

TECHSTRUM

September 1986

Jaffna College Technical Institute

Vaddukoddai

Sri-Lanka

TECHSTRUM
A TECHNOLOGICAL SPECTRUM
OF THE
JAFFNA COLLEGE TECHNICAL INSTITUTE
VADDUKODDAI - SRI LANKA

SEPTEMBER

1986

Nos. 2, 3, 4

Staff Editors :

A. M. Spencer

S. Kantharajah

Student Editor :

S. R. Sivakumar

Business Manager :

S. Ayathurai



TECHNOSTRUM
A TECHNOLOGICAL SPECTRUM
OF THE
JAFFNA COLLEGE TECHNICAL INSTITUTE
VADDUKODAI - SRI LANKA

Nos. 2, 3, 4

1986

SEPTEMBER

Staff Editors: A. M. Spencer
S. Kantharajah
Student Editor: S. R. Sivakumar
Business Manager: S. Aysathurai



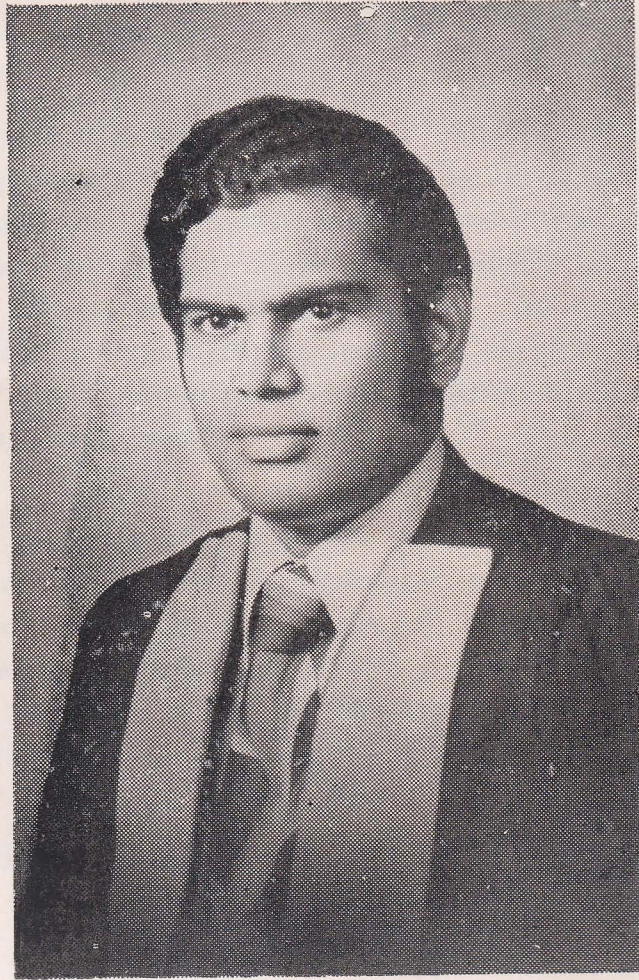
CONTENTS

	Page
1. From our Director	... 01
2. Editorial Notes & Comments	... 02
3. A Director — with a Vision and a Mission	... 09
4. The Institute Day — 1983	... 12
The Institute Day — 1984/85	... 20
5. Status Symbols should go	... 40
6. The Education & Training of Technicians in the Mechanical Engineering Field	... 42
7. Direct TV Reception from STATIONAR — Russian Satellite	... 45
8. Houses of Jaffna 100 years ago	... 49
9. Operating system of a Computer	... 53
10. Solar Electric Power	... 56
11. The Versatile Microcomputer	... 57
12. Quantity Surveying	... 59
13. Science and Technology	... 63
14. Electrical Laws and Circuits	... 64
15. Power Factor Improvement	... 66
16. Safety in Workshops	... 68
17. Development in Computer Technology	... 69
18. Electricity in everyday life	... 73
19. Purpose of Workshop Technology	... 74
20. The Value of English	... 76
21. இவன் நித்திரையில் இன்றுதான் கனவு இல்லை	... 77
22. தந்தவனே வந்தனமே.	... 79
23. தொலைக்காட்சி தொழிற்படுவது எப்படி?	... 80
24. இந்த நிலை மாறுமா?	... 83

25. English Elocution Contest - 1984 & 1985	... 85
26. Students' Union Office - Bearers — 1985 / 86	... 87
27. Report of the Students' Union — 1985 / 86	... 89
28. Report of the Fine Arts Society — 1985 / 86	... 92
29. 1. Sports Report — 1983 / 84	... 93
2. Sports Report — 1984 / 85	... 95
3. Sports Report — 1985 / 86	... 96
30. Council of Management — 1986	... 100
31. The Staff — 1985 / 86	... 101
32. List of Graduates, April 1984 — 1986	... 103
33. Students' Union Executive Committee — 1986 / 87.	... 109

*

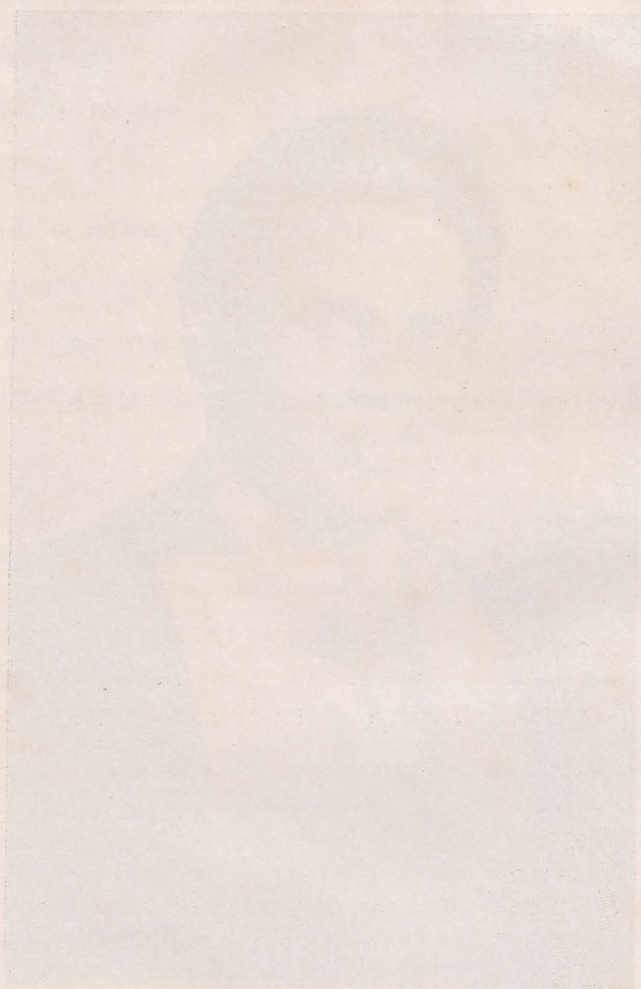
THE DIRECTOR



M. George Pillainayagam

B. Sc. Eng., M. Sc. Ag. Eng., C. Eng., M. I. Mech. E. (Lon)

THE DIRECTOR



George Pillsbury
Pres. and Mgr. of the C. & N. W. R. Co.

From Our Director,

This Institute is a non-profit making charitable organisation — sponsored, established and run by the Christian Church bodies in Vaddukoddai and the world over. Our Trustees are continuing to extend their support until it becomes a self-supporting educational unit. All facilities are provided by them with the love of God at heart to enable our youth to receive a sound technical education for gainful employment.

No course of study offered at this Institute is low enough — be it a craft course or a technician certificate course. The students should not fight shy of artisan courses. Their attitude should be such that they must think high, aim high and take pride in the vocation they have chosen for their livelihood.

M. G. Pillainayagam

Editorial Notes & Comments

An Apology

We regret the late appearance of this issue after it made its glorious debut in early 1983 as the first-ever publication to be churned out by a private technical institution in Sri Lanka, only to be rudely checked in its stride by events beyond our control.

The Gloom and the Gleam

Dark clouds hovered ominously over the years 1983 to 1985. The July '83 disturbances, the horror of what happened, the fear and the suffering experienced by so many in so short a time cast a pall of gloom country-wide. Scenes of carnage and devastation jolted a society out of its complacency and caught it in a grip from which it could hardly extricate itself. In the aftermath, the upsurge of violence, the disruption of transport services, the movement of troops and the uncertainties of the times brought all semblance of activity in the North to a standstill.

In this impasse the Institute had its own share of problems to face squarely and resolve as best as it could with the resources at its command. The year 1983 saw the number on roll rise to an unprecedented high with the admission of "displaced" students to the various disciplines whilst the years 1984 and 1985 registered a record drop in attendance when there was a large exodus of our students to foreign climes for reasons best known to themselves, the teaching staff besides. To worsen the situation, two events of tremendous magnitude struck the Institute as if by a tornado and shook its very foundations resulting in heavy loss of expensive and hard-to-find equipment and teaching aids.

Nonetheless, through staggered working hours to suit the exigencies of the moment, adjustments in work schedules, drastic cuts in on-going projects and make-shift arrangements of all kinds, the Director saw to it that the establishment was kept going with the torch of learning alight.

We see a glimmer of hope on the distant horizon and foresee the dawn of a new era of peace and goodwill, harmony and prosperity in the country—the old order changing, yielding place to new.

Our Director

It was during the period of drama and trauma enacted in and around the Institute and the country at large that Mr. George Pillainayagam assumed duties as Director. Undeterred and unperturbed, he threw himself heart and soul into the stupendous task of re-structuring the Institute that had almost crumbled to base and re-building it with patient care over the years to the prestigious position it holds now. In the process he had not only maintained the standards already set by his predecessors in office, the gallant Mr. S. Rajanayagam and the doughty Mr. George Somasundaram, but had given it a meaningful role in line with the rapid advances made in the fields of Science and Technology.

A lesser mortal, in the turbulent times in which Mr. Pillainayagam was placed, would have laid down tools and taken to wings.

A Profile titled 'A Director—with a Vision and a Mission' appears elsewhere in this issue.

What the Institute has in store to offer

In a publication such as this, it would be in the fitness of things to give a brief account of what the Institute can offer the young people who seek to enter its portals.

The Institute, established as far back as 1972, embarked on a program of Technical Education primarily to help young people, especially the school-leavers, left high and dry in a competitive world with no place to turn to for employment or for further education, to learn the intricacies of a craft or a technical skill to secure employment in the industrial sector and, if they are so inclined, to engage in self-employment.

The term 'school-leavers' unfortunately is often used loosely to mean all students who leave school after completing their secondary school education just as the confusion that sometimes arises from the contemporary fashion of speaking of 'technological education' and 'technical education' as being synonymous.

School-leavers are not a new breed nor are they an unmixed blessing. They can be categorized into drop-outs, leavers of school after the O/L and the university rejects.

Parents send their tiny tots "with satchels and shining morning faces" (with apologies to Shakespeare) in the fond hope that their offspring will make the grade — gain entrance to the University. Children start their upward climb of the educational ladder and after a few rungs some of them fall by the wayside—the drop-outs; the rest continue the arduous climb, a few more rungs and give up at the O/L stage — the leavers of school; the number left, steadfast and hopeful, plod on, spurred by private tutorials intent on making a fast buck, and just when they are about to reach the topmost rung, find themselves confronted with a blank wall — university rejects; and, finally, a negligible few, though spent and deserted by their fellow-travellers, make the grade. These drop-outs, leavers of school and the university rejects are the so-called 'school - leavers' who constitute the bulk of the student population and whom the Institute seeks to turn and fit so as to find a secure place in the sun by offering them opportunities of acquiring the appropriate and effective technical knowledge and skill required for gainful occupation.

Through consistent analytical and critical studies, the Institute has picked its way through the complexity of the task it has undertaken in identifying the current needs and objectives of the industrial and commercial sectors and has provided courses of study in the vocational, technical and engineering fields, the duration ranging from six months to three years. The Technician Diploma Courses are designed to enable students to sit the examinations conducted by the internationally recognised City & Guilds Institute of London and the students following the Professional Engineering Degree Course are coached for the London Engineering Council Examination Part I (E. C. E. — Part I). Performance of our students at these examinations has been very encouraging hitherto. As an experiment, arrangements have also been made, against a back-drop of deadly opposition to it, for a 'follow-up' study to those who have successfully completed Part I of the London Engineering Council Examination to prepare for Part II of the Examination. Classes during week - ends commenced early this year in a make - shift building rented out, centrally situated in Jaffna, for the convenience of the students, with the proviso that the practical work involved would be conducted in the Institute laboratories at Vaddukoddai.

The Institute has launched programs and projects aimed at serving the youth in better and more meaningful ways, and also envisages to offer theoretical instruction in special fields in an innovative scheme of integrated theoretical instruction and on-the-job training in collaboration with the industrial sector.

The Place of English

No one today questions the urgent need for more and better English as the language of international communication, of trade and commerce, of banking and finance, and of science and technology. But one wonders whether our students are

equipped to succeed in any area of the workaday world without a fair proficiency in the language to be able to read with understanding and to express themselves with sufficient fluency and clarity in speech and the written word.

English is taught as a second language in all the secondary schools in the island. It is logical, therefore, to expect that the average student, having had the opportunity of studying English from Grade 3 to the G. C. E. (O/L), would have the competence required for tertiary education, be it at a university or at an institution for further studies. It is equally illogical to think on this premiss for the simple reason that when the students qualify for the University Entrance and proceed to do the G. C. E. (A/L), the study of English goes into cold storage with the consequence that any attempt at the continuance of the teaching of English is never given a second thought in schools.

It is not surprising in the circumstances to find an obvious drop in the standards of a tainment in English among the admissions to the Technician Diploma and the Professional Engineering Diploma Courses of the Institute. On a percentage count, approximately 80 per cent of those admitted this year have shown an abysmal ignorance of the basic structures of the English Language, not to speak of their spelling (atrocious) and handwriting (shocking), although all of hem were prepared to declare on oath that they possessed documentary proof to the contrary. 20 per cent of this number are a waste of space.

The work of the teacher of English in the light of the data gathered is doubly painful. He has always to bear in mind that he is dealing with material too hot to handle (adults of all hues) and he has to get himself equipped in the language of the craftsman, technician and the engineer to be in a position to revitalise the fundamentals of English and guide the learners through the various stages of learning needs in technical situations. In other words, he has to metamorphose as a teacher of Technical English.

Teaching English is hard work, and teaching it for a specific purpose is harder still; but hard work will nearly always bring results.

We commend through these columns the foresight and forthrightness with which the Establishment made English as a compulsory subject in the curriculum of the Institute and giving it equal status with the course subjects for all purposes.

The Library

The Library, exquisitely designed and in use now, was financed entirely by the Trustees of the Institute with a view to providing opportunities to the rising generations of students to keep abreast of the whirlwinds of change in Tech-

nology and Science in an ever-changing and fast-moving world. Soaring majestically into the skies over-shadowing the Administration Block and overlooking Abel's Auditorium, it stands proudly apart as a Technical Library, the first of its kind in the North.

This miniature world of knowledge, to say the least, has an optimum capacity to hold 20,000 volumes, but with only 3,000 volumes at the moment, the shelves look pitifully bare. Donations of rare books have been gratefully received from a leading technical training institution in the United States through the good offices of the Board of Trustees, Asia Foundation, the National Library Service Department, Colombo and from individuals.

We consider our past students and teachers in employment overseas as our 'ambassadors of good-will' in procuring and sending us books, journals, periodicals and such like literature of scientific and technological content. And those employed in Sri Lanka and all well-wishers, we feel confident, will do likewise.

Research

This is a field not many will dare step in. It involves time, sacrifice and cost. However, with the full support of the Director who himself has a number of inventions and research papers to his credit, the teachers fell to the new experience with enthusiasm, first as a novelty and with increasing interest as a real job of work to accomplish.

In the Electronics Department new methods of conducting laboratory practicals and writing up of lab-log and course work reports were introduced. The laboratory reports submitted by the Final Year Electronics students last year were granted recognition as acceptable at Diploma level by the Institute of Engineers, Sri Lanka. From mere scrap a motor cycle was modified and modernised in the Automobile Department while several demonstration boards were developed in the Electrical Power and Air-Conditioning Departments. In Computer Studies new programming techniques were evolved.

A sizeable project on developing a UHF disc antenna to view satellite signals on TV screens in Jaffna and its outskirts was undertaken and completed successfully by Mr. S. Brihadiswaran of the Mechanical Engineering Department. Details of the project appear in an article entitled 'Direct TV Reception from STATIONAR — T (Russian) Satellite' written by him for this issue.

Students actively participated in all programs of applied research and such participation has given them the much-needed insight into the virtues of mature thinking, reading, understanding and evaluating on their own, an experience they can ill-afford to miss.

The Students' Union

Our association with the Students' Union, though brief and our contribution to its deliberations, infinitesimal, we have, nevertheless, had the rare privilege of watching from the side-lines its goings-on.

From small beginnings it has grown with the passage of time into a formidable organisation where young men, and now, to add colour and glamour to its proceedings by their graceful presence, young women, not only find stimulus and scope for self-improvement and for training in leadership but also enjoy the fullest opportunity to bring to the surface their debating and aesthetic talents, under the benign eye of a duly appointed Vice-Patron. This organisation is helping the members to think of themselves not as mere cogs in a wheel but as integral parts of a large machinery of fellowship.

Despite the heavy set-backs experienced in the past few years, the Union has continued to carry out its good work with a smoothness and thoroughness that reflect admirably on an enthusiastic Executive Committee in its faithful execution of a responsibility reposed in it by the general membership. The activities have been many and varied. New fields of endeavour were carefully surveyed and ventured upon from year to year with conspicuous success.

We trust that this organisation will grow from strength to strength without being drawn into controversial squabbles which could be better left to older heads to dabble in, and strive to bring honour and glory to an institution that nurtures and nourishes it. We have no doubt that all those who leave after completion of their courses of study (and even those who are likely to leave earlier for reasons of studies or employment elsewhere) will uphold the good name of the Institute by their conduct and commitment to duty and service in their working lives.

Our Future

From the facts we have gleaned delving into the history of the Institute during our stretches of boredom between lectures, we feel constrained to express the view that this Institute has grown in stature much faster than anticipated. Over the years it has steadily built up its physical infrastructure, laboratory, workshop and library facilities, its academic standards, and above all, its credibility in the academic world to a point where, in so short a time, it can rightly take its place among similar or more developed and much older technical institutions in the country. An intake of foreign personnel with specialised training and expertise in the various disciplines will ideally fit into an environment of a knowledge explosion occurring in the world of Science and Technology, enriching its life and work.

It is hoped that ere - long the Institute will blossom into a full - fledged Centre or Institute of Technological Studies.

Acknowledgement

We thank the organisations that sent us their journals, periodicals, news sheets and bulletins, and the educational institutions for their magazines.

From Techno - Cart to Techstrum

A swing from the bullock cart to the motor vehicle age is but a natural leap forward.

