemical molecule. The second is the fact that Science, as we all know and recognise, has definite applications to human welfare, as evidenced by examples in agriculture, knowledge of heredity etc. An important advance is the invention of plastics, stemming from the work of a scientist who was simply interested in studying the structure of big molecules, an instance of a pure scientific endeavour leading to the

establishment of an industry on a big scale. In the field of medicine, from the era of the witch-doctor to the age of modern medicine, there has been a spectacular leap. There is a third and somewhat sinister way in which Science has developed in the last sixty years–its application to warfare. It is true to say that a lot of modern Science has come directly out of the needs of War. A good deal of our knowledge of the mechanism of the brain and of the body has come from a study of dead and dying men in the threatres of armed conflict. During the World War I, scientists like Lord Rutherford and Sir William Bragg worked on subsonic devices to combat the submarine menace, and these devices are widely used today. In the exigencies of World War II, aviation reached new proportions. This Second World also brought the atom bomb into existence. It came as the consequence of the actual discovery of fission in the laboratory by Joliot Curie. I was privileged to see this experiment in Paris. The fear that the opponent may use the atom bomb has led to its wide development. Then came the hydrogen bomb and with it an atmoshpere of fear, mutual hatred and recrimination. The fear complex has produced a psychological and pathological state of affairs in the human mind. In many countries, Science has become the hand-maiden of the War Machine. Rockets are sent up and men walk in space. It is with feelings of disgust and loathing that I witness this colossal display of lunacy on the part of mankind. It is a pretence to say that exploits like these have any scientific value. This is all nothing but militarism thinly disguised. I heard you pledge that you will not use your knowledge for unworthy ends. If you were in one of these countries, you would have to use it for unworthy ends, or you would lose your job. There are sensitive consciences in those countries which revolt from this sort of misuse of science. Yet the prostitution of Science goes on. As a man of Science, my heart is wrung by this tragedy.

THE LESSON OF SELF-RELIANCE

We in this country have no future unless we learn to rely on ourselves for all that we need. It is far better to go back to the Gandhian age and ride an ox-cart and throw away Radio, Television and all the rest of it than to cling, as we now do, to the coat-tails of European Civilization. If we cannot by our own efforts make the things that we require, let us do without them. Why should we buy our Cars from abroad? Or, even import parts? I have tried to find out if there is any place in India where the most important component part of all lamps and Radio Valves–the metallic filament–is made. This is the starting point of the whole industry and we do not make this basic ingredient. Let us wait till we make it before we buy a single electronic valve from outside. Then we would learn how to make it. We will learn the lesson of self-reliance and until we learn it there is no future for us.

* * *

THE THIRD CONVOCATION

30th July 1966

Sir C. V. RAMAN

Nobel Laureate

delivered the Convocation Address

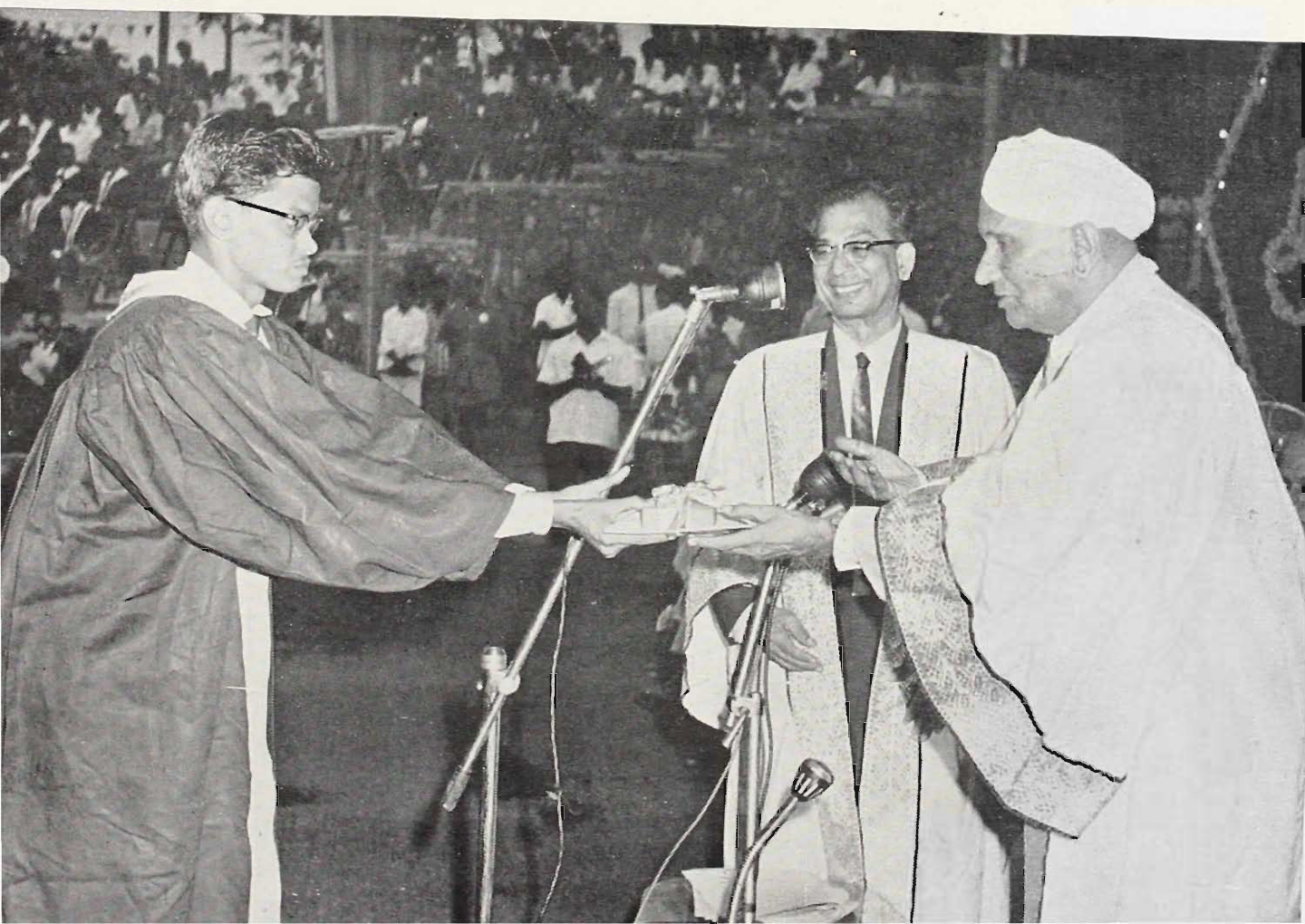
DR A. L. Mudaliar, Chairman, Board of Governors,
receives SIR C. V. Raman

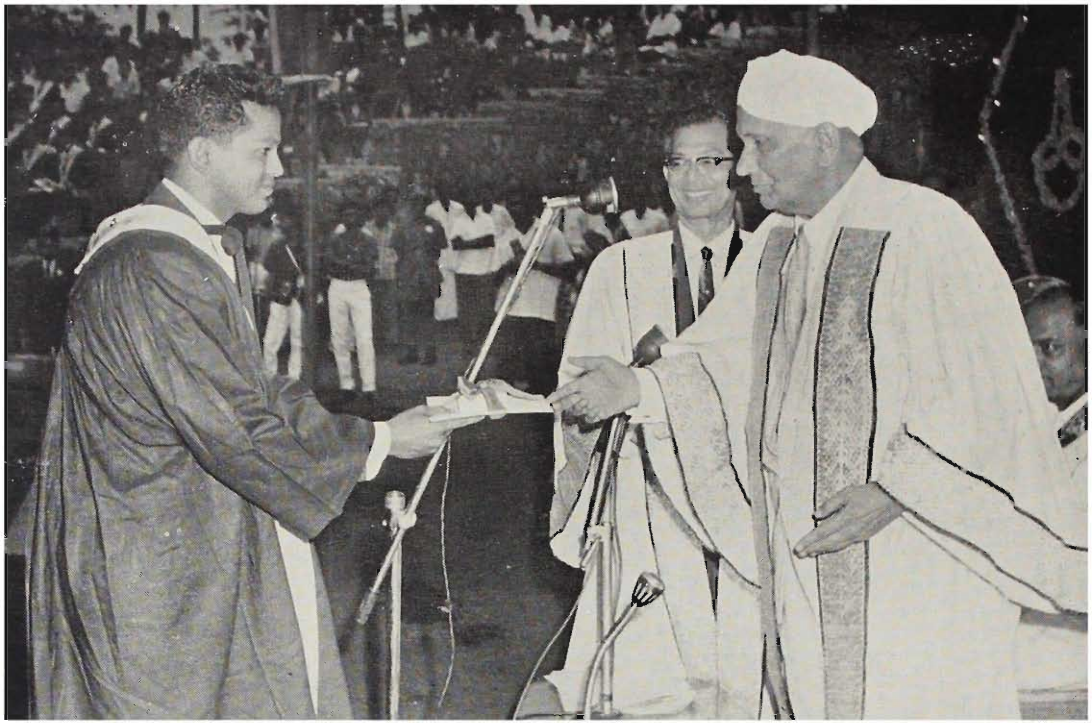
Right Top

SIR C. V. Raman delivering the Convocation Address

Right bottom

Sri Srinivasan receiving the President's Medal for standing first among all branches in the 5 year course





Sri Lionel Paul receiving the Governor's Medal for the best all rounder

The Chairman escorts SIR C. V. Raman

Exemption From N.C.C. Camp

by Vidya Prakash Agarwal

ONE calm morning in December, about ten boys are found sitting outside the Registrar's office. They have divided themselves into two groups and are talking in whispers. Their voices are just inaudible even to a person sitting 5 ft from them. Are they planning to do something rowdy? No! All of them have come to seek exemption from the forthcoming N.C.C. Camp in the winter. The clock strikes ten times and a Mr. X rising, says, "Good Heavens! What the hell is wrong with the Registrar? Is he gonna come or....."

At that moment, the Registrar strides in coolly and the unfinished sentence hangs in the air as if cut by a pair of scissors. Mr X stares at him with a gaping mouth.

The Registrar begins," I know all of you are here to seek exemption from the N.C.C. Camp. To-day I am not giving anybody any exemption. Whatever the case may be. Go and attend the camp. Why are you afraid of the camp? Get out everyone of you! Beat the hell out of this place!" After this fiery piece of oration, he goes inside the office.

The first year chaps, 6 in number, terrified by the harshness of the Registrar, walk out with sullen faces. But the second year guys who are as obstinate as striplings clothed in khaki shorts, stay behind.

After a few moments, Mr. X ventures to go in. He tiptoes upto the door waits for a second, turns the handle, pushes the door and gets in. As a result of this, the conversation which ensures between the Registrar and Mr. X is:

Mr. X: "Good morning Sir!."

Registrar (harshly): "Good morning. Did you not hear me outside when I asked everyone of you to get away?"

Mr. X "Y-Yes sir! But——!"

Registrar: "No buts here! Get out!"

Mr. X: "But sir, Please. This is urgent – top priority – case – sob – My mother - sob – sob – expired last night sob – sob. This Telegram says so– sob – sob." By the end of the sentence he has broken into a weeping fit.

Registrar (rather calmly): "Do not weep here like a sissy! Go, wash your face and then I shall listen to you".

Mr. X: "Right Sir!"

Hardly one minute has passed, he is back.

Registrar: "Ennada! come back so soon, etc!"

Mr. X: Yes Sir!

Registrar (looking directly into the eyes of Mr. X) Did you attend last year's winter N. C. C. Camp?"

Mr. X: (Rather taken aback): N - no sir!",

Registrar: "What? What did you say? 'no sir', etc!"

Mr. X (Hurriedly): "Sir, I could not attend the winter camp last year because then my mother was taken seriously ill".

Registrar "What happened to her?"

Mr. X: "Sir the doctor diagonosed her to be a patient of asthma."

Registrar: ( ), "I see! so your mummy gets ill only in December, etc! and this time she has left you!"

Mr. X: "No sir".

Registrar (sharply): "What do you mean by 'no sir'?"

This time she must have had an acute attack of asthma—probably blood vomiting too."

Registrar: O. K. You come after one hour. I have to attend a meeting.

Mr. X: "But Sir! My train leaves at 12 O'clock noon."

Registrar: "Going to Delhi, etc! Well it is already 10 - 30. I don't think you can catch your train. You can very well stay behind and attend the camp".

Mr. X: "Sir, I can definitely catch it. I shall ask my friend to drop me at the Central on his mobike.

Registrar: "O. K.! You win! sign this paper here before you go,"

Mr. X signs the paper and hands it over to to the Regislrar.

Mr. X: Thank you very much sir!

Registrar: "Now, of course you will be happy as you can enjoy your winter."

Mr. X walks out with the Registrar behind him. Outside his friends are eager to know of Mr. X's adventure. They are promptly put to silence by the Registrar.

Register : Every one of you who wants exemption, can come to my room at 2 o' clock with some good reason. All those who are unable to produce satisfactory and valid reasons will be required to attend both winter and summer camps "

Meanwhile Mr. X has gone outside with a gleaming and triumphant face He is gloating over his success, while the others after hearing the Registrar'. stringent remarks, leave the place without any ray of hope.

* * * * *

One joke :

Wife: Look at that couple living in the opposite Bungalow. The husband always kisses his wife before going to office. How I wish you did that !

Husband: Yes ! You are right. I wish to do the same but will she allow me ?

The Wing

by VGP

LET me at the outset point out, dear reader, that the following epistle does not purport to be an erudite dissertation worthy of a 'cranky' skull-and-bone professor of biology who interlaces his cortical complex with the minute intricacies of the feathered vertebrate's symbolic entity – the wing. On the contrary this is a mere attempt to make known to the reading public, certain illustrious **Homo Sapiens** who, otherwise will fade away from your midst without leaving a trace. The title, mark you, is an indication that the said **Homo Sapiens**, occupy the so called 'wing' of the hostels in this campus.

Let me start with the one who even in a multitudinous and disparate throng, impinges with a rare clarity on your retina, wiping away all the other images, the reason being that he is endowed with a physique of such proportions that will make even the best breed of Kathiawar bulls blush. After that first visual introduction you would normally expect him to be the owner of vocal districts that can outstrip any in their acoustic abilities, but nay, he greets you with a reedy, piping "'Ow do you do?" that does poor justice to his obesity.

He hails from the arid deserts of Rajasthan to which place he owes allegiance so extreme, that it smacks of unsavoury parochialism. He can at will, launch a tedious monologue on the architectural splendour of its cities. Next to himself he loves medicine; the devotion of the application of this science has won him the title of 'Doc'. Name your trouble, and he will name the remedy for it – that's him. But it goes without saying that one should not follow up the remedies he suggests with the same nonchalant alacrity with which he suggests it.

His one real weakness is his mercurial temper. You press him hard and he will retaliate with agility which is a little surprising considering the surface area he enjoys. For instance, if you are involved in the innocent act of removing a speck from his sparsely populated crown, he is very likely to miscalculate it as a preplanned attack on his person and reward you with a cowardly right to your unguarded solar plexus. Such foibles apart, he is a capital fellow, full of zest for life, and ready to take the ups and downs of life here. Looking at him one can easily explain the problem of food scarcity facing this sub-

continent. He is capable of doing full justice to table set for six, the absence of the other five, by the way, being unnoticed by him. He has gained a fair amount of notoriety on the tennis courts and the pandits of the game are sure the game will flourish even though our worthy friend has retired from active participation. He exhibits a keen interest for Western music and he practices hard on a harmonica, to the detriment of my mental peace. He has, more than once ventured into the unknown depths of vocal music, in the close confines of his room, but the Muse in her wayward neglect of such temporal efforts has refused to smile upon him. As this is being scribbled, I can hear snatches from the musical: "SOM", emanating from his vocal districts, though the credit of deciphering it as such goes to me rather than to him. Last but not the least, there is one little thing very dear to his heart and that is his "brand" as a Texan would say, that gives his lineage from Adam downwards viz. "Andleigh" which he claims with a rare twinkle is most un-Indian like.

Well, that's all folks. The next "Winger" will come in the next issue.

* * *

What is This Supreme Consciousness

by V. Ranganathan

THERE are two ways of accumulating knowledge in this world. One is objective knowledge, and the other, subjective experience. People in West set about in quest of the former, whereas the sages in the East introverted their mind and penetrated into the elusive subject of self analysis.

It we compare our body to a bulb, our intellect which discriminates the right from the wrong, to the anode and cathode, and our mind which bridges the gap, to the filament, there is no light, without that vital aspect, "electricity." When the supreme consciousness functions through these sense organs, body, mind and intellect, there is a brilliant expression of life. Just as the electricity has neither the quality of the blub, nor that of the filament, but without which there is no lustre, to the blub, similarly the ultimate truth is different from the body, mind and intellect without which there is no vitality of life.

When you go to a cinema, you concentrate on the screen and become one with the happenings on the screen. You perceive different colours, you are carried away by the ever changing flux of happenings and the drifting panorama on the screen. But do you for one moment look back and think of the cause of all those happenings? It is because, the film moves at a stipulated rate, and more than that, it is essentially because of the powerful, lustrous arc light behind the film which is responsible for all the happenings on the screen. Mind you the arc light itself does not have either the colour or the fluctuating panorama that the screen reflects. But imagine seeing the film without the arc lights!

If we shift the concentration from the terrestrial to the transcendental, and introvert our attention, then we see glimpses of this blissful state of permanent peace, unaffected by the mounting passions, ecstacies of joys and flaring frenzy.

The absolute reality is beyond words. Beyond perception and comprehension.

"We do not know it; or rather we cannot put it across before you" It is both beyond the known and the unknown.

Anything known, is the realm of gross body and subtle body. Unknown is the causal body. Deep sleep stands for the unknown. Truth is above all

these levels of consciousness. We know that this "I" of which we talk is entirely different when we are dreaming. It is not the same self when one is awake. When 'I' the waker, is not the same 'I' the dreamer, which is different from the 'I' the deep sleeper, how then can this 'I' be the waker or the dreamer or the deep sleeper.

But still, this pure consciousness must be approached only through what we know. On the fourth day from new moon, when the beauteous evening slips away into the night; it is very difficult to see the moon. So, a man showed a tree and in between the leaves identified the moon. Just as the moon is entirely different from either the tree or its surroundings, but is still approached with their help, so can the supreme consciousness be brought to proximity by certain techniques.

When you go on a newmoon night and stand before the waves, you do not see anything. The next morning when you go, you see the waves plus the light. You do not see the waves alone or the light alone. What you see, minus waves, is the light. Similarly, what you know, minus thoughts, is the consciousness.

As long as Sita was with Rama, the consciousness, she was happy, whether she was in Ayodhya or in the jungle. But no sooner did she fall a prey to the desire of the deer, than she was under the susarainty of the ten. headed monster, You and I, when we are thus staying away from the devine spark within us, and fall a prey to the temptations of the world, that golden deer, we become a prey to the Ravana within us, the five senses of perception and the five senses of action.

Every time you think of the objective world, you become part and parcel of it. Change your focus and become the very consciousness. Then you are different from the ordinary life that you lead. Change the concentration to the self. You become the self.

Jesus Christ said,

"He that findeth his life loseth it.

He who loselh it for my sake shall find it."

He who has concentrated upon the world of objects in this life, loses the consciousness. He who loses the world of objects for the sake of consciousnes, finds it.

* * *

The Trophy Baggers or Who made all the Noise?

by Duke

It all started when three young men at IIT, whom hardly anyone knew, got together and decided to form a musical group. These were: Ashley Solomon, who on returning home from the U. K., had, unknown to the customs officials, ingeniously smuggled in an obsolete clarinet, long since discarded by his ancestors; "Jay" Jayaraman, who had more use for the bucket he had borrowed, than merely washing clothes; and, Alfie D' Souza, who had spent twelve long years in oblivion, endeavouring to make music with a squeaky violin. It was at this crucial stage that "Ebbie" Sargunar's Hofner guitar formed the group, bringing along with it accessories, such as Ebbie. The group was named "Beat-X"

Since those good old days, conditions have changed considerably. Alfie says he now plays some fine chord progressions on the piano, happily oblivious of the fact that he is seldom heard. Ashley has graduated to an oversized tenor saxophone. At a recent Inter-Hostel competition, he was asked to bring it out merely to impress the judges. Jayaram has a real, live drum set to himself. After a lot of persuasion, Mohit Goyal joined the group as Rhythm Gintarist, which accounts for the fact that he is seen rather frequently at the knick-knack. Ebbic continues to work on his Guitar Amplifiers, which, he swears will work soon. Desmond Dunne, who claims to be a tenor-sax. Virtuoso, is their unofficial manager, namely, he gets blamed for everything that goes wrong.

The Beat – X have made quite a name for themselves in the city, as they have fared well in many local talent competitions. At last year's "Musical knockout", they won the Judges' Trophy, whilst they stood second in the popular poll. This year, their rivals, the Mustang, turned the tables, and there was a grand swap of prizes. However, the Beat – X registered another victory at the All-India Beat Meet, recently held at the Music Academy.

The Beat – X have always wanted to be a group that plays a different kind of music, and in this way they are unique. They have ventured out into Jazz, and have attempted pieces like "Take five" and "Desafinado", which have never been tried by other local groups. This has cost them a lot of popular votes. A

recent survey has revealed that they have a few other fans besides the members of their families. However, at the big shows in town, they have played a lot of pop music, with, nevertheless, their own characterisitc touch, that lays a stress on improvisation. This had redcemed them in the popularity polls, as indicated at the last "Musical Knockout".

The boys are very sensitive about their music. They always work out their own arrangements of the tunes they play, and strive hard to improve on them. Ashley is very critical about the tone he gets on his sax. He once broke down when the reproduction on a maladjusted taperecorder sounded like Alfie's violin. Jayaram has spent many hours in class trying to evolve his own beat. His 17/32 beat caused much consternation in Tapti circles. Alfie claims to be influenced mainly by Dave Brubeck, possibly because that is the only big name in Jazz that he has heard. Mohit once spent hours working out the chords of " Desafinado ", only to discover that he had learnt them in the wrong Key! Poor Ebbie still does not know why the Shadows have never been featured on the V.O.A. Jazz Hour. He is, however, very devoted, and puts in a lot of effort, when working out his Bass Solos.

Always called on to play at very short notice, the boys find very little time to practise, what with the hectic seven - hour routine in class. Besides, the inadequacy of their sound equipment and space for practice has proved to be a constant problem. However, thanks to the unceasing efforts of Prof. Varghese and Dr. Rouve, conditions are definitely improving.

The Beat – X have recently started singing, too, and even here they have their own characteristic sytle, as they restrict themselves to folk Music. They have been able to provide us at the Institute with many hours of entertainment, and they did well to redeem our reputation at the Bombay Meet. Who knows how many years will pass before IIT gets another group that can, to say the least, hold their own, in music ?

* * *

Adventure in Real Life

by Uncle

FIVE lethal capsules packed with high explosive. Each shining brass cylinder plugged at one end with specially cast lead. The deadly objects, held together in a steel clip, shimmered in the heat of the tropical sun. The heat was awful. He was unbearably thirsty, and weak with hunger, but he had to carry out the mission for which he had been brought at a forced march.

He crouched behind the sandbag gazing intensely at the target. The time had come to prove himself and, by Jove, he would do it! In the deathlike silence, the monotonous ticking of his watch reverberated through his ears. Fear filled him. Something, anything, could go wrong! He did not relish the thought that little bits of his face might be blown all over the countryside and his mangled remains left to nourish the gaunt vultures hovering overhead. With tremendous effort he got a grip on himself—there could be no backing out now!

At last the order came. Swiftly, with efficiency born out of long hours of practice he loaded the hellish cylinders into the firing mechanism. Any moment now, small, deadly, missiles would streak out at fantastic speeds much faster than that of sound. A sense of power surged in him and removed all his fear. The stark silence was abruptly shattered as he set off the weapon. His ears were deafened and his whole body violently jerked backward! Again! Again Again! and yet again! Five times in all.

His tense face relaxed and a smile of satisfaction spread over it. Cadet 06536 of 6 (M) E. M. E., 'B'. Coy, from the NCC camp at Pallavaram looked at the target on the Meenambakkam range and thought "Not bad, looks like an eight inch group."

* * *

Who is likely to contribute more to civilisation—the scientist or the artist?

THE Scientist is a comparatively new species of specialised men, and he comes late in history. Artists have existed for thousands of years and vielded enormous influence in the civilisation of their times. It is quite difficult to judge which of the two is likely to contribute more to civilisation.

To understand the problem, it is necessary to consider what the term 'civilisation' connotes. It stands for all the human values and ideals which have inspired men for thousands of years. Art is only a part of civilisation. The ways of life of the people constitute the sum and substance of civilisation.

In the ancient civilisations, Scientists did not play a significant part; any one who was fired with scientific imagination and a spirit of reasoning was given only the freedom to choose his way of death. Scientific and religious interests were often at war, and since the latter formed the basis of civilisation in those days, the scientist was curbed from playing an active part in contributing to civilisation.

Such a state of affairs no longer exists; the place of men of science is recognised in any society and with material advancement, the scientists have begun to play a more dominant part in the lives of people. It is true that artistic creations are still appreciated and the various delineations of art still continue to imbue them with inspiration, but it is equally true that the scientist has carved for himself a niche in contemporary affairs.

The contributions of the scientist and the artists to civilisation therefore vary with the times. The spirit of the times forms a decisive factor in judging whether or not artistic values predominate over scientific reasoning; and the predominence of either or both of these values determine the nature of the civilisation of the times, which in effect is the spirit of the times. Hence the problem becomes very difficult to analyse because by its very nature, it is a vicious circle and our deductions depend on our starting premises.

It has taken man thousands of years to give credit to Archimedes for his scientific discoveries and inventions, but due credit was given to him anyhow.

Posterity will continue to be enthralled by his resourcefulness and ingenuity, and will honour him as a pioneer of science. On the other hand, the " Immortal " paintings of Michaelangelo, Da Vince, Cazane and others change their values with the spirit of the times. To a civilization which appreciates one form of painting, or in general, a particular form of art, the achievements of another civilization in the same fields may seem monstrous. This is not the case with scientists whose theories can only be proved or disproved. The bases of judging the artistic and scientific achievements therefore differ and it is difficult to analyse their relative merits.

Our civilisation is purely a materialistic one. The comforts and convenience we enjoy were beyond the wildest dreams of our forbears. This is due wholly to the advancement of science with the times. Enjoying all our comforts we owe to the progress of science, we are apt to overlook the cultural advancement which has made our lives really enjoyable. Without art man is a cipher : Without scientific advancement, life is hell. Both these therefore are very important factors in judging the growth of civilisation. Without art, science is meaningless, and without science, life itself is devoid of glamour. It is difficult to find out how these two control human activities, but it is needless to lay stress on their importance.

Take away science from our lives, and we can still exist ; but take away art from our lives, then life becomes impossible. Art has been the mother of science; it hasalso been the fountainhead of inspiration for man. What distinguishes man from animals is the cultural inheritance the former has had and the latter has not had. What distinguishes one society from another is the scientific advancement one has had and the others have not had. Hence we find that art is the more important of the two when we consider the progress of mankind. The role that artists play in human life is therefore the more important. Scientific advancement is a mere expression of man's intelligence. Artistic temperament is his natural legacy and decides his very existence. Art is man added to nature and it is to art, therefore, that we owe our civilised existence.