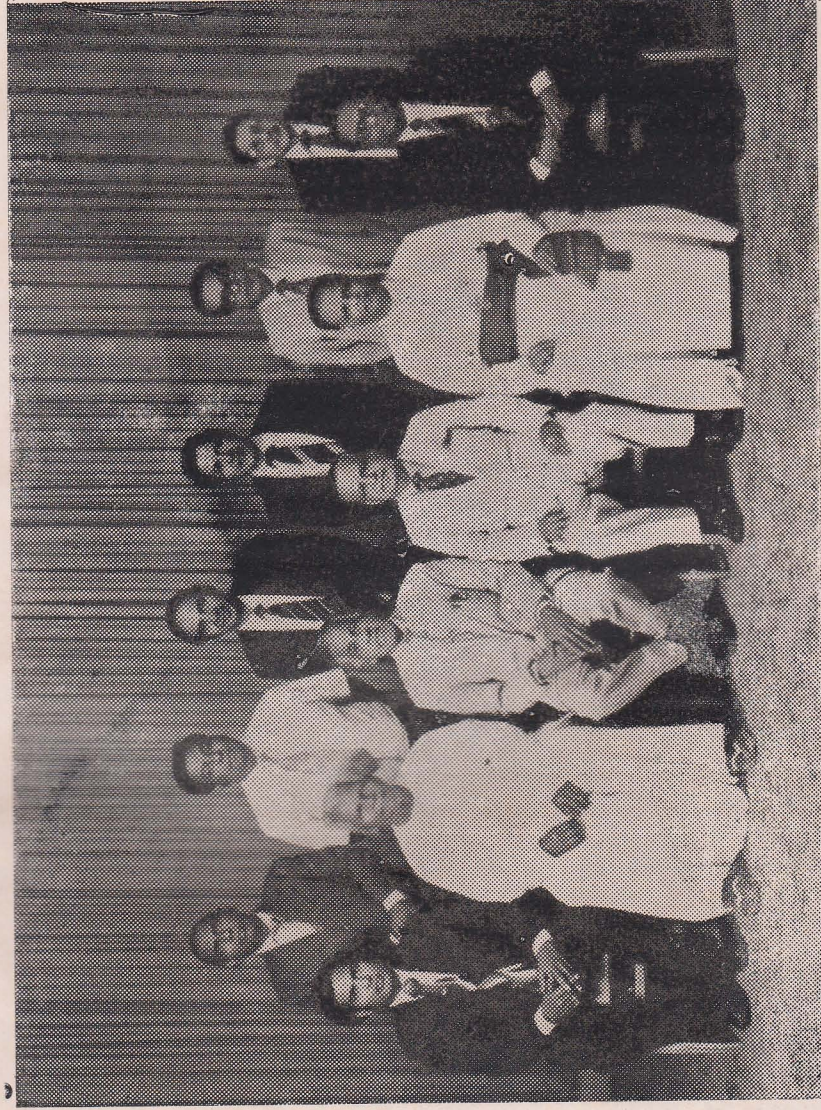
Before the motor age, we had in these parts several types of animal-drawn vehicles, well within the personal recollection of many readers. The slow-moving bullock carts, both of the single and double variety, have to a large extent been replaced by the light and heavy motor vehicles. They still exist but the time is not far distant when they will altogether disappear from the roads. And so were the speed and content of the courses of study offered when the Institute started its run on the road to modern technologies, as compared with the need to catch up with the speed of rapidly developing technologies and meet their demands for skilled man-power. Appropriately, the first issue of this Magazine carried the label 'TECHNO-CART'.

In the years that followed, the entire gamut of Technical Education in all its ramifications was examined critically, with special reference to its content and presentation, so that its scope has expanded to such an extent that at present the Institute imparts instruction in a wide variety of areas in a broad spectrum of levels, ranging from artisans to engineering graduates, shifting the emphasis from what Techno-Cart stood for to what Techstrum stands for today.

Incidentally, Techstrum is a happy blend of the technical and technological impacts on an emerging society telescoped into a spectrum. The spectrum represents the J. C. T. I. It beams a true image of what the Institute precisely offers, as seen on a radar screen — blip ... blip ... blip ... blip ...

We gladly place before our readers this package labelled 'TECHSTRUM'

— Editors —



Standing (L to R) : Dr. J. P. C. Phillips, Mr. C. Jeyaratnam (Principal, J. C. A. I.)
Mr. T. Kirupaithilakan, Mr. S. M. V. Tissanayagam, Mr. R. R. Blanchard
and Dr. W. D. Joshua.

Seated (L to R) : Mr. M. G. Pillainayagam (Director, J. C. T. I.),
Mr. S. S. Selvadurai (Treasurer), Mr. S. Rajanayagam,
Mr. J. M. Sabaratnam (Vice-Chairman), Rt. Rev. D. J. Ambalavanar
and Mr. A. Kadirgamar (Secretary).

Absent : Mr. A. C. Canagarajah (Chairman), Prof. A. Thurairajah,
Mr. L. P. C. Canagasisingam.

A Director — with a Vision and a Mission

The Institute is extremely fortunate in having Mr. M. George Pillainayagam, a capable administrator and a highly qualified engineer, as its Director. Already two years at the wheel, he has proved himself eminently suited to guide its destinies for many more years to come.

Mr. Pillainayagam hails from Karampon, a remote village in the Jaffna District—a village that has been the cradle of celebrities like the late Rev. Father Peter Pillai, the late Rev. Father Thani Nayagam and the Rt. Rev. Dr. Deogupillai, the incumbent Bishop of Jaffna, who, though turned to the priesthood, are reputedly known the world over for their lasting contribution to the cause of literature, culture, education, their theological lore apart. Nonetheless, it is not a matter for surprise that God out of the fulness of His grace could have also foreordained that the self-same village should, for a change, produce in due course an engineer with attainments par excellence.

After his early education at St. Anthony's College, Kayts and a brilliant career at St. Patrick's College, Jaffna, where his forte was Mathematics - Pure, Applied and Advanced, he entered the University of Peradeniya for his Degree in Mechanical Engineering. On acquiring his Degree he served for a brief period as Instructor in Mechanical Engineering at the University and joined the Department of Agriculture at Maha Illuppalama as Designs and Testing Engineer. It was here that his abilities were stretched to the utmost. Soon he was appointed Resident Engineer in charge, Farm Machinery Research Centre, where, in addition to his onerous duties, he served in various capacities as Lecturer in Agricultural Machinery & Management at the Post-Graduate Institute of Agriculture, University, Peradeniya, a member of the Board of Directors of the Sri Lanka State Trading Tractor Corporation, Colombo, and a member of the Panel of Experts in Agricultural Mechanization, F. A. O., Rome (Representative in Sri Lanka).

His academic distinctions, besides his degree in Mechanical Engineering, include the Post-Graduate Diploma in Agricultural Engineering, Council for National Academic Award (U.K.), the M. Sc. in Agricultural Engineering, Granfield College of Technology, Bedford, U.K., and Certificates of the Inst. of Electrical Engineers (Lond) - Parts II & III whilst his professional accomplishments are: A. M. I. E. E (Lond), A. M. I. E (Sri Lanka), M. I. Mech. E (Lond) and C. Eng. (Lond).

During his period of service in the Dept. of Agriculture, 1969 - 1981, Mr. Pillainayagam has had training in Sri Lanka, Thailand, South Korea,

Japan and the Philippines. He represented Sri Lanka at the Pre-shipment inspection of Power Tillers at Krishi Engines in India and at the Workshop on Rice Transplanters - UNDP / ESCAP Programme in South Korea. He had participated in various development projects sponsored by the Sri Lankan Ministry of Planning, World Bank and UNDP (Assisted Programme) as supporting member, counter-part member or as Principal Investigator for Sri Lanka and his contributions have been highly commended by the foreign participants. His many designs for implements — manually operated, animal-powered, power-tiller operated and tractor powered — have been released for manufacture by local industrialists. He had also found the time to bring out many publications as evidence of his profound knowledge, motivated by the sole desire to share it with those in the production line.

That Mr. Pillainayagam, with such attainments, accomplishments and achievements, should have chosen to serve our institution and the community at large is our good fortune, and an honour we do deeply appreciate. Lesser mortals would have taken to a sphere of activity, especially in foreign climes, carrying more attractive, remunerative gains. He is a young man of vision, endowed with grit and determination to accomplish great things for the Jaffna College Technical Institute and the community in general, ever sensitive to the needs of the youth. In accepting the post of Director against a back-drop of uncertainties, he has taken upon himself a mission which, we venture to say, he will fulfil, strengthened by the hall-marks of his character — a deep and abiding faith in God, humility, integrity and sincerity.

It is gratifying to note that within a short space of time the Director has brought to bear upon every aspect of his work the stamp of meticulous care and thoroughness. He devotes every minute of his time, week-ends and vacations, notwithstanding, and every ounce of his energy (of which God has blessed him in abundance) to the development of the Institute. A visitor, looking around, could see the Director's hand at everything: the Administration Block, Abel's Auditorium and the new Library, that of an architect; the ever-increasing additions of books, magazines and other publications to the library, an erudite scholar; the laboratories and workshops, an engineer; and the lay-out of the premises, an agricultural expert.

Deeply conscious and appreciative of your labour of love for us and the Institute, we take the opportunity through this issue to welcome you, Sir, as our Head and extend to you our loyal co-operation and the very best wishes in the sacred task you have undertaken.

It will be appropriate to conclude by quoting the lines of Oliver Wendell Holmes:

"There are men of one - storey intellect who can add and subtract, multiply and divide, and follow the instructions of others. The world needs them. There are also men of two-storey intellect. They have, in addition, the ability to direct other people; they can lead and inspire — we need them more. Then there are men of third - storey intellect who, in addition to the talents of the first and second - storey men, have the priceless ingredient—vision. They stand on the top - storey, look out into the heavens and here they see visions of great things to accomplish."

— Scribbler —

NOTE:

This contribution was written for inclusion in the '84 issue. With Scribbler we are in full accord and with him we are living witnesses to the changing scenes:-

— Ed. —

The Institute Day — 1983

The Institute Day was celebrated on the 12th of November, 1983, in the newly-opened Assembly Hall — Abel's Auditorium. The occasion marked the eighth presentation of Diplomas and Certificates to the Graduates. The Chief Guests were Mr. J. G. Aseervatham High Court Judge, Jaffna & Mrs. Sheila Aseervatham, Mr. J. M. Sabaratnam presided.

The day took on a greater significance when the newly-constructed Assembly Hall, named Abel's Auditorium, was dedicated and declared open by the Rt. Rev. D. J. Ambalavanar, Bishop, J. D. C. S. I. at 3-05 p. m. in the presence of a large and distinguished gathering. At 3-15 p. m. all present moved into the Auditorium where refreshments were served. At 4-00 p. m. the Guests of Honour were received at the entrance to the Administration Block by the Director of the Institute and the Principal of the Agricultural Section together with the staff and conducted in a colourful procession accompanied by the members of the Council of Management and the Rt. Rev. Bishop Ambalavanar to the venue of the function.

The proceedings commenced at 4-15 p. m. with a song, musically set, befitting the occasion, followed by a prayer by the Rt. Rev. Bishop Ambalavanar. The Director of the Institute presented his Annual Report whilst the Report of the Agricultural Section at Maruthanamadam was read, the Principal having excused himself for personal reasons, by Mr. A. Kadirgamar, Secretary of the Council.

The Chief Guest, in his learned address to the gathering, said,

"It is indeed a pleasure to me, an Old Boy, to come on an occasion like this and witness the growth and expansion of an institution that is near and dear to my heart. I think nothing is more gratifying than the spectacle of the Alma Mater growing and moving on from success to success.

"It is needless for me to state that the Technical and Agricultural Institutes which are extensions of Jaffna College, play a vital part in the educational set-up of our country and are fast gaining recognition for the significant contribution they are making towards the development of skills of young persons in Industry as well as in Agriculture.

"I think it is widely acknowledged that our system of secondary education is geared mainly to prepare students to enter the institutions of higher learning and due to various constraints only a small fraction of the thousands who complete their secondary education finally gain admission. Further, this system has little to offer as alternatives to those who fail to gain such entrance. Naturally this system results in much waste. Institutions, such as the Technical and Agricultural Institutes of Jaffna College, have undertaken the worthy task of taking up these young persons who would normally feel frustrated

and converting them into useful generators of economic activity which would benefit the community at large.

"I was fortunate to be present here on the day the Institute was inaugurated and noted the hopes that were expressed on that occasion. I am happy to find that the persons who run this Institute and those who work and learn here are committed to making these hopes transform into reality. The Director's Report is evidence of this trend. Since the Institute has proved itself in the fields of activity it had embarked on, it is my firm belief that circumstances will soon arise when it will be called upon to shoulder greater responsibilities in wider fields of education and practical training. I have no doubt that when such a situation arises, this Institute will rise to meet the challenge.

"One aspect of your curriculum that pleases me much is the place you have given to English. I am not against the mother tongue being the medium of education, but I am very keen that our young persons should have a good command of the English language. My experience as a teacher has been that a mastery of the English language widens one's knowledge, develops one's personality and helps one to understand the world and humanity better. In recent times I have been saddened at the spectacle of the modern young man who has been growing up without access to the wealth that is in the English language, whether he comes as a product of the University or of the seats of professional learning, such as Law, Medicine or Engineering. Often he is found unable to express himself clearly in any language or to grasp the wider issues of life. I am happy that you teach English as part of every course of study for, I believe, this will help to give a more liberal education to the students.

"I have no doubt that under the leadership of the present Director and the guidance of the Council, the Institute will grow and expand to serve the community in more ways than now. Such institutions as these in developed countries strike out eventually to provide facilities for 'Further Education' to the adults in employment, holding instruction classes at times suited to them. I hope this type of extended service will eventually be considered by this Institute when it is fully established and funds, equipment and staff become available. It is also my wish that you will show the way to our youths that they could make a good living in the land of their birth and that they need not get dispersed to the ends of the world to find a place for themselves under the sun. It is a grievous matter that the flower of our youth is being lost to our country by this dispersion."

At the conclusion of the Address, Mrs. Aseervatham gave away the awards. Mr. N. Thangarajah and Mr. T. Vigneswaran, Senior Lecturers of the respective institutions, read out the names of the recipients.

Mr. V. Suresh, President of the Students' Union, proposed a vote of thanks.

The ceremony came to a close at 6.15 p.m. with the Benediction pronounced by the Rev. S. Kulendran.

From the Director's Annual Report

Mr. Chairman, members of the Council, parents, alumni and friends, on behalf of the Institute I welcome you once again to our annual event, the Eighth Institute Day function.

I have great pleasure in welcoming you, Sir, and Mrs. Aseerwatham. We are very happy to have you both this evening as our Chief Guests. It is a special function to us and we are on the tenth year now. I am sure you will be very pleased to see the progress and achievements we have made during this decade of service. You were with us at the opening of this institution in 1974 and so today as our Guests of Honour during our tenth anniversary. We are very thankful to you and your wife for your kind gesture in making yourselves available to us for this function. Being an old student of Jaffna College, you have had great concern for your Alma Mater. Your presence here today will be a sure sign of encouragement to our students.

Our warm welcome to you, Mrs. Sheila Aseerwatham. You are an energetic and magnetic wife behind all the success of your husband, and not a stranger to us. We are very happy to have you today and I thank you for your gracious acceptance to give away the certificates and prizes to our graduates.

We welcome all our visitors and I thank you for your concern and interest in the development of this Institute.

The Council

The general governing and direction of this Institute is vested in the Jaffna College Technical and Agricultural Institute Council. It is as far as possible autonomous and the constituent members are specialists in different fields of Engineering and Agricultural technology.

Mr. L. R. Muttiah—retired Engineer from the public service, served the Council for six years and as Chairman during the past three years. He retired from the membership of the Council on completion of his period of service. I thank him for his wise counsel and guidance extended throughout his term towards the development of this Institute.

It is very sad to record that our Treasurer, Mr. K. A. Selliah, retired Principal of Jaffna College, reputed scholar and devoted Christian member of the Vaddukoddai Society, departed from us just a month ago.

He was the first Sri Lankan Principal of Jaffna College. After his retirement he served in the Executive Committee of the Board of Directors in establishing this Technical Institute in 1972. He was a member of the Council from its very inception. He was also the Treasurer of the Council during most of

the period, and carried out his duties with the utmost care and devotion. He was present at every meeting of the Council and was very concerned for the development of the Institute. None of us can forget the services he rendered to our community, his consoling and kind-hearted attitude to help everyone who approached him. While we sympathise with the members of his family, our prayers are for his soul to rest in peace.

Technical Education

Our prime aim is to help the school leavers to learn technical and vocational skills and secure satisfactory employment in the industrial sectors. We are involved in much experimentation and research to identify suitable engineering courses and the level of training to be offered to the students to gain recognition by the prospective employers. The objective is to train the youth as technicians and craftsmen on basic engineering vocations. The facilities available with us are fully utilised for this purpose even though some of our laboratories are inadequately equipped to meet the demand.

A large number of school leavers who have successfully completed the G.C.E. (A.L) examination are seeking the services of this Institute to provide engineering education for their professional requirements. The Management Council was sympathetic towards their demand and now we have ventured into conducting professional Engineering courses commencing from January 1983. I should express my sincere thanks to the Board of Trustees of Jaffna College for establishing and continuously supporting this Institute to fulfil its objectives. Establishing and running a private technical institute is no easy task today. The courses offered must precisely meet the ever-changing manpower needs of the society it serves and be recognised as both relevant and useful by employers as well as the prospective students.

School leavers

The education at the senior secondary school level at present is too academic. There is not much effort to educate the child on the life of the community, he had to serve. Generally, school leavers seeking admission here have not got any opportunity of acquiring simple manipulative skills and developing practical engineering skills and hobbies at their early age. When they begin technical education, they experience much difficulty in motivating themselves towards their chosen vocation. Some of the qualified school leavers and their parents are prejudiced by the illusion that learning a trade vocation is below their dignity and look down upon a person learning such vocation. The resources and facilities for capital intensive engineering development in this country are limited. Therefore, our youth should be motivated towards learning life skills for their self-employment.

Courses of Study

The courses of study are designed with the guidance of the appropriate syllabuses of the City & Guilds of the London Institute, but the practical training given is to meet the local industrial requirements. The prospective students on successful completion of the Diploma courses could appear for the internationally recognised (City & Guilds of London Institute) examinations and seek appropriate employment in any part of the world. Many of our past graduates were very successful and had obtained such rewards.

C. E. I. (E. C. E.) Courses

In January, 1983 we commenced a professional study programme to prepare students for the Engineering Council Examination (Lond.) Part I. The first batch had an enrolment of 50 students at the beginning but now there are only 33 students, registered to sit the Part I examination in May 1984. At present our facilities are limited to conduct the Part I programme. Perhaps, in future if our laboratories are equipped, we may be able to offer the complete engineering professional course (Parts I and II), recognised by the London Institutions as academic requirements to become a Chartered member of their institutions.

Technician Diploma Courses

The most popular course is the Electronic Engineering Diploma. The syllabuses and practicals are designed in conjunction with the City & Guilds Telecommunication technician course. However, additional practical exercises are given on electronic devices and circuits, Communication practice and Electrical measurements and controls. The students are coached to learn the fundamental principles and relevant engineering applications, but they must be involved in developing practical skills and experience for acceptance by commercial employers. The Mechanical and Electrical Engineering Diploma courses are also designed in a similar manner. These courses are of three-year duration. I am glad that some of the leading industrial and manufacturing organisations in the peninsula are willing to accommodate our interested students for vocational employment in their workshops during the term holidays. The Automobile Engineering course has become very unpopular among our students, and soon it will be revised into an attractive specialised course of short duration, such as Auto Electricians course (1 year).

A Diploma course in Buildings and Civil Engineering technology was commenced in May 1983/84 academic year. It is now being revised to suit today's needs.

Another course on Refrigeration & Air Conditioning technology was started in May 1983 and now it has been converted into a one-year intensive training programme as 'Technician Certificate in Refrigeration & Air Conditioning'.

Craft Courses

We are offering three craft courses: Foundry Practice, Welding and Turners & Fitters, of one-year duration. These are Mechanical and Production Engineering-based trade courses. Adequate practical training to the standard required by the industry is included in the curriculum. Though it is open to all school leavers of 16 - 20 years of age, some G.C.E (O.L) qualified students showed very great interest in these trade courses and completed them with 'merit passes'. I am pleased to mention that now all metal fabrication requirements of the Institute are done at our workshops by the staff and students.

Staff

The growth and stability of a non-government technical institution like ours largely depend on the quality of education and training offered by the institution. Our achievements in this regard depend on the co-operation of the members of the staff and the students. Now there are ten qualified Engineering graduates on our regular staff, in addition to the services of two Engineers from industry as Visiting Lecturers.

The academic staff consists of a Director, 8 lecturers, 4 Special Instructors, 9 Instructors and 4 Lab. Assistants.

Current Academic year 83/84 — Admissions

We received 368 applications for admission. All types of school leavers with different levels of attainment sought admission. We admitted 141 students to the six technician courses (First year 126 and Second year 15) and 39 students to follow the three craft courses. In addition, we enrolled 48 students to follow the professional Engineering course (C.E.I. Part I).

I wish to place on record that this year for the first time we admitted girl students to this Institute. Five students are following the technician Diploma courses (Electronics - 4 & Civil - 1) and two are in the first batch of the C. E. I. (Part I) course.

Prize Fund

During the period under review we have not received an appreciable contribution towards the Prize Fund. We appeal once again to our old boys, friends and well-wishers for their generous contributions and encourage the students in their academic career.

Awards

Final year :

Best performance prize is awarded to Sivanantham Anpalagan.

A. S. Sangarapillai Memorial Prize for best performance in Electronics Engineering is awarded to Sittampalam Kulendrarajah.

Second year:

Best performance prize is awarded to Florian Euguine Constantine.

First year:

Best performance prize is awarded to Ragupillai Rathamanalan.

Facilities

Buildings

We are indeed very grateful to the Inter-Church Co-ordinating Committee for Development Project of Netherlands for their valuable contribution to add new buildings and facilities at this Institute. My special thanks are due to Mr. B. Abels, the Head of the Asia & Pacific division of this organisation, for his sympathetic consideration to my appeal to meet the increased expenses incurred to complete the on-going building programme. To honour his services, the Institute's Management Council decided to name this magnificent hall after him as 'ABELS AUDITORIUM' and today it was dedicated to the glory of God and opened by the Rt. Rev. Bishop D. J. Ambalavanar. Under this project programme, we have completed the following buildings: the Administration Block with an equipped Conference Room dedicated and opened by the Rt. Rev. D. J. Ambalavanar on 18th October, 1983; two staff quarters, completed in May 1982 and now occupied by the staff members and their families.

The New Library, now under construction, will soon be completed and we are looking forward to receiving generous contributions of technical books, etc. from all possible sources to equip the library.

Playground

The construction of the playground is in progress. Soon the Institute will have a playground, large enough to play tournament matches within the campus. Our Sports Master, Mr. T. Skandarajah, and the Students' Union members are setting this ground ready for use from this season.

Hostel

Only one wing of the proposed hostel complex was completed last year and now only 10 students are housed. Many students are requesting hostel accommodation. We have made arrangements to rent out buildings in the neighbourhood and provide accommodation to them.

Computer Section

A knowledge of Computer application in Engineering Technology is very essential today. A Computer division was set up in March this year and equipped with one small computer. Lessons on 'Computer Science & Application' are included

in the curriculum along with Mathematics for the final year students. A few improved model computers were added recently. A specialised one-year course on 'Computer Science & Engineering Application' will be offered as an additional course from the next academic year.

Equipment

The student population was doubled during 1982/83, and trebled in 1983/84 session. In addition, the courses and practical training offered here are upgraded and additional equipment are always required to fulfil this task. A large portion of our old equipment and instruments needs repair and replacement. Some are out-dated. While we are making every effort to obtain the necessary equipment, we are looking forward to receiving help from our old boys, well-wishers, friends and industrialists in this respect.

My sincere thanks are due to His Excellency the High Commissioner and the Secretary for Development of the Australian High Commission in Sri Lanka for giving us the moral support and providing equipment to commence the Air Conditioning & Refrigeration Technician training at this Institute. I am sure, this course, now in its infancy, will soon be developed into a recognised status with the blessings of His Excellency the High Commissioner and his support.

Additional laboratory equipment were imported and supplied to the Mechanical Engineering division. Now the students are able to carry out 18 sets of practical exercises in Mechanical Engineering Science.

The staff and passed-out students of the Foundry department had designed, constructed and installed a small cast-iron cubola (for melting cast-iron) of 50 kg. capacity of the Foundry Lab. during their term vacation this May. This plant will be commissioned soon and the complete practical training required could be given to the technician and craft students.

Research

I always encourage our staff members to carry out suitable research, development work and design and construction of lab. equipment, demonstration models etc., which are relevant to our courses. Some members have already ventured into such programmes. I wish to place on record that the new findings by Mr. Kandasamy, Instructor in the Foundry department, on the 'Use of Illupai Seed Oil for baking Cores' were a very interesting innovation. I congratulate him on his effort.

Industrial training

As I mentioned in my previous report, we had attempted to form an Institute-Industry liaison in this peninsula. Our first effort was in March this year and we conducted a two-day (17th & 18th) programme of demonstration and exhibition, inviting the industrial sector and encouraged our students

to display their achievements in their fields of study. 500 children from ten senior secondary schools patronised the exhibition and gained first-hand knowledge of the activities of the students.

My special thanks are due to M/s United Electricals, M/s Hayleys Ltd., & Cantabia Institute in collaboration with D. M. S. Electronics and M/s Samuel Sons & Co. Ltd., who contributed valuable demonstrations, lectures and exhibits during this programme. Several industrial sectors have given their assurance to provide further training to our students.

Thanks

With my thanks to you, Mr. Chairman, Mr. & Mrs. Aseerwatham, Ladies & Gentlemen, for your patient hearing, I conclude my report.



The Institute Day — 1985

All hopes of celebrating the Institute Day in the year 1984, without a break in tradition in the ceremonial pomp and pageantry associated with it, were shattered and plans projected into it had to be abandoned when blood-curdling events, two in a row, threatened the very existence of the Institute, the disturbances in the country and their repercussions aside. Through a combination of sheer grit and determination the Director and the Council of Management settled down to salvage the Institute out of the parlous state into which it had sunk. They managed to steer it clear of all road-blocks and dead-ends and putting it back on an even keel, in time to make it possible for the function in 1985 to be held on Saturday, the 7th of September, the entire programme scheduled for the morning.

And so once again Abels Auditorium became the venue for the Institute Day celebrations and the Presentation of Diplomas and Certificates to the passing out graduates. There was a large, distinguished and representative gathering present on the occasion.

The following programme was worked out without a hitch:

- 9-00 a. m. — Guests arrive at the Auditorium & Students' Cultural Show.
- 10-00 a. m. — Refreshments
- 10-15 a. m. — Staff, Members of the Council, Chief Guests & Bishop Kulendran form ceremonial procession.
- 10-20 a. m. — Procession moves up from the Administration Block.

- 10-30 a. m. — Staff, Chief Guests, Chairman, Vice-Chairman, the Secretary & the Treasurer of the Council, Director, Principal & Bishops take position on the platform.
- 10-35 a. m. — Welcome song. — Students
- 10-40 a. m. — Prayer — Rt. Rev. D. J. Ambalavanar
- 10-45 a. m. — Director's Report — Mr. M. G. Pillainayagam
- 11-00 a. m. — Principal's Report — Mr. C. Jeyaratnam
- 11-15 a. m. — Chief Guest's Address — Dr. S. Mohandas
- 1-30 . m. — Presentation of Diplomas, — Mrs. P. Mohandas
Certificates & Prizes
- 12-00 noon — Vote of Thanks — S. Sivayogan, President of the Students' Union
- 12-10 p. m. — "The Hymn for Ceylon" — All standing
- 12-15 p. m. — Benediction — Rt. Rev. S. Kulendran

A fitting finale to the proceedings was a fellowship lunch arranged by the Director of the Technical Institute and his staff to honour the Chief Guests the twin Bishops, members of the Management Council, the Principal and Staff of the Agricultural Institute, and spouses, thus, creating the atmosphere of a family gathering, sharing a sumptuous repast together.

From the Report of the Director, Technical Institute

Distinguished Chief Guests, Chairman, members of the Council, members of the Jaffna College Board, alumni, parents and friends, we at the Jaffna College Technical Institute, extend to you all a cordial welcome to this, our annual event, the Tenth Institute Day celebrations. The Ninth Institute Day function was scheduled to be held in September '84, but was postponed several times due to the unsafe and unhappy situation that prevailed in this country and finally got cancelled. To-day, we hope very much that you will welcome this type of fellowship with us, reviewing our work done, progress made and successful achievements during the year 1984/85.

I have great pleasure in welcoming Dr. Mohandas, and we are happy to have you, a brilliant technologist of your calibre, as our Chief Guest today, at a time when you are fully involved in the development of one of our natural resources — the symbol of the North — the Palmyrah. It is appropriate to have you, a dedicated gentleman, who had your early education at a school, small and unheard of, at that time — Stanley College, and, having started your career as a technician, through hard work and sheer determination you continued your education while working as a technician and obtained an

Honours Degree in Chemistry from the University of Sri Lanka, Colombo. Your thirst for knowledge and high aspiration in your vocation as a Chemist enabled you to obtain a scholarship to do a doctoral programme at the University of Adelaide in South Australia and become a full-fledged scientist with the Ph. D. award in Biochemistry.

Your image, as a technician who rose to the highly esteemed position of a scientist, has to be maintained and set high before the younger generation, both our technician students and technical teachers, as an example worthy of emulation.

As scientist and a Senior Executive of the Coconut Research Institute, you endeavoured to establish and administer a new division, the Coconut Processing Research, at C. R. I., Lunuwila, and a centre for Coconut Processing Research and Development of the palm of Sri Lanka, the palm of the North attracted you and how fortunate we are to have your services as the General Manager of the Palmyrah Development Board.

We are very thankful to you for your kind gesture in making yourself available to us for this function. Your presence here today, I am sure, will be a source of encouragement to our students.

Our warm welcome to you, Mrs. Pushparani Mohandas, to this function. You are an energetic and magnetic wife behind all the successes of your husband to become a scientist and devote himself to a dedicated cause. We are happy to have you today and I thank you for your gracious consent to give away the awards to our passing-out graduates.

The Management Council

The general governing, policy making and counselling of this Institute have been vested in the Jaffna College Technical & Agricultural Institute Council. It is an autonomous body functioning under its own constitution established in 1973 and sprung up as the great - great - grand child of Jaffna College established in 1823. This Council is composed of eminent personnel in the fields of education, agriculture, business and engineering. There have been some changes in the Council.

Mr. S. S. Selladurai resumed duties as the Treasurer of the Jaffna College Board and was appointed as Treasurer to serve on this Council.

Mr. C. L. Devasahayam, Principal of the Agricultural Institute, was replaced by Mr. C. Jeyaratnam, B. Sc. (Agric.), M. Sc. (Agric.) who assumed duties on the 1st of August 1984. Mr. Jeyaratnam served the Department of Agriculture for 30 years and lately as the Additional Deputy Director of Agricultural Extension (Northern Division) before he retired from the Government Service and joined us. During the interim period from January to July 1984, I was

requested by the Council to look after the Agricultural Institute at Maruthanamadam and, I hope, I did my best to straighten up this Institute in order. We welcome Mr. Jeyaratnam and are looking forward to his contribution for further development of this Institute.

Mr. M. Jayabalan, who was the representative of the C. S. I. in the Council, retired from the membership on completion of his first period of three years of service in 1984. Though he was eligible for re-election for a further period of three years, he could not accept the nomination as he took up an assignment in Canada.

Mr. S. R. Arasasingham as representative from the Agricultural field served for two years and relinquished his services in July '85 as he left abroad.

It was a great shock to all of us when our founder member of this Council, Mr. I. P. Thurairatnam, retired Principal of Union College, a reputed scholar and devoted Christian, departed from our midst suddenly.

At a time when he was enjoying his well-earned period of retirement after serving as a brilliant and successful teacher and Principal of Union College, Tellipallai, he continued to associate himself with Jaffna College, his Alma Mater, and served on the Board of Directors and the Special Committee in 1966 to investigate the feasibility of establishing this Technical Institute. From the inception of this Institute in 1972, Mr. Thurairatnam served on the Council and the Sub-Committee as member, Vice-Chairman and Chairman for 13 years until he departed from us. He was present at every meeting of the Council and served on the Buildings Advisory Committee and was very much concerned with the development of this Institute. We can't forget the services rendered by Mr. Thurairatnam to this Institute, and the community at large. His counselling and his willingness to help every one who approached him, his admirable personality and character are traits that will ever remain with us.

Dr. W. D. Joshuwa was nominated by the Jaffna College Board as one of its representatives to serve on the Council.

Mr. L. S. C. Canagasingham was nominated by the C. S. I. as its representative to the Council with effect from February 1984.

Mr. T. Kirubaithilakan was also nominated by the Council to serve as a member in place of Mr. Arasasingham.

We welcome all the new members and thank them for their advice and guidance given to us.

Technical Education

The programme of technical education at this Institute was commenced in 1974 offering four different courses of two-year duration. 15 students were enrolled

and seven of them completed the courses and received their awards at the first Institute Day held on 19th June 1976. The prime objective of this institution is to help the school leavers and school drop-outs to continue their tertiary education in technical & vocational skills. During the past ten years we were involved in much experimentation and research to identify suitable engineering courses of study and the level of training to be offered to the students with varying academic standards seeking admission here. Academically qualified students do not remain with us long; they gain admission to the Universities here or abroad, and use us as a booster institute to prepare themselves in learning technical subjects in the English medium and leave half way for higher seats of learning elsewhere. The remaining students who complete their education here are to be trained with sufficient academic standing to gain recognition by the prospective employers. The range of courses and curriculum cannot remain settled because with the rapidly changing situation, specially affecting the youth, we have to adjust and up-date our activities and facilities to meet the needs and expectations of the society we seek to serve.

Courses of study

Now we are offering 11 different courses of study to fulfil the hopes and aspirations of the students and their parents. The study programmes we offer are in the Engineering trade, relevant and useful to the school leavers. We constantly monitor the syllabi and up-date the practical exercises, project studies, field work etc. to meet the academic requirements for the Diplomas and Certificates awarded by us.

- a) Professional Engineering Course — equivalent to Engineering Council Examination (London) - Part I
- b) Technician Diploma Course — equivalent to City & Guilds of London Institute
 - Electronics & Telecommunication — 3 years
 - Electrical Power Engineering — 2 years
 - Mechanical Engineering — 2 years
 - Building Technology & Quantity Surveying — 2 years
- c) Diploma in Computer Programming — 1 year
- d) Technician Certificate course
 - Automobile Technology — 1½ years
 - Air/Conditioning & Refrigeration Technology — 1½ years

c) Craft Certificate Course

Foundry Practice	— 1 year
Welding Practice	— 1 year
Turners & Fitters	— 1 year

All the courses are conducted in the English medium and adequate explanations are given in the Tamil language.

Professional Engineering Course

Engineering Council Examination (London) — Part I.

The first batch of 50 students with the minimum qualification of two passes in G. C. E. (A/L.) including Mathematics and Physics were admitted in January 1983 to follow a full-time study at professional engineering level. Seven subjects were taught as per syllabus of the Engineering Council Examination (London) Part I. Additional lessons in English, Engineering Drawing and Laboratory practicals were also included in this course programme. From this first batch 23 students continued their studies during 1984, but only 14 of them were able to complete the full course and sat our Institute's examination held in April 84. 11 students were successful and awarded certificates today. They proceeded to Colombo under very trying conditions and sat the Engineering Council Examination held in May 84. At this London examination 3 candidates passed in all six subjects, 6 passed in five subjects and 3 in four subjects. Many of them passed the referred subjects in the next attempt in May 85.

The second batch of 53 students were enrolled in January 1984. A large number of them abandoned their studies and left the Institute towards the end of the year. Only eight students remained to complete the course and sat the Institute examination held in April 85. 3 candidates passed this examination. A large number of them appeared to have left the country.

The Examination Department of the Engineering Council (London) was approached to provide an additional examination centre in Jaffna. The authorities considered our request sympathetically but expressed their inability to help the large number of students appearing for their examinations, mainly due to the unrest and unsafe situation that prevailed in this part of the country.

The third batch was scheduled to commence in January 85, but when advertised twice, only six students applied for admission and, thus, this course was not offered during the year 1985.

Technician Diploma Course

Of the four courses of study offered at the Technician Diploma level, the Electronics & Telecommunication course is the most popular one, followed by

Building Technology & Quantity Surveying and Electrical Engineering Practice. School leavers who have passed six subjects at G. C. E (O.L) examination with credit passes in Mathematics, Science and English were admitted to the Diploma courses. The curriculum was based on the respective syllabi of the City & Guilds of the London Institute courses. All the students were persuaded to appear for the respective parts of the C & G (L. I) examinations held in Colombo by the Commissioner of Examinations (as agent for Sri Lanka) while following their courses of study here at this Institute. Lessons in English language and Engineering Drawing and adequate laboratory practicals were included in the curriculum of all four courses and conducted in the English medium. In the course lessons the principles and application of respective sciences and technologies in the relevant engineering fields were taught and the students are persuaded to apply their knowledge on practical problems to develop their practical skills and become technicians of high quality.

Technician Certificate Courses

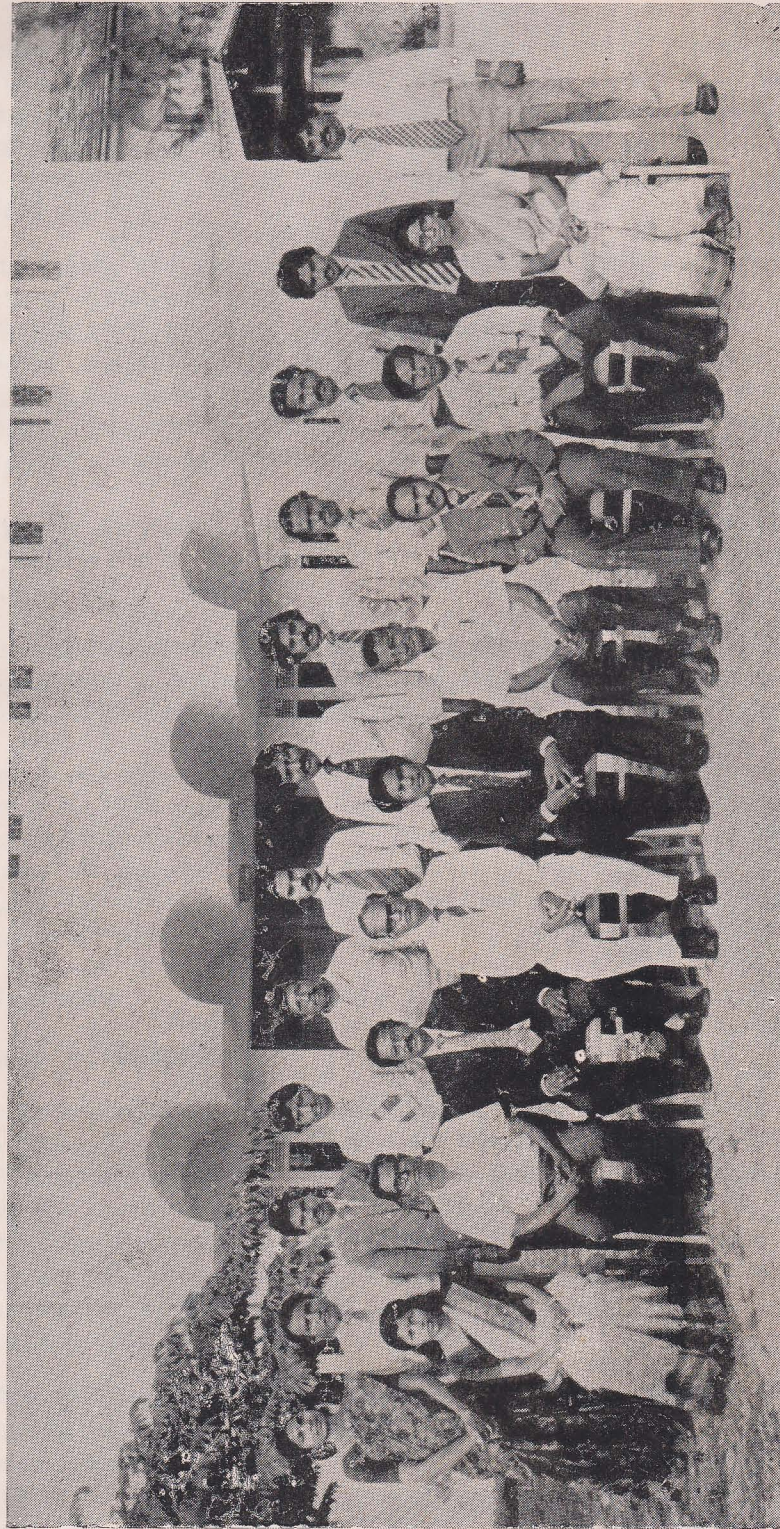
The Automobile Engineering Course at Diploma level (3 years duration) was offered from the inception of this Institute, but it became unpopular and not a single student was successful at the 1984 examination. Hence, it was modified to a 1½ year Technician Certificate Course, and more practical lessons were included. In addition, lessons and practical exercises in Auto-electrical applications were also included in the curriculum. This arrangement became attractive and we enrolled 27 students in May 1984. But, alas, 17 students ran away from this country and now only 10 students are continuing their last and final month and will complete the course in October 1985.

A course of study in Air-Conditioning & Refrigeration Technology was commenced in May 1983. The duration of this course was 1½ years and the first batch of 5 students passed out in August 1984. There were 15 students enrolled in May 1984 and 10 of them left during this reporting period and the balance 5 students will complete their course in October '85. This course is now modified to a one-year intensive practical course and the third batch will be enrolled in January 1986. Generally, students with six passes at G. C. E. (O.L) are admitted to these Technician Certificate courses.