* * *

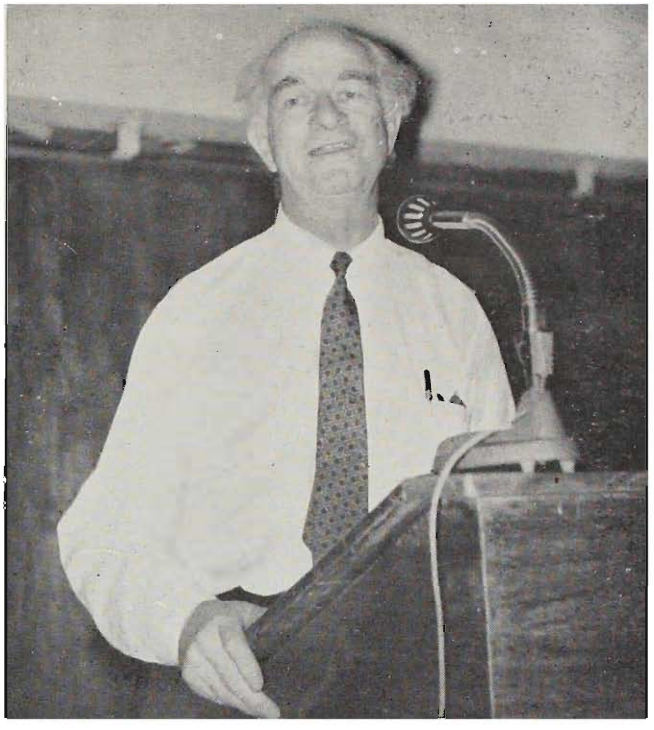
H. E. Baron von Mirbach

Ambassador of Federal Republic of Germany Visits IIT

H. E. Baron von Mirbach, Ambassador of the Federal Republic of Germany and Dr E. Reichel, Consul-General in Madras with the Director, Deputy Director and the Registrar

His Excellency Baron von Mirbach in the Chemical Engineering Laboratory

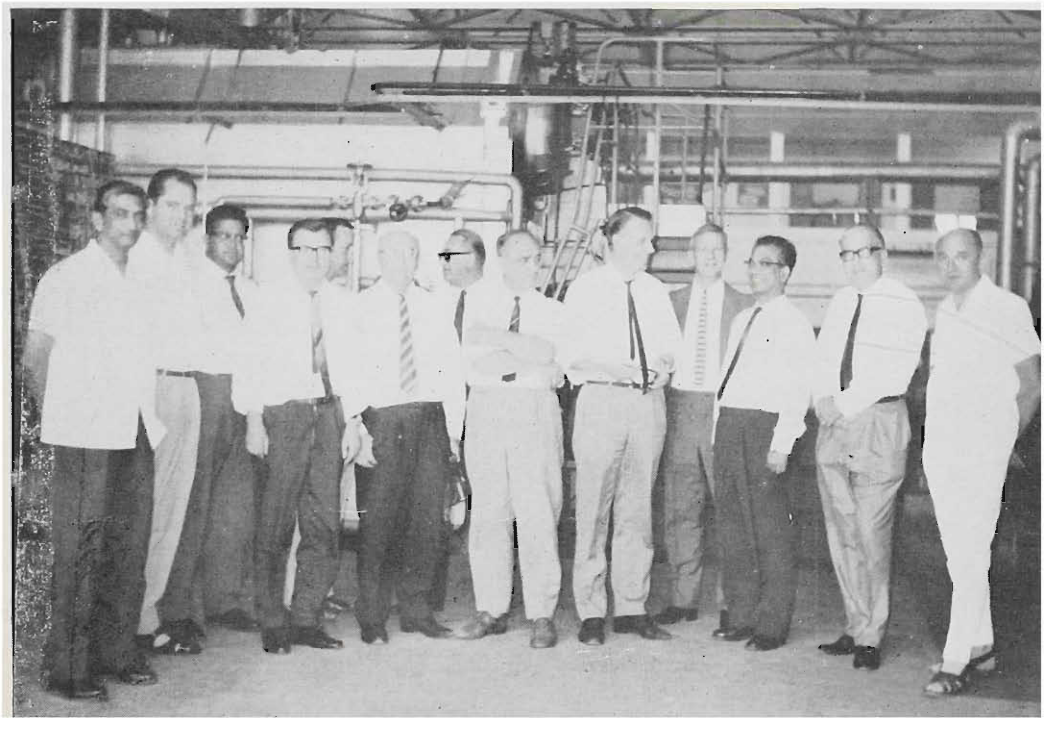
Dr Linus Pauling Visits I I T — 18-1-1967



Professor Linus Pauling addressing the students of the I I T on 18-1-67

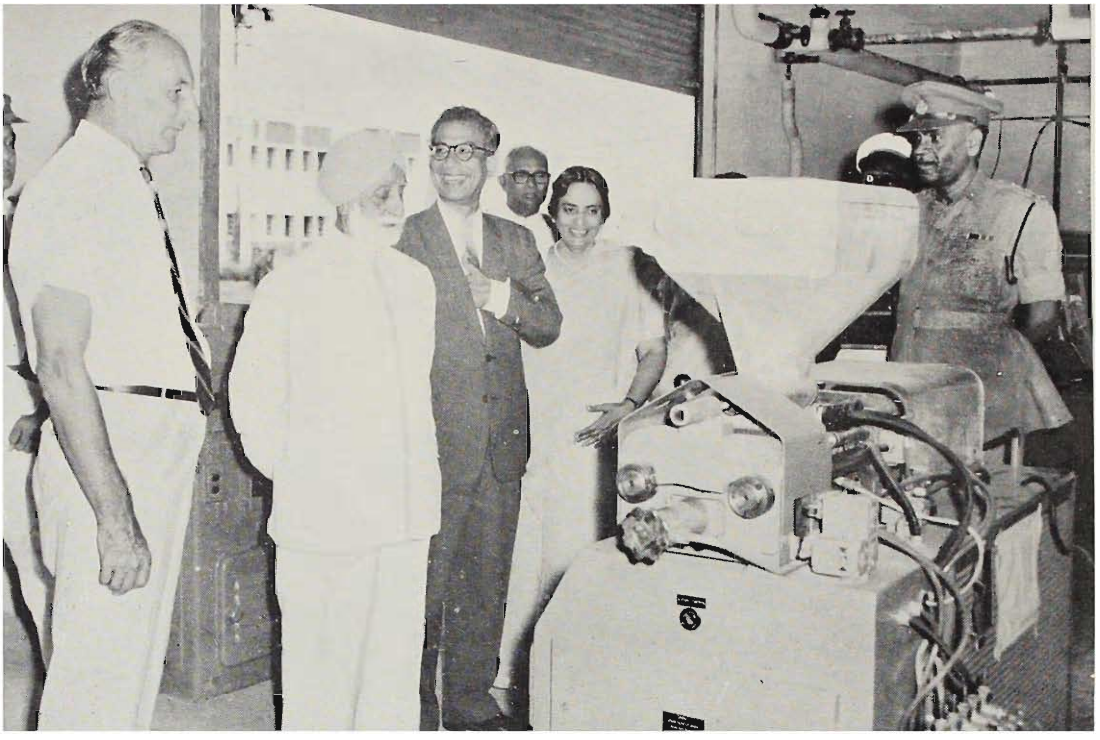
Professor and Mrs Linus Pauling with the Director and the Deputy Director

Distinguished Visitors to I I T



The German Parliamentary Delegation which visited the I I T on 19-1-67

Visit of the Vice-Chancellors of German Universities to the I I T on 3-1-67



Sardar Ujjal Singh, Governor of Madras visits the I I T on 15-7-66

Prof. Dr-ing Hans. A Havermann, Prof. Dr-Phil Martin Schmeisser and Prof. Count Graf Stenbock-Fermor of the Technical University of Aachen

Does India Need more Technologists than Scientists?

—Need for Technicians

By Gautam Mahajan

INDIA today is a country of needs, of wants, of desires, of idealism, of misery, of yearning, often dwelling in the glory of its past, often dreaming of the future, but rarely catering to its immediate problems. No country in the world is as dependant on Nature as India is. From time immemorial, India has depended on the monsoons, those rain bearing clouds that give life to the cracked and parched brown soil of India, that bring smiles on the face of the peasants, gaiety in the gambolling of children; and also ! which also bring death when there is too much of it, or too little of it. India has always suffered from too little or too much of monsoons. If monsoons fail, there is famine. If there is an excess of monsoons there are floods. Everyone knows this—but to this day we have not remedied this. Interlinked with this is the need for food and nourishment. We need more and more fertilisers—we need, therefore, to lay more emphasis on research and industry, and to treat agriculture as it rightly should be – our most important industry. Industrialisation and research must go hand in hand. We cannot afford to neglect either. But for both we need trained men - dedicated men - men with fresh ideas, men with ability—capable of shaking off the fetters of tradition and superstition, men who will pave the way for an India which will be the envy of the India of the past — a land of milk and honey. To man our research stations and industrial plants we need scientists and engineers; which is more important, we shall presently see.

We have been guilty in the past in treating agriculture as a craft, and not as an industry. To-day, as never before, we need agricultural engineers and technologists, who will be able to bring new ideas to the common peasant, technologists who will be able to show the peasants a better way of life. These will be men who will work with their hands, men who will mingle with the soil of India and so hold in their hands the destiny of India. These will be men trained in extensive cultivation, soil mechanics, fluid mechanics, men who will be ready to hold their own against nature, men who will fight against misery, starvation and death. These so called agro-civil engineers have done a first rate job in Japan. They are bound to succeed in India. At the same time we should not neglect our frontiers.

Today we are hemmed in on our northern borders by antagonisitic and quarrelsome neighbours. To defend our nation we need a well equipped army. To keep the army supplied we need a sophisticated defence industry. To this end we need technologists who will be able to give the army what they need. To keep the peasants and the army comfortable we should be able to supply goods which will help them to live in comfort. The need for engineers attached to the consumer industry cannot be too amply stressed. Along with this we need a strong batch of technologists to man our heavy engineering plants These are the backbone of a nation. The strength of a nation depends on what it produces. It depends on the amount by which it is independent of other nations.

If India is to be independent of other nations, it is imperative that its scientists should be able to supply new ideas to the industry, which the latter can develop. Take the case of the agricultural industry. Hardy strains of rice have been produced, such as that the grain is half an inch long. This yields much more to the acre than we can dream of. However, the agro-civil engineers have not been able to utilise this strain of paddy. At the moment scientists at the Indian Institute of Applied Agricultural Research are trying to develop a strain suitable for Indian conditions. What we need is better quality stuff, and people who can see to it that quality products are produced in sufficient quantities. This is true in all our industries. In the Defence industry, research is becoming increasingly important. Even five or seven years ago, how many of us were interested in the Himalayas, apart from the fact that 'it is there' (to borrow Sir Edmund Hillary's famous saying). Today out of sheer necessity our scientists are trying to find out more and more about this Himalayas because our army is there, trying to defend our frontiers. The Central Food and Technological Research Institute has done yeomen work in finding out the type of food necessary in these regions, their packing and distribution. In other industries also research is most important. How long can we keep on using the crutches of foregin dependance? How long can we keep on buying license rights? Have we not learnt the lessons of the brilliant research done by the Central Glass and Ceramic Research Institute and the Central Mechanical Research Institute by which we have saved foreign exchange to the tune of ten crores per annum? But what recognition has been given to these scientists? one wishes to know.

To be recognised, applauded and praised is second nature to human beings. It is perhaps one of the reasons why people are willing to work hard. That is why most people try to become technologists or scientists. We have seen that both are necessary for progress. To say one is more important than the other is absurd. It is like King Lear trying to find out which of his daughters loves him best. The technologist and scientist - ah! why this distinction, (as if they are two different entities) have almost the same goals. It is silly to think of them as different. It

is like trying to split education into two - the teacher and the taught. The engineer is a man of applied science. He is dependent on the scientist, for he it is who supplies him with ideas. But then it is the technologist who produces the article and hence feeds the scientist. Today India cannot afford too many scientists. It cannot pay for all that the scientist wants - India is not willing to take the risk. But without taking the risk is it possible for us to take the big leap forward? Sooner or later, India will realise that it cannot do without research, as it cannot do without industry. Today, the time has come to strike a balance between technologists and scientists. In the United States a happy balance has been achieved. In the Massachuesette's Institute of Technology there are too thousand post-doctoral fellows in sceince and an equal number in technology.

In concluding, we should like to stress that India's need is not so much for technologists or for secintists, but for technicians - men who are willing to work with their hands, menwho have a knowledge of science and know how to apply this knowledge, men who know their problems and how to tackle them, for these are the men in the long run who run a nation, these are the middle-men responsible for our progress. Even if we do have many scientists doing excellent work, and technologists, we do not have the backbone for progress. We have the head, but not the body. Thus what we need today is a balance between scientists and technologists in the country; these will then be able to hand over the task to the technician and so make the impact of progress felt on the common people. Because technologists and scientists are not enough—they are like the excellent windows which let in no lights, the passages that lead nowhere (with apologies to Thomas Gray), more developed countries than ours have progressed by going in for technicians and not worrying their heads about who is more important - the scientist or the technologist!

* * *

A Mystery

JANE Symons was cruelly murdered in a dark alley. Only two men were present at the scene of action, both suitors of Jane. They were Harry Smothers and Paul Hendron, both of good extraction, excellent education and equally good financial standing. Both werc handsome. Only one of them could have killed her!

The fatal single shot was fired at 9.57–(the beat cop heard it). Running steps were also heard and the cop saw both Paul and Harry standing near the body. Paul had a smoking revolver which was obviously the murder weapon, in his hand.

Fortunately, Arctine Hendricks, the chief detective was also at hand. He heard the shot just as he was leaving the house of one of his friends. He arrived at the scene of action at precisely ten p.m and took charge of the situation immediately.

He proceeded to an on-the-spot inquiry. The first statement came from Harry. He said, "Mr. Officer, Jane and I had been to dinner and I dropped her at the corner. Then as I watched her proceed down the alley I saw somebody-else creeping behind her and following her. As it is my duty to protect my fiancee from any possible danger (this evening she had promised to marry me), I got out of my car and I too followed her. Precisely at 9·57 (I noticed the time in my wrist watch) I heard a shot and hurried, only to see Paul with the gun. That as far as I know is the sequence of the events."

Paul who was listening with an ammused and indifferant look ventured to say, "The story that Harry told you is perfect except, that I was with Jane. Ofcourse I did not see anybody following her and when I heard the shot I ran and found her dead It is a fact I took the pistol to look at it when the cop came along. Other than that I have nothing to say".

Hendriks did not know what to do. Here were two perfect gentlemen who did not accuse each other directly, but implied by their statements that the other had murdered Jane because of obvious jealously He came out of the alley and in the light he chanced to see them more clearly. Harry noted the time in his watch and hastily concealed it. He then said, "I am sorry Smothers, I have to arrest you as the murderer of Miss. Jane Symons. Your whole statement though pre-thought and is absolutely possible, I think you made a mistake in not winding your watch and it has stopped at 6, as I observe. More than that it does not have a luminons dial and your assertion of time happened to be correct because of a freak chance. You will not commit mistakes anymore".

"Gentlemen, such are the facts surrounding the murder of Jane Symons. But for Harry's mistake either it could not be solved at all, or Paul would have been convicted. Of course, I do not deny Hendricks had a brilliant mind which saw and observed".

Good story—eh?!

INAUGURATION OF NEW LABORATORIES AT I I T

Prof Heitland and a student showing a distinguished visitor from Aachen the Thermodynamics and Combustion Laboratory

THE MACHINE-TOOL LABORATORY

On Obscenity and Fiddle Sticks

by Vijaya Reddy

IN England, the womb of democracy, **Lady Chatterley's Lover** is in the dock. In the United States, the green house of 20th century renaissance, Ginzburg, the publisher of Eros is serving a five-year jail sentence. In Italy, the hotbed of classical romanticism, film actress Gina Lollobrigida lives with the threat of a spell in jail. In Pakistan one may not wear tight fitting apparel. In India one may not kiss on the screen.

D. H. Lawrence in that masterpiece of prose only brought to life a class of people from Britain's society; the way they lived; the words they spoke. What he wrote was not far from the truth. In prosecuting his historical work, the British prosecuted a part of themselves. Publisher Ralph Ginzburg's Eros, which serialised such classics as **"Kama Sutra"** and **"Fanny Hill"** was acclaimed by the intellectuals of his country as a significant contribution to the cause of literature. The Supreme Court found him guilty of "the sordid busines of pandering". All that Gina Lollobrigida did was to appear, a mite scantily covered, on the screen, as so many women do appear in real life in so many places and on so many different occasions. The deputies in the Parliament came down upon her as if she were a sorceress sent to steal the chastity of the Italian people. All that the Indian movie director ask of society in that his actors and actresses screen the agelong gesture of affection—the kiss.

But no! They are criminals; enemies of the society, cancers in the community. Prohibit them, censor them, control them, punish them, jail them! The necklines are too low. Pull them up! That scene shows too much, that song says too much; clip-clip-clip! Every where, it is society in panic, a misled society on the defensive. Obscenity has become a stupid obsession with communities round the world.

Obscenity is an image in the mind; it does not exist outside the mind. What may seem obscene to one may seem divine to another. Take the topless for example. If one wears topless in the bazaars today, one does so with equal chances of being mobbed or ending up in the cooler. Five thousand years ago, in the dawn of our civilization, it was a daily occurrence in Mohenjodaro for women to go about topless in the wide promenades and the men did not mob

them or the police arrest them. Why five thousand years ago? Go now to New Guinea and there toplessness is a way of life, not a fad of the sensation seekers.

It seems as if the test for obscenity is to measure the quantity of sex. In fact, one is led to believe that no field of human involvement is obscenily. Like photosynthesis, like digestion, sex is a vital function of life, an instinct of life. As eighty year old U. S. Supreme Court Justice Black pleaded "Sex is a fact of life". What is more, sex is the essence of immortality of man, his perpetuator. There can be nothing obscence about sex, in words about sex, in talk about sex, in thoughts about sex—about sex in all its forms. Sex is so important to man, psychologically that he is doing himself no good when he is so secretive and shy of it. People write about it and read about it as if it were a mystery, a taboo. The more wantonly sex is furnished as a topic from public discussion, exhibition and publication, the more definitely does it become the object of profane contemplation and perverse imagination.

To simplify what cannot be simplified, men define things they are not sure about. The Supreme Court of a certain country says it recognizes obscenity when "the dominant theme of the material taken as a whole appeals to the prurient interest in the average adult". It does sound sharp and smart as do all definitions. For thousands of years, in jungles, in caves, through storm and flood, man, woman and sex have co-existed and fruitfully, I daresay. Is it not an insult to man's integtiy of mind if after thousands of year of evolution he cannot be trusted to read a few lines in a book, to see an image on the screen, to look at a photograph in a magazine? Delivering the dissenting judgement in the Ginzburg case, Justice Potter Stewart declared, "Censorship reflects a society's lack of confidence in itself. The constitution protects course expression as well as refined vulgarity no less than elegance. A book worthless to me may convey something of value to my neighbour. In the free society to which our constitution has committed us, it is for each to choose for himself."

In India, this fallacy of equivalance of obscenity and sex has been pushed to inordinate lengths. The Government has intervened massively in an area of responsibility that is essentially personal, at worst, social. It decides for the people what they shall not read in books. What they shall not see on the screen. The stark irony of it all is that in trying to hide what they think is obscene, they have given birth to an obscenity of a worse nature. The domestic films are classic test cases. What ingenious loopholess have the costume men found to dodge the censorship rules, but to catch the eager eye! What techniques of the camera, what sugggestive situations have the film makers

devised to attract that very prurient interest that the Government seeks to avoid! Even the censor board has betrayed an utter lack of taste or tact. Every foot of the film that is cut incites in the minds of the audience a thousand feet of possibilities and permutaions. These abrupt gaps in the film are more vulgar in their suggestiveness, in their implications, than the actual scene could ever have been.

A much quoted dramatist wrote, "There is nothing good or bad in the world, it is thinking that makes it so." Profarnity and obscenity exist only in the minds of men, not in magazines, not in films, not in words. It is there that it must be judged, and by the individual, not in courts and censorboards by demagogic moral societies and government lawyers.

* * *

The Experience of Mr X— Vengeance after death

AN interesting and invigorating discussion was under way, on the truth or otherwise of the existence of spirits or ethereal beings. The subject, bizarre as it might seem, was taken up by a conglomerate group of well-nigh middle aged persons at a week-end get-together at Mr. X's residence.

"I, for one, have no belief in the sway of the supernaturals, nor am I prepared to be taken in by any prodigiously concocted figments, however convincing and from however much an authoritative and reliable a source", said the practical-minded sceptic Mr. Y of modernity.

"In fact, whatever is professed to have been seen in this regard by some is, but the projection of the gruesome haunts, and hallucinations obsessing their minds," interpolated another gentleman.

"Anyhow, the reasoning in support of the belief in the influence of the dead does strain the credulity, and offend the common sense. It does not enter intothe domain of my prehensility", put in another.

"I object to the initiation into all this stuff, whether it be true or not, of young people, especially those of weak spirit, insufficient courage and of gullible disposition. Their normal strength is enervated, their faith in the invincibility of their souls becomes flabby, and what more, in extreme cases, they fall victims to acute psychosis with their minds affected with ghastly imageries, and bedevilled by unnatural and unwholesome instincts", expounded Mr. Z

"The purer the mind, the freer it is from such unwelcome thoughts. Any act done against the conscience remains dormant in the subconscious, coercing the person into remorse, plunging him into sadness whenever something or other, by way of a crude, ugly reminder of the past misdeed is encountered," was yet another opinion.

"Such as are incarcerated in painful memories of their criminal acts, and spend sleepless nights, invoke the existence of evil spirits by way of a palliative explanation of the unease and the intense anxiousness weighing upon their minds".

Thus several opinions and arguments were hurled forth from one to the other. Mr. X was the only abstainer from the controversy. He seemed absorbed in his own thoughts, deeply immersed in cogitation. About the time his reticence started making itself felt, he cleared his throat and looked around. When the disputation ceased and silence prevailed, signifying others' readiness to listen to him, Mr. X said, " Whatever your opinions are, gentlemen, on the subject under consideration, I, with no dogmatic assertion, would like to relate an incident which, to this day, appears queer and eerie. It all happened about 15 years ago, in the village of Mayfield. 50 miles from London, where I was convalescing after a severe attack of typhoid".

Leaving aside their differences, and points of disagreement, all those assembled screwed up their ears, for, Mr. X had a flair for narration. He was gifted for painting life-like verbal panoramas of his spicy experiences, or of what he heard and saw.

"It was during a winter; hardly had five to six days gone by since the assault of a blizzard on Mayfield. The snow was quite heavy. It was a trying experience for anyone to be on night duty. The station being small, had only five people on the railway staff. Two porters, station master W. Mathews, signal and pointsman, David Johnstone, and a watchman.

"Mathews was sitting in his room attending to some files by the dim light of a candle. All of a sudden, he heard the door burst open and looked up with a start. David, the pointsman, throwing his hefty, robust body against the door, barged in. The door, being old, squawked on its hinges, producing a sound savouring of a crash. His pace was unsteady, his countenance haggard and registering the shock of having witnessed something deeply unpleasant and, to say the least, weird and terrorising. Moreover, he was in the clutches of excruciating agony, and belching forth a stream of incoherent words almost tantamount to a wail, staggered and finally fainted. Mathews held him from falling and, after issuing orders for fetching a doctor, set about his first-aid treatment. The doctor came after 15 minutes. He promptly administered the necessary treatment, thereby quickening the pace of attaining consciousness. After a few minutes of relaxation, David ventured to speak, but was effectually intercepted and calmed by a signal from Dr. James. James opined that the accident was the result of severe nervous shock presumably associated with some untoward incident, and that, the vestige of nervous exhaustion not having completely died out of the victim's features, it was advisable that no attempts at the recapitulation of the awful causative experience be made.

The doctor was gone. David slept the night in Mathews' room. Next morning, Mathews and he breakfasted upon bread and black coffee. David was

fresh with renewed nerve and vivacity after a night of sound sleep. Finding him quite fit for conversation, Mathews asked him about the previous night's accident. David, evidently shuddering at the remembrance of this contretemps, recounted the whole thing to Mathews. He said :

"I can't vouchsafe the reality of what I saw. Nevertheless, I 'think' I had that bizarre experience. I was some distance from the station upon a short ramble. Suddenly, while passing the tea-shop, I felt uneasy. I had a distinct impression of being followed. The thing was heavy on my mind, and with my moving farther and farther away from the tiny bit of humanity clustering round the tea-stand, the following foot-falls became more and more audible. When I was for turning back to see who was on my trail, I felt somebody's presence in the 'front', and instantly looked up. I was surprised to have not noticed his presence until then or probably, he appeared just then, suddenly materialising out of darkness, as it were, by magic. Added to the tension of loneliness and disquieting thoughts within, was something about his appearance which disconcerted me-quite a lot. Upon observing him at close quarters, I became speechless. I closed my eyes. My blood congealed. My throat was gorged from terror. For, what I saw was an extremely pale, bloodless countenance with dishevelled hair and protruding eyes. It was lifeless. Gathering my spirits and renewing my courage, I opened my eyes again, my whole body shivering from cold and fear alike. The apparition was not to be seen ! Without once turning my head, I came running headlong to your room".

"David's narration disturbed Mathews a lot. It had in it a suggestion of the pervasion of some unearthly influence, most probably evil. He could not reconcile himself to the strange, unbelievable possibilities which David's experience indicated. Anyway, he wanted to be careful so as not to hazard a premature opinion. He asked "How was he dressed ? Did he resemble anybody known to you ?

"No sir, I can't tell you with certainty whether I recognized the countenance or not. But, as to his attire, I have a very dim recollection of having taken him to be an Engine driver. I am sorry I can't add anything more

This, however, did not help Mathews make much out of the narration. He was not sure how much was true, and how much of it could be dismissed as the product of frenzied imagination abetted by fear. Mathews, though naturally prone to the inevitable conclusion that the whole thing was a manifestion of a disordered mind caused by nervous breakdown, was not cent percent sure about his own prudence in making light of it ; for, David was a stolid person of fine constitution. He did not have a wagging tongue. The stability of his mental-make-up was reliable. He was bolder, of a more enterprising disposition than Mathews.

Anyhow, no amount of rethinking appeared to be fruitful, and as such, the matter was dropped. Everybody thought it best to let it pass into oblivion.

"Mathews granted a few days' leave to David at the latter's request, to stay with his parents, who were living about 30 miles Northward. As dissemination of any rumours was discreetly avoided, there was the usual normalcy every where. David's job was shared by the porters.

"Four days went by after David's departure. On the fifth day morning, Mathews received a letter from David. Though a letter was not unexpected, Mathews was very excited about it in view of its running to a few pages. He opened the lock, went into his room, closed the door behind him and started reading it in privacy. It read, more or less, as follows ;

"Dear Mr. Mathews,

I write this to inform you of a very queer incident which has perpetuated the unpleasant memory of that horrible happening in Mayfield. On my way down here, I got down at a small stop to have some edibles to quel my hunger. After the necessary refreshment, which consisted of washing down my throat a few slices of bread with a cup of black coffee, I walked to my compartment. I always travel second class, as you know. There were only two second class compartments, by the way. I did not look up until a few feet from the door step. When I did so, believe it or not, I found to my profound horror, the familiar apparition perched on the door-step. The stern, ruthless, uncompromising stare from its two protruding eyes was unnerving. I stepped back with a half-stifled scream, my inexplicable behaviour astonished a few who, seeing nobody in the direction pointed out by me, looked upon me with half suspicion and half derision. The form was visible to me only !

I, not daring to confront the enigmatic, grissly stare once again, scurried into the only other 2nd class compartment. The carriage was empty but for a handsome couple. My noisy entrance made them look at me. They were, however, soon engaged in whispering sweet nothings into each others ears. They were too blinded to the surroundings to take notice of my condition. I soon regained my composure and as the train had by then left the station and was on the run, approached them hesitatingly for water. Brought to this world the couple, for the first time, felt my tiredness and exhaustion, and helped me with some whisky as they didn't carry water.

This gave me a break to get to know them. Their names were revealed to me as Reynold and Ursula. Reynold was a dark-haired, blue-eyed, handsome person of 26; he was an Engine driver. He had been married about 8 months. Ursula was an attractive blonde, green eyed and 22 years of age. They

were, on the whole, an attractive couple of winsome appearance, and prepossessing behaviour and carriage. They were enjoying a short vacation which they had been expending over jolly trips. I asked if they had been to Mayfield and commented on its considerable natural beauty. I proposed that it was an eminently consentaneous spot for youthful lovers.

"Oh! I used to go there sometime, until eleven months ago. I was staying with my friend Johnny, then an Engine driver. We had been chums right from infancy; we studied together, and later, pursued different careers. Johnny did well as an Engineer driver, while I was a miserable failure as a businessman, whereupon I decided to join the railway service, and went to put up with him for some time, It was there that I first met Ursula, who had come on a school picnic along with her class mates. We took a fancy to each other, and love grew in the salubrious atmosphere of the ineffably beautiful gardens, meadows and fields lush with crops. Johnny was cross about it; probably he wanted Ursula who, I came to know, was a relative of his. But, out of affection for me, he did not cross my path, though, I knew that it affected him quite a lot. Anyhow, fate willed that he should not live to see our wedding, for a month before our marriage following my employment in railways, he was cruelly snatched away from us by his death in a train accident. This unfortunate accident developed in me an aversion to Mayfield. Subsequently, I managed to leave the place on transfer, and am in no mood to ever visit that village again".

'The conversation had to be broken as my destination had arrived I took leave of them. There was an upsurge of thoughts in my mind as a result of my fortuitous meeting with the couple. I marshalled my recollections of the trip. I had heard about the accident of which, I had no first hand knowledge having been employed at Mayfield only for the last 6 months. Both you and I have thus heard it from others, and of course, read of it in the dailies. Johnny's train collided with an Engine owing to ill-timed pointing and changing of rails, and his death was instantaneous. Probably it was Johnny's ghost that I had encountered, by now, twice. I also place before you that, but for my second confrontation with the apparition that actually induced me to enter the only other 2nd class compartment, I would not have won the acquaintance of the couple. Or, was it a strange coincidence? Though all these connections were working upon my mind all the time the conversation was going on, I dared not dismiss my misgivings and suspicions without proper confir matory evidence. By the time I had made up my mind, I had to get down. Despite my outward complacency, I am not able to shake off the irresistible premonition signifying danger to the lives of the couple. I am convinced that,

in the event of my suspicions becoming true, the chain of incidents unmistakably indicates a rapacity for evil, a predatory vengefulness on Johnny's part, in the burning fire of which Reynold and Ursula might be scorched. Despite the seeming coherency and reasonablness of these speculations, I can't rule out the possiblity of my overimagining the whole scheme.

'But, why should the apparition reveal itself to me, driving me crazy? What have I to do with all this? My mind is very disturbed. I shall try my best to forget everything during my brief stay with my parents.

Very sincerely,
DAVID

"The letter left Mathews numb for a while. He feared that there was something unpleasant in store for them all. Anyhow he decided not to fuss about it, but to be discreet. He would wait till David came back.

"A week later David returned. There was nothing strange about him to observers at the first sight. But, to those who knew him well, he appeared a bit enigmatic in his behaviour. There was an under current of mental unrest and agitation in him. Often he was lost in fierce thinking and ominous silence, in the course of a lively chat. He was no longer his old self. He went about doing things rather mechanically. Mathews felt that he moved about in a set way, as if some power dictated every small bit of his movements, speeches and even reactions to others' talk. Of course, he talked much less than before. He was gradually getting more and more aloof. He talked of nothing other than things pertaining to business. Even to Mathews, his long and trusted friend, he held himself incommunicado. His eyes gradually started wearing a far away look. With passage of time, he seemed more and more withdrawn into his ownself. His appearance became more terrible to look at. He showed displeasure at any body's overture to conversation. Mathews concluded that he was possessed. Medical aids of all sorts were sought, but in vain. All conceivable means of affording succour to him, and instilling the same old vivacity and enthusiasm ended in a deplorable fiasco.

"It was not possible to recommend him to a mental asylum, for, he seemed in considerable control of his senses. Notwithstanding his eccentric mannerisms, sinister movements and slovenly disposition, he was as prompt and regular in the discharge of his incumbent duties as ever. His zeal for punctuality and exactitude remained undamped.

"A few days rolled by. His colleagues thought it advisable to wait for a few more days before taking any drastic decision. Anyway, they were of the opinion that some calamity of serious implications had befallen him, and that he

would recover in due course. But Mathews, well aware as he was of David's experiences and further being David's sole confidant, sensed something evil. He strove hard to penetrate David's reticence, but failed. He cursed himself for his inability to do anything. He impatiently awaited the developments

"At last the denouement came, ghastly and terrifving. All the anxieties ended in a horrible way. On Sunday morning at 2 A. M. Patrick, the porter, rushed Mathews to where David usually used to be. To their profound horror, both saw him standing between the rails with the train bound to Duncan hardly 100 feet away. Before anybody could reach him, David threw himself across when, amidst the noisy remonstrations and vehement gesticulatory warnings the train ran over him, crushing him into an unrecognizable fleshy mass. His last unearthly screams pierced the cars of the two onlookers, curdling their blood, on top of the sonorous breathing of the Engine. The train ran headlong into the engine stationed for being taken to the yard. It was too late when it was discovered that the necessary sidetracking onto another pair of rails leading to Duncan had not been accomplished. The collision was unavoidable. David had been responsible for the sinful decimation and destruction of the harmless travellers. Or, was it a really a conscientious lapse on his part? Could he not have been coerced into this monstrous perpetration?

"Among the dead were a handsome young man, blue-eyed and about 26 years of age, and an attractive, green-eyed blonde. An assiduous search brought out a purse containing their autographed photographs, some of them taken at their wedding. Enclosed therewith were also a few more papers of identification which furnished their names as Reynold and Ursula, and further, Reynold's profession as that of an Engine driver.

"The accident was imputed to 'mental derangement tending to Homicidal Mania', on the part of David. Thus the police did away with the case, and closed the relevant official files.

"Mathews, sitting alone in his room, ruminated over Johnny's insidious possession of the innocent victim David. David was instrumental in accomplishing the terrible, inhuman revenge born of Johnny's blood thirstiness and, in that process, had done himself in. What struck Mathews was the diabolical consistency that marked the whole scheme reaching its climax in a hideous simulation of a fact that had killed Johnny about twelve months ago. Both had occasioned carnage to an abominable degree. All of a sudden, an idea lurked in Mathews' mind. Was it exactly a year ago that Johny died? Ah, Yes! to complete Mathews' amazement and satisfy him of the efficacy of the Demon's influence, he found that Johnny died 'exactly' a year ago, on precisely the same date, though not of course, about the same time.

"Was it the same agency, then, whose hateful influence had somehow forced the innocent couple to undertake this journery at this illfated hour? Well, that is something which is bound to remain a conundrum. Or, it can easily be one of those very many coincidences that occur in this topsy-turvy world of to-day.

Mr. X stopped his story. A curious mixture of scepticism and bewilderment on his friends' faces was the reaction to his incredible tale of horror. That the narration had its effect was evident from the tense silence that still prevailed. The time was 11 P. M. Hence, without comments, his friends dispersed, bidding Mr. X 'good night', to re-assemble at his residence after a week.

There was the cooing of the Engine's whistle. from far-off, filling the ears of one and all.

In an hour, humanity slept, and the ghosts woke up.

* * *

Never Ride a Cycle in Madras City

By: C. S. Krishnan

Riding cycle in Madras City
Has many a peril and difficulty
It indeed is a great feat
To ride a bike in these streets.

To the right is the zooming bus
To the left is a pit full of dust
Not to speak of the sudden gust
Oh! Go ahead and try if you must.

The roads are infested with deadly pits
To break your bones into bits.
One needn't have to search one's wit
To name those who got such a hit,

Once a smart and good looking gent
Through the streets by a cycle went
Only to find it completely bent
A twisted mass less than a cent.

So I tell you my dear friends
If you don't want any more dents
Never ride a cycle in Madras City
Or it would only be a pity.

* * *

Celebrating

Institute Day

12th March 1966

Dr A. L. Mudaliar, Chairman, Board of Governors, I I T Madras presents the Entertainment Trophy to the Jamuna Hostel representative

Dr Koch befudles Gopal Ramachandran during the magic show

Prof. Sengupto, Director, I I T delivering his annual Institute Day address

The Deer Ones

T. Varadarajan

IF you had not known about the recent nation-wide agitation against deer slaughter it was neither the mistake of the deer nor that of the agitators. It all started with a report by the Security Officer that deer-shooting was going on in the campus. Immediately, the Institute Administration issued an official order banning shooting of deer, or for that matter any quadruped or biped within the campus and sent copies of the order to the Government of India, Ministry of Education, for their kind information. The Ministry officials could not, for a moment, decide as to what to do with that copy of the O. O. received from Madras. However, the paper in question was transferred to the All-India Board of Animal Education for study and necessary action.

The A. I. B. A. E., in turn, sent out circulars to all State Boards, asking for statistics (to be submitted in triplicate in the prescribed form) regarding the exact number of deer living in the forests of the respective States. On the recommendation of the A. I. B. A. E. the Government of India constituted a Special Committee under the Chairmanship of a Leather Technologist to study the question and submit a report urgently.

Meanwhile, an Oppostion Member in the Lok Sabha put this question to the Minister concerned: "Is the Hon'ble Minister aware that shooting of deer in the IIT (Madras) campus is on the increase; if so, what steps does the Govt. propose to take to stop this?" The Minister, replied as usual that he had no information on the subject and the question of a legislation for banning deer slaughter did not arise. This statement was enough to spark off strong protests from the Opposition—the ruling party members all in one voice, tried to pacify the opposition members. Pandemonium prevailed in the House, which was adjourned by the Speaker for ten minutes. When the House reassembled, the Opposition demanded a full-day debate on the issue but this was not granted by theSpeaker. Then the rest of the formalities such as thumping of desks, shouting, swearing at one another, naming of members by the Speaker, walk-outs, the Marshall bodily removing the members out of the hall, were all gone through in perfect order. Throughout this confusion, the ruling party members did not forget to shout back at the Opposition "Shame, Shame".

The next day, newspapers were full of reports about the country-wide agitation against deer-slaughter. The Government's attitude in not preventing

what was going on was criticised and a Committee for the Prevention of Cruelty to Deeer was formed. Processions were taken out in various cities urging the ban on deer-shooting and demanding that the Government resign if they were not able to stop it. All forms of a national agitation were in full progress throughout the country and reports of mob-violence and police atrocities were in circulation The Madras Government informed the Centre that since the I. I. T. was a Government of India institution, the responsibitity fully rested with the Centre and that they were helpless in the matter. The Prime Minister however, at a Press Conference declared that animal wealth is a State subject. The P. M. also denied that there was any proposal to transfer the I. I. T. to the control of the State Govt.

The All-India Deer Samrakshana Samiti, in the meantime, approached a religious leader to commence a fast unto death, till the Govt. prohibits by law shooting of deer. The Secretary of the Swamiji was reported to have told the Samiti that the Swamiji was already on fast almost daily either due to religious reasons or due to non-availability of rations. However, the Swamiji was ultimately persuaded to start the fast. The Bharat Meat-Eaters Association protested against all this and announced its decision to start a counter-agitation in favour of deer-slaughter. The President of the B. M. E. A. instantly launched a venison eating programme. Newspapers carried reports daily about the physical condition of both the Swamiji and the B. M. E. A. President. The reports indicated thet the Swamiji was losing weight at the rate of 1 lb. per day while the President of the B. M. E. A. put on 1 lb. daily.

While this was the situaiton in India, let us see what the international reaction to this trouble in India was.

A report from Washington said that the promised allotment of 12 million tons of wheat for India would not be made available immediately, in view of the conditions prevailing in India. However, at a Press conference, the President refused to be drawn into the controversy when questioned about the change of policy of the U. S. Govt. with regard to aid to India. He made it clear that the present situation in India had no bearing with increased supply of millitary equipment to Pakistan.

'Pravda' reported from Moscow that at a reception held by the Indian Ambassador in honour of the visiting Snake-Charmers' Goodwill Delegation to the U. S. S. R., the Russian President was reported to have said that he was very much concerned about the activities of the reactionary forces engaged in subversive activities in India and declared that the Western Imperialism should be smashed from raising its ugly head.

The Hinsua News Agency reported from Tokyo that according to some usually reliable sources, Chairman Mao-tse-Tung, at a Peoples' Rally in Peking,

strongly condemned the action of the reactionary Government in India in trying to put an end to the Indian peoples' just demand for the protection of an animal. "This struggle of the proletarians in India against the bourgeois bureaucracy of the Indian Govt. is bound to succeed as any other struggle for freedom against Western imperialism", he said. In a broadcast monitored in Tokyo, Peking Radio was reported to have said: "Our comrades in the Socialist Republic of Pakistan, along with the freedom fighters from China, will always share with sympathy the feelings of the Indian people. Success can always be achieved as enunciated by chairman Mao in his book "Mao's Teachings on Struggle for Peace". Long live Chairman Mao".

"Campastimes" interviewed several leaders about the 'deer issue'. The quotable one among them was Rajaji who quipped: "The deer are dying; I am alive"

In the meantime, negotiations between the Govt. and the Deer Samrakshna Samiti were going on to achieve an acceptable solution. Leaders appealed to the Swamiji to end his fast, but the Samiti decided that he should not do so.

Ultimately as it should happen to all agitations, the Government decided to appoint a Committee under the Chairmanship of yet another Retired Chief Justice, to go into the question and on the IIIth day of his fast, the Swamiji, with the approval of the Samiti broke his fast.

As I was still thinking about the merits and demerits of the Government's policy with regard to such agitations, a gentle tap on my shoulder woke me up. The Security Officer was standing before me with a smile. Yes, I was in the office and presumably, had dozed off for a few minutes in that sunny afternoon. The morning edition of 'THE HINDU' with its bold caption 'Puri Sankaracharya ends his fast' was just lying on my table. I had brought the paper with me to go through during the lunch hour and that was what I was doing.

"Had you been to any late-show yesterday?" enquired the Security Officer. "I came to ask you about the Director's permission for the shooting of the....."

"Yes", I interrupted him. "It is here. He has given the permission." and I handed over to him that particular letter from a film-producer requesting permission to shoot some sequences of his forthcoming film "Oh! My dear!!" in the I. I. T. Campus. The film, I was told, features M. G. R. and Saroja Devi, but the villian is not M. R. Radha.

* * *

Elegy written in the Oat

(With apologies to Gray)

S. Parameshwaran

The siren screeches in its usual way,
And student groups converge at Oat,
The graduates, red-robed, gather for the day
Of their departure from the IIT

Now sits the crowd on metal chairs packed tight,
And all the air a solemn stillness holds,
Save where volunteers mutter of their plight,
And muffled sniffing mark out those with colds,

Save where, in yonder last row seventh chair,
A third-year wit with fun and jokes holds sway,
Of criticism doing his fair share,
With hapless blundering speakers for his prey.

And in the front in seried rows they sit,
Each in his scarlet robe richly enswathed,
All wondering how, coming to think of it-
They got through five (or six) long years unscathed.

The breezy call of incense-breathing morn-
One charred egg, two slices of black toast,
Followed, at seven forty, by the scorn
Of what's-his-name (punctuality his boast)-

No more shall rouse them from their green steel cots :
Nor, in the warm and sleepy, afternoon,
In this or that lab with its 'Don'ts' and Oughts'
Shall they devise results, and leave too soon.

For them no more the dread notice shall come,
On Tuesdays, Fridays, aye, and Saturdays too ;
On seeing which, eyes glazed, minds blank, heads numb,
Most men swot facts, which they no clear clue find.

Full many a D of helpless hope forlorn
The dark unfathomed caves of exams bear;
Full many a C the grade card to adorn,
Springing relentless from secret lair.

Their lively mischief much amused their friends,
Gaily they cogged each assignment and test.
How fast they found means suited to their ends!
How destroyed they their teachers' peace and rest!

Some silly joke the tired mind requires,
Relief from tutorials one desires
'Tis fun to hear, when lectures one's soul tires,
What Mother Abbess told the two old friars.

The time has come at last to say good-bye
To those from whom we learnt IIT's ways;
And they depart to succeed-or or to try-
With happy thoughts, I trow, of campus days,

* * *

Parliament Etiquette

Machiavelli

IT was Shaw who said of a constitutional monarchy, that the cabinet wants to splash mud on the royal robe and expects this to be reciprocated. In India, substituting the ruling party for the sceptre and the oppsition for the arrogant cabinet we can arrive at a realistic picture of democratic ungentlemanly, robust, vulgar and shameful behaviour. Both the ruling party and opposition are to blame for this disgraceful performance.

The practice of democracy in this populous nation consists in the total disregard on our part for concrete truth, respect, honour and culture. To slander every leading public figure has been the constant practice of the opposition. Often ithas surprisingly some bearing on the affairs of our Republic. At those times the condemned tries to paint himself new, bringing out very clearly the amount of decay left. Heated arguments result; motions are put forward. If they, in anyway would affect the ruling party and-force some destruction upon it, the trouble starts. The speaker uuwittingly comes to its rescue with a denial, quoting from the constitution some slipshod, irrelevent and ambiguous passages.

This starts a chain reaction.

1. A part of the opposition calms down, being absolutely ignorant of what is written in our constitution. (a shameful result of our indiscriminate adult franchise).

2. Another which is equally ignorant, but immensely angered at the dismal failure of its futile efforts gives accurate expression to its subhuman thoughts with flowing, "figurative" and filthy language.

3. The third part, unfortunately a minority, which alone has taken the trouble to pursue parliamentary ethics and obtain a doubtful knowledge of our constitution rises up to argue on the ruling, all at once.

4. The relieved ruling party which has seen the breach in the opposition makes no attempt to conceal its joy and decides to celebrate its "tactical victory", by oral expressions.

The result obviously is absolue pandemonium. A bunch of noisy oysters would certainly have kept quiet if they had had a parliament.

This wakes up some snoring members, who shout "Shame! Shame! The Speaker shouts "Order! Order!" (A sensible observer usually cannot avoid shouting" Bark! Bark!), The speaker names the few who are barking loudest. The audibility of the hall being poor, they continue ther oral presentations. They are ordered out and they naturally cannot understand it. They are forcibly removed. In the meantime the cause of the quarrel has been forgotten.

The forbidden members usually belong to the opposition and in sympathy the whole opposition walks out. The ruling party members see no point in remaining in the hall and the parliament "finishes" its work for the day. This is more or less what happens in our democratic parliament, state assemblies and even in our municipal councils.

Such a behaviour proves conclusively that Democracy is a system of Government invented by the corrupt few to favour the incompetent many. If this is the way that Governments by the people, for the people and of the people govern their people, it can be safely said democracy has lost its value, prestige, purpose, and its meaning. Democracy is intended for discussion, debate, argument and proper execution of plans which bring forth the best for the most. This is more or less an ideal form of Government where every individual knows what is expected of him. It is definitely not a fitting form of Government where the majority does not realise its existence. It is not hard to arrive at the conclusion, that democracy and parliamentary behaviour as practiced in this ignorant nation are not far from hallucinations and it is merely foolish and fatal to defend it anymore. In any nation where the brilliant few are completely submerged by the ignorant majority democracy can never be a success. It is high time, that we as the representatives of future generations, start thinking in terms of realities, because the damage done by this generation may be a serious handicap to us in the future and may not be annuled for ever.

* * *

Thermal Power From Sea

M. N. Viswanathan,
Associate Lecturer in Mechanical Engineering
Steam Laboratory.

The use of tidal waves as the source of generating electricity is a well known phenomenon and there are already some power stations that generate power by tapping energy from from tidal waves. Another method of energy production, as yet untried in the commercial sense, is that of exploiting the difference between the temperatures at the surface and at the bottom of the sea in tropical zones. This scheme was envisaged over a hundred years ago by Jules Verne, whose forecasts in so many fields of science have come true in recent years. He made this proposal in "Twenty Thousand Leagues Under the Sea". In 1926, M. Georges Claude put forward a proposal based on the Carnot cycle for a practical scheme for utilizing this sea temperature difference.

Basically, the scheme is simple. It is a well known fact that water boils at a lower temperature at reduced pressures. Suppose now that one has a source of warm water that is led into a chamber which is continually exhausted or maintained at sub-atmospheric pressure. The water instantly boils. If the vapour is passed into a chamber containing cold water it will at once condense. If the vapour in its passages from the evacuated chamber to the condensing chamber strikes the blades of a turbine, then the turbine will be driven round, thus generating power. The warm water from the surface of the tropical ocean is led into an evacuated chamber where it vaporizes. The vapour is sucked down through the blades of a large tubine wheel into the condensing area, containing cold water from the bottom of the sea. In doing so it turns the turbine blades which are of the reaction type and drives the alternator mounted at the top of the turbine shaft.

Mr. M. Daric, a French engineer, has put forward a totally different proposal. In his proposal, he uses an intermediate fuel such as propane or isobutane as the working fluid. Warm water, from the top of a steel tower, evaporates the propane and the gas then drives thc turbine. The cold water at the bottom of the tower recondenses the gaseous propane and the cycle is repeated. Operation of the plant on a fluid other then water eliminates the problems of deaeration and high-vacuum production. Propane is used as the working fluid because of its low cost and non-corrosive action.

Recently Mr. Anderson has studied the feasibility of design of a large sea thermal power plant-a 100,000 KW plant to be located in the Caribbean. He has studied in detail the economic aspects of the above plant and concluded that the initial investment cost and cost per KW-hr of the above sea thermal Power plant will be only comparable to that of any Hydro-Electric plant of the same capacity.

The advantages of the scheme for generating power from sea temperature differences are that the evaporation of sea water could provide valuable chemical by-products and also a source of distilled water. These plants are capable of meeting increasing needs. There are no water treatment problems. Cavitation problem does not arise since the pump impellers run at speeds much lower than common hydraulic turbines and are deeply submerged. No large concrete structures are necessary. Power supply is almost independent of the weather. The power station has no complicated or costly auxiliaries such as are found in modern fossil fuel or nuclear power plants. There would be no seasonal or occasional effects such as the droughts which from time to time bedevil even well planned hydro-electric projects. Maximum power is available in the hot seasons, when demand is greatest.

The vision of Jules Verne, that man would harness the enormous energy which the sun prodigiously throws down on the ocean surface, has not yet come true. But there is little doubt that some day his dreams will come true.

References :-

1. Mechanical Engineering,
2. Discovery.

* * *

The war Song

M. N. Krishnan

The curse fell on the human race
For killing each other is so very base
We cannot for shame lift our face
This will be remembered in future days.

Germany, Italy, and Japan
In thirty-nine the war began
Killing people with many a gun
As if it were only for fun.

First went Austria and Hungary
For the Nazis were hungry
Then they went for the lovely France
By then Mars had set afoot with a dance.

Germans beat the French and British forces
For they had a mighty resource
The German Panzers did come to the fore
To see the mighty Atlantic roll before.

Many planes in the sky did loom
Like many a lotus in a tank does bloom
They did cities roads, and men bomb
Thus breaking the nature's blessed calm.

Even during nights black as tar
Seas were crossed by men-of-war
Sinking each other without a pause
Thus creating a heavy loss,

Americans English and the French
Joined together to topple the bench
With the Soviets coming to their help
The Nazis gave a big yelp.

* * *

Symbol Fever
or
The Success Story of A. S. Noman

by M A C

("A circus lion, on wheels, headed a procession organised by supporters of Mr. Kishan Singh Sarma, an independent candidate contesting for the UP Assembly. The lion is the Independent's election Symbol"—News story.

How did it all happen, you may ask? Well, let me tell you the story. The newly formed party called the Leaders Of the Socialist Trend, or more usually, by their initial letters, the LOST party, were having their first meeting. At this moment the leader of the party, Vishan Singh Sarma, was speaking.

"The most pressing problem that confronts us," he said, "is what shall we choose for our election symbol?"

"I think it should be an animal," said Josh Bahadur, the man who held the purse strings. On being asked why, he continues authoritatively, "We stand for integrity, faith, strength and courage. What mere inanimate symbol can project all these qualities?"

"What about a rock?" suggested one of the lesser members.

"A rock is immovable. It would suggest adamantine qualities," demurred Burma.

"Perhaps a small rock..." voiced the lesser member, but he was quietened firmly. For sometime, the members mooted various animals, which were rejected for one reason or another. The bustard, because its name might offer ample opportunities for the frivolous or the malicious to misinterpret it; a bullock because it might be confused with the Congress;

"It must be an unusual one," mused Bahadur, "the people must identify it immediately with our party. 'I've got it' "he shouted suddenly." It shall be an abominable snowman"

"Eh! what ??!!" howled the others.

Bahadur was continuing: "It's got to be it. It'll be unique, won't it? It'll attract voters like flies to a...to a..." "to fly-paper" muttered a dissident. But Mr. Burma was undaunted,"...and as an election stunt we'll gat an actual one

from the Himalayas and parade it through the streets: It'll show how resourceful our party can be. The rest stared incredulously. Was he out of his mind?

"Get an actual one? An abominable snowman? How? And where from?..."

"It's simple. A team will be sent to capture one. This brave act will also show that we don't lack courageous men unafraid of death. Naturally, Burma, as leader you will volunteer for this mission, won't you?"

Well, as they say, when the man with the money plays the tune, the have-nots dance to it, or something of that nature, so the opinion of the majority was shelved in favour of that of a minority of one

So . a few weeks later

"Mr. Bahadur? Call from Tibet." squeaked the telephone. The aide who had picked up the phone reported to Mr. B. "Phone, Seems to be from out of town."

"Burma reporting" "Burma? I thought he said Tibet" muttered Bahadur. "Had some initial difficulty about the Trapping Licence for Abominable Snow-men (up to 7601bs). Seems the last one they issued was in 1799, and they had lost the appropriate forms or something. But a little grease worked wonders. They'll have nothing to learn from Indian Bareaucracy over here. Also got the expedition, yaks, llams, lamas, (the careful diction of Burma enabled Bahadur to distinguish the one-lled one from the two-lled one.) and..."

"Why the lamas?" queried Bahadur.

"To carry the loads, of course," replied Burma, a trifle peeved at this frivolous interruption.

"Not the llamas, idiot, the lamas!" shouted Bahadur.

"Oh, them, well they're to pray for our success, the locals won't come along without some official prayers...ha...ha...get the pun?...Sorry. Anyway other equipment includes one medium size patented Abominable Snowman Trap, guaranteed genuine, made in Japan, by Komutso and Co., by appointment Royal Trap Makers to his Majesty Charles II. By the way have you any preference as to sex?... No? . OK. Roger."

And a few weeks later...

"Burma reporting. Thought we had one last week. It was a fierce looking, hairy creature that kept making untintelligible noises and very threatening gestures. Finally turned out to be a false alarm. It was a Red Guard. Wonder what he was doing there. Perhaps he's trying to teach Mao-thought to the Snow-men, Three members of expedition died yesterday. We were in a village where

they offered us some strange looking matter to eat. It looked like fowl, fish, flesh. Finally turned out to be foul fish flesh. Killed the three outright."

A few weeks later...

"Burma reporting. Success at last. Have obtained an Abominable Snowman, large, white, male, one number. We've just got back to civilization. The trip cost us thirty-five lives, too...No, all weren't killed. They just decided to stay back there. You see, it seems that the Abominable Snowwomen have just the... Click...buzz.....click . and that's why they decided to stay back there. One strange thing, though. The Snowman almost speaks. It seems that a few months ago, some American planes dropping propaganda leaflets over N. Vietnam accidently got off course and dropped them over Snowman territory instead. These things have been studying the leaflets and have acquired a rudimentary knowledge of the language. This opens up great possibilities. Do you think that we could train this one to deliver election harangues? Or just to denounce the Opposition candidates? Think of the effect! An election symbol that speaks! There are other advantages he has over normal people. A good forceful denunciation followed by a blood-curdling scream (he does this beautifully) should work wonders, I think, don't you?"

So they brought back A. S. Noman, as they had begun to call him, and they trained him to speak. They hired the services of the best elocutionist in the city. This wasn't so easy. When they first went to him and told him what he was to tutor, he nearly exploded with rage. He was finally pacified by the brilliantly persuasive tactics of Bahadur.

"Look at it this way," he urged, "You'll be hailed as a real-life Higgins. who but you could teach an ape to debate?" and he was won over. The appeal to vanity never fails, as any psychology student could tell you.

The campaign proceeded in earnest style. Noman, whose intelligence level was found to be just under the level of the average chimpanzee, (and, asserted the malicious, well over the level of the average politician.) progressed in leaps and bounds. He was taken for a tour of the major cities. He denounced all and sundry. What won him over to the hearts of the people was his simple monosyllabic style of speaking (so different from all others). Many sophisticated women were won over too. ('So hairy and masculine, my dear!) The star of the LOST party had never seemed to have shone so brightly before. The blow was yet to fall.

The last day of filing of nominations ..

Frantic phone call from an aide to Bahadur.

"Boss, we're sunk. He's cheated us. He crossed us double, I mean He's double crossed us. What are we to do? The traitor the..."

"Just a minute. Whom are you talking about?" shouted the exasperated Bahadur. Even in moments of exasperation he was grammatically correct.

"Noman! Know what he's done? He's got a lawyer to file his nomination papers as an independent! And he's registered himself as his own election symbol. Seems he found out that, in all our hurry and flurry, we never did get down to registering the Snowman as our symbol! I told you you should never have given him those lessons in Politics and Law and Methods-of stabbing-in-the-back-as-applied-to-modern-elections!"

So that was that. The Election Symbol was duly elected by the populace to the Lok Sabha. Noman became the Leader of the Independents, who for once put aside their individual squabbles to rally to his support. They knew a good thing when they saw one, especially one as large as Noman. Eventually Noman was elected Prime Minister.