Craft Courses & Production Programmes

We continued to offer the three craft courses of one-year duration in Foundry Practice, Welding Practice & Turners & Fitters. In these production engineering courses adequate practical training is included in the curriculum. Generally, the school-leavers who have studied up to G. C. E. (O.L) but have failed to secure six passes to continue technician education are admitted to the Craft courses. These students are given on-the-job training in the production programmes undertaken by the staff of these departments. Steel grills, railings, roof trusses, book shelves, flower stands, hostel furniture etc. are fabricated at the Welding workshop. Water pumps, couplings, hinges, nipples etc. are

STAFF 1985 - 86



Standing (L to R) : Miss. V. Muthukumar, Mr. S. Devananthan, Mr. S. Vanatheva, Mr. P. Sritharan,
 Mr. S. B. Sabanayagam, Mr. S. Kantharajah, Mr. M. Thayananthan, Mr. S. B. Dhivakaran,
 Mr. N. Nitgunam, Mr. S. P. Ravendran, Mr. S. Nesarajan and Mr. R. S. Ratnakobal.

Seated (L to R) : Miss. S. Gunaratnam, Mr. K. Thambiayah, Mr. E. M. Jebarajah, Mr. K. N. Y. Maurice,
 Mr. M. G. Pillainayagam (Director), Mr. A. M. Spencer, Mr. S. A. P. Thurairatnam,
 Mr. I. Balasubramaniam and Mrs. R. Rajendram.

11-1991 11.12

fabricated in the Foundry workshop and machined by Turners & Fitters students in the Machine Shop. Items produced by these crafts students are of acceptable standard and those who complete these courses of study readily find employment as semi-skilled workmen in the industries.

Staff

Establishing and running a private Technical Institution like ours providing tertiary education to the school-leavers who are generally not academically well qualified to enter state-run technical colleges and educating them to achieve reasonably high standards is not an easy task today. The development of such non-governmental institutions largely depends on the quality of educational programmes offered, the skill and motivation of the teaching staff and the co-operation between the staff & students.

Attempts were made to seek admission in Technical Teachers' Training Institutes in India to train our staff members (Instructors), but they have not been fruitful yet.

Senior lecturers have been appointed as Course Co-ordinators and Student Counsellors to advise and guide the students in their academic careers and vocations as well as in their social, cultural and Union activities.

Mr. A. M. Spencer, Lecturer in English, had published our Institute's first text book 'An Advanced Course in English for Engineering & Technician Students' in January 1985. While congratulating & thanking Mr. Spencer, I wish all my staff will endeavour to prepare technical text books in due course relevant to our courses of study and suitable to the category of students who come here for training.

Students

Past performance

At the beginning of the academic year (83/84) in May 83, we had 326 students on the roll. But at the final examination held in April 84 there were only 205 students, that was 64%. The drop-out 36% was higher than that of the previous years. Among the 52 candidates passed out in 84, 17 were awarded Technician Diplomas, 15 were awarded Technician Certificates and 30 students were given Craft Certificates. 64 students failed the final examination and left. The balance 92 students were promoted to continue their studies during the next academic year.

When the next academic year commenced in May 84, we admitted 258 new students to this Institute, total on Roll was 250. During this academic year, the two term examinations scheduled to be held in August and December were cancelled due to the sudden provocations and civil disturbances in the peninsula.

Due to several reasons, a large number of students abandoned their studies and left the Institute, even at the final year of their course programmes. The situation that prevailed in this part of the country was frightful and it had terrorised the youths and students so as to flee for safety of their lives. Several parents were forced to prevent their children from travelling long distances to continue their studies at the Institute. As such the student population at the beginning of the third term in January 85 was only 126, 35% of the number enrolled, but only 110 students remained to complete their academic courses in April 1985. Among them 37 students passed their final examinations and are receiving their Certificates today. 62 students were promoted to the next year and eleven students failed and left the Institute. Many students performed well at their final examinations and won prizes for their best performances.

Prize Fund

This year we received a meagre Rs. 300/= towards the Prize Fund. We appeal once again to our old boys, friends and well-wishers for their kind contributions towards this Fund and encourage our students in their vocational and technical studies.

Prize Awards

I congratulate all the prize winners on their achievements.

Prize Winners - 1984

Technician Diploma Courses:

Final year:

Best Performance Prize — S. Kantharajah

A. S. Sangarapillai Memorial Prize — E. E. Constantine

Second year:

Nil

First year:

Best Performance Prize — Civil & Quant. Surveying — R. Sivakumar & R. Mohan

Electronics & Telecom — Miss. R. Vasanthy

Craft Courses:

Nil

Professional Engineering — Part I

Best Performance Prize — C. Vasudevan

Prize Winners — 1985

Technician Diploma Courses

Final year:

Best Performance Prize & A. S. Sangarapillai Memorial Prize — A. Kugathasan

Second year:

Best Performance Prize — Miss. R. Vasanthy

First year:

Best Performance Prize — Mechanical Engineering — B. Jeyaseelan

Electronics & Telecom — Miss. K. Mallikadevi

Civil & Quant. Surv. — Miss. N. Manchula

Computer Programming — T. Thasarathan

Craft Courses

Best Performance Prize — Turners & Fitters — S. Raveendran

Welding Practice — S. Sivanesan

Foundry Practice — S. Ganeshan

Facilities

Buildings

The new buildings constructed recently are the gifts from the Government of the Netherlands and this aid was granted through the Inter - Church Co-ordinating Committee for Development Projects of the Netherlands. This Phase II programme is nearing completion. We are fortunate to receive this aid and are very grateful to the people of Holland for their generous gift and Mr. S. Rajanayagam, the former Director, who worked out this aid for us.

The following buildings were completed under this project:

Asst. Director's Quarters — June 1982

Hostel (one wing) — June 1982

Staff Quarters (three) — January 1982

Administration Block — October 1982

Auditorium — November 1983

Library — May 1985

Water Tower — On - going, will be completed in
October 1985

Library

The new library building was dedicated and opened by the Rt. Rev. D. J. Ambalavanar, Bishop of the Jaffna Diocese, C. S. I. on the 20th May 1985. This library is the first of its kind—Technical library—in the North, spacious enough to accommodate 20,000 volumes. But we have now only 2000 volumes. Our sincere thanks to all the donors who have voluntarily contributed books to the library. Our special thanks are due to the Trustees for sending 100 volumes of technical course lessons from a leading training institute in the United States, to the Asia Foundation for their continuous supply of books whenever our staff called on them, and the National Library Service Department—Colombo, for donating us some text books. However, we appeal to all well-wishers to extend their kind help to us to fill this library with technical books and periodicals.

Hostel

One wing of the hostel complex was constructed and eleven students were accommodated in this building. But several students from distant places seeking admission to this Institute are requesting hostel accommodation in the campus. The student population was reduced last year. The Union Common Room was taken over and modified as a dormitory to accommodate 10 more students, providing them with lodging facilities. But still we could not meet the demand from students for residential facilities. Hence, the Assistant Director's quarters was also converted as a guest house accommodating three staff members and five more students. Therefore, a fully equipped hostel for 40 students is an urgent necessity to the campus. At present, the catering is done by the hostellers themselves employing a cook and using the facilities provided by the management.

Drawing Office

Our Trustees quickly responded to our request in providing an additional building to house the Drawing office for a maximum of 40 students. This building is designed and constructed by our Building Technology Department, providing light - roof, the first of its kind in the North. The students of this department are working on this building as their project work; the students in the Welding Department fabricated the roof truss, and the students in the Electrical Department will design and provide electrical illumination. We expect to complete this building by the end of October.

Students' Common Room

Now the student population has increased to 200. In order to cultivate and build up a disciplined social life in the campus, the Management Council was so considerate as to provide an extension to the canteen building as a Students Common Room. Now we have 20 girl-students studying Computer Programming, Building Technology and Electronics. The new Students' Common Room was

designed and is now being constructed by the Building Technology - Civil Department and supervised by the staff and students under direct labour contract. This building will house separate common rooms for boys and girls. This building work is also being considered as the final year students' project work.

Tuckshop

A tuckshop was housed in the canteen building, supplying cool drinks, short eats, sweets, stationery together with medicines, cosmetics etc. to the students. In addition, from the canteen tea, short eats and lunch could be purchased. Many students and staff members who travel long distances daily to the Institute can enjoy the services rendered at these welfare units.

Research

Our Institute is the largest technical training institution in the North. There are eight engineers and ten technicians teaching and training students in ten different engineering disciplines. It is an arduous task that our staff have to do several 'search and research' studies in preparing the course lessons of their subjects, laboratory exercises and field work, applicable to the continuously updated curriculum. Mr. Kanagasabai and Mr. Purusbothaman have introduced new methods of carrying out laboratory practicals in the Electronics Department and writing up the lab - log and course work reports. The lab. reports submitted by the final year Electronics students were scrutinised and accepted by the Institution of Engineers, Sri Lanka, and granted recognition as acceptable at Diploma level. I thank these two staff members who have done excellent work in this department, but now they are not with us.

Mr. S. Brihadiswaran has developed an UHF disc antenna to view satellite signals on T. V. screens. The project is now held up for want of a suitable television set. He has further designed and fabricated a few mechanical models for laboratory exercises in the Mechanics Department. Mr. V. Satchithananthan also has developed a range of demonstration models, designed and fabricated by his students in Engineering Science.

Mr. T. Selvendran has modified and modernised a motor cycle from the scraps in the Automobile Department. I have already reported the new developments and production work done by Messrs. S. A. P. Thurairatnam, M. Thayananthan, P. Sriharan and P. Raveendran in the Production Department.

Mr. Sabanayagam and Mr. Mahendrarajah have developed several demonstration boards in the Electrical and Air - Conditioning Departments respectively. Mr. Thangarajah is fully involved in developing programming techniques in the Computer Department.

I thank all the staff members and their assistants who are carrying out suitable research using locally available materials, design and construction of lab. models etc. which are relevant to our courses of study and practical training. The new staff members who joined us recently are actively involved in setting up their course programmes and practical classes. The active contribution by the staff in such applied research with student participation will encourage the students to develop the most needed habits of thinking, reading and understanding on their own, and learning more appropriate skills.

Equipment

Additional equipment to all the laboratories were supplied during this reporting period. Moulding and testing equipment to Foundry, Mechanics Laboratory equipment and teaching models, Computer, measuring and testing instruments and tools were supplied to the respective laboratories. It is very sad that undisciplined and anti-social elements have stolen several teaching aids, tools and instruments from the laboratories by staging two armed robberies. Now and in future we are looking forward to receiving help and protection from our society and youth who are solely benefited by this private Institute which is ready to serve the youngsters and school-leavers to learn a vocational skill to be on their own feet and earn their livelihood.

Industrial Training

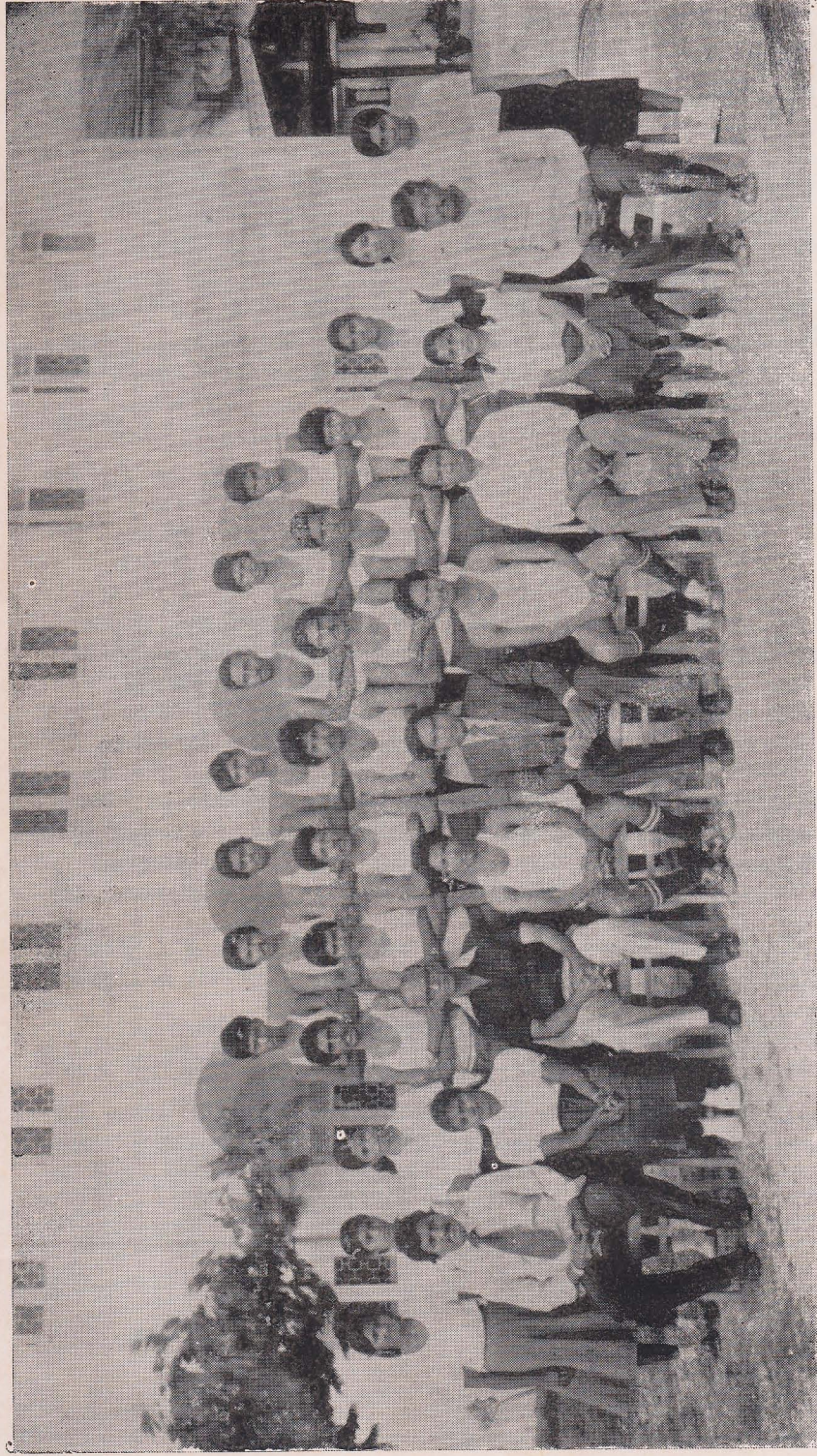
Technical education coupled with on-the-job training in the industries will help the students to acquire appropriate and effective technical knowledge and skill to enable them to find employment in the industries soon after graduation. Attempts were made to arrange a Seminar with industrialists and our staff to work out an Institute-Industry Liaison. But during the past two years the industrial sectors were very badly affected and a few were closed down and others are struggling for survival. Unless the country returns to normalcy, it is very difficult to create an atmosphere among industrialists for effective participation in this programme.

Sports

Mr. K. N. Y. Maurice was appointed as Sports Administrator and he has done an excellent job in organising and conducting Sports programmes at this Institute.

The games and athletic programme for the year 84/85 was drawn up but the continuous civil disturbances have affected the students life and no activity was possible. During the second term, as the tension had eased, foot-ball games were played. The season was started with some practice matches, the freshers vs seniors match, followed by the inter-departmental games. The students were able to show their skills in football and made full use of the opportunities that were available.

ATHLETIC TEAM



Standing - Back - Row (L to R) : T. Sri Ravindran, N. Thivakaran, A. Ravindran, K. Gunarajah, G. Jeevahan.
K. A. V. Thuraiasingham and M. Sooriyakumar.

Standing - Front - Row (L to R) : Miss. T. Yoganandarani, Miss. N. Jeyanthi, Miss. K. Vasantha, R. Sabeswaran,
B. Sivanesan, N. Sivapalan, V. Balachandran, G. Ravibalan, S. Sathiyalingam, R. Mohan,
Miss. R. Anna Nageswari, Miss. K. Mallikadevi and Miss. R. Subanthini.

Seated (L to R) : Mr. M. Thayanathan, (Warden-Yellow Hall), Miss. R. Ranjini, Mr. K. N. Y. Maurice (Sports
Administrator), N. Vimalaranjithan (Sports Monitor & Captain), The Director, S. Jeyaseelan,
Mr. S. Devanathan (Warden-Blue Hall), Miss. S. Sathiyamalar (Women's Team Captain) and
Mr. S. B. Sabanasayagam (Warden-Red Hall).

The third term was not conducive for any type of games as the Institute worked one session. Only a few soft-ball cricket matches were played. The sports activities and recreation facilities among the students were intensified by indoor games.

Generally, the students were very co-operative in developing and preparing the playground, laying running-tracks and organising games and tournaments. Mr. Maurice had taken great pains in persuading the students to participate in sports and, for the first time, the students are divided into three halls—Red, Yellow and Blue—the colours on our Institute flag—and Inter-hall competitions in foot-ball, cricket, volley-ball, badminton, table-tennis etc. are conducted. Our inaugural Sports Meet will be held soon.

Visitors

During the year we have had the pleasure of receiving the following visitors:

Mr. M. Biem Lap — Head, Asia & Pacific Division of 1000 — Netherlands.

Rev. C. V. Bavinck, U. C. B. W. M.

I request the members of the public, parents, principals of schools and industrialists to visit us periodically, advise and encourage our students and staff, and help us to serve you well.

Thanks

I want to place on record my gratitude to all members of the staff—academic and non-academic, and to the students for the co-operation extended to me in carrying out useful work during this very difficult year in the history of the Institute.

I thank the members of the Council for their consideration and advice at all times and for helping me to take courageous steps in difficult situations.

To you, Ladies and Gentlemen, I am very thankful for your kind presence today and patient hearing.

We thank God for His many mercies shown to us during our times of stress and distress and pray for His continued guidance and protection in the years to come.

Thank you.

From the Report of the Principal, Agricultural Institute

I take pleasure in presenting my report for the Agricultural Institute for the academic years, 1983—84 & 1984—85. I took over as Principal on 1st of September 1984 from Mr. M. G. Pillainayagam who has been managing the affairs of the Institute, in addition to his duties as Director of the Technical Institute, from January to August 1984.

It was during 1984 that there was a severe financial and management crisis and the future of the Institute was at stake. Mr. Pillainayagam, by his untiring and dedicated service, has brought about the re-generation of the Institute during the eight months he was in charge.

On being appointed Principal, I was requested by the Standing Committee of the Council to run the Institute as a viable and useful Project. To achieve this I had to decide on:

1. The scale of the farm, ie. the magnitude of the various enterprises.
2. Staff and Labour adjustments and
3. The nature of the Training Programmes to be conducted.

Before I could make my changes, I had to bear in mind the objectives of establishing the Institute. The two main objectives are:-

1. To train the educated unemployed youth in modern Scientific Agriculture so that they could be self-employed in Agriculture.
2. To be of some assistance to the Farming community.

To achieve these objectives the Institute is composed of two sections — The Farm and the School. The farm is to serve as an effective teaching aid but the farm has to be organized and managed so that there is no loss. The past records revealed that while certain enterprises had been run at a profit, yet there were others being run at a loss and the over-all picture was that of losses right throughout.

One important factor for these losses was that our farm at Maruthanamadam is situated among several other small, medium, and large commercial farms in Poultry, Dairy, Crop production and even as regards Plant supply nurseries. They are all over Uduvil, Maruthanamadam, Inuvil, Urumpirai, Chunnakam etc. Thus, there is a big competition for the sale of our farm products at a reasonable price, throughout the year. To overcome this, attempts made to increase the magnitude of the enterprises and thus to make profit have unfortunately ended in greater losses. For instance, when eggs were taken to the Jaffna market for sale, they fetched 20% less than what we got at the farm — cost of transport & less demand.

Again, even now, the wages we pay to our labourers are higher than what is paid at the Government Farms and much more than what the Private Commercial Farms pay. Taking all these limiting factors into consideration, we have set the magnitude of our enterprises so that all farm products could be sold at the farm or close to the farm.

The second factor was the wage bill. We made certain reductions and we have only four on the academic staff (earlier 6) and six labourers (earlier 8).

The Training Program: Here, too, we made changes. Prior to 1984 we had two types of training programs—one of 3 months duration and the other of one year, termed the Junior and Senior Certificates in Agriculture.

But, as the District Training Centres run by the Dept. of Agriculture in each District conduct a four-month training in General Agriculture, we have abandoned our Junior Certificate course and now we have only the one-year training program leading to the award of a Diploma in Agriculture.