And that's why we have the first non-human being as head of government.

* * *

Teenage Idol

by R. Seshadri

WELL, to zoom off, let's forget the trial ball please (I mean the intro to this bit) and get on with the real ones and believe me there'll be no fast ones and be sure you face my bowling straight or you'll be back, God knows where, minus your-you needn't know.

To send down the first ball, 'its my brithday today but which one you'll come to know. This piece is not to announce my brithday (I'd regret the day I was born if it were. I can trust you guys that far.)

Needless to say, but yet I do say, ours is a jet age. I mean now we can do things fast, or better still, things do happen fast and unannounced these days. The other day I ran so fast I could see me chasing myself. Isn't this too true to be good? Ah, to tell you the truth it's a piece of me b'day Cake. Sweet, wasn't it?—the cake, of course.

A story I'm reminded of now is that of that guy who took off on his rocket from Russia with Love (of his wife, silly) radiced back for the tooth brush he had left behind and had it sent up to him in time for him to ask the Martians to take him to their Kosygin. He was flashed across their newspapers as a stick-in-the-mud-or, mouth (Caught the joke ha! ha!, he still had the brush in his mouth, and that gave them away.)

I'm off my track perhaps, but that's only for refuelling. What I was about to say is that things do happen overnight. (The Director for Population Studies says he can certify to that). But that again is not my point. To give it to you right, just now, last night I was 19, today I'm 20 (years of age, I mean). It isn't that simple or funny. It is alright that it happened overnight too, we're sure, but that thing which worries me is that I'm past my teens. You needn't care more than a hoot and a half for that, but that's that. There's so much diff between 19 and 20. It is like a 99 cent sale which seems a lot less than a dollar.

My teenage years were as it should be, short. I don't deny that I had my full quota of 7 teenage years (One was a no-ball). But I wish for the 8th for a simple reason that I've finished with 7. I'm justified too. My cause is nobler than that of those crazy Beat quartet who wanted an 8th day to the week just to love someone.

Last night could have been any other night as far as anyone is concerned-Leave me out. Only unusual thing that happened was that the rain which made the plain in Spain soggy decided to drop in after it had been scared off by the sun months ago. Otherwise everything was Okay, and it was a hard day's might too! What with me trying to learn the back dive with my teenage friends on the beach the whole of yesierday.

Speaking of rain and water, this 20th brithday of mine todays fills my eyes with tears as it does my stomach with cakes. I'm 20, and 'tis a pity to note that God has had no equally good idea these 20 years after he did that wise thing,-creating me, I dare say.

I'm 20, I repeat but I'd like to say I'm 19, going on 20. But after all what's one's age-nothing but the number of times he has spun around the blooming sun. To get to the last ball of the over-mind you it's going to be a googly—I,m sad that my teenage years are past. But I'm glad. Hopes are still alive. Surprised? Yes? I'm glad. all the same I'll yet be a teenager-guess when? Naturally-On my 113th brithday!

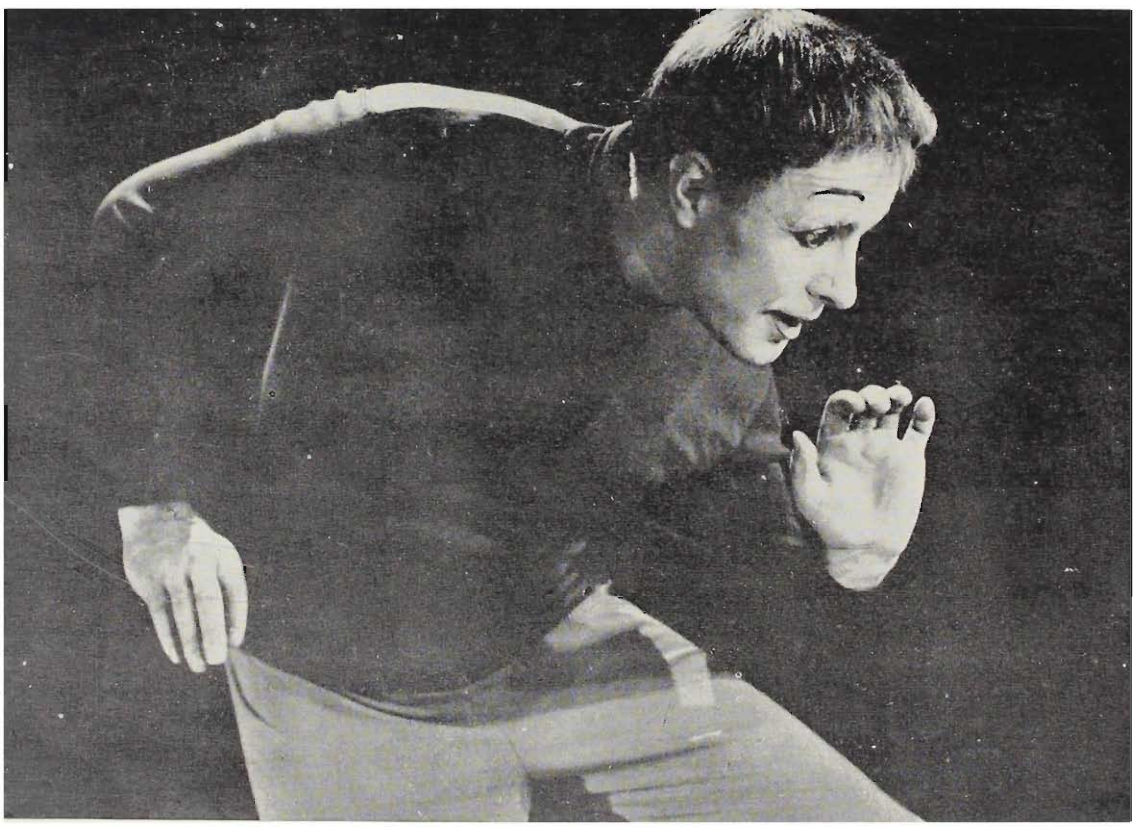
* * *

ENTERTAINMENT FROM WEST GERMANY AT I I T

The Black Forest Musicians

The singer, Wyn Hoop and Andrea Horn

Andra Horne and Wyn Hoop accompanied by Rolf-Hans Mueller and his orchestra from Baden-Baden, West Germany



The Pantomime by the famous mime Rolf Scharre

Physical Education in The Dock

by A. N. Lamech M. S. (Chicago)
Senior Physical Training Instructor

There is a popular misconception among many individuals today that physical education is just, physical fitness' or 'physical training'. This half baked notion is, sad to say, prevalent among many of the leading educationists and intelligentia, of today. There is a fatal tendency to divorce it from 'education', not realising that physical education is only an extension of the class room out of doors. To put it more precisely, the play fields are only 'class rooms without walls'! Terms like 'physical fitness' and 'physical training' have been rejected in favour of the 'total fitness' of the person, Those unaware of these facts are very much behind times and have a great deal of catching up to do!

To comprehend this more fully one has to first understand the function of education. To some, it is an accumulation of knowledge; to others, it is the acquiring of degrees, diplomas and scholarships. Education goes far beyond books and degrees; it strikes at the very central being of man-his soul, or in simple terms-his character! Physical education aims to do just that through the body. It aims to instil self-confidence, courage, perseverance, quickness of decision, courtesy, truthfulness, justice, unselfishness, initiative, alertness, loyalty, co-operation, team—spirit, obedience to leaders, ability to mix well, appreciation of the superiority of others, quality to face defeat or victory with equanimity, fair play, sportsmanship and control of emotions, normally and under pressure. Drs. Lesnard Mc Kenzie & Ray Croft define physical education as "that which sees in measures ensuring bodily health and the right kind and amount of motor activity, an avenue of approach through which the whole individual may be influenced for good in mind and character as well as in body. It employs the word physical to denote the means and not the end". Physical activities are the tools in the hands of the physical educationists with which they seeks to educate the 'whole' man. He aims at providing selected physical activities that are socially sound and mentally stimulating and satisying to help in the total growth and development of the individual.

The physical educationist shares with all other teachers a common concern for the developing individual. The same goals are shared, only each uses different materials and a wise variety of experiences and methods to attain them.

In addition, physical educationists jointly with others are concerned with education for leisure, for health and for democratic citizenship. The staff of the physical education department of the University of California, Los Angeles have very aptly said "Our unique contribution lies in the area of educating for the understanding and use of the body as the instrument for daily living, for expressing ourselves, and for communicating with others".

Why is physical education given a secondary place in many institutions even today? Does it not help in the development of organic fitness, new-muscular skills, interpretive thinking and emotional balance? Is it not based on scientific principles of biology, psychology and sociology? Does it not possess as its philosophic basis insight, understanding and experience? Are not many people blind to these facts? Perhaps, they have never experienced the thrill of kicking a ball or the sense of achievement in vaulting over a bar or a horse! It is not merely the kick or vault that matters much, but it is the sensation, joy and feeling experienced that matter. The more frequenly these experiences are provided through natural activities like running, jumping, climbing and throwing, the better are the the chances of one's mental development and physical well-being. Have not many gone off at a tangent. Pursuing materialistic ends in preference to a fuller, richer, and more abundant life?

True that physlcal educationists have much to blame. There are some that are incompetent and inefficient-they are certainly a disgrace to the profession. But are there not such in other professions too? Many have chosen professions without a proper concept and a deep conviction. They have sought after degrees and diplomas only for a meal ticket! Surprisingly they do wind up getting many of the plum jobs. Is it any wonder that the poor Indians in Chicago that Mr. Kumaramangalam mentioned in his talk to the IITians in Madras prefer not to return to their motherland? I may add, there are many other reasons besides. Are we justified in branding all the clerks in a particular bank as crooks just because one clerk had embezzled some cash?

It is often overheard or said that the physical educationists do not have any work at all. This again is not entirely true—there are some who role their employer's time much to the detriment of their employer and to their oun personal growth. They have chosen a sedentary life pushing a pen behind a desk to a life of joyous activity. The average physical educationist, apart from his office routine in the morning and other odd jobs in the course of the day, works in the evenings when all the other staff of the institution have left for home. Often there is really no one to adequately assess his work.

Perhaps some have become frustrated in that they are not on a par with other teaching staff ot the Institute even though they are inextricably

involved in this big business of educating people. The heads of institutions in many cases have failed to realise that it is the physical educationist alone that come into a vital and personal contact with the students and that he positively does wield an influence over them for better or worse in no small measure. Using physical activities as material he is able to contribute towards a full of meaningful experiences.

Quite often the physical education teacher is hastily misjudged for his lack of skills in many games and sports. The fault lies in the many institutions that train teachers in physical education. Even though many of the colleges of physical education emphasize that every physical education teacher should be highly proficient in any two major games and at least one event in track and field sports they turn out many who possess very poor skills. Though this is only one aspect of the total work he is engaged in, it is an important aspect ant it cannot be denied that skills in games and sports does help a physical education teacher immensely to be a more effective workman. He is primarily obsessed with the idea that sports and games should be for all not slightlng the general program for the highly specialised training for the skilled few. Rosalind Cassidy in 'What is physical Education' has this to say "The primary job of the physical education teacher, as differentiated from that of other teachers, is educating for an understanding of the body as a symbol of the self, for an understanding of the laws of its expression and use, and for the value of a responsive, well directed, mature responsible instrument for living with oneself and with others".

Another charge brought against the physical educationists is that of acceptance of commissions from the sports companies on the purchase of sports materials. Many have tried to stifle that still small voice within by countering that other teachers have opportunities for private tuition, paper-setting and paper corrections. However, it must be pointed out here that the association of physical education teachers have again condemned it as illegal gratification at its most recent meeting. This is a matter best left to the conscience of the individuals concerned as it does effect the quality of the work they are engaged in. If they are engaged in educating others and helping others to a better way of life, it goes without saying that their hands should be clean.

These misconceptions have resulted in no proper recognition being given to physical education. Until and unless recognition and status is given, the physical education teacher continues to remain, in the words of a leading physical educationist of Madras, a glorified peon. It is only when proper recognition is given that the training colleges in physical education will begin to attract the right type of people to do the right kind of job.

It is gratifying to note that the Government of India is contemplating the introduction of Physical Education as a compulsory class room subject in schools and colleges-and why not? Is it not based on the sciences of psychology, psychia try, sociology. Is not the physical educationist entitled to as square a deal as other members of the teaching staff.

On your verdict hangs the lives of thousands of young men and womeu graduating from schools and colleges all over the country with every possibility of being a skilled barbarian, ill-equipped and unprepared to meet a crisis in life just because many with a wave of the hand brushed aside physical education and relegated it to a position of secondary importance or of no importance at all! What is your verdict?

* * *

The First Meeting

by V. Sundaresan

CHANDAR glanced with impatient disapprovel at the office clock for perhaps the fifteenth time in as many minutes. For him, the only thought foremost in his mind was to rush home as soon as his office hours were over, find her waiting for him at the door step with an impatient-yet eager-manner, gather her in his aims and smother her with...

To get thoughts of her out of his mind he decided to think of something else but invariably his memory came back and dwelt upon their first meeting. Ah! The first meeting. It was not like the ones in stories or pictures. He could still picture her as when he had first met her, younger of course, but still as pretty as ever.

It was in a local hospital that they had met. He had heard pitiable heart breaking cries and with one or two others, mostly doctors had gone in to investigate. He would never forget that moment. Time stood still for God knows how long. He had found her weeping besides a cot 'containing' her mother-rather her body-. He had found her inconsolable for she was in a daze as to what had happened and was not sure of her own ground. She did not have any one to look after her and when Chandar made a move to take her home with him she did not object, rather, could not object. After that it was a period of eternal laughter and happiness in their house. She did not cry in between but in the presence and company of his mother-a loving women-she grew stronger and stronger. In these eight years...

In these eight years .....Chandar awoke from his reverie with a start, glanced hurriedly at the clock, locked his room and treaded his way back. He had promised to take her to the exhibition that day and she did get petutant when he forgot these minor things. As was his custom, he brought some flowers- Jasmines which she liked best, and her favourite sweets-and with a thumping heart, set out.

He laughed a little, ashamed of himself for getting so excited about meeting some one whom he had been seeing every day for the past eight years. His love for her remained as strong as ever. He had played a lot of silly little games with her and he still blushed at the thought of those ...

As he turned the corner and entered his street he observed with a grin that she was waiting for him fully dressed and he literally ran the last few steps to reach her. He scrutinized her as though seeing her for the first time. She looked charming, the passage of time having increased her prettieness–in a pale green creation with a blouse to match. Her pouting lips, grey penetrating eyes, slightly brownish hair and the dimple which formed in her cheeks when she smiled made her irresistible to any one.

Chandar's mother was working in the kitchen. Chandar futively looked around to see if any one was observing and kissed her mildly on the cheek. He then gave her the sweets and flowers which he had brought for her. Her steel grey eyes sparkled with pleasure and for that look which she gave him–for that alone–he would have given 'anything.' He looked in the direction of the kitchen again. His mother did not appreciate his exuberance very much but she chose to make her entrance at the wrong moment, "Mother, Meera and I are going to the exhibition and will be back soon". He set out with Meera.

The mother's face filled with tears as she saw her son and her eight year old grand daughter go together hand in hand.

* * *

Teaching and Research at "Technische Hochschulen" in the Federal Republic of Germany

Prof. Count Stenbock—Fermor
(University of Aachen)

A few weeks ago an Indian student from Benares who is studying in Aachen asked me to explain to him the principle of academic freedom which characterizes the universities in our country. He himself had become aware of so many varied problems in this connection that he could not quite understand the meaning of it all and he wanted to know in particular about its practical implications.

I welcomed the question and found it particularly opportune, for I believe it refers to the central problem which must be solved if German universities are to be understood, and I must take it as my starting point if I wish to give you an impression of the essential character of our universities and our university education.

A few remarks about the historical development:

The oldest existing German universities were founded in the 14th century, (Heidelberg, Rostock, Cologne, Erfurt, Leipzig). They were founded, as it were, on the basis of the Revival of Learning (Early Renaissance), that intellectual and spiritual movement which influenced the whole of Europe. A second group of universities owe their origin to the great religious disputes between catholicism and protestantism in the 16th century (e. g. Marburg, Wuerzburg, Giessen, Kiel). A further important phase in the development of the German universities came in the 19th century.

It was governed by the ideas, concepts and principles of "classical idealism". Prussia was in those days the largest state in Germany. Wilhelm von Humboldt who was a Minister in Prussia carried out a reform of the German universities in the course of which Berlin, Bonn and Breslau universities were founded and quickly grew to fame. According to von Humboldt's ideas the essential features of the German universites were to be as follows:

The totality of academic education is founded on philosophy, and furthermore on a constant relationship between research and teaching; out of

this could develop a close intellectual association between the teacher & the taught, coupled with education for independent thought and action, all in the belief that a person thus educated would best be able to master the social and professional problems of the state and the society. Academic freedom for both teaching and study, which is so characteristic for our universities, is based on this concept.

However, in the course of the 19th century the concept of academic studies which so far had been directed entirely towards the arts, began to undergo a change. Up to that time the exact natural sciences had played a subordinate part in the universities. At the end of the 19th century there were faculties of natural sciences at only three German universities but at that time they began to assert themselves as academic disciplines.

The universities were critically opposed to the natural sciences but even more so, to the engineering sciences which were gradually developing. While the natural sciences studied the legitimacy of natural law and expressed it in mathematical terms, the engineering sciences were in search of methods of predicting (prognosticating) the reactions of man-made apparatus, machines, installations and systems which were not provided by nature and which had to fulfil tasks of given characteristics. Only gradually was it recognized that one was concerned in this field not only with systematic experimentation aimed at practical application but that a new academic discipline had been established.

The universities did not open their doors to the new disciplines and therefore new "Technische Hochschulen" arose, which were soon granted a status equivalent to that of the universities (e.g. in Berlin, Karlsruhe, Munich, Stuttgart, Darmstadt and Aachen). Germany, like France and other countries on the continent of Europe, thus pursued a course different from that followed by Britain, where technical faculties were established in the existing universities. While Britain has recently taken steps to establish her own "Technische Hochschulen" one became concerned recently in our country with an approach towards a unity incorporating all academic studies. The "Technische Hochschule" Aachen has been the first to take a decisive step in this direction. In addition to the five existing faculties of natural sciences and engineering sciences a faculty of philosophy was added in 1965 and a faculty of medicine in 1966. Our "Hochschule now has the following seven faculties :

1. Faculty of Mathematics and Natural Sciences
2. Faculty of Civil Engineering and Architecture
3. Faculty of Mechanical Engineering
4. Faculty of Mining and Metallurgy

5. Faculty of Electrical Engineering
6. Faculty of Philosophy including Philosophy History Geography Psychology Languages Sociolgy Economics Industrial Management and Political sciences.
7. Faculty of Medicine

The most important principles of the German University are as follows :—

I The connection between Teaching and Research

That demands from the professors that they do not restrict themselves to importing valid and recognized knowledge but that they constantly put it to the est and add to it by their research and by their striving (forward) from the known o the unknown. Lectures and exercises are to be part of the living process of the search for truth and they should enable students to participate in the research carried out by their professor.

This means that the student is required, particularly during the later stages of his studies, to acquire his education by participating, at least as an observer, in processes which lead to academic truths. Teacher and pupil are united in the common task of the search for truth (knowledge) whereby the one carries on his research, the other develops into a personality who, by reason of having acquired a systematized knowledge and ability, is in a position to master problems, for which there are no ready-made solutions.

That these principles and requirements are not always completely lived up to even in Germany is due in part to the exceptional increase in recent decades of the total number of students but also of course, quite naturally, due to human frailty from which the students and even the professors are not entirely immune.

II The Freedom of Teaching and Research

Article 5 paragraph 3 of the Constitution of the Federal Republic of Germany says : " Art and Science, Teaching and Research are free. The freedom of teaching does not exonerate from allegiance to the Constitution. All the Constitutions of the separate federal states include corresponding passages. The principle of academic freedom means that university teachers are autonomous as far as decisions regarding the content of their teaching and research are concerned, that parliaments and governments are forbidden to interfere in the teaching and research of men of letters by means of laws, orders or instructions relating to method, subject matter or aims. On the other hand, academic freedom is limited in so far as it is bound by general legal norms.

You will probably be interested to hear how these principles are applied in practice, for there are at least two aspects in which academic freedom is threatened by the state :

The University is financed entirely by the state and it is the state also which has to insist on particular schemes of academic training for particular professions and thus, through the medium of the examination regulations, exercises an influence on the choice of academic subjects.

The instrument which really enables the universities to arrange their academic life freely is their system of self-government which is to a large extent independent of state influence and enjoys state recognition and respect. State influence in the field of university self-government is limited to legal control, i. e. its control affects only the legality and not the expediency of measures taken by the academic self-government.

The tasks of the academic self-government are in the main:

Matters concerning research,

all questions connected with academic teaching,

also the organization of the teaching activity and the compilation of regulations relating to study,

the compilation of examination regulations, which however also require governmental approval,

the acceptance and the dismissal of students,

the maintenance of order as it affects the academic life of the University including disciplinary powers over the students,

the granting of academic degrees and awards and above all,

a particular point of great significance;

the making of proposals for the extension of the teaching staff.

This latter function appears to me to be so important that I should like to deal with it in more detail. When an appointment to an existing chair has to be made because the professor has died or retired or when a new chair has to be created, the faculty concerned forms a selection committee which nominates three persons after having carefully examined candidates' academic achievements and having heard sample lectures from each applicant. Thus nobody can apply for a professorship. When agreement is reached between the faculty concerned and the senate, the rector submits the three names to the Ministry of Education which is empowered to alter the order of names on the list. That happens rarely and only after previous consultation with the university. During the last 20 years at our "Hochschule" the Minister of Education has only once appointed number two on the list without our being consulted, and that caused considerable indignation.

The powers of the state are limited in the main to the following :—

It meets the university's current and non-recurring expenditure; the regula tion of the legal position of professors, civil servents and junior officials employed by the university and thus in the service of the federal state concerned; the appointment of university teachers nominated by the university; the compilation of examination regulations for state examinations and the approval of academic examination regulations drawn up by the university; the approval of the university constitution.

III. The Freedoms of teaching and research enjoyed by the professors correspond to the freedoms which the students enjoy regarding their studies.

The German student can attend the university of his choice; he is free to move from one university to another and in principle he is also free to decide what and how he will study; with what intensity he will conduct his studies and to a certain extent how long they shall last. Examination regulations lay down only the minimum period of time required for the study of each subject: the maximum time which may be devoted to studies has so far not generally been stated. In our opinion the student should learn during his studies to be responsible for his own decisions. He should produce the energy and the determination to work and to study reasonably well without being subject to regular etxernal compulsion. It is, of course, possible for him to take advice regarding the most suitable way of arranging his work.

This freedom of study has to a considerable extent been retained as far as the arts are concerned but for the engineering sciences, the natural sciences and also for medicine there are courses of studies which prescribe a certain sequence to be followed and which for example make participation in certain exercises dependent on the successful conclusion of other exercises. In these field of study, therefore, the work is arranged systematically and the scope for free decisions on the part of the student is limited. In no subject, however, is there such a thing as compulsory attendance,

The rapid development of many academic subject in the last two decades and the extraordinary inceease in the total number of students have led in many subjects to a considerable increase in the duration of studies.

In recent years plans have been discussed in Germany for reducing the normal period of study to about four years by means of a system of fixed courses of studies and intermediate examinations. That will, however, only be possible by reducing also the freedom available so far to the student, and although that could scarcely be avoided it will most certainly be regretted.

The number of students in the Fedral Republic of Germany increased between 1950 and 1965 from 110,000 to 250,000 i.e. to 225%. The number of foreign

students in our country increased during the same period from 2,000 to 23,000 i.e. to 1120%.

In the Federal Republic of Germany to-day there are 20 universities, 9 "Technische Hochschulen", and 3 special institutes with university status. In addition there are 17 theological colleges and 32 Teacher Training Colleges in which teachers for the "elementary schools" are trained. Anybody wishing to study at any one of these educational institutions must have successfully completed a secondary school course and must have been granted his Secondary School Leaving Certeficate. It is on the other hand possible to attend an "Technical College" a "Collegc of Art" or a "College of music" when one has simply attended the "Elementary School

Allow me finally to give you some details about the "Technische Hochschule", Aachen, in order to supplement what I said at the begining and in order to give you some idea of the "Institute" which we represent:

The "Technische Hochschule", Aachen cannot compare, in age and tredition, with the oldest and most venerable German universities some of which were founded more than 500 years ago. The "Hochschule" in Aachen was founded in 1870 and will thus in three years time celebrate its centenary.

It quickly developed into a reputable "Institute" remaining however at first quite small. In1939 when the Sccond World war started, Aachen had 1000 students. Aachen was the first German town to be taken by American troops and 70% of the buildings of our "Hochschule" had been destroyed by air attack and street fighting which had lasted for days.

After the War we were faced with a threefold task:

Reconstruction of the parts of the university destroyed, re-establishment of our position in relation to international academic and scientific progress and the handling of enormous increase in the number of students. As early as 1960 the total number of students reached 10,000, with 2,000 foreign students, and it has since remained about constant. Aachen is thus the biggest "Technische Hoshschule" in Germany. The number of professors has increased from 44 to 145 and the total number of university teachers—from proressor to assistant—has grown to over 900.

At the head of our "Hochschule" we have the Rector and the Senate. The Rector is elected for one year at a meeting of all professors. He can be re-elected so that his period of office is increased to two years and that is customary in Aachen. The Senate is the supreme athority in the "Hochschule". It consists of the Deans who are the heads of the faculties together with one representative of each faculty.

In German universities, generally speaking, there is no Governing Body of any kind which stands outside and over the university for purposes of direction or control. Neither do we have the honorary office of Chancellor as it is understood in your country and in Britain. The Kanzler in our universities is the senior administrative official who assists and supports the Rector and the Senate in the administration, and in the maintenance of continuity, in matters of finance, economics and personnel. This is important bearing in mind the fact that a new Rector is elected every two years and the composition of the Senate changes annually. The Kanzler's is an extremely interesting function in the highly charged area between academic self government on the one hand and state administration on the other. I have had the honour to hold this position at our "Hochschule" for 12 years and the two years during which Professor Schmeisser was Rector—years which I recall with thanks and pleasure— were particularly happy and enjoyable in spite of all the external difficulties.

I have already enumerated for you the seven faculties of our "Hochschule". They include many fields of study where orientation and emphasis vary according to the importance of the professor concerned, according to the stage of development reached in particular branches of science and also according to industrial requirements, e. g. electrical engineering has developed quite extraordinarily in recent years while mining as a profession and as a field of study has fallen back as a result of certain structural changes in the German economy.

We have close and manysided relations with the various branches of industry from which many professors receive research projects. We believe that especially in connection with the engineering sciences a permanent and lively relationship with industrial practice and a certain adjustment to meet industrial needs is indispensable.

Our "Hochschule" also maintains academic contact with universities abroad as for example in Britan, France, Belgium, Holland, U. S. A., Chile and of course in India with the I I T. Madras. I am not simply polite when I tell you that our contact with your attractive "Institute" is of very special interest for us—if that were not so we wouldn't be here to-day.

You will perhaps be interested to hear that of all the German universities, Aachen has the largest numper of foreign students. There are some 2,000 representing 76 countries and we have 115 Indian students. We are well aware how difficult it is for someone to study with us when he is separated from his national and family relationships, when he finds himself in a foreign country with a foreign language, strange customs, a climate to which he is not accustomed and different methods of instruction. Therefore we are at great pains to help foreign students

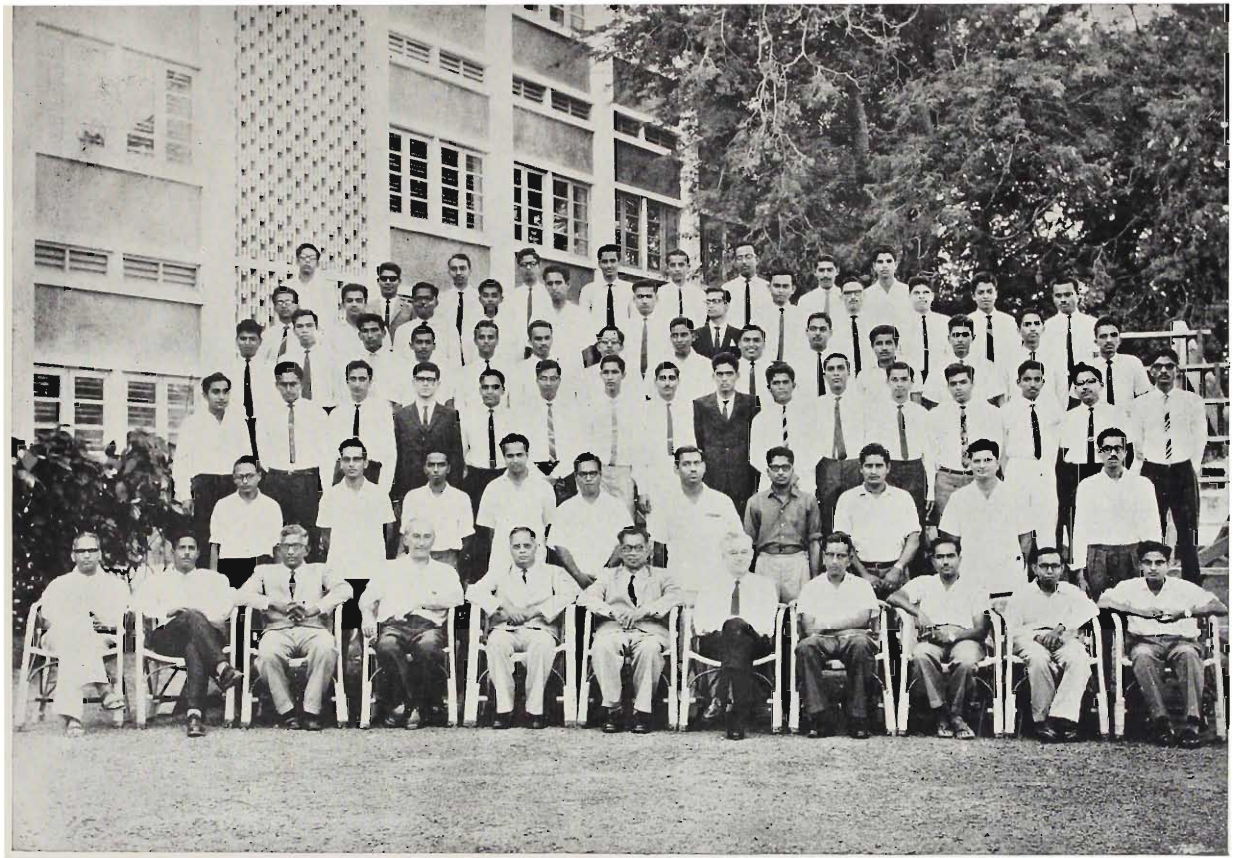
by advising them during their studies and by providing instruction in German and a propaedeutic approach to the subjects to be studied. More than 30 assistants are devoting their entire time to reach foreign students in groups which resemble tutorials.

At the conclusion of our discussion about German universities my Indian friend asked me whether in my opinion our system is the best. I can only reply that I am certainly not convinced about it. When one gets to know universities in foreign countries and when one discusses their problems as I have done, very often one learns that the problems are everywhere the same or at least very similar but that it is the means of solving them which vary so much. The methods employed abroad are often just as good as one's own. Each country must find solutions which suit its own traditions, the mentality of its own people and its own particular requirements, but we should all help each other as much as we ca n for science' sake and for the good of our peoples.

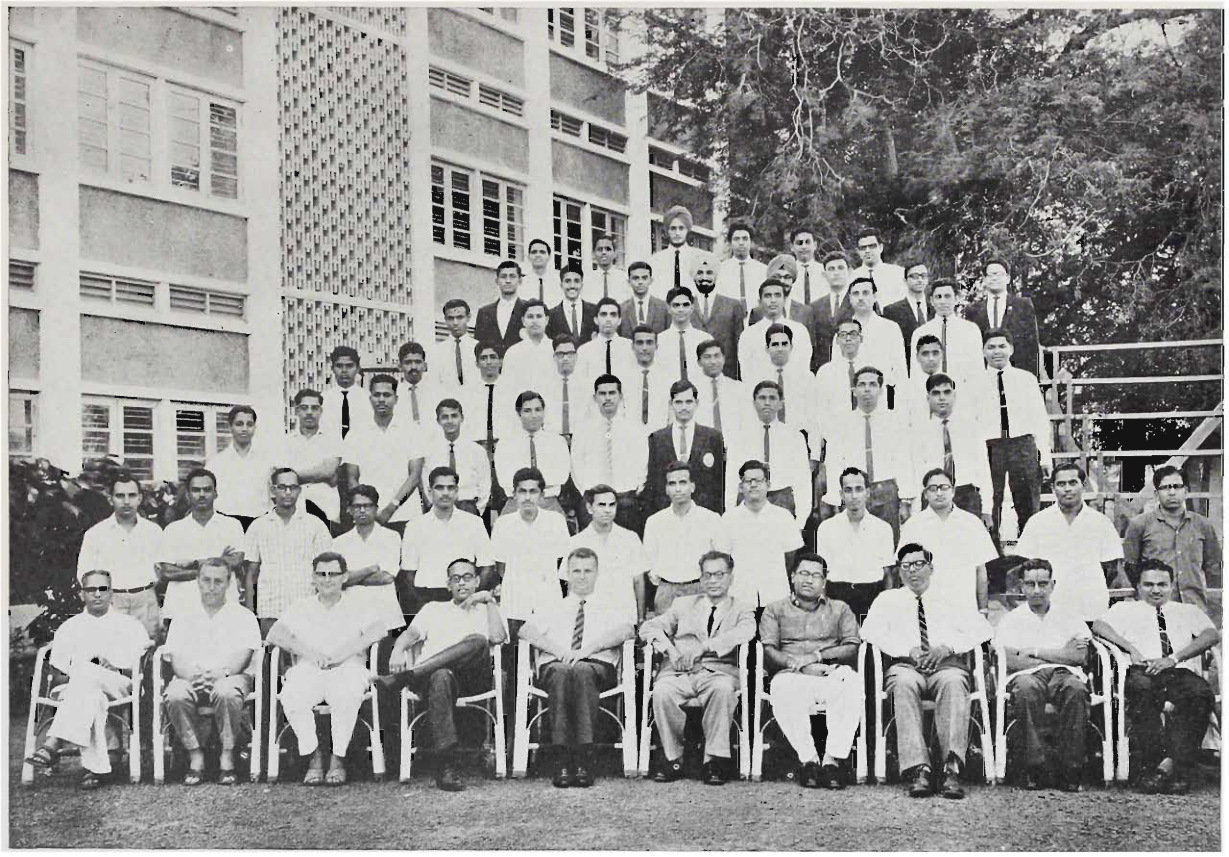
* * *

THE CLASS OF '67

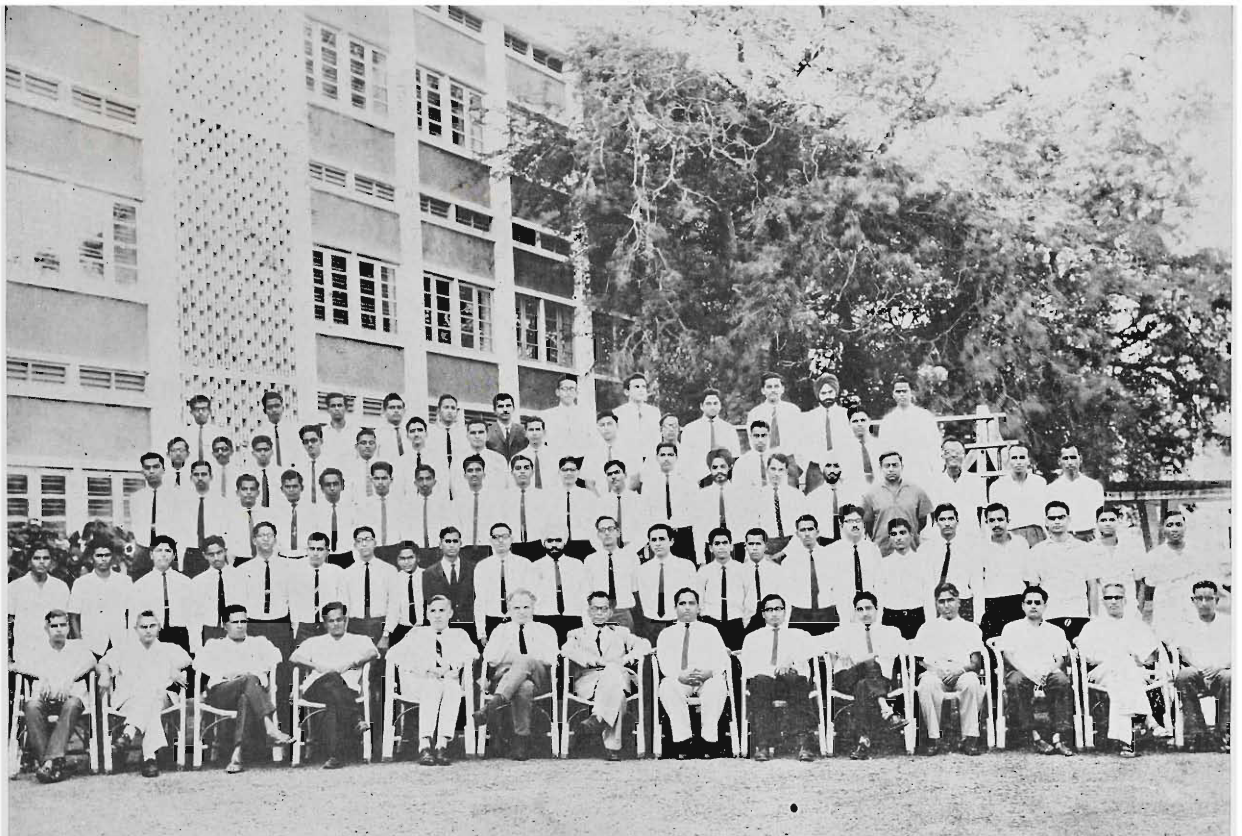
FACULTY OF CHEMICAL ENGINEERING



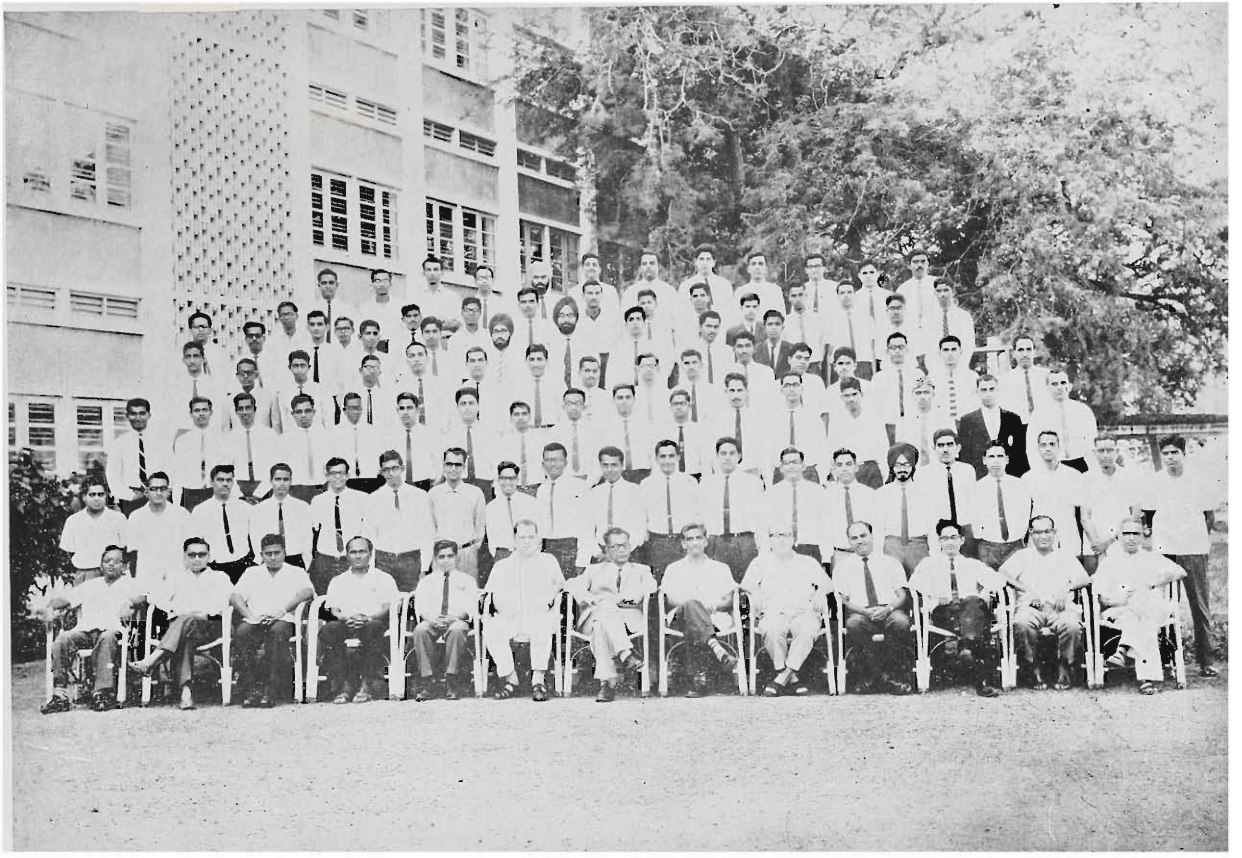
FACULTY OF CIVIL ENGINEERING



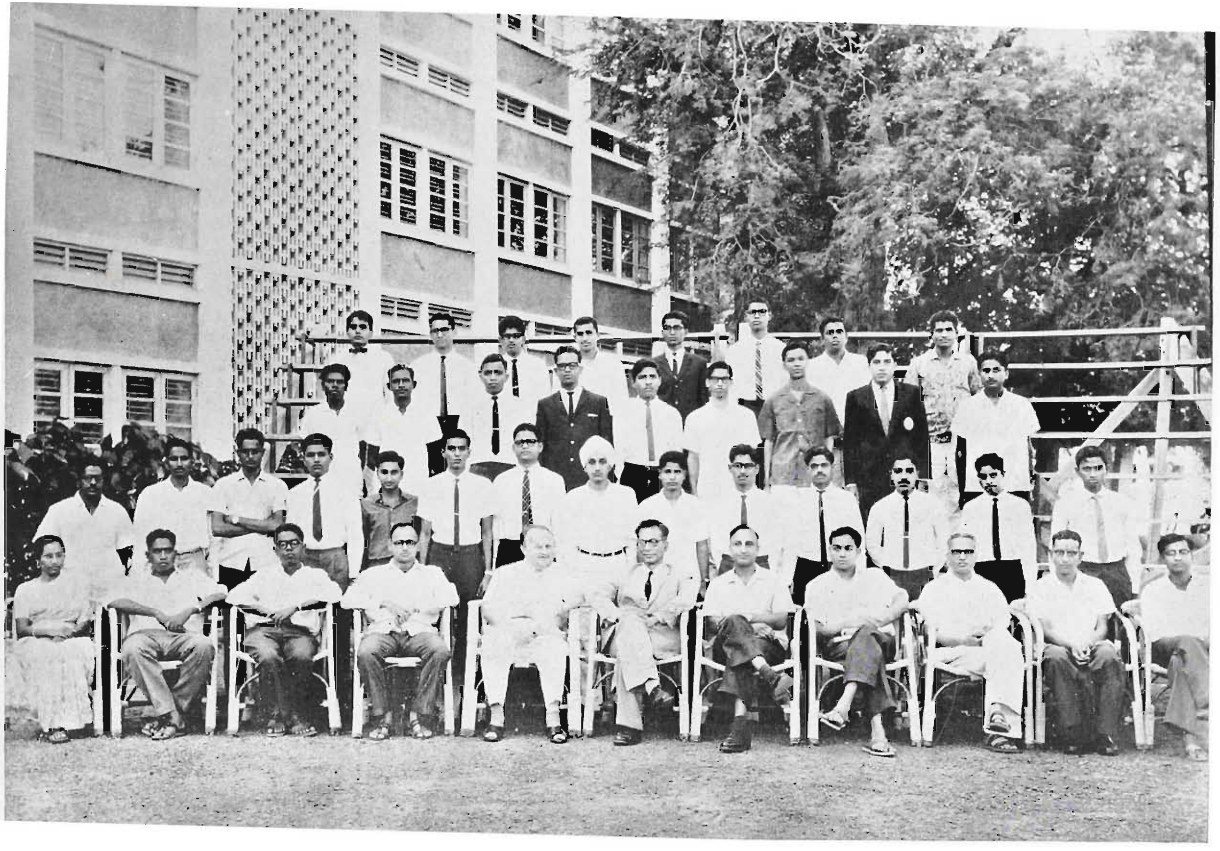
FACULTY OF ELECTRICAL ENGINEERING



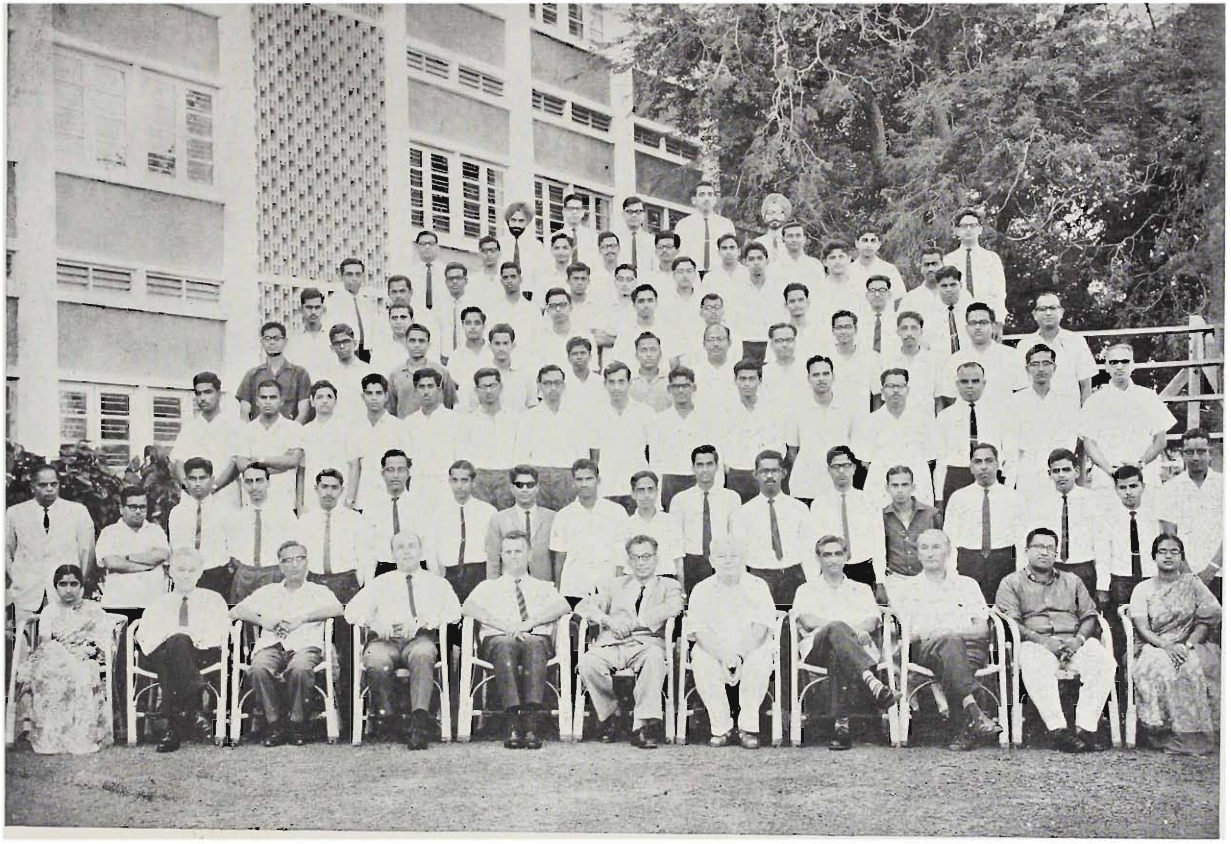
FACULTY OF MECHANICAL ENGINEERING



FACULTY OF METALLURGY



THE POSTGRADUATES OF THE VARIOUS FACULTIES OF THE I. I T.



The Brink

NINE thousand revolutions per minute. A hundred pounds of steel, streaming with oil, spun a hundred and fifty times a second eight inches behind his spine.

The man in the helmet gritted his teeth against the bone-jawing vibration and stared at the bend closing in 200 feet every second. He watched for the landmark–a tree, and as soon as it crossed his field of vision at 45°, he stepped on the clutch pedal, opened the throttle with the heel of his asbestos-covered boot, and slammed the shift lever across the gate into neutral, almost immediately down into third, while at the same time the toe of his accelerating foot had rotated and delicately jammed on the brakes. The nose of the car was pointed straight at the inside kerb and in a wake of burning rubber, the car went into a perfect four wheel drift around the bend and accelerated out of sight.

Silence returned to the bend. The rubber film lay on the road, black and shiny, slowly hardening. The asphalt was shimmering in the heat haze. The track official checked to see if there was an oil slick on the road and went back to his sandwich.

Five minutes later, the man in the helmet screamed into the pits and got out of the low-slung Lotus-Ford. As the cooling metal ticked, he made a few notes in a little book and walked off to find his chief mechanic.

"Ahtoine", he said "it's a bit undergeared. Might try lowering the rear-axle ratio about 0. 1. The 7-mile and 5 mile straights are both a bit uphill, though. Might need 0. 2. I dont like that damn line at 9,500".

"How're the brakes?" "I changed the right disk, the one that faded too much". "I think it's the left one that's biting too much. Each time I hit the brake, the car swerves to the left. It's murder turning right. Just soften them linings, huh!"

With that, Herre lit up a smoke, changed out of his asbeotos overalls climbed into a pair of shorts and went off to study his notes. He had painstakingly written down everything he knew about the 16 starters. He knew their previous performances by heart, as well as the events, cars used and construction details.

He noted down his observations that morning. He reckoned the three American Eagles were going to be tough competition. They had performed

well in Indy despite the fact that they were symmertical. All other cars racing at the 'Brickyard' had offset chassis as the circuit had only left turns in it.

He noted with glee that the Lotus-Maserati had been a big bust that morning. The chassis-builders had boasted that its radically new suspension geometry-7 degrees of negative camber front and back, and semi-elliptic leaves that doubled as torsion bars, enabled it to corner better than anything else on four wheels. "Big deal", he thought "it couldn't go round a corner even if it was straight".

Another intesesting car was a Bordini. It was blown with a 17 psi exhaust powerd turbocharger, and so had a smaller displacement, to conform with the rules. Though it seemed to have tremendous acceleration, it appeared to consume fuel a trifle voraciously and the superchargers back pressure had filled a couple of cylinders that morning to the owner's great disgust.

Herre didn't have much of a memory. "Must be getting old", he thought "can't even remember the 176 bends and corners at Nirbirging". With his face screwed up in concentration, he slowly drew a scale map of the track and its bends and corners, with braking and gear-shift points marked.

Eventually, he went out and found the car nearly ready for another time trial. The officials told him that the lap record had been bettered twice in practice. This irked him but he could do nothing about it. The new rain tires had to be worn down a bit and they were dangerous at high speeds on a dry circuit.

But he was in luck. Mario Castellotti, who had come close to winning the "Drivers championship last year was out practising in a big, red, vicious-looking racer that Enzo Ferrari himself had presented to him. Castellotti was one of the acknowledged experts on braking refinements.

Larnerde went howling down the straight, intent on following the maestro and learning something. It was a shattering experience. Castelloltti seemed to start braking a full half second after he did and seemed to boost out of his drift much sooner. In those few laps, Larnerde learnt enough to clip his lap time by 0. 6 second and use half a dozen less gear changes.

In 14 hours, 16 four wheeled missles, equivalent to 9000 horses would start off on a 1000 mile journery.

All night long, the pit crew, practised their operations. Endlessly, they yanked the four big firestone baloon tires and push-fitted them back on again. They practised their refueling drill though they were handicapped by the regulations of that particular circiut which prohibited pressure hoses and limited the rank capacity at the pits to 250 gallons, which wasn't a hell of a gravity head.

Antoine had neatly copied out a table of front and back tyre pressures to be used to correct various degrees of under and over speed.

A distant clock struck midnight. The men were busy stripping the car as well as the engine and reassembling it with ridiculously motherly care.

The engine, an unblown 3 litre V-12, had been completely designed by a computer at Ford Motor Co. This didn't mean it was invincible of course. The combustion chambers were of a novel design and it was amazing how the engineers had fitted 4 valves and dual ignition to the smalt-bore cylinder heads. No doubt encouraged by the computer, Ford had thrown away the distributor and installed a transitorized ignition system. There were 7 huge main bearings, built of special alloys to take the enormous piston-inertia and gas-pressure stresses produced at 1500 revs. Cost had definitely not been a criterion as far as this mill was concerned. There were four overhead cam shafts and the ZF gearbox, made by Zahn Fabrik G. m. b. h. was one of the best of its kind made in the world.

Thinking their thoughts, the men worked. The car was jacked up after the last screw was tightened and couple of men welded air scoops on the front suspension wishbones to cool the brake cylinders. That was that. They turned in for four hours sleep. Meanwhile, Herre slept like a sack of coal. It was fortunate that he didn't dream. He would have been thoroughly frightened.

The grandstands were filling fast. Thousands of people were talking, all at once. A bunch of sharpies were making book, illegally, near the car park. Vendors, bawling out their spill, made the rounds. Official brochures, with ancient pictures and out-of-date information, and mostly filled with ads from automotive manufacturers, were nevertheless selling briskly. The Press Box was filling fast and sound trucks had moved in, disgorging TV cameramen, who promptly drove out to strategic corners. Meanwhile, the big horns blared out the results of the cycle race that had been held a half an hour ago. Some of the racers were already there, warming up and having their tuning rechecked by sweating, lead eyed mechaics.

The scrutineers had finished checking the cars to make sure they did not violate track regulations as well as FIA classifications for the current year.

At long last, a pompous looking official rode past the grandstand in an open car and declared the G. P. season open. The starters were announced, along with their positions on the starting grid, determined according to their practice lap times.

According to regulations, the cars had to drive up to their grid positions and wouldn't be pushed. Also they couldn't be push-started but had to dare their own self-starter. The officials finished sealing the oil tanks as all cars were

allowed only one tank in this race. As the engines coughed into life, successively, the reverberating roar washed back and forth through the grandstands.

Herre was in the centre of the second row, not having been able to improve his lap time in practice. Castellotti had the coveted pole position and the Bordini-Brabham next to him.

The track was dead quiet. T-15 seconds and the cars exploded into life. Engine revs. 4,500. This was it. The flag went down. Sixteen clutches engaged simultaneously and the whole grid of cars accelerated rapidly down the straight, passing 60 mph in five seconds. At precisely the same instant, 16 drivers changed down and hurtled round the first bend. The hubbub of conversation started up again.

The wind howling past his helmeted head, Lamerde was irresistibly rammed into his seat by the enormous acceleration kicking the car forward. There were four cars ahead of him. There were another forty laps to go on the 21 mile circuit.

With ntense concentration, he inched the tachometer needle higher and higher, approaching 9,300.

The Bordini-Brabham was sliding up alongside. It was the only car among the starters using a hydraulic transmission and the fluid flywheel box suddenly sprung a leak, blasting hot fluid all over the track. The Car's engine, free wheeling, must have instantly gone way over the revolution limit, for with a deafening burst, it flew apart and the Brabham careered across the track, hit an oil drum with a clang, and ended up in a mass of twisted metal, burning fiercely.

In a matter of seconds, the other cars had whipped past the scene of the tragedy and the track officials put up flags warning of the oil slick on the road.

Wailing ceasessly, with red lights flashing, two fire trucks and an ambulance rumbled up to the wreck and plastered it with foam. The driver was burnt to a cinder. The ambulance carried away a spectator who had been hit by sharpnel from the exploding engine.

Ten minutes and 6 seconds later, the lead-car came howling down the straight, screeched around the sharp, slow corner in front of the TV cameras and roared out at full boost.

Herre, who had been push-fitted into the small cockpit, wiped his fogging goggles with the chamois leather patch sewn on his sleeves. The vibration was fantastic.

The sound level was very close to the threshold of pain. The 600 horse-power engine was emitting on a banshce shriek from the spaghetti-like scramble of 12 open exhausts behind him.

Every nerve ending was raw and tender. His hand was blistered from constant gear changing. His calves were cramped from the continuous strain of braking and accelerating, but the pain was hardly noticeable.