The curriculum is revised and the following subjects are taught:-

1. Principles of Agriculture
2. Crop Production
3. Animal Husbandry
4. Horticulture
5. Farm Management
6. Farm Machinery (For Boys)
7. Home Science (For Girls)
8. English.

Field practical work lasts three hours and lectures are given for two hours daily. The students are given ample opportunity to learn various skills in the different enterprises. In Poultry, there will be birds from day-old to point of lay and from point of lay to culling stage. Techniques like Fowl-pox Vaccination, Ranikhet Inoculation, Worming, Feeding, Culling etc. are all taught during the one year.

Similarly, in Dairying-Milking, Feeding, Worming, Care of Pregnant cows form part of the practical work.

As regards Crops, the Cropping system is such that all important crops grown in Jaffna and adjacent districts are grown. Potatoes, Tobacco, Red & Bombay Onions, Pulses, Groundnut, Local & Exotic Vegetables, Dioscoreas, Manioc and other Yams are all cultivated.

Paddy:- Earlier the students were expected to come to the Technical Institute Paddy Fields at Vaddukoddai for their Paddy Practicals. As this is too far and never undertaken, we have now established a Paddy Plot in our farm where rainfed & irrigated paddy will be grown.

Situation as at Present

Managing the farm section, as outlined earlier, the farm is now running without a loss up to the end of August and we are confident it will continue to be so, at the year end too. I must admit it is the Gross Margin we are speaking of and not the FARM PROFIT as such. The difference being, for Gross Margin we do not take into account the fixed costs like Rent, Depreciation on Buildings, and Machinery but all Variable Costs are taken into account.

29 students were admitted at the beginning for the one-year training and we have now 16 of them. The new batch will be taken in October.

Students' Tour:- The present batch of students was taken on a study tour of Govt. Farms, Research and Training Centres of Paranthan and Kilinochchi for two days.

Special Programs:- The Institute is privileged to have two students from the Hardy Institute at Amparai for four months for a special training. At the request of the Uduvil Y. M. C. A. a two-day training in General Agriculture & Poultry Keeping has been conducted for 15 members.

OUR FRIENDS:- Mr. Sam Williams, who was at the Institute for about 8 months a long time back, and now residing in the United States of America, is in constant contact with us. He regularly supplies magazines, periodicals and seed materials. The alfalfa seeds he sent came up well and the poultry are fed with regular cuttings of alfalfa. He has also sent Melons, Maize etc. and are all laid down in our plots. We are very happy that, though from very far and at his age, he is of great assistance to us. We wish to have many more friends like him.

THE FUTURE:- Let me say a few words about our future program. It is our fervent desire to make the farm a model one with an integrated farming of Crop and Animal Husbandry. The conversion of crop and animal refuse to compost and thereby reducing the application of fertilizers will pave the way to semiorganic farming. The Bio-Gas plant which we are putting up will help us to reduce our electricity bill and also to provide artificial light to stimulate egg production.

It is a pity that the Farm does not have a good orchard. We intend to do so this year by planting Sapodilla, Jambu, Bread Fruit, Avocado, all Anona Varieties, Oranges etc.

The vegetable nursery will be established right throughout the year so that the requirement of seedlings for the Home Gardens could be met.

We have also taken steps to supply hatching eggs from the farm. There is a very good demand for them and we hope to supply them from April next year.

During 1984 the new classroom and office Building were completed. The Hostel with the help of the Trustee Funds is expected to commence work this year.

The Home Economics section will be expanded so that students could learn more of Handicraft and Dress making.

I must mention here that all these improvements are effected due to the hard and dedicated services of the Farm Manager, Mr. T. Vigneswaran, for the farm section, and Mr. Kandasamy, the Instructor, for the school section.

Before I conclude, I wish to appeal to all of you to visit us whenever you have the spare time with the purpose of advising us to make further improvements. No doubt, you could always take away with (of course, on payment) some planting materials to plant in your compound.

Finally, I wish to thank the members of the Council and the Standing Committee for their advice and guidance, and the Staff and Students for their co-operation to run the Institute to this much satisfaction.

Thank you.

Excerpts from the Address delivered by Dr. S. Mohandas

Technical education as you are aware is an education designed to promote economic growth through industrial development. If industrialisation is to serve a meaningful purpose, it must be directed towards the production of goods needed for the average man, primarily. Therefore, food production and processing, manufacture of components for housing should receive priority in the programme of industrial development. Technical education, therefore, builds up the necessary infra-structure for meaningful industrialisation. More specifically, the training you have obtained from this Institution will make you to serve as an Institution of your own so that you will be able to provide common services to various industries in the rural areas. For example, if you establish an Engineering workshop at Pallai or Chavakachcheri area, there can be industries developed to extract oil from copra or extraction of fibre from coconut husk or extraction of fibre from palmyrah. If you establish a carpentry workshop at Kilinochchi, then we could expect furniture and fittings being turned out for domestic use. The training you obtained, therefore, results in productive employment and, more correctly, self-employment. When you discuss employment and industries, the following facts need to be considered,

Market: For self-employment to start with, go for the industries to produce items that are in good demand, essential items that are in use for every-day life, for example, production of paddy and processing into rice and flour; production of building materials; production of utensils and garments.

New Materials: There are two types of industries as far as raw materials are concerned. They are demand-based industries and material-based industries. Industries on Aluminium wares or turning out buckets are examples of the (Demand based) Industries; whereas Kankesan cement Industry and Paranthan Chemicals Corporation are examples of (Material based) Industries. Every effort should be made to identify industries that are responsive to raw materials that could be produced locally.

What are the raw materials available locally? They are based from minerals, agriculture, fishing, animal husbandry. As far as minerals are concerned: limestone for cement, M. B. Industries; clay for brick and tile, cement, ceramics industries; and sand for sheet glass and building industries.

As far as agricultural industries are concerned, cash crops for production and processing; coconut for home consumption, oil, fibre, fire-wood, roofing; palmyrah for sugar and arrack, pulp, timber and roofing; fruit orchards for production, processing of fruits. As far as animal husbandry is concerned, animal production, meat, milk, egg industries. As far as fisheries are concerned—fish catching, processing, fish meal etc.

I have discussed marketing and raw materials, two important factors of development, and the other important resources are human, machinery and money.

As far as human resources are concerned, efforts should be taken to identify industries that are responsive to labour intensive technology; in other words, developing countries cannot afford to go for capital intensive technology. There are two types of human resources—skilled and unskilled. Shop industry or cement industry requires largely unskilled workers, whereas carpentry workshop, lathe workshop or a fabrication unit requires skilled work men— if you want to start grape wine industry, then Atchuvely is an ideal place; palmyrah handicraft industry at Thikkam; rice mill industry at Kilinochchi, Vavuniya and Mannar.

Machinery: Machines should be bought or some could be fabricated. All machines cannot be bought from the counter. Some machines should be modified to suit the type of industry you are looking for; for example, processing of mango pulp cannot be the same as that of palmyrah pulp. Fabrication of simple machines locally to suit the local raw materials should be encouraged.

Finance: The last resource I am speaking about but the most important one. Under normal situation you can borrow money from the Bank if the project is viable economically; then there are sponsors, such as IDB or DSI; EDB is also financing industry that is directed towards export. Finance Companies too are lending money for industrial projects. Industries are formed of private persons in a loop scheme or under the organisation of L. L. Companies.

During my talk I was stressing to you on the self-employment for semi-industrialisation of the rural sector. The training you have obtained need not be the final one. You will be learning more in your own experience. You need further training too. You can visit various industries to learn more and more. You are lucky to have this Institute with able men within your reach. You can come back to the Institute to clear your doubts and get guidance while you are working. You can go to various Govt. departments to learn more and get their guidance too.



Status Symbols Should Go

Mallika Rasaratnam, M. Sc. (Arch.)

Chartered Architect—Visiting Lecturer

Look at the changes in the last ten years. Now, as we enter the middle of the decade of the 1980s, one great problem of the Tamils is the question of survival.

Indications are there that quite a lot of our people will migrate to distant lands. This may be the sign that re-location of races and nations is in the offing. Who can foresee what the course of the coming years will bring? Let us not despair. As we stand in awe before the unfurling scroll of destiny, only hope and faith can be our best ally.

Let us not go into the details of this. It might make us drift into ideas which we never thought we might think of. Because our people do not mind being told the worst, and after all, since civil disturbances are full of unpleasant surprises, let us think of the ways, means and tactical adaptations we should take upon ourselves.

Much of our problems come not because we intend to invite them, but simply as a consequence of how we live — and how we wish to live.

Projects invested with the characteristics of particular places, decentralized in nature, should be designed — aimed at enabling the poor to spend less time on necessary but unprofitable tasks, such as fetching water, and more time on income-producing activities.

Tamils must learn to resist impulsive buying so that savings may be pooled to spend on urban renewals and engineering products. Acquisition of items which could be avoided or delayed is dissipation of wealth urgently needed for capital production.

I would not demand — unrealistically — that people should give up modern conveniences. But we have not noticed that many of the goods and products which we have demanded and around which we have fashioned more convenient, comfortable lives come with an inherent capacity to waste the processed natural resources. They even cause transport, storage and pollution problems as they are bought, used and discarded. Our local authorities, with their humble budgets, spend so much on the collection and disposal of such solid waste.

We should work towards a recycling system that will channel the components of trash into a new useful life.

Pollution, we now realize, is often an unwelcome by-product of progress. Air pollution in most cities comes from a number of different sources — industrial smoke-stacks, automobiles etc.

Although automobiles' contribution is, perhaps, negligible, they do pollute. They give off hydrocarbons, carbon monoxide and nitrogen oxides. We must develop an effective community transport system permitting sparse use of private automobiles.

Growing mini-forests in the out-skirts of the towns is the best ally we can think of in our fight to improve our environment and make our countryside look lush.

Huge walls are built to screen off very strong winds. Mini-forests mixed with park features for public recreation are the best wind-breaks one can think of. Such encampments can be assigned for motor-cars etc. to wait in.

A lot of our land is unproductive and set aside in wilderness. We must learn to manage our public lands better to get the material we need to provide decent housing and re-build our unplanned towns.

We waste quite a lot of time and money on style changes in residential buildings. For the time being, let us leave houses look pretty much as they were and concentrate on improving their safety, durability and comfort. Even automobile makers are reducing expenses on studies about style changes. Realization is growing in this industry that what one wants is four wheels, a body and an engine to get economically and reliably, from place to place. All excrescences and ledges on wall surfaces should be reduced to an absolute minimum. The divisioning of industrial, commercial and public buildings should generally be reduced to a minimum. Where it is essential, the division walls should take the form of removable screens so that in the event of any future alteration, they may be taken down and re-used without interference either to themselves or floor and walls to which they were attached.

In response to the modern demands for greater freedom, thrift and more natural living, even woman's out-door dress has passed from an extreme of complexity and artificiality to an extreme of simplicity. In the United States, as in every other western country, building design is the most significant of all expressions of modern taste.

Whenever natural forces, such as social ideas, emulation, etc. make for frequent changes and adjustments, there one finds highly developed critical taste and continuous progress of artistic taste. In the last decade, one can notice that Tamils are gradually acquiring interest in modernism and new architectural forms. Our progress in the field depends much upon the leadership. Students of Architecture and Engineering should produce among them leaders with the ability and vision to interpret the needs and tendencies of their times in forms of beauty.

The Education & Training of Technicians in the Mechanical Engineering Field

S. A. P. Thurairatnam, B.Sc. Eng. (Hons.), M.I.E (Sri Lanka), C. Eng.

Lecturer — Dept. of Mechanical Engineering

The term 'technician' applies to persons working in occupations requiring a knowledge of Technology and related sciences between that of a skilled worker and that of an Engineer. Occupations at the technician level may call for inspection and maintenance, study of drawings, supervision of production work etc. Collaboration with the engineer is an essential part of the work of the technician. In the performance of his duties, the technician is thus required to have a knowledge both of the skills required by the skilled workers in mechanical engineering and of the technology related to those skills. In other words, he must not only know how a job is done, but he must also know why it is done in that way.

Unlike in the Industrialized Countries where the technicians are drawn for further education and training from a large body of skilled workers, the majority of those undergoing institutional training in our country are recruited direct from schools. The student entering the institutions straight from school still has as a natural result of his background a 'school boy' attitude which must be developed into one of maturity and responsibility. His technical knowledge is negligible and skill training must be commenced from the most elementary and fundamental tasks. In developing the student's awareness of the dynamics of industrial operations and his sense of responsibility, it is essential that he spends a reasonable period in practical training, working under actual industrial conditions.

Teaching Staff

To achieve the desired goal, the institution should not only recruit experienced teachers but must also recognise their industrial and practical experience, and they should be rewarded accordingly. Generally speaking, the teaching profession does not appear attractive to engineers and high-level technicians, and great difficulty is often experienced in attracting these people, particularly those with practical backgrounds, to leave their present employment to join the staff of the institution. This attitude commonly results in young and inexperienced graduate engineers and diploma holders being recruited directly from their Universities and Colleges into the technical institutes. As a direct result of the lack of practical experience, such staff commonly display a lack of confidence in approaching the practical work in the institutions' workshops. The ideal solution is to recruit only staff who have worked for a minimum of two or three years under actual industrial conditions.

When the institution faces the problem of inexperienced staff, special steps must be taken to train the staff. Advantage must be taken of every opportunity to improve the practical knowledge and ability of all members of the staff. They should be encouraged to make frequent visits to the industries in the locality of the institution, and to discuss their problems and the employer's problems at every opportunity. Selected key members of the staff should be sent overseas for periods of six to twelve months to gain direct practical experience in industry and to observe and participate in both teaching and administration at well established training institutions. Other members of the staff can gain great benefit from even shorter periods of attachment to local industries, at any time that they can be spared from their teaching duties. Their release for such training may be difficult to arrange due to shortage of staff, but considering the advantages to be gained and the importance of practical training, such arrangements are justified.

Relationship with Industry

The Institution should establish close relationships with industry in order to give proper training to the technicians. Without such ties it is impossible to relate the education and training being given in the institution to the needs of the eventual employers. Surely, the prime reason for establishing technical institutes is to assist and to speed up the development of the industries. This must be pointed out to industrialists and all possible ways must be used to stimulate their interest and encourage them to play a part, no matter how small, in the development of training programmes.

'On - the - job' training at the industries is a 'must' for all technicians who are studying at an Institute. Therefore, the industry must be involved in the advisory or governing board of the institution in preparing schedules for 'on-the-job' training of the students and in as many of the Institution's activities as possible. Industry representation on the board can be expected to give over-all guidance to the institution on the type and nature of courses to be provided and to some extent on the level and general orientation of the courses.

'On - the - job' training

A minimum period of six months during the vacation or towards the end of the course should be allocated for 'on - the - job' training. The staff with industrial experience can act as part-time training officers during this period. It must be stressed that arrangements for practical industrial training cannot be expected to be successful unless the discussions are carried out on the job. At such discussions, the educator is able to see and assess for himself the technician requirements of the employer. At the same time, the employer has a chance to assess the value of the prospective technician and, in many cases the industrial training period leads to eventual employment. During this period, staff also make frequent visits to the industry and establish good personal relationships with their counterparts in industry. They can draw direct examples

from the industries they have visited for use in their lectures and practical work. In many cases they are able to offer the use of the institution's testing facilities to the industries for assistance in the solution of their problems.

Project Work

Students following the full-time course should be provided with extensive laboratory and project work within the course to enable them to become familiar with the application of theory given in the lectures. This project work excludes routine laboratory work associated with standard subject-matter in Mechanical Engineering courses. The student undertakes his project work during the 4th semester after having sufficiently learned the subject 'Engineering Drawing & Design' during the 2nd and 3rd semesters. The project is presented to the students by the Design Lecturer who normally arranges a visit to the factory or industry, in which the device will eventually be installed. It is much advisable to undertake a project which represents a current design problem in any of the local industries. A student group is given a period of approximately 10 weeks in which to submit a solution to the problem in the form of drawings and design calculations. At the end of this period the merits and disadvantages of each solution are freely discussed with the practising engineer in the industry. In this way the student is introduced to the realities and limitations of industrial practice and manufacturing processes, and the advice and guidance he receives as a result is most beneficial. The solution provided by the students will receive consideration when a final design is being selected. There is a good possibility that their design would be selected in preference to designs produced by experienced staff in the industry concerned. The student's mark in the subject is decided from a consideration of his ability in carrying out the project and not simply on the theoretical subject.

The main objective of a technical institute is to lay emphasis on practical applications of engineering and to train a technician ready to take his place in industry. It should be admitted that a young man who has reached an appropriate academic standard is not ready to enter industry until he has shown that he has personal qualities which would enable him to work either alone or in a group in an enterprise which would produce fruitful concrete products based on his special academic training.

Direct TV Reception from STATIONAR—T (Russian Satellite)

S. Brihadiswaran, A. M. I. E. (London)

Special Instructor — Dept. of Mechanical Engineering

Unlike its counterpart Short Wave Radio, the art of long distance television reception had by its very specialised and technical nature remained an activity with a very small following until recent years. As most television viewers will be aware, only a limited number of stations are available to them at reasonable strengths in their particular area. With the advent of the communications satellite and direct satellite-to-home TV transmission, new techniques in signal reception and demodulation are being evolved. It is possible to receive and display TV pictures in areas some thousands of miles from the target area and on modified domestic apparatus. For direct reception of TV signals from a satellite, normally, small diameter parabolic dish antennas are employed.

Television Standard Adopted By U. S. S. R. For Earthbound Broadcasting Stations

625 line system D

Colour system : SECAM

Sound / Vision Spacing : +6.5 MHz

Vision Modulation : negative

Vision Bandwidth : 6 MHz

Sound Modulation : F. M

Overall Channel Bandwidth : 8 MHz

Stationar - T Satellite Transmission

Frequency : 714 - 722 MHz

Type of Polarisation : circular

Azimuth : N 80°E

Dish Elevation Angle : about 70°

Design Details

Dipole

Electrical half wave length (length of the dipole)

$$\frac{\lambda}{2} = \frac{468}{f} \quad (\text{ft}) \quad (\lambda - \text{wave length, } f - \text{frequency})$$
$$= \frac{468}{718} \sim 8 \text{ inch}$$

Dish Construction

Parabolic reflector must have a diameter of 10λ or more if it has to be properly effective.

Considering practical difficulties, the dish was fabricated with 6 feet aperture diameter and 1 foot depth. The focal length of this dish is 2.25 feet according to the formula of the parabola, $y^2 = 4ax$. The dipole should be positioned at this focal point.

Gain of the Dish

Effective capture area is 0.65 times of the physical area.

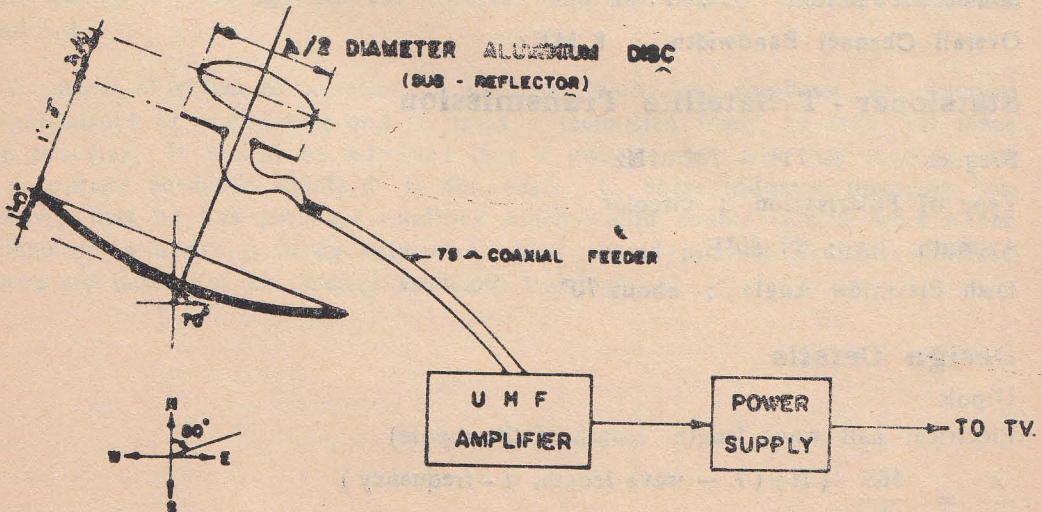
$$\begin{aligned}\therefore \text{Capture area of the parabolic dish} &= 0.65 \left(\frac{\pi D^2}{4} \right) \\ &= 0.65 \left(\frac{\pi \times 1.83^2}{4} \right) \quad (6' = 1.83\text{m}) \\ &= 1.7 \text{ m}^2\end{aligned}$$

$$C = f\lambda$$

$$\lambda = \frac{c}{f} = \frac{3 \times 10^{10}}{718 \times 10^6} = 0.418 \text{ m}$$

Gain (G)

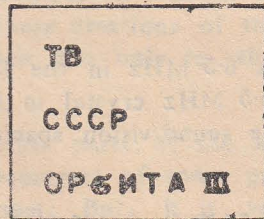
$$\begin{aligned}&= \frac{4\pi}{\lambda^2} A_{\text{eff}} \\ &= \frac{4\pi}{0.418^2} \times 1.7 \\ &= 122.38 \\ &= 20.88 \text{ d B}\end{aligned}$$



Test Results and Discussions

Video Reception

The station can easily be received in channel 50 \longleftrightarrow 55 and identified from the caption.



Which stands for TV USSR ORBIT - III. Their news bulletin for the morning session will be read at 10.30 a. m. Russian time (1-00 p.m. Sri Lankan time).

We are at the back of the satellite and are only receiving a minute amount of the signal. This signal undergoes a considerable amount of absorption travelling through 22,000 miles, known as the path loss.

All TV transmissions relayed by satellites use frequency modulated (FM), very wide bandwidth form of transmissions. The normal TV transmissions we receive from earthbound broadcasting stations are Amplitude Modulated (AM), and only the sound is frequency modulated. The normal AM, TV — transmission does not use a very wide bandwidth, only a bandwidth of about 8 MHz. Whereas very wide FM, TV-transmission uses a bandwidth of 30 MHz.

In normal AM TV—transmissions, the frequency (or the channel) remains the same, but the power-level of the transmitter varies with the picture content (amplitude).

In wideband FM—transmissions, the power level is constant, but the centre frequency shifts either side, positive or negative, depending on the picture information. In the Stat - T, the centre frequency 718 MHz varies from 699 MHz to 729 MHz. This is too wide for a normal TV set which can only discriminate against change in signal level (amplitude) and not the frequency.

Frequency modulation is used in Satellites to conserve power and to get very high Signal to Noise ratio. This does not mean that a normal TV cannot receive the picture. If the set is sensitive enough, then it will receive the picture. But, fine details will be missing because there is no wide bandwidth. Contrast level in normal TV sets vary with the amplitude and has no effect on frequency changes. As the amplitude is constant, the contrast is nearly fixed. You will be able to see large letters, moving pictures and good outlines depending on the set, but not of video quality.

If one is interested in receiving these pictures with video quality, then, one needs a very high sensitive wide-bandwidth FM receiver and a high quality antenna. The received output from the FM receiver can be connected to a normal TV-set for viewing. Black and White 12 inch TV sets are more suited than the insensitive well-known brand of colour sets.

Audio Reception

The sound / vision spacing is 6.5 MHz in the Russian TV-transmission, so it is necessary to replace the 5.5 MHz crystal in the audio circuit of the normal TV-set with a 6.5 MHz. The sound/vision spacing in our TV-transmission is 5.5 MHz.

A straight dipole (impedance 75Ω) or a folded dipole (300Ω) is satisfactory for reception in colour. But the signal is transmitted circularly polarised. For optimum reception results, a tuned circular quad element or a helical aerial is required to match the incoming wavefront which may be either clockwise or anti-clockwise polarised. It is possible to use crossed yagis for this purpose, reversal of polarisation screw being achieved by switching specific lengths of cable into the aerial feeders.

Half inch mesh chicken netting, fibre glass or aluminium foil can be used to construct the dish.

Cost Evaluation

The cost involved in the experimental model is as follows:

(a) Construction of the parabolic dish	Rs. 2, 500.00
(b) UHF Amplifier (30. dB gain)	Rs. 1, 150.00
	<u>3, 650.00</u>

This system has been successfully employed in receiving TV signals directly from 'STAT - T' at 714-722 MHz. It can be used in other communication areas where similar gain requirements exist, and also for surveillance etc., using suitable mounts.

NOTE: The above article is the result of an experimental project undertaken by Mr. Brihadiswaran of the Staff and a group of students of the Mechanical Engineering Department. The project convincingly proved the feasibility of receiving TV signals in Jaffna directly from the Russian Satellite STATIONAR - T in Channel 52.

— Ed. —

Houses of Jaffna 100 Years Ago

S. Ayathurai — Instructor (Draughtsmanship)

In the preface to his book 'An Outline to Medieval Architecture', James A. Davidson states, 'An old building is a piece of unbiased history, written in a language, that cannot be understood without some study and research.' As 'pieces of unbiased history', these creations of the past readily reveal the facts which are of great importance not only to the student of architecture but also to the social scientist.

Unfortunately, as in many other parts of the world, in our land, too, there are only a few temples or remnants of some palaces still existing as evidence of the architecture of the past. But, it is very difficult to find out the structure of dwellings in which the ordinary people lived.

In Jaffna, except for a few temples and churches, there are only a handful of 'old buildings' which are older than even a century. These habitats of our great grand fathers or grand fathers are also facing the imminent danger of extinction.

It is equally regrettable to note that only a few casual references have been made in literature as in other forms of records of the past to these shelters of the common man.

The first-ever mention was made by the Evangelical Missionaries from the New World to Jaffna, Miron and Harriet Winslow, in their journal. They arrived in Jaffna on the 17th February, 1820. The journal reads as follows:

'The houses of the Tamilians in the country, except such as are mere huts, have usually a court in the centre open to the sky, narrow pent roof supported by posts and covered with large fan-shaped leaves of the palmyra or the braided leaves of coconut, are thrown over each of four low, mud walls, enclosing an area, perhaps 40 or 50 feet squares. These roofs project on the outside, so as to form a virandah all round the building 4 or 5 feet wide; and on the inside, another of perhaps twice that width looking towards the open court in the centre in the manner of a low gallery. The floors of these are of hard earth or outside virandah is used for sitting, working and sometimes sleeping, while the inside may be divided into enclosed apartments of which, there is usually one, at least, where the most valuable articles and stores of the family may be locked up, but most of it is left open or separated only by temporary partitions. It is the parlor, dining room and bedroom of the family, comprising perhaps 2 or 3 generations and many collateral branches'.

Those houses which were witnessed by the Winslows would have perished long ago. But the ones still existing can be considered as the next generation of buildings. Although they seem to be of the same basic pattern described by the visitors, the materials used for construction are different and this can be

claimed as the reason for the comparative longevity. Further, in some aspects, these houses seem to be hybrids of traditional 'Tamilian' and western styles, the latter being an influence due to the foreign rulers.

The basic, unique and typical features of these houses are note-worthy, interesting and revealing.

The first thing we come across as we enter is the gate shed. This is a shed covering the gate and with or without daises (or 'Thinnai') in front. The purpose of this shed is two-fold. It helped - the passers - by. In those days, with the means of transport being mainly on foot, the travellers needed some place to rest during their long journeys. These sheds served as lobbies.

The gate sheds were possible only when there was enough space between the road and the house, or, in other words, when the house is set inwards away from the road. If the space in between was limited or when the house is situated alongside the road, daises were provided on either side of the front entrance of the house alongside the road.

The basic plans of the house broadly fall into two types. One, as observed by the Winslows, belongs to the 'natsaar' or quadrangular pattern, with a central court yard. The other is a two-roomed two-verandah style, with a detached kitchen. A spread-out and yet a compact social living was made possible by this court yard house system. The normal height of the daises, whether they are situated at the front or rear verandahs, or around the quadrangle, is usually 1'-2'. When rendered smooth, these raised platforms under the low roofs provided a comfortable, cooling place for relaxation during summer.

In an integrated system, not only the town but even the house contains the civic as well as cultural centres, woven into each other.

The civic centre need not be a large hall. Our 'Thinnai' served as a mini hall for this purpose. It is not fully realised how our old fashioned 'Thinnai' served as provisions for recreational and cultural facilities, particularly to those who are socially and economically backward. Indeed, our gate shelters and daises of the good old days, being small-scale centres of cultural and intellectual activity, were embodiments of civic pride and consciousness.

Also these daises served the purpose of 'virandahs' as observed by the Winslows in the previous generation of houses.

It is interesting to note that the total area of the open spaces like daises or verandahs is very much more than that of the enclosed spaces like rooms. The reasons are obvious: the warm climate and the way of living of the people. The front rooms are sometimes smaller, even of the size 6'-6" x 8'-6". In contrast, the daises or verandahs may be up to 40' long.

Generally, the walls are shorter and thicker. The height on the eaves side is as low as 5'-4". But, in the central portion, the height may go up to 12' or above, simply to allow the required slope of the roof. The walls are made out of lime stone built in lime mortar and plastered again with lime. The thickness is usually 15"-20", excluding the plastering of about 1½" on either side.

Another special feature is the niches for lamps. These are found usually on walls on either side of the main entrance. But the positions are not restricted, and as such these cavities for the coconut oil lamps can be found along any wall enclosing a room or the central court yard. The breadth and height of these niches vary from 1'-1'6".

The sizes of doors are found to be another extra-ordinary feature. The normal heights are 5'-0" or even slightly less, but not more. The reason is explained by saying that 'one must bow down one's head while entering'. The normal width is 3'-6". The sashes are usually single and of panelled type. The thickness is from 1'-1½", and the sash, in turn, is lined with architraves full of ornamental works.

Margosa is preferred for making frames and sashes of doors. The door frames are 6"-12" thick, with large heads. In most cases an additional member to this frame is found at the floor level.

The trellis work found usually over the doors of the shrine room or of the main entrance is really striking. These wood carvings are of high artistic quality depicting the deities of the Hindu religion and floral work.

Another noticeable fact is the absence or lack of windows. The rooms served the purpose of store and security while the daises or verandahs are used as working and living areas. It is very interesting to note that the 'lintels' over the doors are of timber planks about 1½" thick.

The central court yard is open to the sky and the floor is brick paved or cement rendered roughly. The drainage is by means of half round drains built under the floor of one side and covered with timber planks.

The striking similarity with contemporary buildings is the pattern of roof as there are no remarkable differences in the design. Like nowadays the rafters and reepers are of typical matured local palmyrah and even the beams and wall plates in some cases. 'Palai' (or Palu) is the most common timber used.

The roof structure is supported by walls with cornices or by beams which are in turn supported by columns. The base of the columns is generally 9" x 9" to 12" x 12" and the heads are wider up to 2'-6".

Roof coverings are tiles either half round or flat, the latter more generally used. The name 'T. H. Morgan & Sons' was printed in the Mangalore tiles found in a house which was said to be more than 100 years old.

The floor work is usually block paved or cement rendered over a hard core filling. The blocks of lime stone when neatly paved provided a pleasing appearance.

A perfect half round, white, dressed sand stone of about 4' diameter is usually laid in the ground just in front of the shrine room or main doors. This is known as the 'round moon stone.'

When speaking of the materials used, egg and cane sugar were said to be blended with lime to increase the cementing power and to give a gloss to the finishes.

Nails were locally made of wrought iron and palmyrah dowel pins were widely used in carpentry and joinery.

The most striking absence is that of the latrine, neither attached nor detached. Those found along with these houses nowadays were built in later stages. The reason may be the habit of the people. It is a fact that the people used palmyrah groves or bushes found in their compounds or bare land in the locality for the purpose. This was possible and allowable as the population at that time was scarce.

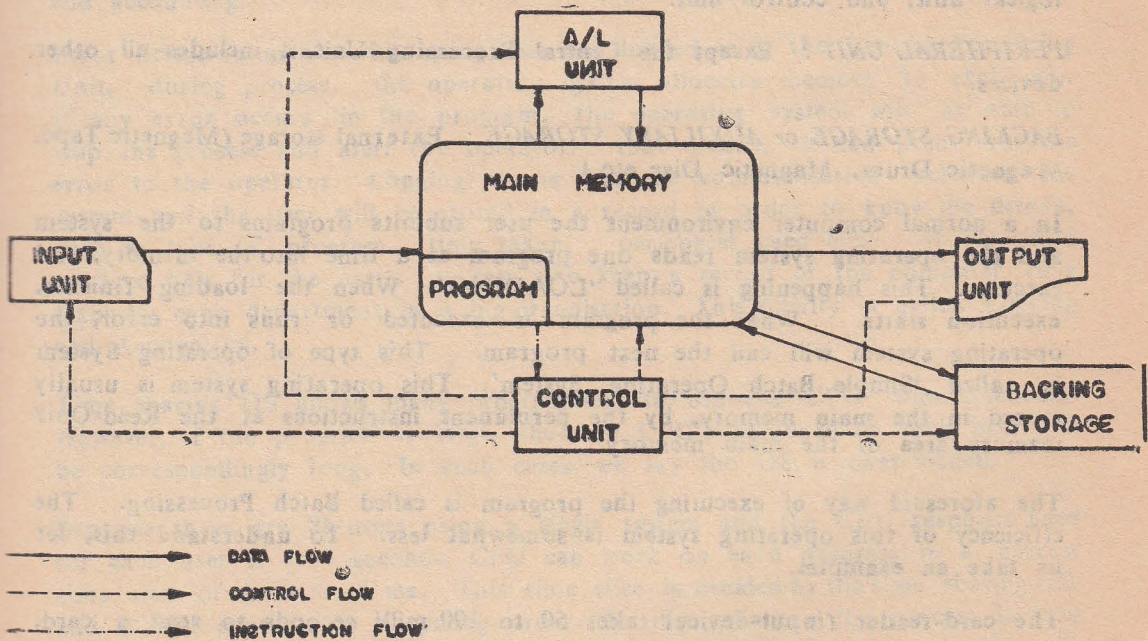
Not only the way of living of the people but their very beliefs seemed to have played a role in designing and constructing these houses. The popular work on building, the 'Sitpa Nool' or 'Mannaiyadi Sasthiram' dealt with aspects like selecting the site, levels, orientation, nature of soil, lay out, scale, dimensions of doors and rooms, positions of doors, drainage, soil testing, surveying, selecting of timber, carpentry etc. etc. Even with all these this book seems more superstitious in content than architectural. Nonetheless, it played a role and is still playing in the designing of plans for houses.

These houses of the Jaffna people built in the last century proved themselves worthy creations of their masters by demonstrating the basic purposes of security, privacy, comfort, durability, and beauty, too. After all, what is beauty? As set forth by W. R. Dalzell in the introduction of his book 'Architecture', 'The basic architectural beauty of its form is due to the fact that it represents a contemporary architectural problem solved by the use of most advanced constructional methods of the time and with a sensitive manipulation of available material. The beauty of such buildings is an unconscious by-product, which arises from an economical and intelligent solution of purely practical problems.'

Operating System of a Computer

S. B. Dhivakaran — Instructor, (Computer Studies)

Controlling a computer is actually called by the name "OPERATING SYSTEM" (OS). It's nothing but a controlling body which supervises the entire system. We can compare the operating system to a manager of an organisation. In a computer system the operating system controls and co-ordinates the various parts of the system. The operating system is provided to the user by the manufacturers. It's merely software, specially written for controlling the system. (Software: programs and instructions). Before we go further, let us discuss the COMPUTER CONFIGURATION to have a better understanding of the topic. Figure below describes the computer configuration:-



Each part of the system can be categorized as :

INPUT UNIT : The unit converts external information into internal machine form.

OUTPUT UNIT : This unit converts internal information into external form.

MAIN MEMORY : When the program being executed and the data to be worked and the results awaiting to output or transfer to Backing Storage are kept.

This is the most expensive unit.

CONTROL UNIT : This is the monitor of the entire system.

ARITHMETIC AND LOGICAL UNIT : Here the arithmetic and relational operations are carried out.

CENTRAL PROCESSING UNIT : This consists of main memory, arithmetic and logical unit, and control unit.

PERIPHERAL UNIT : Except the Central Processing Unit, it includes all other devices.

BACKING STORAGE or AUXILIARY STORAGE : External storage (Magnetic Tape, Magnetic Drum, Magnetic Disc etc.)

In a normal computer environment the user submits programs to the system and the operating system reads one program at a time into the memory, and executes. This happening is called 'LOADING'. When the loading finishes, execution starts. When the program is executed or runs into error, the operating system will call the next program. This type of operating System is called 'Simple Batch Operating System'. This operating system is usually stored in the main memory, by the permanent instructions at the Read-Only memory area of the main memory.

The aforesaid way of executing the program is called Batch Processing. The efficiency of this operating system is somewhat less. To understand this, let us take an example.

The card-reader (input-device) takes 50 to 100 milli seconds to read a card. But in this time the Central Processing Unit would have carried out nearly 10,000 jobs. In such cases, the Central Processing Unit is getting blocked. This happening is called Peripheral Bounds. To improve the efficiency, the operating system will request the card-reader to read the data card before the program calls for it. This technique is called Read-ahead-technique. In this method data can be stored in a special location at the main memory called Buffer. In a similar fashion outputs are also treated.

Another development has been made in the operating system so as to keep many programs at the main memory simultaneously and when a program is

blocked, the operating system will be able to switch on to another program. This technique is known as multiprogramming. Even in this type of operating system the efficiency is not sufficient. To overcome this another type of operating system was developed called Time Sharing System. In this type processing is less efficient to execute a long program. The main advantage of this operating system is that many programmers can use the computer system simultaneously.

Suppose a human being is to control the above activities, it's impossible to compete with the speed of the Central Processing Unit. Naturally, errors and time limits are increased. This operating system carries out many of the tasks which are performed by the human operator. It controls the operation of the hardware (physical bodies which make up a computer system) and the processing tasks can be carried out much faster.

Let's examine the jobs that an operating system normally performs. They are job controlling and loading, peripheral controlling, error detection, logging and accounting.

Error detection means when programs are loaded in-to the Central Processing Unit, during process, the operating system allocates memory to each one. If any error occurs in the program, the operating system will be able to stop the process and alert the operator: that means, it can point out the error to the operator. Logging means that the communication between the system and the user will be stored in a record in order to know the details, such as type of program, time taken, peripheral used etc. It can also produce bills for the users. It can also keep a record of the computer time taken by each department in a big organisation. This activity is called Logging and Accounting.

Time sharing OS allows many programmers to use the CPU simultaneously. However, if the program is large, then the CPU's response to each user will be correspondingly long. In such cases, we say the OS is over-loaded.

Suppose there are 25 users using a single system and the CPU response need for each user is 4—6 seconds, CPU can work on each program in a narrow time slice of about 6—8 ms. This time slice is decided by the time sharing OS, and it will continue in a cycling order. In this manner, the process is very slow. This can be overcome by providing a Multi Processor net work. With this system the speed of execution and CPU response are improved.

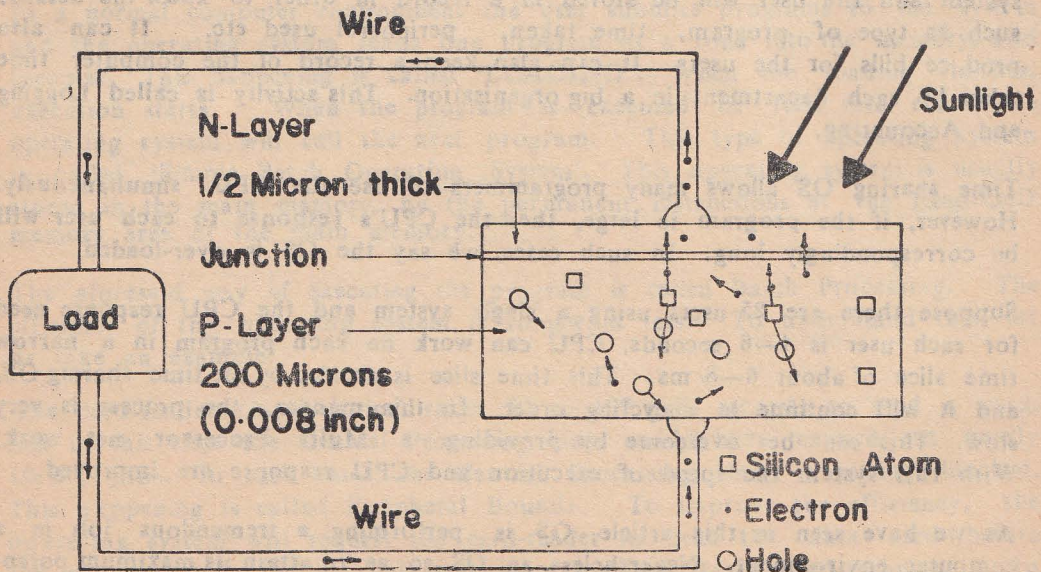
As we have seen in this article, OS is performing a tremendous job in a computer environment. Nevertheless, an OS so as to attain its maximum potential will, by and large, take time.