The exposed area of his skin was, immediately sand-blasted by the almost solid wind and the heat was intense.

"Why the hell am I here?" he thought. Some people would explain it as life reduced to its barest essentials, the struggle for existence compressed into a few hours; all window dressings removed. The strong would win. The weak would die. It was adventure for many; a livelihood for others. For all it was excitement of a kind that only mountaineers, animal tamers and combat troops know.

Herre could feel the individual irregularities of the road surface, the changing camber, the variations in adhesivity and had to continuously compensate for these. The car hurtled round the circuit laying rubber in its own darkening tracks, grimly fighting for position.

His crew signalled to him for a refuelling stop after three more laps.

Half an hour later, he was in the pits. The tank was filled three quarter as he reckoned that the lighter car would compensate for less fuel and the faster speed would enable him to indulge in some slipstreaming.

Roaring out on the track again, he managed to get immediately behind the faster fuel injected Ferrari. The reduced air drag and suction effect added fully 20 mph to his speed. He coasted 24 inches behind the Ferrari, as if locked, in place at 180 mph and the cars bunched like a fist burned round the corners, fighting for scant hundredths of a second. Antoine noted down the times into the lap sheet tacked on the hardboard with the three stopwatches on it. The three stopwatches were simultaneously operated by a bar so that when one was stopped, the second was started and the third reset. This enabled consecutive lap times to be continuously recorded.

Antoine was keyed up to breaking point. His boyhood friend and lifelong pal Herre was still tailing Castelotti, the leader for the past dozen laps. They had another 10 laps to go, about 210 miles. Both cars were being steered on the brink of disaster. You were a hero just a hair's breadth this side of the brink, and a smoking corpse on the other. At the transition, the road turned from rough asphalt to glasss-mooth ice.

At that very instant, Herre accelerated just a little too hard and the wheels pin pushed him over the brink.

The danger flags were raised. All cars had to slow down. Passing was forbidden. Sirens wailing, the meatwagon thundered down the side of the track, TV camera operators zoomed their lenses in, asbesetos-clad firemen scrambled round the flaming mass. Antoine and his crew, grimly ran up to the inferno and a track official scratched out no 18 from the starting list.

* * *

Damn the Dicks

by 'Oren'

PROLOGUE

I am no Shaw to write a preface as long as or longer than the play herself (I guess that the gender of play is feminine in Deutsche Sprache Lehver . If not let it be so.) I find no reason why one should write a preface for the work you are going to read in a few moments. What earthly use will it be to give a glimpse or an expansion of (Shawinism) such a piece; I know not. If you have such a dish before you, you might leave the play and read the preface alone. So I think it is best to introduce the play right away, rather than mumbling about it beforehand. Here you go.

I think it is always worth being conservative in dedicating the piece to someone ere you start any work.

"May Muse protect me in my endeavour*."

I would rather like to apologise than acknowledge the original creators of most of the DRAMATIS PERSONAE. I think it is high time we start the play.

PLAY PROPER

Scene I

(It is a big hall. There are about half a dozen pedestal lamps placed asymetrically around the hall. A few original paintings (so the owner claims) are hanging on the wall. You can see the twilight through the large French window lying west of the room. There is a large bronze statue at the southern corner. There is a huge stuffed head of a orang-utan. It was supposed to have been shot by the owner of the mansion. The window-sills are all decorated with vases containing synthetic flowers. The floor-spread is made of deerskins. The blinds are of snakepeels. Near the bookshelf there is placed a convertible; I mean a sofa-cum-bed. The middle of the room accommodates a dinner table. It is made of stained mahagony. It has as its legs ivory from African Elephants. The table is three feet one and a quarter inch high. This seems to be the value designed to give the

---

* *Dedication of a play to the Goddess of Poetry owes its cause to the lack of knowledge about who the Goddess of Play is.*

most comfortable position for eating. It's a pretty long table. It has around it half a score of chairs; these chairs are made of plastic with spring fitted seats. That's about the room.

Of the owner we have little to say. He is a very rich man sans Arbeit. His name is Hellhe Sailsea. He utilises his time most usefully in dwelling upon books of crime. Any such book will decorate his library the very day it's published. The party is arranged by him. Now the hall sees an ensemblage of several people. They are all connected with crime. They are no criminals. But they are world's foremost detectives and criminal lawyers of fiction. Whom do we see here? We see Perry Mason, Hercule Poirot, Sherlock Holmes, Shankarlal, and the Assistant Commissioner of Police of the City of Addis Ababa. All these people are special guests invited for a holiday party. You know how difficult it is to have a gathering of such persons for whom special permission has to be got from the Heads of State.

We dont see the owner among the ensemblage. I guess we have to wait with the others. Now the Secretary of the Palace Mr. Alphakhan leads the visitors and requests them to wait a few seconds till the host arrives.)

Mr. Alphakhan: (with a smile) Welcome to this place. You have conferred a great honour on us by accepting our invitation. Let us introduce ourselves before the host arrives. (Doing an Ethiopian salute) I am Alphakhan, Secretary de palace, of Mr. Hellhe Sailsea.

Perry Mason: I am Perry Mason, the lawyer, from Los Angeles.

Sherlock Holmes: I am Sherlock Holmes, from the United Kingdom.

Hercule Poirot: Me Poiroto (Italian accent), from Italiano.

Shankarlal: I am Shankarlal (removing his gogs) from India

Asst Commissioner: I am Abyssinsa, the Asst. Comm of the city of Addis Ababa.

(Mr. Alphakhan takes them around the Palace. After a few minutes they come back and seat themselves before the table and await the host. The butler enters. He is wearing a suit which reminds us of the good old Arabian Nights. A long silk apron embedded with multifarious things that glitter, we see well polished buttons of the shirt and tight fitting pants that look more like a pair of jeans. He is wearing a pair of blue suede shoes and a funny looking cap. A golden plate with platinum lining rests in his hands. But his face does not match the things that don him. It is pointed on the plate. We see no drinks, but only a large bundle looks more like a parcel that arrived by the post.)

Butler: (Bows his head and offers the parcel to Alphakhan) Here Sir, a parcel for you. There is an inscription 'URGENT' on this. So I thought I would bring it to you immedtiately.

Alphakhan: (Rips the wrapper open. Sees a blood-stained coat and a knife. We see twitches on his face, He looks faint). Ha! (More of a scream than an exclamation). It's our boss's. (Addresses the butler) Who gave you this?

Butler: Sir, I found it on the teapoy in the verandah, when I went there to collect my cap (touches his cap.)

Alphakhan: (He is pale as an Antartican penguin. He lifts the knife by the handle and looks at the dicks) What do we do now?

Sherlock Holmer: I guess it is murder then.

P. M.: Of Course.

H. P.: But where's the body?

S. L.: We got to find that.

Abyssinsa: Let me have these sent to the police lab. May be someone's fooling us. It may not even be human blood.

A. K.: I think I can be of some help in this. Only yesterday Mr. Hellhe Sailsea donated blood for the country's sake. Didn't you see it in today's news papers? I guess that's the headlines in the "Ethiopian Chronicle". May be if you can get hold of the authorities you can actually check on it.

Aby: Thank you Mr. Alphakhan for your help. Shall we disperse?

A. K.: We shall do that after we finish our party with the host in absentia. (Looks the dicks). I think you'll help me solve the mystery. (Takes the glass to his lips). Let us drink to the revelation of the truth.

S. H., P. M., S. L., H. P., A. C.: Amen! (They say it as though synchronised. It is supposed to be Ethiopian Etiquette).

Scene II

(This is the garden. You call it a wood rather then a garden. We see shrubs all round. But mind you, they are all well maintained shrubs. The host meant it to be an artificial jungle. The early birds twitter and the owl hoots before going to bed. We hear a distant rumble. The rippling of the waters in the nearby stream needs some hundred Kingsleys to describe it. We see a tall figure coming from the eastern end. From the west one short man enters. Both these are wearing walking jackets. It is their morning stroll. Near the tall oak tree they meet and exchange greetings)

(*Tall Person*) *S. H.*: Good morning Poirot, the great grey cells!

(*Short Person*) *H. P.*: Good morning Mr. Holmes.

S. H.: Hullo, Poi, I guess murder and me never separate. Actually I thought of spending a few days in a country like this, without murders to bother me. That's why I readily accepted the invitation.

H. P.: I never expected you to come here at your old age. What happened to your dear friend? Dr. whatever son he is?

S.H.: I think you have not been in touch with England for a long time. One day as he was walking near the Picadilly, he ran over a mobike and died on the spot. What are you doing these days?

H. P.: (Italian accent) Oh! that! I have been reading old Latin and Greek classics for the thesis I am preparing namely "Mythical Criminology". I am staying in Florence. I used to tell Captain Hastings long stories.

S. H.: I never thought that your grey cells would rest for a thing like that. I see no mention of this by Agatha.

H. P.: Oh! She never likes old things. She thinks that her husband does. What about the case here?

S. H.: Mr. Abyssinsa has not yet found any clues, and neither have I. What of you?

H. P.: Me! (pointing to himself) I think it might be Mr. Alphakhan. Anyhow, I have got to get facts, you know.

S. H.: (looks at his watch) I think it's time for breakfast. (They walk away).

Scene III

(This is Mr. Hellhe Sailsea's library. Shankarlal as usual is resting on a chair and his legs are on the table. An open book finds a dwelling in his palms. Perry Mason enters the library. The library is a huge affair. It has been said that this is world's largest library owned by any individual. Perry Mason walks towards Shankaralal and greets him the time of the day, and he also sits on a chair nearby).

S. L.: Hi! Perry, how's you?

P. M.: I am alright, as I guess you are. Any findings in the case.

S. L.; Mr. Abyssinsa says that the blood checks. The knife is from Mr Hellhe Sailsea's Musem.

P. M.: Any finger prints on the handle.

S. L.: Yes! They are supposed to check with Mr. Alphakhan's. Mr. Abyssinsa will be coming here within an hour.

P. M.: Let the case go to sleep for sometime. Let's speak about something general, say, the weather. How well do you know this place?

S. L.: Not a bit better than you do. I have been thinking of asking you something. But I have forgotten.

P. M.: What may be that?

(Buttler brings in tea. Shankarlal drinks tea. Suddenly he brightens).

S. L.: The tea always helps you know. Now I know what I forgot. Why didn't you bring Della here.

P. M.: That eh! The playwright said that no girls are willing to act. So thought better. (He shrugs his shoulders and says) No girls–No Della.

S. L.: (He looks at his watch and says) Time up for lunch.

Scene IV

(Now we are in the study. There is diffused light throughout the room. Nobody knows where it comes from. It has been designed taking care to allow for the optical stresses and strains. The whole lot of people whom we met in the first scene, exepting Mr. Abyssinsa, are seen here, gossipping. Now the butler comes in and announces Mr. Abyssinsa's arrival. He is full of rage. He has got a sheet of paper in his hands. He comes straight towards Mr. Alphakhan.)

Abys: Mr. Alphakhan, I have come to arrest you, as all evidences show that you are the murderer. Here is the warrant. You will be brought to court in a day or two before the jury.

Alph: What Mr. Abyssinsa? Are you joking?

Abys: It's no joke to commit a murder and laugh at it. I am sorry that the evidences are against you. Duty first, friendship next. (goes to arrest him.)

Alph: (Looking grim and at Perry) Hullo Perry will you defend me?

P. M.: I dont know the evidences against you. Yet I think I'll defend you as you are my HOST ENACTE. Dont utter a word to the police.

Alph: So kind of you to let me have you as my counsel. (They go away).

Scene V

(The Court. It looks more of a Durbar of the Moghul emperors. The Judge is seated on a high chair, decked with velvet cushions. There is a huge canopy in red above. The Judge's seat itself is situated on a high platform. The jury are seated on the run, on eitherside. They are all dressed in some ceremonial uniform which is an Abyssinian custom during every murder trial. The prosecuter and the defense counsel Perry Mason are provided with seats in the front. The defendent is brought to court and made to stand throughout the trial. Witnesses are seated in a particular corner. There is a large table covered

with green velvet to serve the purpose of placing the exhibits over that. The Judge arrives. He bears a platinum rod on his right hand. It is the sceptre of Justice. He is gaudily dressed. He wears a special kind of headdress. The court rises up as he takes his seat. The court is ordered to silence. The jury are introduced. The judge orders that the trial begin.)

Pub. Prosecutor: Now melord! I'll call my vital witness. (He calls Mr. Abyssinsa. Oath is taken over the ABYSSINTRUM the Holy Book of the Ethiopians. Now P. P. addresses Mr. Abyssinsa.) Are you sure that the defendent is the culprit?

Abys: Yes, sir.

P. P.: On what grounds do you s'port your point?

Abys: The blood stain on the culprit's jacket checks with the blood of the deceased.

P. P.: You checked it with the blood from the blood bank. Didn't you?

P. M.: I object! my 'onour! The counsel is incriminating the evidence. Let the witness talk on his own. (He forgets something. He stammers and says) Ohh! I...I...I fo . rgo . t. Gardner would have told me what to say.

Judge: Objection overruled. The public prosecutor may proceed.

P. P.: (Looks at Abyssinsa) You may answer.

Abys: Yes, sir, I did. Then I found the fingerprints on the handle. They were none but that of Mr. Alphakhan. So I concluded that he is the culprit.

P. P.: (Looks at Perry Mason) Now you may cross-examine.

P. M.: (Looks at the judge) I think the evidence is incompetent and no more vital than a bug on his coat. (He forgets again) (One of the audience: No Gardner here, Perry!

P. M.: (Returns to Abyssinsa) I think you have based your points on wrong things. Did you say that the fingerprints are that of Mr. Alphakhan?

Abys: Yes, sir.

P. M.: Are you sure of it?

Abys: Yes, Sir, We applied the latest electrography methods to check it with care.

P. M.: Are you sure that those prints were made while the defendent was engaged in the act of killing?

Abys: I think it must have been made then.

P. M.: You being a police officer of a high calibre-(turns to the audience) with due apologies to the Government I do not want to laugh at your incompetency. Were you present when the parcel was delivered?

Abys: Yes sir.

P. M.: Who else were there?

Abys: Yourself, Shankarlal, Sherlock Holmes, Hercule Poirot, Alphakhan and the butler.

P. M.: Who opened the parcel?

Abys: Mr. Alphakhan. He also showed me the knife.

P. M : How did he take it?

Abys: (Shaky) I am not quite sure.

P. M : Did he use a handkerchief?

Abys: No, Sir.

P. M.: Now, I'll tell you that he took it with his hand and by the handle. The fingerprints were left at that time.

Abys: Yes, sir, it must have been so.

P. M.: My cross-exam is over.

Judge: (looks at the prosecutor) Any more witnesses?

P. P.: No me Lord!

Judge: The jury will retire and decide.
(Same settings. The lights go off and return 15 sec later)

Jury: The defendent is not guilty.
(Mr. Alphakhan lifts up his face and smiles.
The judge looks at him with wonder. The court is broght to order)

Judge: Before the adjournment of the court I would like to say a few words. The defendent is nobody but the so called deceased, Mr. Hellhe Sailsea. He is a good friend of mine. No one has made any attempts to find the body, but has made a fuss in bringing the trial to court. Neither the Assistant Commissioner nor the Universal Dicks. Damn this set of wonderful brains.

(THE BLINDS GO UP)

* * *

Chemical Engineering Society

by Harish K. Seth, *Secretary*

THE CHEMICAL ENGINEERING SOCIETY started its activities for the year 1966-67 with a "GET TOGETHER" of all the Chemical Engineering Students on the 27th July 1966. Dr.D. Venkateswarlu extended a hearty welcome to the new students in undergraduate and postgraduate classes. This was followed by the introduction of the new students. Report of activities for the previous academic year and an outline of proposed activities for the current academic year by the Secretary.

The Inaugural Address of the Society was delivered by Prof. Dr. R. J. H. Bisanz. In the course of his address he indicated the landmarks in the development of Chemical Engineering and the scope of the Chemical Engineering profession.

The following were the activities of the society during the current academic year.

Name of persons.	Subject of talk.
Mr M. C. Varghese. Inter Regional Director, Centre for Regional Development, United Nations.	"Role of the U.N. in Industria Development"
Dr Hans Oertel, Hoechest Dyes and Chemicals Limited, Bombay	"Plastics in Chemical Engineering Industry"
Mr G. Subramaniam (V/5 Chemicals)	"Cost of Estimation of Heat Exchanges"
Prof N. R. Kuloor, Indian Institute of Science, Banglore.	"States of Matter"
Mr R. Neelameggam (V/5 Chemical)	"Sea water as a cooling medium"
Mr Ganesh Karanth (-do-)	"Rocket Fuels"
Mr S. Mallikarjuna Rao (-do-)	"Foams"
Mr V. M. Gokhale (-do-)	"Computer Techniques"
Mr V. S. Ramachander Rao (-do-)	"Size Enlargement"

Mr T. V. Lakshmanaswamy, Chief Inspector of Factories, Madras	"Accident Prevention in Chemical Industries"
Dr A. R. Natarajan. Director of the State Forensic Science Laboratory, Madras	"New Horizons"
Mr C. P. Vijayan (111/3 Chemical)	"Molecuiar Distillation"

The students of the V/5 and III/3 Chemical Engineering visited the Ashok Leylands Limited, and the K. C. P. Limited, during the course of this year to familiarize themselves with production techniques employed there.

On 16th December, 1966, 35 students of the V/5, and III/3 Chemical Engineering classes accompanied by Dr G. S. Davies, and Dr Durga Prasad Rao, left Madras, on an Industrial Tour of Ernakulam and Alwaye. During the 10 days stay in Ernakulam the students visited FACT, Premier Tyres, Travancore Cements, Indian Aluminium Company Limited, Indian Rare Earths Limited, Tata Oil Mills, Cochin Refineries, Oagle Works. The tour was very fruitful and gave a very sound idea of the working conditions in Indian industries.

A novel feature this year is the first annual number of the Society Magazine which is proposed to be released at the valedictory function of the Society in the first week of April, 1967.

The following were, the students office bearers for the year 1966-67

Mr Harish K. Seth	Secretary	
Mr Ch. Venugopal	II M. Tech class	Representative
Mr M. Balasubramaniam	I M. Tech	-do
Mr R. Neelameggam	V/5	-do
Mr A. Janakiram	III/3 Class	-do-
Mr G. Chauhan		
Mr R. Kannan	II/3 Class	-do-
Mr C. Balaram	IV/5 Class	-do-

Professor D. Venkateswaralu, is President of the Society and Mr N. Subramaniam is the Treasurer and Staff Representative.

I am indeed very grateful to Prof. D Venkateswarlu, Mr N. Subramaniam and all the members of the society for their whole hearted co-operation in making this a 'society which has come to stay'

* * *

Deft Definitions :

1. **Earthquake**—Mother Nature's hiccoughs (sic !)

2. **Deepavali**—Festival of running into debt.

3. **Formula of water**: HIJK LMNO (H to 0)

4. **Boss**: Person annoying his staff by asking them to do nothing.

5. **Sulk**: Person who has decided what he is and is not too pleased about it.

6. **Economist**—Fellow who knows more about money than the man who has it.

7. **Laugh**—A smile that bursts.

8. **Flirting**—Optical collusion.

9. **Adolescent**—One who is well informed about anything he does not have.

GEMS OF THOUGHT

1. The man who believes is the man who achieves.

2. If the circumstances do not suit you, then suit yourself to the circumstances.

3. Courtesy and civility are commodities which cost nothing but which can buy everything.

4. Best lubricants for the wheels of human machinery are humour, love and kindness.

5. No amount of experimentation can ever prove me right; a single experiment may at any time prove me wrong—Einstein.

6. I do not know what I may appear to the world, but to myself I seem to have been only like a boy, playing on the seashore and diverting myself in now and then finding a smoother pebble or a prettier shell than ordinary, whilst the great ocean of truth lay all undiscovered before me—Sir Issac Newton.

7. Personality is to man as perfume is to flower.

8. No one but yourself can cheat you out of ultimate success.

9. Wisdom is to science what death is to life, or if you prefer it, wisdom is to death what science is to life.

10. If you can't be a star in the firmament, at least be a bright lamp in your home.

11. It is not what you eat, but what you digest, that makes you strong. It is not what you earn but what you save that makes you rich—it is not what you learn but what you remember that makes you a wise man.

12. A life of love, service, sacrifice and constructive work alone is worth living. Lest the truth you see may not be the truth the other man sees, you should be ready to convince and convert him thro' love, service sacrifice and never try to force your truth on him by coercion or by violence—Gandhi.

13. A mother takes years to make a man of her son and another woman takes hours to make a fool of him.

14. Not a single moment of life can be purchased back by giving even billions of gold coins. What more destruction can occur, if life is just wasted?
—Chanakya

15. Nonsense is a kind of exuberant capering around a discovered truth.

* * *

Mathematics - through the ages

by C. Sivaram

Mathematics is a subject which has been developed by man ever since the dawn of civilization. The beginning of mathematics is therefore unknown. It probably began in the very remote past when man started counting his fingers. Mathematics has progressed steadily from the time man began to count till the present day when Maxwell's equations of electromagnetism have given us the wonders of the radio and television and Einstein's $E=MC^2$ has released the tremendous powers of the atom and hydrogen bombs.

Like any other well-developed subject it has been the work of several men through the ages. We have enough evidence to conclude that the ancient Egyptian must have been well-versed in geometry. The remarkable construction of the giant Egyptian Pyramids which stand firm to this day even after a lapse of four millenia clearly indicate that their builders (the Egyptians) were well acquainted with the properties of squares, triangles and geometrical solids like pyramids etc. The Egyptians also measured land on the banks of the Nile and in this they performed several mathematical calculations. The Sumerians (who established their civilization in Babylon about the same time as the Egyptians) were also well acquainted with mathematics. They probably used the first calendar based on the movements of the sun, moon and the planets. This shows that they knew astronomy. They could also count upto 60 using the abacus.

Next we come to the Greeks. One of the earliest of greek mathematicians was Pythagoras. He is well-known to every student because of the famous theorem which bears his name. Pythagoras was also probably the first to realise that the earth was round. He also taught that it was rotating on its own axis. He however taught that the earth was the centre of the universe and all planets and stars including the sun moved round it. He is also known for his work on sound. He deduced the relationship between the length of the string in a musical instrument and the pitch of the sound produced. About 200 years later Euclid laid the foundation of modern geometry. He published his famous book on geometry. It is remarkable that almost all the geometry taught in our schools today is the work of Euclid.

With the sole exeption of the Bible, Euclid's book on geometry is said to have had the largest circulation in history. The period during which Euclid

lived and worked was the 'Golden Age' of greek mathematics. Euclid's book has inspired several mathematicians through the ages. During this period lived Aristotle, Aristarchus, Eratosthenes, Archimedes, Apollonius, Heron and others famous for their original contributions. Aristotle was not strictly a mathematician although he made valuable contributions to various branches of science and philosophy. He is known as the father of modern science. Aristarchus propounded and taught the Heliocentric theory (which considered the sun as the centre with all planets revolving round it including the earth), several centuries before Copernicus rediscovered it in the fifteenth century. Eratsonenes living in this period knew enough trigonometry to calculate the circumference of the earth by observing the sun from 2 places 500 miles apart Aristotle however stoutly opposed Aristarchus and vigourously propounded that the earth was the centre of the universe. The influence of Aristotle was so great that his view prevailed centuries after his death and thus completly eclipsed the simple truth which Aristarchus had stated.

Apollonius is well known on account of the theorem and circle which bear his name. Archimedes is of course known to every school-boy for his discovery of the principle in hydrostatics which goes by his name and his triumphant shouts of Eurekra ! Archimedes also solved several problems in mechanics. He discovered 'the law of the lever' and the principle of moment of forces about a point or a line. To illustrate the principle of the lever he is reported to have remarked 'Give me a lever long enough and I will lift the earth.' It was this idea that led to simple machines like the wheel barrow. Archimedes also performed crude forms of integration in his problems. He is also credited with the invention of the screw and to have used it to invent a device to raise water. According to some writers Archimedes helped the Greeks in warfare by burning enemy ships with the help of powerful convex lenses and by focusing sunlight on the ships-through thes lenses. Heron invented a crude form of the steam engine and other mechanical devices. The Greeks also made valuable contributions to astronomy Next. came the Romans. They made hardly any significant contribution to mathematics except perhaps for their clumsy numeral system. The Romans however did a lot of counting (usually money) with a stone called 'calculus'.

As for arithmetic India may be rightly proud of having laid its foundation. The world will be forever indebted to the unknown Hindu mathematician who invented the place value system (for numbers) and who above all invented the great number 'zero'. The place value system assigns a value to a digit by virtue of its position in the number. For eg. in the no. 23, 2 has a value of two tens or twenty.

So $23 = 2 \times 10 + 3$. Similarly $233 = 233 = 2 \times 100 + 3 \times 10 + 3$ and so on.

The invention of the 'zero' is perhaps far more significant and revolutionary than the invention of the atom bomb or the rocket for without the great digit, big mathematical calculations would have been impossible and scientific and techonological progress would have come to an inevitable standstill. The Arabs observing the superiority of the Indian system over the clumsy Roman numerals introduced it in turn to their European conquests.

After this came the Dark Ages. There was a reign of terror and disease all over the world. This period was also dark as far as mathematics was concerned. However a few prominent mathematicians lived during this period. Most important of them being Ptolemy and the Indian Aryabhatta.

Ptolemy laid the foundation for modern trigonometry. He also explained the motion of the planets in a complicated (wrong!) way involving circles within circles! This theory prevailed until Copernicus, Galileo and Newton shattered it. One reason for its popularity was that it agreed with the Biblical view that the earth was the centre of the universe.

Aryabhatta made several contributions to algebra, geometry and astronomy. He invented various ways of solving quadratic equations and for extracting square roots and cube roots. He also calculated the value of π and found it to be 3·1416.

Another famous Indian mathematician who lived during the Dark Ages was Bhaskara. He made original contributions in arithmetic and algebra. The determination of the exact value of one of the most important constants in mathematics is π the ratio of the circumference of a circle to its diameter has taxed mathematicians through the ages and even till the present day. Archimedes was one of the first to make an accurate determination. He showed that the value of π lay between $3\frac{1}{7}\frac{0}{0}$ and $3\frac{1}{7}\frac{1}{0}$.

Aryabhatta found π to be 3·1416 correct to 4 places of decimals. Aryabhatta's value is considered sufficiently accurate for most scientific purposes and is used widely to-day. More accurate calculations of π were made when the theory of infinite series developed. One French mathematician had the great patience to work out the value of π elaborately to 700 decimal places! However modern electronic computers have succeeded in determining the value of this important constant to well over a thousand decimal places. Quantities like π whose exact value can never be worked out are said to be incommensurable. Other examples of such quantities (and there are several of them) are $\sqrt{2}$, $\sqrt{3}$ etc. The values of these quantities can however be obtained to any degree of accuracy.

We have seen that Aryabhatta laid the foundation for algebra. However most of the elementary algebra we use to-day was the work of Arab mathematicians who lived during the 'Dark Ages' or 'Middle Ages'. It is interesting to note that in this dark period of world hisiory most of the knowledge of the ancient Greeks was forgotten and lost to posterity. This knowledge of the

Greeks was revived and rediscovered during the Renaissance period in Europe This period saw several stars shining brightly in the mathematical sky. We shall name a few of them. Copernicus, who shattered the extremely popular views of Aristotle with his heliocentric theory.

Galileo dropped two stones of different weights from the leaning tower of Pisa before a vast sceptical audience. The result of this famous experiment is too well known to be mentioned here. Galileo was also the first to study mathematically the motion of freely falling bodies and of oscillations of the pendulum His work on the pendulum led to the invention of clocks and watches. He also invented the astronomical telescope and with it made startling discoveries which fully confirmed the heliocentric theory of Copernius. He discovered the moons of Jupiter, the phases of Venus and sunspots moving on the surface of the sun. By observing the motion of sunspots he deduced the rotation period (on its own axis) of the sun (26 days). Galileo was subjected to much persecution on account of his work but he was able to withstand the ordeal bravely. About the same time as Galileo, lived the great mathematician Kepler. Kepler made use of the painstating observations made by Tycho Brahe on the motion of the planets to obtain the laws of planetry motion for the first time. He propounded three laws which made a complete description of the mechanics of the solar system.

Galileo and Kepler were to inspire Newton a few years later. The contributions made by Newton to various branches of mathematics and physics are so many that it would be impossible to give a complete list of them here He explained Kepler's laws with his theory of Universal Gravitation. He condensed the work of Galileo and also his own work into three elegant laws known as Newton's laws of motion. These laws formed the basis for the advancement of modern science and technology Newton also explained the the colours of the rainbow, calculated the velocity of sound in air and discovered the law of cooling of a hot body.

Newton also made the greatest single contribution to algebra — he propounded Binomial the Theorem. Newton also has the great honour of inventing differential calculus simultaneously with the German mathematician Leibnitz. Newton had to invent the calculus to cope with the continuously varying quantities in the problem of mechanics and it is of indispensable value to workers in various fields of sceince and technology. His book 'Principia Mathematicia' is one of greatest books of all time.

A work of great importance in mathematics is 'The Theory of logarihms'. This was the work of one man — John Napier. Napier first worked out a table of logarthms (known as Naperian or Natural Logarthms). He used the famous 'e' as logarihmic base. The value of 'e' the Naperian Logarthmic base is again incommensurable like 'π'.

The idea of using 10 as the logarthamic base was first given by Charles Briggs. Logarithms have considerably simplified complicated mathematical calculations. Before the invention of modern computers the use of logarithms was the only reliable way to simplify intricate mathematical operations. The usefulness of logarithms in this respect is strongly felt even in this age of electronic computors.

The work of Newton and others inspired several men with the result that there were great advances in mathematics in the 18th and 19th centuries, Here again several names may be mentioned. The advances were specially prominent in the field of applied mathematics and mechanics. The diffierential and integral calculus were freely uscd in mechanics and physics. The great mathematician Leonhard Euler solved several problems in particle and rigid body dynamics by integrating differential equations. John Bernoulli developed for the first time the principles of hydrodynamics and fluid flow. D'Alembert evolved his famous principle in dynamics. Euler, Bernoulli and D'Alembert also made contributions in pure mathematics. Joseph Lagrange evolved the famous general method of solving dynamical problems using differential equations based on virtual work and D' Alember's principle. The Russian mathemaicians Ostrogradsky and Chebyshev also made important contributions to both theoritical and appled mechanics as as pure Mathematics. The Russian Lyapunov established the Stablity theory in mathematics and differantial equations.

Special mention must be made of the great French mathematician Laplace. He made important contributions to mathematics and astronomy. Together with the philosopher Kant he evolved the nebular hypothesis for explaining the origin of the solar system. He also evolved several theorems in probability, modified Newton's equation for the velocity of sound, made discoveres in the newly discovered phenomenon of electricity (chiefly that of eddy currents) and published several treatises in mathematics and astronomy. Other prominent figures during this time were Ferdinand Gauss the German mathematician who made important contributions in magnetism, electricity and astronomy; and (2) Carnot who postulated the theory of the steam-engine and laid ths foundation for the study of thermodynamics.

One of the greatest mathematicians and scientists of all time was Clerts Maxwell who expressed the laws of electromagnetism in the form of elegant mathematical equations Using the powerful instrument of mathematics Maxwell carefully felt his way into the dark unknown realm of electromagnetism and came to the starting conclusion that light, heat, infra-red and other radiations are electromagnetic waves. His theory confimed on Wave theory of light. Maxwell paved the way for the development of the radio and other electronic miracles of today! He predicted that the human voice could be propagated through space without wires and at the speed of light.

Maxwell's theory was proved correct by the results of the experiments of Hertz and Marwani. Maxwell's electromagnetic theory was undoubtedly one of the greatest achievements of nineteenth century mathematics.

Another important landmark in mathematics in the nineteenth century was the prediction of the existence of the planet Neptune before it was seen. It was observed by mathematicians that the planet Uranus (discovered by Herschel) was not exactly following its predicted path around the sun. It sometimes lagged behind or went too fast at other times. The suggestion was made that an unknown planet was pulling on Uranus and tending to drag it away. Two mathematicians John Adams of England and Le Verrier of France using the data supplied by observations of Uranus' orbit successfully worked out (on paper!) the exact position of the unknown planet which was causing these discrepencies

When astronomers turned their telescopes to the spot predicted they saw the new planet! This clearly showed the mathematical accuracy and correctness of Newton's law of gravitation. It was under similar circumstances that Lowell and Pictcering predicted the existence of the planet Pluto from perturburations on Neptune's orbit. The planet Pluto was actually discovered by Clyde Tombaug in 1930.

Pure mathematics also advanced greatly in the 19th Century. Riemann postulated a new type of geometry different from that of Euclid. This is known as non-Euclidean or Riemann geometry. Algebra also underwent siginificant changes. The theory of matrices was postulated. The vast Physical scope and siginificance of matrices were recognised. Number theory advanced a lot. Modern Algebra beean its appearance in the realm of mathematics. Several methods to solve differential equations were postulated by Bessel, Laplace, Euler and others.

Towards the end of the nineteenth century the famous Michelson—Morley experiment was conducted, This experiment opened the door to one of the greatest mathematical works of all time—The Theory of Relativity—by Albert Eintsein. Using the Lorentz transformations (worked out a few years earlier by Lorentz, Eintsein succeeded in deriving the many revolutionary and starting conclusions of special relativity. The truth of his mass-energy equation was clearly demonstrated by the 'small' atom bombs (small by modern standards for, the 50 megaton bomb is 2,500 times more powerful than these bombs!) which completely wiped out the fine cities of Hiroshima and Nagasaki. Einstein also developed a simple mathematical relation for the Photoelectric effect (discovered by Hertz) and for this he got the Nobel Prize in 1921. Eintsein also extended the tensor calculus and the non Euclidean Riemanan geometry theory of electromagnetic radiation was worked out by Planck. Planck's radiation equation was the starting point for the development of modern quantum mechanics and quantum physics. The great advances in physics made in the twentieth century simultaneously advanced mathematics. The probability wave theory of matter

developed by Schroedinger and Dirace required complicated partial differential equations. Modern Physics and electronics required plenty of mathmatics of a very high standard for its thorough understanding. This led to new methods for solving differential equations and new statistical analysis in probability theory.

The advent of the modern space age with its space rockets gave a great boost to mathematics. The equations of Rocket motion and jet propulsion were first quantitatively worked out by the great Russian space pioneer K. Tsiolkovsky about the turn of the century. The Russians honoured his birth centenary by launching the World's first artificial satellite in Oct. 1957.

In modern science mathematics fiinds its place not only in science and technology but is indispensable in almost evey sphere of human activity. Its extensive applications in economics and economic theory, trade, market research, stocks and shares, banking, clerical work and in fact in the daily life of the ordinary citizen.

Any account of the history of mathematics would be incomplete without the mention of modern electronic computers. The need for such high speed calculating machines was strongly felt during the second World War. The possible trajectories of missiles had to be computed before they struck their target. A brief outline of the history of calculating machines may be given here. The first to invent an adding machine was the French genius Blaise Pascal in the seventeenth century. The desk calculating machines now used in offices was only a modification of this simple original device.

The next idea came from Oxford student Charles Babbage in 1822. Babbage designed a machine which could handle numbers upto five digits. He had plans for constructing a much larger machine. Unfortunately this was never built as the mechanical engineering know-how of his time was not up to this formidable task. According to Babbage mathematical operations with numbers was the lowest operation of the human brain. Thus his idea of a calculating machine.

Babbage's idea was taken up about a century later by Bush and his colleaugues at the Massachessuts Institute of Technology. Bush made Babbage's dream come true, although his machine had nothing to do with electronics. The era of electronic computers began about the middle of the Second World War. Goldstein was a pioneer in this field. He made the first computer 'the Eniac'. Computers developed rapidly after the second world war. They could perform arithmetical operations and solve differential equations millions of times faster than the human brain. It was soon realised that computers would be extremely useful in clerical work in offices and business houses. Such a computer could duplicate the lifetime work of an ordinary clerk in two minutes! Computers found their way into banks and insurance companies. The first electronic bank clerk was 'Emma'. It weighed 25 tons. One difficulty about computers was their size. Even this was considerably reduced with the invention of the transistor by William Shockley. Computers shrank in size from that of a big room to that of a small suitcase.

The invention of computers was timely. Modern society is extremely complex. The use of computers enabled banks, insurance companies and business houses to serve the people and human society more efficiently. In research work computers were a boon in solving complicated partial differential equations.

The great achievements in space science and technology witnessed during the last decade would have been impossible without computers which are indispensable for solving the differential equations of rocket motion. Before a rocket could be sent to the moon or Mars its exact trajectory or path had to be predetermined. The human brain can never solve this problem in a short time. As an illustration it may be remarked that at the beginning of this century it took Dr Miller seven years to determine the exact orbits of Jupiter and Saturn. But for the development of computers the launching of Satellites would be a rare occasion. Also the use of transistors reduced the size of computer building and steering devices to one small enough to be used in ordinary rockets. The invention and use of computers has led to a new kind of arithmetic which uses only two digits (0 and 1) instead of the usual 10. This corresponds to the on and off position of the flop-flop electronic tube.

Computer programming has developed into a new advanced branch of modern mathematics. Computers will become more and more indispensable as the functions of human society become more and more complicated. Mathematical techniques in engineering are replacing conventional techniques. This is clearly indicated in the evolution of electronic automation technology. In future the engineer will also be an expert mathematician. Even industrial workers and manual labourers will depend far more on mathematics than on their manual skill. As we have mentioned before the use of mathematics has become indispensable in all spheres of human and social activity.

The 'Queen of the Sciences' as mathematics is so rightly called will continue to progress steadily and rapidly in the future. Its progress will continue. as long as the human race lasts. It has always helped man to think logically and has enabled him to use it as the most powerful instrument to understand the secrets of Nature and to use them for his to benifit.

Mention must be made of the great Indian mathematician Ramanujam. His worth was entirely in the field of pure mathematics. He made original contributions to infinite series and number theory. It is interesting to note that his work has found practical applications especially in the theory of pyrometry.

Ramanujam's co-worker was Professor Hardy. He is also one of the great mathematicians of this century.

It is impossible to mention all those who have advanced the study of mathematics and their contributions, However, most of the important contributions have been mentioned as far as possible.

* * *

The Institute Gymkhana

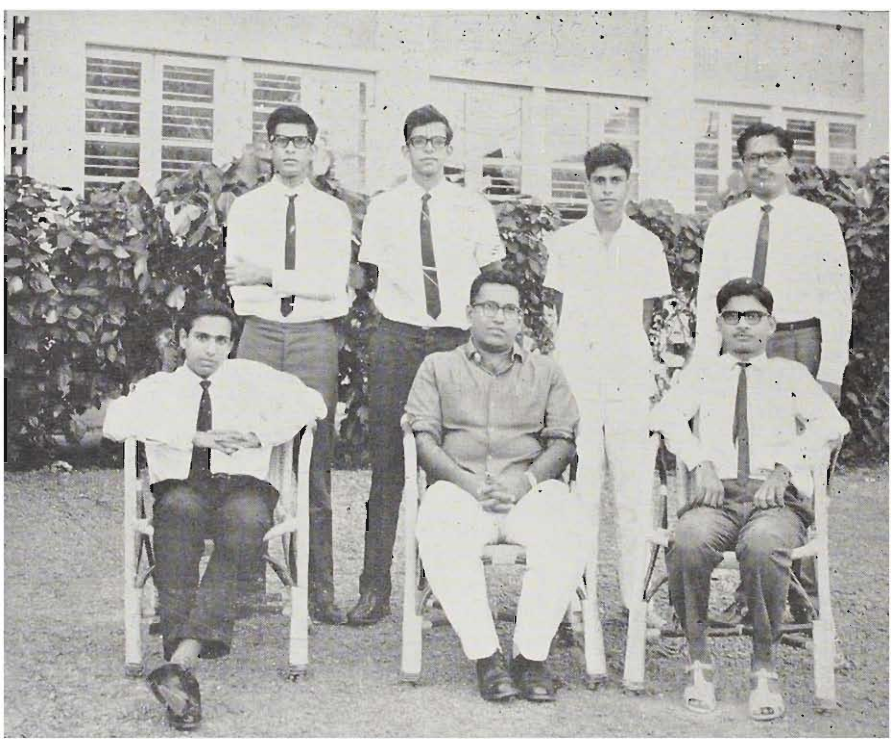
Committee
Reports and News

Sitting: (*L. to R.*)
V.C Jocob (Secretary)
Prof.P.C. Varghese (President)
Mr H. J. Ebert
Thomas Victor
(General Secretary)

Standing: (*L. to R*)
D. Venkappaya
S. Venkatapathy
S. Jain
R K. Nayar
K. R. Visweshwar
I.P. Singh

Absent:
S. Alexander
P T. Ananthakrishnan

FINE ARTS COMMITTEE



Sitting: (*L. to R.*)
A Kacker
Prof. P.C. Varghese
(President)
B.B. Kamdar (Secretary)

Standing: (*L. to R.*)
G. Cariappa
M. J. Kuriyan
S. Naryanamurthy
P Krishna Mohan

Absent:
K. Venkataramani
M. Raghunandan
F. X. Dias

LITERARY COMMITTEE

Sitting: (*L. to R.*)
M.G. Subramaniam
(Editor of Campastimes)
Prof. P.C. Varghese
(President)
S. Ramajayam (Secretary)
Thomas Victor
(General Secretary)

Standing: (*L. to R.*)
C. S. Krishnan
C. Balaram
P. S. Krishnan
G. Govindarajan
R. Roy
D. Sampath
C. S. Sastry

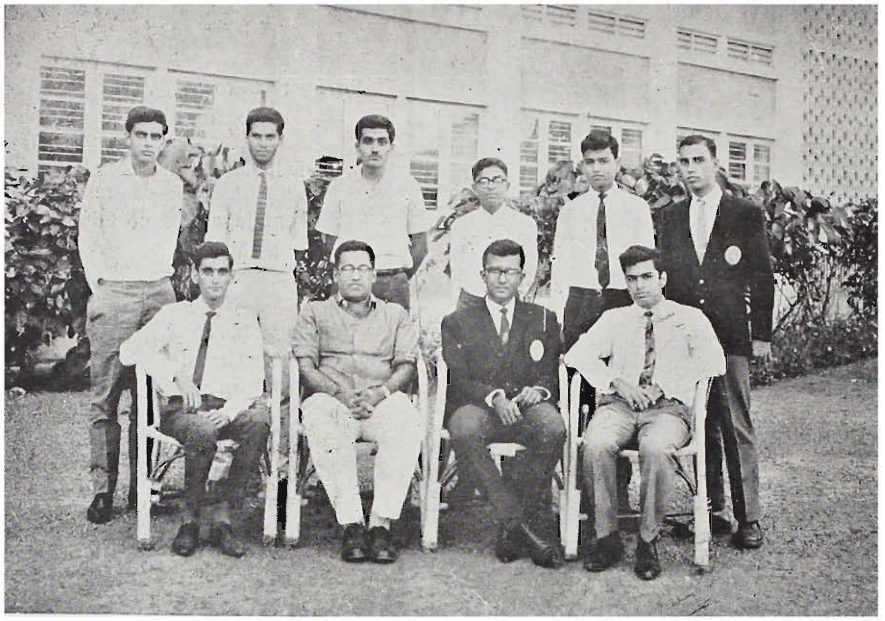
PUBLICATIONS COMMITTEE

Sitting: (*L. to R.*)
Abdul Hameed (Secretary)
Mr Lamech (Senior P.T.I.)
Prof. Varghese (President)
Thomas Victor
(Genl. Secretary)
Mr Joga Rao (PTI)

Standing: (*L. to R.*)
Joshi Paul
G. M. S. Rana
C. N. Anand
M. Sanyal
M. Chandrasekar
Lt. D. P. Kala
D. R. Naidu

Absent:
S. G. Subba Rao

SPORTS AND GAMES COMMITTEE



Sitting : (L. to R.)
Shah Nawaz Bukht (Secretary)
Prof. Varghese (President)
Thomas Victor
(Genl. Secretary)
H. K. Seth

Standing : (L. to R.)
K. Deva Kumar
Balakrishnan Nambiar
V. Chandrasekhar
V. J. R. Asirvatham
Gilra
N. Ganesan

Absent :
Premila
S V. Kannan

EXTERNAL AFFAIRS COMMITTEE

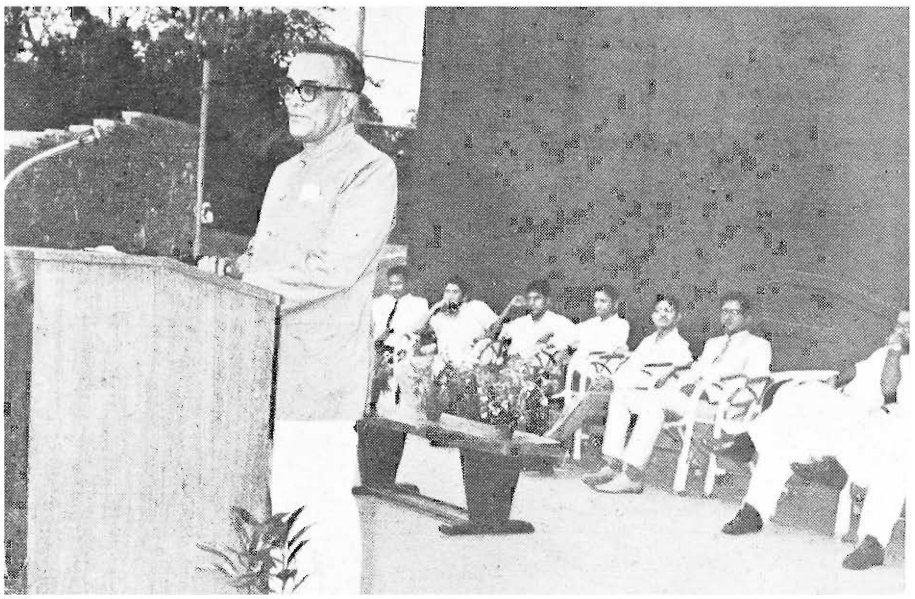
Sitting : (L. to R)
V. Gopal (Secretary)
Dr Anantharaman
Prof. P.C Varghese (President)
Thomas Victor
(General Secretary)

Standing : (L. to R.)
G Ramachandran
R. Nirula
R. Lobo
G. Sudersanam
C. Narayanaswamy

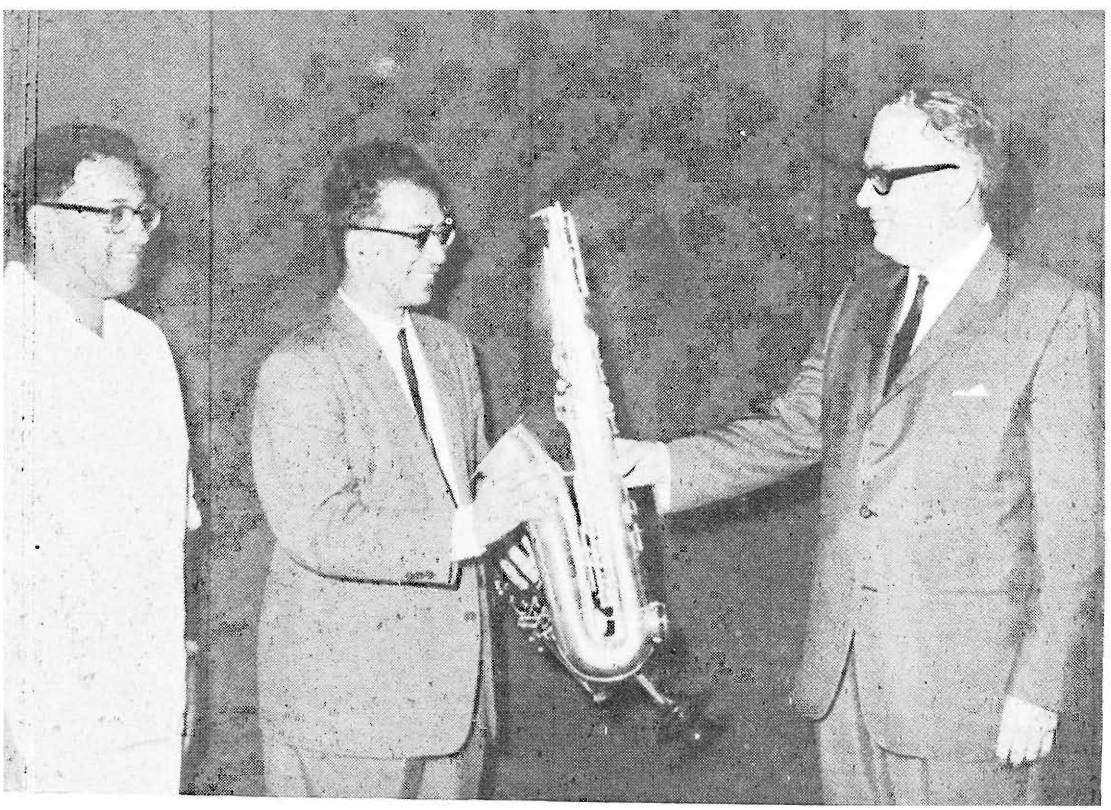
Absent :
P. Sudarsan
B. Rengaraja
A. V Maithreyan
B. Amin Ahmed
S. Subramaniam

ENTERTAINMENT COMMITTEE

Gymkhana Activities



Mr Mohan Kumaramangalam, Advocate-General delivering his inaugural address



Gift from West Germany: Dr Reichet, Consul-General presenting musical instruments to the Rector of the Gymkhana, Prof. B. Sengupto

THE I I T SENIOR "FOURS" ROWING TEAM
(L—R) V. Datta, A. Nayyar, J. E. T. Sargunar, T. N. V. Reddy

THE BEAT - X

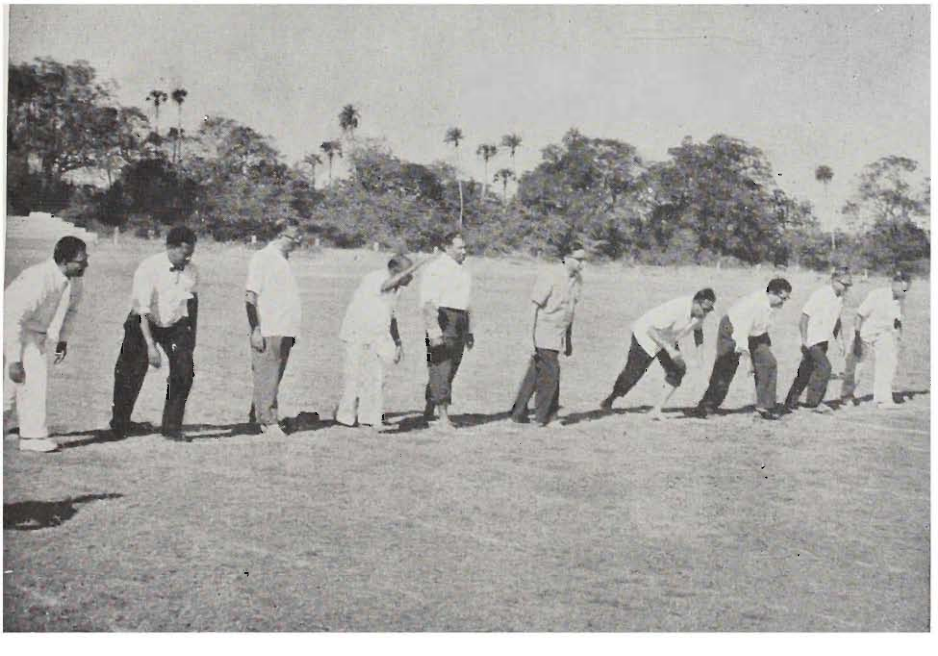
The Institute's Jazz Quintet which won the All India Beat Meet and the popular prize at the Musical Knockout

Standing L to R: J. E. T Sargunar, D. Dunne (Manager) Alfred C. D'Souza Mohit Goyal

Sitting L to R: J. Jayaraman, Prof. P. C. Varghese, (President, Institute Gymkhana); Charles A. Solomon

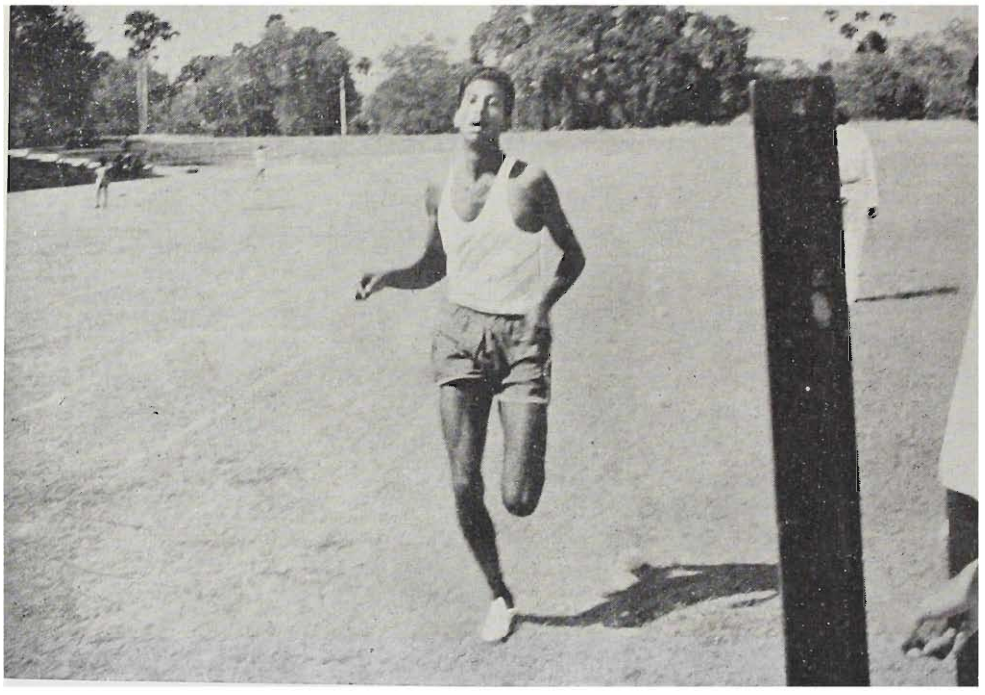
The Institute Sports Day

The Chief Guest, Sri S. Sriraman, Secretary of the Cricket Control Board of India addressing the gathering at the Institute Sports Day.



The start of the Staff Race

Minu Kalappa of Ganga Hostel doing the broad jump



Joshi Paul of Saraswathi Hostel breasting the tape

Reports

Institute Gymkhana General Committe

by Thomas Victor, *General Secretary*

THE year started with the election of 54 committee members to six Gymkhana Committees. The Elections were very keenly contested this time, and victorious candidates with margins of one or two votes were not uncommon. Soon after this the representatives were introduced to the students at the formal inauguration of the Gymkhana. The speech by Mr Mohan Kumaramangalam on this occasion was one of the best ever heard at IIT.

1966–67 was another good year for IIT in the field of extra-curricular activities. The debating team proved itself to be the best in winning practically all the inter-collegiate competitions held in the city. Not satisfied with this they went all the way to Calcutta to win another trophy for IIT. Despite the absence of Venkatesan the IIT Quiz team lived up to its reputation and like the debating team have remained virtually unbeaten. It's best performance was at the quiz held at IIT during the cultural week when Phillipos and Parameswaran finished first and second beating contestants from more than 15 colleges. An innovation this year was the popular Brains' Trust, a brainchild of the hard working Literary Secretary Kamdar.

The Sports committee under Hameed must be congratulated for having successfully completed the intra-mural tournaments. Our sports teams especially in football, basketball, athletics and rowing fared well. More than 70% of the prizes awarded at the Regatta held at the Madras Boat Club went to rowers from IIT and the IIT "fours" team was selected to represent the Boat Club at Colombo. The football team remained unbeaten in the intercollegiate league. The basketball team under George Verghese's inspiring captaincy won all their league matches and won the inter-IIT Basketball title with ease. The Athletics team put up a very good show at the Intercollegiate Athletic Meet and were unlucky in finishing 2 points behind YMCA. At full strength we are second only to Christian College. A Skating Club had come into being and is expanding rapidly under Rana's able management.

The Outdoor Club has become part of the Gymkhana with Neelamegham as its first secretary. Its activities, such as hiking, cycling, rock-climbing, katamaran rides, etc. are in full swing. Honorary member R. Jaikumar

has been appointed Joint Leader of the All India Expedition to Mt. Sasir Kangri, the highest unclimbed peak in the world. Jaikumar was also named the Leader of the most successful expedition of 1966,

The Publications committee led by M. G. Subrahmanyam and S. Ramajayam centinued to work around the clock as usual, bringing out "Campastimes" which is easily the best college newspaper in the city.