Solar Electric Power

A new day is dawning in which electricity will be as abundant as sunshine. Sun - light striking photovoltaic cells causes current to flow and power to be generated. This direct conversion of light into electricity has technically been feasible for the last 30 years. This type of electricity production was used where normal power supply methods would impose extreme difficulties. Examples would be the supply of power to a satellite or to communication equipment. In outer space it has functioned superbly, free from any need for maintenance year after year.

How does a solar cell work?

The basic concept is simple. A solar cell is made up of two very thin layers of semiconductor materials, normally silicon. These are mixed with other materials to give one layer: a negative electrical bias (n-bias, an excess of electrons) and the other layer, a positive bias (p-bias). Terminals of an external circuit are connected to the front and back of the cell. Sun - light reaches the junction between the two layers in the form of protons of energy and knocks electrons across the junction. This leads to a flow of current through the external circuit to return to the other side of the junction. If a load, such as a d. c. motor or an electric bulb, is connected in the circuit, it will be operated by the current. Thus, sun-light is directly converted into electricity.



Applications

In the past, solar electric power was used in satellites, spacecraft and off-shore navigational buoys. At present, as fossil fuel cost continues to rise and photovoltaic cost begins to fall, solar electric power is rapidly becoming economical for a wider range of applications. Amongst the most promising of these are water pumping systems for irrigation, remote lighting and power needs in non-electrified villages. In the future, as the costs continue to decrease, the use of photovoltaic will become justified for large scale electrical generation. However, till the late 1980s the guiding principle of solar electricity will continue to be "small is sensible".

Miss. R. Rajani,
E. C. E. — Part I.



The Versatile Microcomputer

The microcomputer is a small and handy electronic instrument capable of performing certain functions independently and in an efficient way. It does not need any supervision as in the case of a human clerk.

The first electronic computer was available in 1946. It was so big in size that it occupied a large room. It was made by using thousands of valves and other spares but it was very slow and clumsy. The scientists continued their research with perseverance and in 1947 Bell Laboratories of U. S. A. developed the first transistor. The transistor soon replaced the electronic valve because the transistor proved to be rugged, smaller and cheaper. In 1959 a more advanced type of transistor called the metal oxide semi-conductor appeared and it became the turning point of microelectronics. With their continued research the scientists were able to put the first commercial microcomputer into the market in 1975.

A computer consists of three parts. The first part is the Central Processing Unit, abbreviated C. P. U. This Unit controls the functions of other parts. The other parts include the Memory Unit which stores all the information and the input — output devices. In a microcomputer all these three parts are incorporated into one small unit.

In large computers transistors are used whereas in microcomputers silicon chips are used. A silicon chip consists of thousands of tiny electronic circuits. Each circuit in a silicon chip can switch on — off several hundred times in one second. This constant switching is the basis of computer — working. In a digital computer, all the information, including letters and numbers, are

coded into a series of on — off pulses and stored in the computer memory. The digital computers handle all the calculations in these on — off pulses called binary language.

Microcomputers are comparatively cheap and handy so that they could be easily put into any appliance or machine which could function efficiently by automation. This union of the computer and the appliance will help the user to obtain efficient service from the appliance. For example, a microwave oven, when computerised, can warm roast, cook it carefully and then switch itself off without any order or supervision or reminder from the human cook.

A microcomputer can help the driver of a motor car to effect a fuel economy ranging from about 25 to 35 kilo metres of distance per litre of petrol to his car. In addition to this, the microcomputer can tell the driver about the condition of various sections of a motor car and to help to maintain it at peak efficiency.

More and more people starting to use microcomputers have found the use rewarding. In business, the inventory control, budget allocations, pay roll calculations and other difficult tasks are performed by the microcomputers very efficiently in a short time. Many schools have already started to use microcomputers. In many places, on both sides of the Atlantic Ocean, computer-aided curricula are used to teach subjects like Mathematics, English and History. In an American University an I. B. M. computer is used to teach Music. Here, the computer first gives a series of notes. The student then sings. The computer thereafter compares the pitch of the student with the true pitch, and gives exercises to improve the student's performances.

The future out-look for the microcomputer is very promising. The microcomputer of tomorrow will be a rugged and powerful one incorporating self-programming techniques. It will be easier to operate. It can be commanded to do its work. That means, it can be given the data and will be asked to do the type of calculation needed.

Another version of the computer for tomorrow will be made to read hand-printed text and display it on the V. D. C. (Visual Display Unit). Any error in the reading can be corrected and the correct information can be forwarded for processing. Scientists are trying to put forward microcomputers that can speak and answer questions. They can be made to understand different voices and instruct children in their learning. The steam boilers used in industries can be made to save millions of rupees by improving their efficiency by means of computerised controls.

The robot of the future can be made to perform a variety of automated functions by properly programming it with the help of a microcomputer.

It looks like that the future of the microcomputer is limited only by the imagination of the scientists in the design and functions to which a computer can be applied.

S. Kantharajah,

Electronics — IIIrd Year, 83/84



Quantity Surveying

What is meant by "Quantity Surveying?"

One of the dictionary meanings of the word "Surveying" is "measuring". "Quantity Surveying" is the term adopted for working out or measuring quantities of a building or a work, based on a standard method of measurement, in a systematic and scientific manner, which when priced give the estimated cost of the building or the work to a reasonable degree of accuracy. In other words, we record or measure all the materials and labour involved in the construction of a building or a work, so that we have quantities in appropriate units against which prices can be appended. The fundamental requirements of quantity surveying are accuracy in measuring and clear, concise and correct description of items of work.

Who is a "Quantity Surveyor" ?

A person who must be able to describe clearly in proper unambiguous language the requirements of the Architect and so arrange his bill of quantities that the owner (client) can quickly, easily, and accurately arrive at the estimated cost of the work. The Quantity Surveyor must have a sound knowledge of building materials and construction and of customs prevailing in the trade. He must be accurate in his work and calculations, apart from control of the cost of the building.

The Bill of Quantities

The function of a bill of quantities is to assist building contractors to estimate the unit rate for each and every item of the building project before any work commences and the client to know how much the project is going to cost him and hence he can decide whether he can afford to do it or not. The B. O. Q. is used to call quotations from which the contractor is selected to carry out the work.

The building owner must have a definite agreed figure in advance before he can commit himself to a contractual agreement. The final cost of a building project is unknown at the design stage, as buildings are not like articles of goods for sale that stand in a showroom with price labels attached.

To obtain a price for a building the method is that the building owner has a detailed and itemised list of the components of the building, prepared by a professional adviser. Building contractors are invited to price the components on this list and so arrive at a total sum. This list is known as a bill of quantities.

The list of items in the bill of quantities is a matter of fact, whereas the prices attached to these items by the contractor are a matter of expert opinion. This is the reason why no two tenders are identical. The person who prepares the bill of quantities is usually the quantity surveyor employed by the building owner for this purpose. However, there are many occasions when the building contractor has to prepare his own bill of quantities from the building owner's drawings. When this is the case, the quantities are prepared by the building contractor's surveyor.

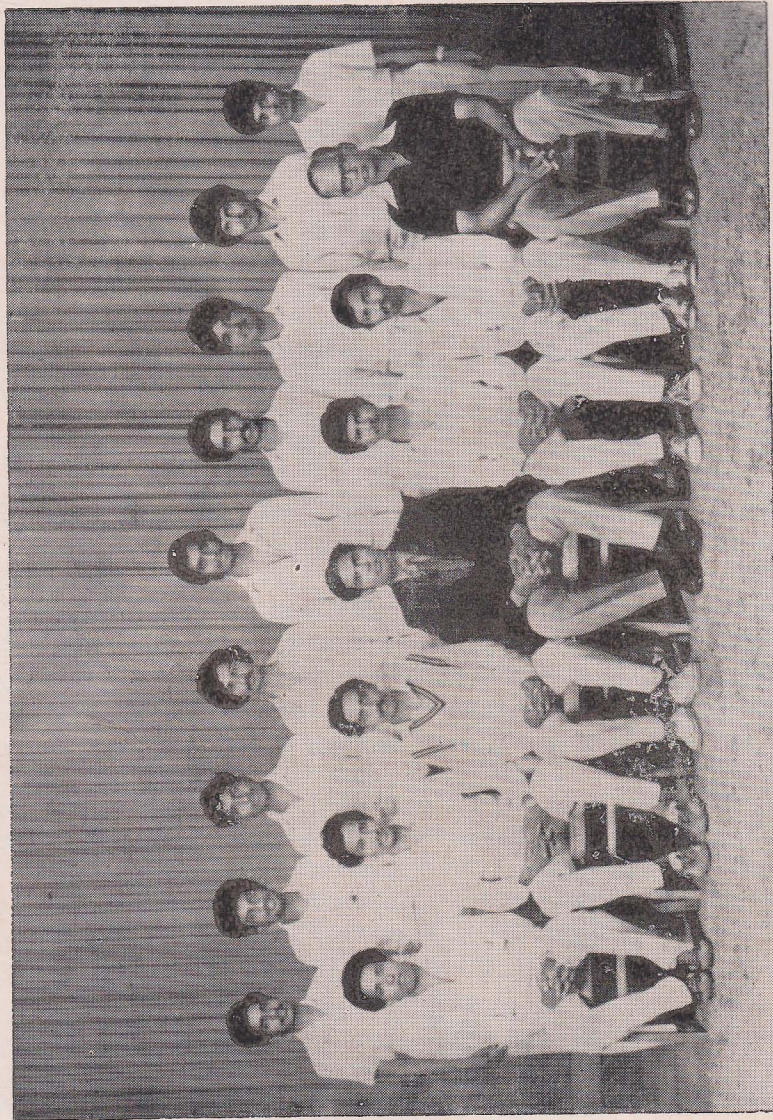
The person preparing the bill of quantities reads the drawings and should be able to visualise every detail of the building. In addition, he should be competent to convey to the person who is to price the bill of quantities, the quantity and quality of the materials required, and the nature of the labour to be applied to the materials in the construction of the building.

The history of the bill of quantities :

The ancient Egyptians, Greeks and Romans engaged in building projects were not interested in the final cost. If the cost element ever entered into their schemes, it would stop at the cost of the raw materials, as their manpower was free of charge, being slave labour. This lack of interest in cost persisted until the Industrial Revolution in Europe. During these early centuries the patrons of buildings were the feudal barons and the Church. Artisans would spend a whole lifetime working on a cathedral with their wages being paid out of the 'ecclesiastical coffers'.

During the seventeenth and eighteenth centuries the great 'architect builders' appeared on the scene, such men as Wren, Adam and Capability Brown. They were mainly engaged in the design and construction of mansions for the landed gentry. A project would be designed and the architect acted as organising contractor, ordering materials and hiring local labour. Gradually the hired craftsmen ceased to be paid at an hourly rate, and a new method of payment was devised on a measure and value basis. The work was measured during the construction and on completion was valued at customary rates paid in the locality. Measurers were employed by the architect to measure work and prepare a final account for each craftsman or group of craftsmen. The actual valuing of the work at local rates was done by the architect.

CRICKET TEAM



Standing (L to R): P. Sritharan, S. K. Satheeskumar, S. Nimalakumar,
S. Nimal, M. Paramalingam, R. Sabeswaran, B. Vasuthevan,
K. Jeyanathan, T. Vigneswaran.

Seated (L to R): N. Vimalaranjithan (Sports Monitor), S. Jeyaseelan, G. Jeevahan
(Captain), The Director, B. Sivanesan, N. Thivakaran and
Mr. K. N. Y. Maurice (Sports Administrator).

b
 c
 c
 C
 s
 b
 e
 c
 n
 t
 o
 A
 b
 n
 e
 c
 e
 n
 v
 l
 s
 t
 v
 z
 o

Gradually artisans became dissatisfied with this practice, often thinking that the measurers were not measuring all their work. As a result of this, they began to employ measurers themselves to settle their payment with the architect; and architects slowly ceased to operate as building organisers, and concentrated on the design and supervision side of their schemes. Many artisans set up in business as building contractors, and employed craftsmen at an hourly rate, and the practice of architects sending out drawings of a proposed building to a few contractors and asking them to quote a price for the erection of a building grew. By this time many builders employed measurers or surveyors on their staff to measure the work involved from the drawings and in many cases price the work.

One or two builders' surveyors set up in business on their own account and specialized in the preparation of bills of quantities for all the contractors tendering for a contract, ready for them to price, the agreement being that each contractor included the surveyor's fee in his price, and the successful contractor paid the surveyor his fee when he received his first payment on account. This system offered many economies to the contractors, who with the surveyors appeared in many parts of the country, specialising in this type of work.

About 1850 many architects realized that they could make use of the contractor's bill of quantities with the prices inserted for the settlement of any variations, and the final account. They knew that the building owner was indirectly paying for the preparation of this document, and so persuaded building owners to employ the surveyor to prepare the bill of quantities for their scheme, ready for issuing to tendering contractors. The bill of quantities became a document incorporated in the contract and the independent quantity surveyor measured variations and settled the final account for both parties.

Ironically, in recent years there appears to be a tendency to revert to the system of 'architect builder' by the increasing use of the 'all-in-service' or the 'package deal' where building owners are contracting with building firms who design, estimate, and build, thus by-passing the independent architect and quantity surveyor, so that to a certain extent we are seeing a full turn of the circle back to the methods of the seventeenth and eighteenth centuries.

Duties and responsibilities of the Quantity Surveyor:

It must be remembered that although the quantity surveyor is a member of the architect's team from very early on, he must have a very close relationship with the builder upon acceptance of the tender, for it will be his place to cost valuations, variations and the like and, in so doing, remain completely impartial and without favour to either side and so produce harmony in his role of project accountant.

On commencement :

- (a) The quantity surveyor is called upon in the early stages of consultation with the client because of his knowledge of costs.
- (b) Prepare an approximate cost from sketch drawings, assembling element costs, so that, should the client's sum be exceeded, the architect can consider each element of the building in reasonable isolation, enabling him to prepare costs as necessary.
- (c) Upon acceptance by the client of costs and scheme, the quantity surveyor's next task upon receipt of the architect's drawing is to prepare a bill of quantities in accordance with the current Standard Method of Measurement. This is a very important section of the quantity surveyor's responsibilities and great care is taken to ensure accuracy.
- (d) The contractors selected for tendering will each receive a copy of unpriced bills, together with drawings upon which to estimate the project costs. Upon receipt of the tender and now priced bill, the quantity surveyor must check the accuracy to ensure that the builder has made no serious errors which could cause complications at a later date.
- (e) Architect informed of cost variations.

During Contract Period :

- (a) The quantity surveyor will carry out monthly valuations, pricing of variation orders and so on in conjunction with the contractor who is allowed to be present at such times, enabling him to receive payment from the client via the architect's interim certificates at regular intervals.
- (b) Must keep architect informed as to running costs and the progress of the project.

At Completion :

- (a) Prepare, with the aid of builders, receipts and other documents, the final accounts.
- (b) Assist the architect in discussions with the builder as to extra contractual costs.

The Quantity Surveyor must include an allowance, generally 75% of the cost, for the material on site which is necessary to continue the work, in his certificate for payment.

R. Mohan,

Civil Engineering & Quantity Surveying,
IIIrd Year - 85/86.

Science and Technology

Nothing has captured the imagination of mankind so much as science and technology have done during the last two centuries. There are more scientists alive today than have lived throughout the history of the world. It can be safely said that the sum total of scientific knowledge doubles every ten years.

Science and Technology spreading rapidly around the world seemed to promise mankind that some day their well-being would be provided in abundance if only man could invent the appropriate processes to exploit, with the use of science and Technology, the natural resources the earth provided.

But Science and Technology which were once thought of as liberating mankind from all want, hunger, sickness and ignorance, are now gradually proving to be potentially dangerous and enslaving. As we approach the end of the twentieth century, the world population would have doubled and so our wants, too. Newer and newer problems which Science and Technology cannot cope with have begun to raise their ugly heads in the world. Even the very existence of human life on earth is threatened.

The proliferation of new scientific and technological inventions has no doubt solved some of man's problems, but it has at the same time created far more problems. Food production is unable to cope with consumption. New factories, cities and palatial buildings, are arising from verdant farm-lands and virgin forests. Science and Technology have produced an imbalance in nature. It is estimated that global vegetation has already been reduced by one-third. In many regions of the world renewable supplies of ground water resources are being drawn more rapidly than can be replenished by the natural springs & caverns. The result is that fresh water wells are becoming saline.

It has been said that more than a thousand substances are devised each year by man with the aid of Science and Technology. Some of these are highly stable and not easily degradable. Once they accumulate in the atmosphere, water and articles of food, which they do without our knowledge, they become enemies of humanity. Odorous smoke and vapour emanating from engines, by-products and wastes from factories, gaseous fumes and dust particles liberated into the atmosphere, polluted water and dirty liquids released into rivers and lagoons around the globe, have been proved to be the causes of numerous diseases and deaths. Even asbestos roofing sheets have been found to cause cancer and lung diseases. Extensive mining for natural resources, and the neglected areas of mined lands, have caused land slides and erosion which have become serious problems in many countries.

As man today is seeking various sources of energy, unconcerned by the damage his efforts have on the environment, heat released by all the energy we use in our daily lives, whether it is released from our bodies or from combustion engines, alters the climate unnoticed by us. Hazards from atomic

energy plants which are proliferating throughout the world today are beginning to pose a colossal threat to the environment of the globe.

The first shock the world received by the calamity caused by the discovery of the atom was during the Second World War when America dropped an Atom Bomb on Hiroshima in Japan. Since then Atomic energy has played an important part in the proliferation of numerous types of armaments capable of annihilating mankind. Science and Technology have become the hand maids of the nations of the world, whose avarice to amass wealth and power is hastening the destruction of the world. There is illiteracy and misery, chronic under-nourishment and hunger, appalling child mortality and epidemics, that affect hundreds of millions of people inhabiting three-quarters of the earth. What have Science and Technology done for them?

The leakage of poisonous gas from a huge factory owned by a millionaire company of Bhopal in Western India caused the death of thousands of innocent people in the neighbourhood and maimed for life several lakhs of others. More recently the American space shuttle, Challenger, exploded into bits in California within a few seconds of its taking off from the launching pad. The Americans lost millions of dollars on this venture. Now we are getting the news that a Sikh Computer Scientist has gone on trial for plotting to murder Rajiv Gandhi, Prime Minister of India, with the use of some form of computer invention. Do not these examples indicate the direction in which Science and Technology are taking us? It is crystal clear that Science and Technology are not likely to bestow on humanity more benefits than ruination. They are upsetting nature's order of things to such an extent that the Creator of the Universe will no longer tolerate.

S. Nimal,

Electronics & Telecom—Eng.

IIIrd Year—85/86.

Electrical Laws & Circuits

Fundamental Principles

Some of the manifestations of electricity and applications are familiar to everyone. The effects of static-electricity on a windy day, attraction by the magnetic north pole to a compass needle and the propagation and reception of radio waves are just a few examples. Less easily recognised as being electrical in nature, perhaps, the radiation of light and even radiant heat from a stove are governed by the same physical laws that describe a signal from a TV station or an amateur transmitter. The ability to transmit electrical energy through space without any reliance on matter that might be in that space (much as in a vacuum) or the creation of a disturbance in space that can produce

a force are topics that are classified under the study of **ELECTROMAGNETIC FIELDS**. Knowledge of the properties and definitions of fields is important in understanding such devices as transmission lines, antennas and circuit-construction practices, like shielding.

Once a field problem is solved, it is often possible to use the results over and over again for other purposes. The field solution can be used to derive numerical formulae for such entities as **RESISTANCE**, **INDUCTANCE** and **CAPACITANCE** or the latter quantities can be determined experimentally. These elements then form the building blocks for more complex configurations called **NETWORKS** or **CIRCUITS**. Since there is no need to describe the physical appearance of the individual elements, pictorial representation is often used and it is called **SCHEMATIC DIAGRAM**. However, each element must be assigned a numerical value, otherwise the schematic diagram is incomplete. If the numerical values associated with the sources of energy (such as batteries or generators) are also known, it is then possible to determine the power transferred from one part of the circuit to another element by finding the numerical values of entities called **VOLTAGE & CURRENT**.