The Fine Arts committe deserves a pat on the back for having organised, perhaps, the best Arts & Science Fair so far. There were a record number of entries for both the Science and Art sections-thanks to a lot of hard work put in by the Secretary, V. C. Jacob and his committee members. The long awaited Art Room and Photography Room have been set up.

V. Gopal and co. provided us with entertainment of high level throughout the year. The Charity Show arranged by them and Mrs. Sengupto was a great success, more than Rs. 7000/-being collected for the Seva Samaj Childrens's Home. Vijayan, Rao, Raghavan, Basheer and others put up a good show at the MIT intercollegiate entertainment competition and won the trophy for the best team. The Film Club continued to run smoothly with S. Subramaniam and Amir Ahmed at the helm.

Shah Nawaz Bukht, secretary of the external Affairs Committee, feeling perhaps that his committee had nothing to do, organised a Psychology Study Circle with Mr. T. N. Govindarajan's help and arranged a few interestinng lectures by eminent psychologists.

I would like to thank all the students for the keen interst they have shown in all Gymkhana functions, and the staff members in charge of all the activities. The Gymkhana President, Prof. P. C. Varghese providing guidance from the top continued to be a stabilizing influence. It is unfortunate that the Gymkhana will not have the benefit of his guidance and leadership next year. Finally I would like to wish my successor the best of luck.

* * *

Sports Commitee

THE elections for the Sports Representative of various hostels were held in the middle of August, 1966.

Abdul Hameed was unanimously chosen to be the Sports Secretary. The honour of providing the person for the top student post in the Institute Gymkhana, incidentally, went to our Committee when Thomas Victor was elected as the General Secretary.

The Inter Hostel Tournaments for the Schroeter Cup got under way soon after the setting up of the Committee. There was a keen sense of participation among the various hostels and many were the instances when the top favourites were toppled. The Annual Sports Day was held on 11th March, 1967. Tapti and Ganga tied for the overall Championship.

The Inter I. I. T. Meet was held this time in Bombay from Dec. 21, '66 to January 1st 1967. Tremendous improvement was shown by the rival teams especially of Delhi and Kanpur. Bombay and Kharagpur were, as usual, concerned in a ding-dong battle, all through the meet and the former just managed to beat the latter by a solitary point, to wrest the General Championship from the holders, Kharagpur. We won the Basketball Championship and were runners-up in Football and Tennis. However, we could finish only fifth in the overall championship.

Our teams entered the Madras Inter-Collegiate League Championships in various games and did considerably well. Special mention has to be made about our Basketball and Footbal teams which remained unbeaten. We participated in the Athletics championship too and came a close third behind the YMCA College of Physical Education and the Madras Christian college, Joshi Paul, and Venkateswaran gave outstanding performances.

J. E. T. Sargunar won the '1956' Cup for the most outstanding Oarsman in the Annual Regatta conducted by the Madras Boat Club. One of the two teams sent by Madras to represent it at the All Asian Regatta held in Colombo fully consisted of I. I. Tians, viz., Nayyar, Reddy, Sargunar and Dutta.

R. Jaikumar, the crack mountaineer and an ace member of our Outdoor Club led a successful All India Varsities expedition to Mount Shilla (23,000 ft. and odd). George Verghese and G. Srikanth (by now an ex-IITian) were also members of the triumphant team.

The report will not be complete without a word of thanks for our esteemed President, Prof. P. C. Varghese. He has given his full support and encouragement to all the ventures of the committee. But for the generous attention he has showered upon us all through the year we would not have been able to satisfy the vast variety of tastes of the IITians to as large an extent as has been possible now. We take this opportunity to thank him whole-heartedly.

—Abdul Hameed, Secretary.

* * *

THE OUT-DOOR CLUB
(A Subcommittee in the Sports Committee)

THOUGH the foundation of this club had already been laid in the previous year, this year the club became a part of the Institute Gymkhana. Mr. Goetz was selected the Staff advisor.

The club has now got a strength of sixty including a few staff members. The Mt. Shilla Expedition members Mr. R. Jaikumar (Leader), Mr. George Verghese, and Mr. G. Srikanth were made honorary members of the club, and Mr. Jaikumar was nominated the first member of the club. We are pleased to announce that he has been appointed the Joint Leader of the All India Expedition to Mt. Sasir Kangri, the highest unclimbed peak in the world (25000 ft). This expedition is to be carried out this summer.

The various activities of the club included hiking, cycling, rock climbing, etc. There were in all fourteen trips made during the year. We congratulate Mr. Gopal Ramachandran for his wonderful performance of cycling, from Poona to Bangalore in ten days. Mr. Kabilan also deserves mention for his improvising a rexine table cloth for a tent and using it in Ooty during this winter (4°C). He hitch-hiked for about 400 miles, covering Mysore, Nanjangode, Bandipur Forest, Ooty, Coimbtore and Trichy in about four days.

At present the club has as its equipments a few sets of cooking utensils, stoves, and of course, life jackets (made in IIT). In the years to come we think that it will have enough equipment to sponsor Himalayan expeditions and the like. And we are deeply indebted to Prof. Varghese for sanctioning enough money for buying more equipment.

Finally my thanks go to the various members of the club, especially the the hostel representatives who have helped the club come up to a standard worth reporting.

—*R. Neelamegham, Seeretary*

* * *

The Literary Committee

THE year under review was a great success for the Literary Committee, not only from the point of view of organisation and planning but also for the response and the reaction of the students. Having decided to offer the students at least two events a month, we charted out a detailed plan for the first term—and succeeded in keeping to it.

The rcsponse for the Annual Debate almost swept us off our feet! For the first time a preliminary selection was necessitated. The finals saw the eclipse of our ace debaters Kacker and Shankar at the hands of Amir Ahmed. But then this year was full of surprises. Parameswaren repeated the trick and unseated the veterans Phillipose and Thomas Victor at the Annual Quiz–proving thereby that there are quite a few dark horses lurking in the Campus.

The Annual Group Discussion went off well in spite of the faulty P. A. system. It was an honour for us to have the visiting German student delegation at the occasion. The discussions this year were extempore and therefore more natural and interestiug. Kacker and Shankar shouldered the Saraswathi team to victory.

Having finished the traditional items, the committee came up with the Brains Trust which was announced with due fanfare. Prof. Ramaseshan stole the show with his witty answers while Dr. Armin Klein kept the audience roaring with his funny 'little stories'. The others were not be outdone and kept the audience lively till the very end.

If the Brains Trust was a success with a capital S, our other brainchild the Mock Parliment—was stillborn. We just didn't seem to get over the technical difficulties, e.g. the elaborate mike system in time. Much spade work, has been done, and we hope the next year's committee can capitalise on this.

The Inter–Hostel Quiz attracted a packed house and was another feather in our cap. Narmada Hostel romped home to victory with a comfortable margin.

That brings us to the piece de resistence—the Annual Literary & Cultural Week. Though we had more than our usual share of trials, tribulations, and troubles, the infectious enthusiasm of the staff and students carried us through.

There was more colour at the All India Debate as representatives from the women's colleges came forward to take up the cudgels on behalf of the 'weaker' sex. They certainly out-talked the boys—which isn't surprising—but Shankar out smarted them and ran off with the flrst prize. The tussle for the team trophy and the remaining prizes was a close affair between the girl's colleges.

Ethiraj College won the Team trophy, and Miss U. Ramachandran and Miss R. Shanmugam weve placed second and third respectively.

German Recitation was again a hotly contested affair. Max Mueller Bhavan was determined to rench it away from us. They changed their tactics this year and send a couple of girls along and, — well, they succeeded. Mrs. Varadarajan of Max Mueller and Kamdar of IIT stood first and second respectively.

Prof. Thangaraj conducted the Quiz in his characteristic style. Though in the earlier stages we nostalgically thought of our quiz wizard Venkatesan, Alex

and Parameswaran soon came into their own and bagged the first and second prize respectively. The team trophy was shared by the School of Architecture and the Madras Christian College. The Group Discussion was handicapped by a lack of entries—finally only six colleges turned up. Yet those that did turn up, did really well and it must have been quite a problem for the judges to pick out the winner. the Law College emerged victorious with the S. I. E. T. Women's College second The city colleges do seem to have picked up quite a lot about this much neglected literary item and one can only hope that next year it will find sponsors other than IIT.

The Literary Committee is deeply grateful to the many staff members who were of great help from time to time. We are particularly thankful to Prof. Sampath, Dr. Varghese, Dr. N. Klein, Dr. Anantharaman and Dr. N. V. Chandrasekhar Swamy for their guidance and advice. I should also like to to thank the other members of the committee for their infectious enthusiasm and hard work. But the greatest thanks should go to our patrons—the students—for flocking to our functions in large numbers.

—Bharath Babulal Kamdar, Secretary.

* * *

Entertainment Committee

BEFORE starting of on an account of the year's achievements, modesty compels us to apologise for blowing our own trumpet–well if we don't who will? And speaking of trumpets we would like to point out that though our functions always included a good deal of music, there was no domination of any one group. There was no dearth of entries and we were often forced to have a preliminary selection.

The year, for us, started with the Charity Show on August 8 in aid of the Seva Samajam Children's Home-our neighbours. In this case, charity began with our neighbours rather than at home. The function was remarkable for the vast cooperation that made it a success. The function was a star-studded one and a financial success.

The new feature in this year's inter–hostel eompetition was the participation of the Ladies' hostel. They were so well represented on the stage that hardly any of them could be found in the audience. In spite of rather active audience participation, the function went off without a hitch, Jamuna retaining the Engineering Unit's Trophy, though having to share it with Godavari.

The Inter-collegiate competition for Prof. Narayanamurthi's Trophy was remarkable for the tolerant attitude of the audience. The S. I. E. T. womens' college bagged the trophy with a performance which was noted for its variety and good organisation. There was a magic show by Prof. Bhattacharya (of Water of Ganges fame) at the Oat earlier in the year.

The German Jazz programme was a hit with the audience, especially Andrea Horn's rendering of 'Hello Dolly'. The pantomime by Rolf Scharre was another memorable evening's entertainment.

Through Mr. Coward of the USIS we were able to hear the original sound-tracks of 'Oklahoma' and 'Kiss me Kate.'

The chief-guest for the Bharathi day was Jayakanthan, the well-known writer and film producer. His speech provided much food for thought. The Beat-X are among the doubloons with their winning the Musical Knock-Out (the popular choice) and the All India Beat Meet.

IIT's light music orchestra walked away with the staff trophy at the M. I. T. Music Competition. Our team took part in the entertainment programme arranged by the Psychology Association. We presented an english play 'Thread O' Scarlet' at the inter-collegiate entertainment competition of the college of Engineering, Guindy.

The films screened by our film club this year were a trifle better than the normal run of films, thanks to S. Subramaniam and B. Amir Ahmed. The cartoons were a treat and the audience went for them in a big way.

The months have sped by rapidly, but we are left with pleasant memories of the year's entertainment. The committee was on its toes right through the year. The upward trend in the standard of entertainment, will, we hope, persist.

—V. Gopal, Secretary.

* * *

Fine Arts Committee

THE Fine Arts Committee for this year consists of D. Venkappaya (Kaveri) I. P. Singh (Krishna) V. C. Jacob (Narmada), Ramkumar Nayar (Tapti), S. Venkatapathi (Saraswati), Suraj Alexander (Godavari), Karve (Ganga), P. J. Ananthakrishnan (Jamuna) and Sukand Jain (Alakananda). Mr. H. J. Ebert graciously consented to continue as the staff-in-charge this year also. Soon after

the committee was formed, the activities for the year were planned. We decided to conduct various internal and inter-collegiate competitions and, to set up an Art Room and a Photography Room.

During the first term, competitions in greeting card design, photography and sketching were conducted. The participation in these competitions were certainly not upto our expectations. We were forced to print old designs of greeting cards since a suitable design did not come up this year. Among the participants in the photgraphy and sketching competitions, a few were promising.

By the end of the first term, the cellar in Narmada Hostel was ready to accommodate the Art-Room. Facilities for painting in oils are now available in the Art Room, which was opened at the beginning of the second term. A number of promising artists have been making good use of the facilities available.

A room in Tapti Hostel was secured for the purpose of getting up a photography-room. Developing and contact-printing can now be carried out there. Efforts are being made to obtain more facilities this year itself. Meanwhile, our photography enthusiasts have formed a 'Photography club.'

Inter-collegiate competitions in photography, painting and sketching were conducted during the Cultural Week in February. The entries formed a part of the Arts and Science Exhibition whlch was the result of a considerable amount of effort by the committee. Many Colleges sent in entries for the painting and sketching competitions. The number of entries to the photography section, however, were not considerable. In all the sections, our Institute was well represented.

The science section of the Arts and Science Exhibition indicated an increasing interest on the part of the students in building their own projects. Umesh Achia and Umesh Dutta were placed fist and second respectively for their project work.

The fascinating models which were displayed, drew, large crowds to the exhibition.

A number of people have helped the committee, in organising the various activities this yeae. Special mention must be made of the Engineering Section and the Workshops. Mr. Ebert, the staff-in-charge and Prof Varghese the President of the Institute Gymkhana have shown keen interest in our activities thoughout the year.

—V. C. Jacob, Secretary.

* * *

THE LITERARY & CULTURAL WEEK

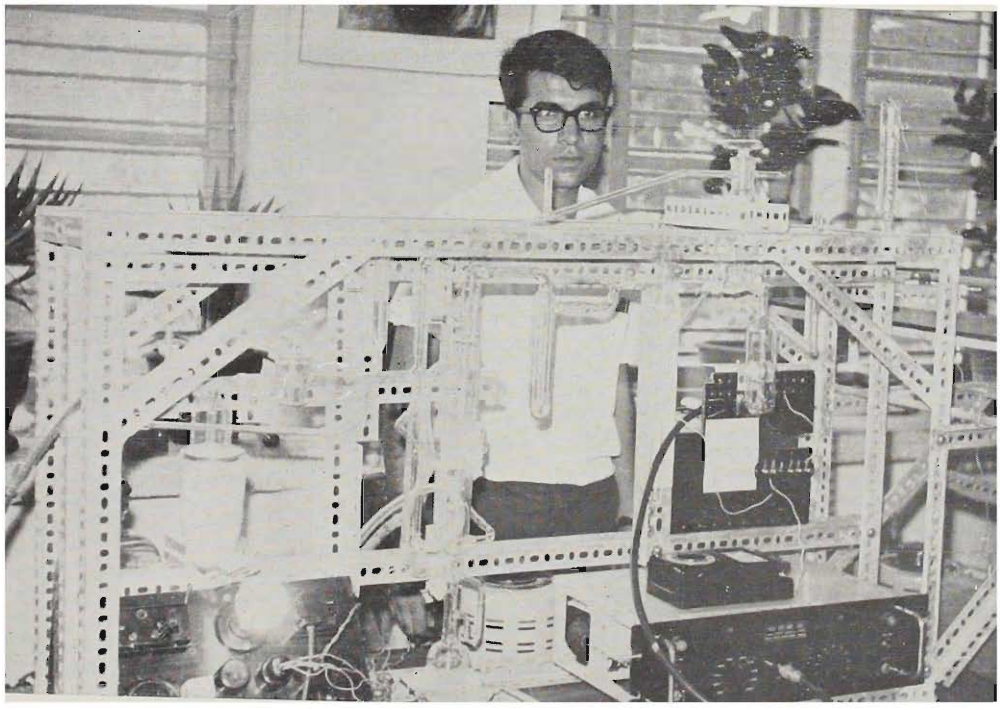
THE ART EXHIBITION

Mrs Rouve judging the Painting Exhibits

Mrs D. V. Reddy judging the Painting Exhibits

From (L. to R.) Dr Scheer, Mrs Rouve and Dr Koch at the Painting Exhibits

R. Shankar, the winner of the All-India Debate receives the trophy from Mrs Achuta Menon

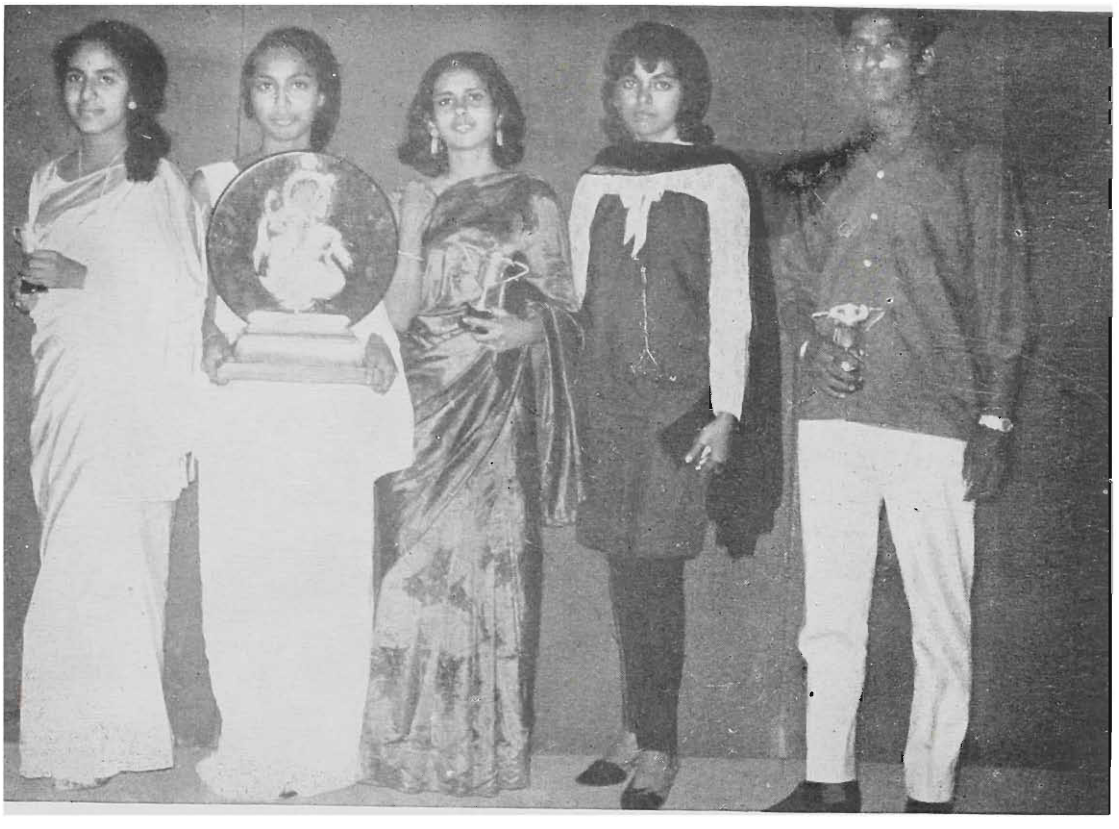


THE SCIENCE FAIR

Neon Helium gas laser designed and built by Sri Umesh Datta

'Bhangra' by the YMCA College of Physical Education.

English Play — by the S I E T Women's College



Prize winners at the Inter-collegiate Entertainment Competition

The I. I. T. QUIZ AND DEBATE TEAM

L. to R.: Alex Phillipos, Thomas Victor, Ashok Kacker, R. Shanker

Kumari Sabita of the School of Architecture

M. Sanyal of the I. I. T.

— *STROKE TO VICTORY* —

By GURDEEP SINGH BAJAJ
College of Engineering, Guindy

This entry won the First Prize in the Inter-Collegiate Photographic Competion

The Publications Committee

THIS year we faced a big problem - the problem of acquiring a suitable Press. A month and a half had to be spent on this, before the regular work could be started.

More copies of Campastimes—about 1800 per issue on the average—were turned out this year. The Institute, as some would phrase it, is growing from strength to strength, and we made sure that every student got his (or her) copy.

The response to our call for articles gave us a surprise, and not a pleasant one at that. The Editor wishes to thank those few stalwarts who kept our paper going. In spite of these stalwarts, we have regrets—for we can only bring out five issues this year. Six was our target.

The regular columnists of Campastimes have never let us down. A. Hameed with his 'Sportfolio', S. Bukth with his 'The Moving Finger Writes,' and Mr. T. N. Govindrajan with his 'Psychofolio' did good jobs. 'Over a cup of Aye Aye Tea' has reached new heights with the advent of Vijay Reddy.

The same difficulties about the Press are bound to be present during the next academic year also. It would be of a great help if the Institute had a press of its own. Not only Campastimes and the Annual Magazine but also all the publications of the departments and the academic section could be done, we feel, far more easily and cheaply.

The year also saw the publication of the Special Supplement to Campastimes laying emphasis on Science and Technology. It contains articles of a general scientific interest by people of such eminence as Sir C. V. Ramrn, Dr. K.S.G. Doss, Mr. S.M. Patil, and Dr. Lal G. Verman.

The committee's thanks go to Prof. Varghese and Prof. Sampath for their guidance and to the non-members who have willingly helped us with our work in times of need. I thank the members of the Committee for the hard work they put in, and all the students for their healthy criticism and help.

—*S. Ramajayam, Secretary*

* * *

Social Service and External Relations Committee:

Report writing is by itself quite an unpleasant job. But when one has to write a report on nothing the task becomes formidable. Because certain condi-

tions have to be carried out, it is my duty to set down in writing what the opinions of some of our committee members as well as those of student populace are.

Though the commitee has helped at every function held at the Institute, (and there have been so many this year), yet, except for the Psychology Study Circle, there has been no activity which we undertook on our own. This was not because we were unwilling to do so, but primarily due to the fact, that with so many committees already in existence there was no other field to pioneer in. All external functions either came under the direct care of the entertainment committee or the literary committee leaving little for us to do.

With this in mind, one really begins to wonder at the necessity of havlng such a committee when no definite sphere of activity can be assigned to it. It might be wise therefore to totally scrap this committee.

—S. Bukht, Secretary

* * *

Institute Gymkhana Activities 1966—1967

5— 8—66	Get Together function.
13— 8—66	Gymkhana Class Representative Election.
24— 8—66	Fresher's Debate
31— 8—66	Annual Quiz
2— 9—66	Participation in Inter Collegiate quiz conducted by Saturday evening Club
	Participation in Bertram Tournament
7— 9—66	Recorded Music programme of KISS ME KATE
	Annual Essay Writing competition
12 9—66	Bharathi Day
14— 9—66	Inauguration of Institute Gymkhana
	Annual Debate
21— 9—66	Brains Trust Programme
24— 9—66	Dr. T. M. A. Pai's Lecture
28— 9—66	General Knowledge Test

5—10 - 66	Annual Group Discussion & German Students' Visit Participation in Inter Collegiate League tournaments
8—10 - 66	Variety Entertainment Programme at Open Air Theatre for Seva Samajam
10—10—66	Exhibition Basketball Match at Open Air Theatre
12—10 - 66	Lecture by Prof. T. E. Shanmugam, under "Psychology Study Circle"
17—10—66	Magic Show by Mr Bhattacharya
16—11—66	Participation in Inter Collegiate Debate conducted by College of Engineering, Guindy
17—11 - 66	Participation in Inter Collegiate Quiz conducted by College of Engineering, Guindy
25—11—66	Concert by German Radio Dance Orchestra
29—11—66	Participation in the All India Inter Collegiate Debate conducted by Bengal Engineering College, Sibpur
13—12—66 14— 1—67	Inter Hostel Entertainment Competition
24— 1—67	Participation in Ent. Competition at M. I. T.
25— 1—67	Participation in Inter Collegiate Debate conducted by Madras Institute of Technology
26— 1—67	Participation in Student Times Knock out Tournament (entertain ment competition)
2— 2—67	Inter Hostel Quiz
3— 2—67	Delegation from the Technical University of Aachen meet with the Students
6— 2—67	All India Inter Collegiate Debate.
7— 2—67	Inter Collegiate German Recitation
8— 2—67	Inter Collegiate Group Discussion
9— 2—67	Inter Collegiate Quiz Inter Collegiate Photographic competition
10— 2—67	Inter Collegiate Entertainment competition
11— 2—67	Prize Distribution Day Inter Collegiate Entertainment Competition
18— 2—67	All India Amateur Musical Meet - Entertainment competition
21— 2—67	Pantomime Programme by Rolf Scharre

27— 2—67 28— 2—67	Participation in Inter Collegiate Athletic Meet at Y. M. C. A. College
2— 3—67	Finals of the Inter Departmental tournament of Toshniwa Trophy
11 — 3—67	Annual Sports Day
15— 3—67	Institute Day

* * *

Distinguished Visitors to I. I. T. Madras

22— 3—66	Dr. Ofjeord, Chief Technical Adviser, U. N. S. F. Project, Central Mechanical Engineering Research Institute, Durgapur
26— 3—66	Mr. J. F. Lockwood, Group Staff Administration Officer, Dunlop Rubber Company, London
11— 4—66	Mr. L. Drucquer, President & Dr. G. F. Gainsborough, Secretary, Institution of Electrical Engineers, London
22— 4—66	Dr. A. C. Joshi, Adviser, Planning Commission, New Delhi
3— 5—66	Lt. W.F. Stuhrke, Department of Air Force, Air Force Materials Laboratory, U.S.A.
7— 6—66	Generai K. M. Cariappa, Former Chief of Staff
17— 6—66	Hon'ble Shri M. C. Chagla, Union Minister for Education, New Delhi
9— 7—66	Gp. Capt. D. Rajagopal, Deputy Director, Electronics R & D Organisation; New Delhi
11— 7—66	Gp. Capt. H. D. Mehra, Commandant, A. F. Tech. College Bangalore
15— 7— 66	His Excellency Sardar Ujjal Singh, Governor of Madras and Sardarni Ujjal Singh
30— 7—66	Sir C. V. Raman. Nobel Laureate.
1— 8—66	Dr. I. von Ruckteschell, First Secretary (Commercial), Embassy of the Federal Republic of Germany, New Delhi

29— 9—66	Sub-Committee of the German Parliament (Bundestag) for Cultural Relations Abroad consisting of: – Dr. Martin, Chairman, Mr. Kahn-Ackermann, Dy. Chairman, Dr. Huys, Mr. Raffert, Mr. Saam, Dr. Schramm, Secretary Foreign Relations Committee and Dr. Citron, Second Secretary (Cultural Affairs)
2—12—66	Mr. Hermann Ziock, Head of the Information Department, Ministry of Economic Co-operation, Bonn Mr. Heinz Ockhardt, Head of the Photographic Department Inter Nationes, Bonn and Mr. Rolf Seelmann-Eggebert, Editor, North German Radio, Hannover
14—12—66	Major General Virendra Singh, Director-General, National Cadet Corps, New Delhi
3— 1—67	Prof. Dr. Med. K. H. Schafer, Director, Universitats-Kinderklinik, Hamburg Professor Dr. Wilhelm Groth, Rector, Rheinischen Friedrich Wilhelms-Universitat, Bonn Prof. Dr. Wolfgang Mechelein, Rector, Technical University, Stuttgart
4— 1—67	His Excellency Mr. G. Dove-Edwin, High Commissioner for the Federal Republic of Nigeria, New Delhi
6— 1—67	His Excellency Baron von Mirbach, Ambassador of the Federal Republic of Germany in India, New Delhi
18— 1—67	Dr. Linus Pauling, Nobel Laureate and Mrs. Pauling
19— 1—67	A German Parliamentary Delegation
28th Jan. to 6th Feb. 1967	Prof. Dr.-Ing. Hans A. Havemann, Director of the Instt. for International Technical Collaboration, Technical University, Aachen Prof. Dr.-Phil. Martin Schmeisser, Pro-Rector and Prof. Graf Stenbock-Fermor, Chancellor of the Technical University, Aachen
24— 2—67	Dr. Gieselher Wirsing, Chief Editor, "Christ und Welt", West Germany.
7— 3—67	Dr. Wilson, Council Science Officer, British Council, New Delhi.

PRINTED AT
SRĒMATI PRINTERS
(SWAMI RAMABADRA & COMPANY)
3/30, Mount Road
MADRAS-2

MAGAZINE PUBLICATION BOARD

Dr P. C. VARGHESE,
(Publisher, President, Institute Gymkhana)

Sri C. S. SASTRY

Sri M. G. SUBRAMANYAM

Sri S. RAMAJAYAM

Sri C. BALARAM

Sri R. GOVINDARAJAN

Sri R. N. ROY

Sri P. S. KRISHNAN

Sri C. S. KRISHNAN

Sri D. SAMPATH

Edited by: RATHINDRA N. ROY & CHANAKYA BALARAM