Finally, there is the consideration of the fundamental properties of the matter that makes up the various circuit elements or devices. It is believed that all matter is made up of complex structures called **ELECTRONS**, **PROTONS** and **NEUTRONS**. Construction of an atom will determine the chemical and electrical properties of matter composed of like atoms. The periodic table of chemical elements is a classification of such atoms. Electrons play an important role in both the chemical and electrical properties of matter and elements where some of the electrons are relatively free to move about. These materials are called **CONDUCTORS**. On the other hand, elements where all of the electrons are tightly bonded in the atomic structure are called **INSULATORS**. Metals, such as copper, aluminium and silver, are very good conductors while glass, plastics and rubber are good insulators.

Although electrons play the principal role in the properties of both insulators and conductors, it is possible to construct matter with an apparent **CHARGE** of opposite nature to that of the electron. Actually, the electron is still the charge carrier but it is the physical absence of an electron location that moves. However, it is convenient to consider that an actual charge carrier is present and it has been labelled a **HOLE**. Materials in which the motion of electrons and holes determine the electrical characteristics are called **SEMICONDUCTORS**.

While there are materials that fall in between the classifications of conductor and insulator, and might be labelled as semiconductors, the latter term is applied exclusively to materials where the motion of electrons and holes is important.

Power Factor Improvement

Electrical energy is almost exclusively generated, transmitted and distributed in the form of alternating current. Therefore, the question of the Power Factor immediately comes into the picture. Most of the loads are inductive in nature and, hence, have low Lagging Power Factor. The low power factor is highly undesirable as it causes an increase in current, resulting in additional losses of active power in all the elements of the power system from the power station generator down to the utilisation device. In order to ensure most favourable conditions for a supply system from the engineering and economical stand points, it is important to have the power factor as close to unity as possible.

The capacitive load current leads the voltage by an angle 90° as shown in Fig (i). The inductive load current lags the voltage by an angle 90° , as shown in Fig (ii).

For single phase supply - Power = $V_L I_L \cos \phi$

$$\therefore \text{Load current} = \frac{P}{V_L \cos \phi}$$

For 3 phase supply $P = \sqrt{3} V_L I_L \cos \phi$

$$\therefore \text{Load current} = \frac{P}{\sqrt{3} V_L \cos \phi}$$

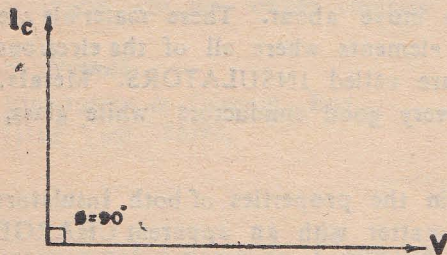


fig.1 Capacitive Load

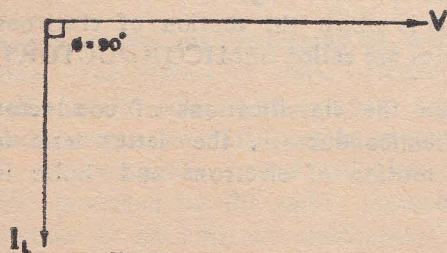


fig.2 Inductive Load

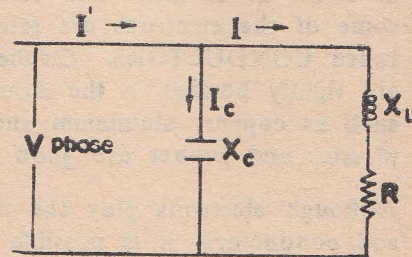


fig. A

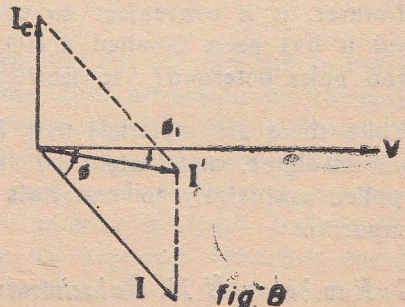


fig. B

The cosine of the angle between voltage and current in an A.C circuit is known as power factor. In an A.C circuit there is generally a phase difference ϕ between voltage and current. The term ' $\cos \phi$ ' is called the power factor of the circuit. If the circuit is inductive, the current lags behind the voltage and the power factor is referred to as lagging. However, in a capacitive circuit current leads the voltage and the power factor is said to be leading. The low power factor is mainly due to the fact that most of the power loads are inductive and, therefore, take lagging currents. In order to improve the power factor, some device, taking leading power, should be connected in parallel to the load as in Fig A. One of such devices can be a capacitor. The capacitor draws a leading current and partly or completely neutralises the lagging reactive component of the load current as shown in fig. B.

The improvement of the power factor is very important for both consumers and generating stations.

A. *For Consumer*: A consumer has to pay electricity charges for his maximum demand in KVA plus the units consumed. If the consumer improves the power factor, then there is a reduction in this maximum KVA demand and, consequently, there will be an annual saving due to maximum demand charges. Although power factor improvement involves equipment, yet improvement of power factor to a proper value results in the net annual saving for the consumer.

B. *For generating station*: A generating station is as much concerned with power factor improvement as the consumer. The generators in a power station are having rated KVAS but the useful output depends upon kw output. As station output is $Kw = KVA \times \cos \phi$, the number of units supplied by it depends upon the power factor. The higher the power factor of the generating station, the higher the kwh it delivers to the system. This leads to the conclusion that improved power factor increases the earning capacity of the power - station.

The power factor improvement could be done by using

- i) capacitor bank
- ii) synchronous condenser
- iii) phase advancers

N. Vimalaranjithan,

Electrical Power Engineering—IIIrd Year, 85/86

Safety in Workshops

Every five minutes at least one of the world's workers is killed and 14 permanently disabled as a result of accidents at work or occupational diseases according to a rough estimate. The estimate also shows that in those five minutes, thousands of accidents would have taken place, in each of which some workers would be disabled and some production time lost.

An accident occurs unannounced. It can happen anywhere, anytime—at home, while travelling, at play, or at work. But when it happens, it brings death or injury to the victim, the loss or disablement of a bread-winner, an additional expenditure and loss of production for industry, and, in general, a loss of human resources. It cannot be brushed aside.

Even so, accidents can be analysed, their causes identified and steps taken to minimise the chances of their future occurrence. Statistics gathered of the accidents show, in general, that of every three accidents which occur, two out of the three are due to the victim's own fault, and the third was his employer's fault for not making safe working conditions.

Power-driven machines are always a potential source of accident, however well the moving parts may be protected. Some machines are still driven by belts from over-head shafting. In addition to the risk of the hand being entrapped between the belt and the pulley, there is a danger of a projecting part of the steel belt lacing touching the hand and tearing the flesh. Loose and flapping clothing may at any time become entangled in a belt or moving part which is not adequately covered, and for this reason overalls without loose ends are to be recommended. Badly fitting spanners may slip with disastrous results to the knuckles.

The worker should cultivate the "safety-first" code as a habit and then, if misfortune does come his way, he can truly say it was bad luck, but if he takes simple and elementary precautions, it is unlikely that anything very serious will happen.

S. Balakumaran,

Mechanical Engineering,

IIIrd Year - 85/86

Development of Computer Technology

The computer is a device that has the capability to store internally a list of required instructions that will guide it through a series of operations which will ultimately complete a given task. This is the stored program concept vital to modern computers. Anyway, this is too new and too fluid to define the computers. But we can give a functional definition. A 'Computer' can mean any device capable of accepting information or data automatically, applying a sequence of processes to the data and supplying the results of these processes.

The Newton of the Computer field was Charles Babbage who invented the 'Analytical Engine' which proved to be the seeds for the development of large-scale modern computers. He is hailed as the Father of the Computer. The first automatic electronic computer ENIAC (Electronic Numeral Integration and Calculation) — the most complete electronic device of its day was built in 1946 by the University of Pennsylvania.

We may conveniently divide the whole range of computer development into four (4) generations. A new generation of computers occurs when some generally accepted fundamental changes are incorporated into the physical systems which make up the computer configuration (ie. Hardware) or the usage of the Machines.

The first generation of the computers was in operation during the years 1954-59, and their technological basis was circuitry, consisting of wires and thermionic valves. These computers larger in size, compared to present-day computers, generated a lot of heat, low capacity of internal storage and processors operated in the Milli Second Speed range.

The Second generation of computers was in operation during the years 1959-64. The advance of technological knowledge enabled the wires and thermionic valves of the first generation to be replaced with printed circuits, diodes and transistors. These components were based on 'Solid State' technology, as electricity did not have to flow through space as in the thermionic valves.

These computers were smaller in size, generated a lower level-of heat, greater degree of reliability, higher capacity of internal storage, related series of processors, processors operated in the micro second speed range and high cost direct access storage.

The third generation of computers came into existence in 1964 and are in current use. The technology forming the basis of their design is micro miniaturisation, consisting of Micro Integrated Circuits very similar to the Solid State Technology of the second generation but much more compact. These computers were smaller in size compared to the second generation of computers, with highest capacity of internal storage, remote communication facilities, multi programming

facilities, processors which operate in the nano — second speed range, use of high level language and a wide range of optional peripherals.

The fourth generation of computers came in 1974. A standard architecture was derived which provided for up-grading networks of computers without alteration of application programming. This generation also includes the introduction of Micro technology and the advent of Micro computers, retail terminal systems, data bases and large internal and external storage capacity, word processing and electronic mail.

Man's incessant craving is to make the computer faster and faster in speed and to make it smaller and smaller in size and also to make it cheaper and cheaper in price. The present development of the computer is as follows:

The importance of computer facilities for research had increased, and the advent of Micro-computers has helped to make their use more meaningful. When considering whether to equip a laboratory with a digital computer system, the cost must be carefully compared with the outlay on several pieces of delicate equipment for specialised uses. However, a small machine with limited calculating facilities is often sufficient to permit the advantages. On-line computer facilities possibly on a custom-built basis may well become a standard feature of laboratory equipment in the near future so that we can say the computer is a Research Tool.

The Electronic message system is also available by using computers. This is a unique and fascinating word processor or a display writer used in the system where you can record anybody's voice and store it in the memory. This is not the conventional tape recording. It is done by the Digital Audio Recording method, with the use of new hardware techniques.

A person who fails to get an Urgent International call through will have the message recorded in the computer in his own voice. Then the computer will automatically try to get this message across at regular intervals. If, on the other end, the desired person is not available, the computer will inquire when he will be available and will try again at that time. Once the reply is obtained, that will be held in the memory. The first 80 words if requested can be immediately displayed on one or any number of display screens all over the complex.

When considering the Marriage Proposals and Charts, the computer is very useful. The computer also does the Numerology. That is, we have to feed the Name and our Date of Birth. The computer will calculate the fate number and print our character, colour and our future to that number in the screen. Here, we can call it computer in Numerology.

The importance of the computer is that it can be in everyday use because there are computers which control, and do the tea-making, coffee-making etc and also we can see some computers are in use in cafes. Considering this,

it is very useful for preparing bills according to the items and quantities available there. That means, we have only to give the items we want and how much we want in that particular item, so that the computer itself will find the total amount payable and prepare the bill for the customer.

Micro Processors are already used to control equipment installed in the home and at work, such as washing machines, and automobile systems. Personal computers are becoming more common. The influence of computers in society is growing. Computers are playing a major role even in the political area from selection of candidates to analysis of voting patterns.

In the west with their networks of large interlinked computers and satellite communications systems, home computers have a variety of uses. Using phone cables, you can hook up your computer to the bank's computer and check up the balance to your credit. Some stock brokerage firms have introduced a system whereby a customer can hook his home computer to their data network and buy or sell shares at any time of the day or night. You can directly connect to the airlines reservation system and confirm your ticket and hotel bookings. All charges will be automatically debited, electronically to your account.

Electronic shopping is also now being introduced in some countries. Items available in a departmental store are displayed on the screen in your house. All you have to do is to key in your requirements on your computer which is in the house. The goods will be dispatched to your house after the departmental store computer has checked with your bank's computer whether your credit rating is satisfactory.

In India home computers will have a major impact in education. The first time a child makes an error the mother will correct it; the second time also she will help the child to correct the error. But the third time she will probably warn the child. This is where the home computers come in. There will be no scoldings. Interest will be stimulated and study will become a pleasure instead of the thankless drudgery it is today. With the changing educational curriculum many parents are finding it difficult to coach their children in new subjects being introduced, such as new maths. Here they will find these packages helpful. We can find some libraries in this field. We can also find accounting packages. (i. e. Tax laws).

Lastly, they have developed the computers' work in Optical Fibre Technology and Laser Technology. This is the fastest way and also the Hitachi Company had developed the Super Computers of Hitachi. Its speed is 810/20 Array Processing per Second. The Super Computer called FACOM VP-400 has attained the speed of one (1) Gage floating point operation per second. This has been developed by FUJITSU LIMITED IN JAPAN. (REF. "JAPAN NEWS" — MARCH 85).

Computer programming is an expensive course using expensive machines and also in an expensive environment that means using air-conditioned rooms to operate them. Man or the Programmer loses his humanity; the computer will try to master the man. That stage must not come. Always the computer should be the servant (without self-thinking power) of man and not the Master of Man.

Today Computer Technology is on the threshold of the fifth generation, namely, the Generation of Artificial Intelligence.

In the future, Computer systems may be able to read hand writing and understand speech. They may also produce spoken output. Future development in Computer systems will bring about enormous changes in our daily life and work. There are computers with walking facilities. These computers are known as 'walking computers'.

The computer is used in many ways in developed countries. Because of that, we must try our best to study this computer programming course and get our beautiful country be computerized as early as possible.

Ramani Jegathieson,

Computer Programming & Data Processing, 85/86

FOOTBALL TEAM

FOOTBALL TEAM



Standing

(L to R) : K. Sakthivel, N. Kuhesan, E. Jeyanesan, A. Ravindran,
G. D. Arulraj, N. Sivapalan, S. Segar, S. Sivayogan.
K. A. V. Thuraijasingham and T. Vickneswaran.

Seated

(L to R) : Mr. S. Devanathan (Coach), Mr. K. N. Y. Maurice
(Sports Administrator), N. Vimalaranjithan (Captain & Sports Monitor),
The Director, N. Thivakaran, S. Jeyaseelan and Mr. S. P. Raveendran
(Asst. Coach).

Ground

(L to R) : M. Thayaparan and M. Gnanavel.

Electricity in Everyday Life

One gets up in the morning and switches on the heater and the water boils in a very short time. He goes for a bath in warm water which has been heated by an electric heater. He shaves with the help of an electric shaver. His breakfast is cooked on an electric cooker. His room is in the third floor of a storeyed building. So he gets down to the street in the lift.

In his office his room is air-conditioned. He feels very comfortable in his office. Whenever he is free from work, he relaxes in a room and listens to the radio or views a cricket match on the television. During the week-ends, cleaning and polishing the floor of the house are done quickly and efficiently with the help of electrically operated vacuum cleaners and floor polishers. He washes the clothes in the washing-machine. The master of the house buys provisions enough for a week. He preserves certain perishable items in the refrigerator.

Electricity is indispensable in hospitals. Many diseases are diagnosed with the help of X-ray and electric cardiographs. In the clinics and operating theatres very powerful electric lights are used. Certain diseases are cured by ray-treatment. Electrotherapy cures pains in the limbs.

In farms and factories machines are operated by electricity. The machines work like magic. In large dairy farms, feeding, cleaning and milking of animals are done by machines. In factories, too, the conveyor belt plays a very important part. Thus, much of labour and time is saved and productivity increased.

The theatre is a common place of recreation for all. In parks coloured bulbs decorate the place. At the carnivals and exhibitions electric light illuminations make them like fairy lands.

Thus, electricity plays a very significant role in our daily life. It has made life very easy and comfortable for the people. It is a good servant if properly handled. In the twentieth century electricity works like magic and does wonders.

B. Jeyaseelan,
Mechanical Engineering,
Second Year - 85/86

Purpose of Work Shop Technology

Work Shop Technology has become increasingly important to the engineer, supervisor or worker engaged in the production of various types of machines or tools. It has been established since long that the ability to work skilfully with hands can be developed more readily and accurately when the work to be performed in the work shop is understood both in its practical and theoretical aspects.

The study of work shop technology has, therefore, been made compulsory these days for a worker, foreman and engineer so that he can make himself acquainted with the basic knowledge of manufacturing processes and materials. The three important branches of Workshop Technology are:

1. Foundry Practice 2. Welding Practice 3. Machine Shop Practice

1. Foundry Practice:

Foundry is a place where castings are produced. Casting is a process of pouring molten metal into a mould and allowing it to solidify. By this process, intricate parts can be given strength and rigidity which is not frequently obtainable by any other method. The mould or cavity into which the material is poured is made of some heat-resisting materials. Sand is widely used as it can be readily packed to shape and resists high temperatures. Though all the metals can be cast, still cast-iron is widely used for casting. This is due to the fact that by casting this metal, it is possible to have easy control of its properties which include fluidity, rate of shrinkage, strength and rigidity. The shape of the object is determined by the shape of the mould or cavity.

Welding Practice:

Welding is a process of joining two similar or dissimilar metals by fusion with or without the application of pressure and with or without the use of filler metal. The fusion of metal takes place by means of heat. The heat may be obtained from blacksmith's fire, electric arc, gas, electrical resistance or by chemical reaction.

The process of joining similar metals with the help of a filler rod of the same metal is called autogenous welding.

The process of joining dissimilar metals, using filler rod, is called heterogeneous welding. The filler rod material is such that its melting point is less than the melting point of the parent metals.

Welding is extensively used in fabrication as an alternative method for casting or forging and, as a replacement for bolted and riveted joints. It is also used as a repair medium, e. g. to reunite metal at a crack, to build

up a small part that has broken off, such as a gear tooth, or to repair worn surface, such as a bearing surface.

3. Machine Shop Practice:

It is a well-known fact that a machine shop forms not only an important but an indispensable part of a modern workshop. It not only involves a heavy investment but at the same time calls for a fairly high skill of workmanship. If carried out successfully, the operations performed in this work shop are capable of producing a large number of jobs of different shapes and sizes having a fine finish within very close limits of dimensions. A machine shop man should, therefore, have a thorough knowledge of the different machines he has to work on. He should also have a comprehensive knowledge of the type of tools he has to use and their effective applications.

In addition to this, he should be fully acquainted with the various operations performed on these machines, their working principles, the attachments which are used in conjunction with these machines, the different measuring and testing devices used for checking the finished products and the materials used for helping in cutting of metal and maintenance of the cutting tools and the machines.

T. Sriravindran,

Machine Shop Practice, '86

The Value of English

Once upon a time 'The sun never set on the British Empire'. This means that the British had colonies—all round the earth. The native peoples living in these colonies would naturally learn the English language for their benefit and that was exactly what happened. Because English was the language of the rulers, the native people learned it eagerly and, with the passage of time, English became a kind of universal language. Now, although the British colonies have become free, yet the English language continues to be used. Therefore, if we know English, we can travel to almost any part of the world without much difficulty.

There are other more important reasons why one should know English. All the latest and best books on medicine, science and technology are in English. What are the reasons for this? One reason is that the words in the English language are short, to the point and give the meaning fully. Another reason is that from early times the language has been developing to suit the changing needs of the times. If one wishes to learn the latest developments in medicine, science and technology, one must know English.

In modern times science and the allied fields of knowledge are advancing so fast that these advances must be made known fast. Besides, what is one thing today may not be the same tomorrow. Therefore, it is necessary that new discoveries and thoughts must be made to spread fast. English is best suited for this purpose.

It is all well and good to say that a child must learn everything in its mother tongue if it is to develop mentally. But unless there is a sound foundation in the learning of the mother tongue, the child will not get the full benefit of a complete education. Whatever it may be, even if a child completes his education in his mother tongue, he must have a knowledge of English for higher studies. Hence, if we know the English language, our future will be bright.

R. S. Vijikumar,
Draughtsmanship, '86



இவன் நித்திரையில் இன்று தான் கனவு இல்லை

இன்று வழமைக்கு மாறாக, காலை ஐந்தரை மணிக்கே படுக்கையிலிருந்து எழுந்தான் வாசு. அவனுடைய இருபத்தைந்து வருட வாழ்க்கையில், இன்று தான் வசந்த அழைப்புக்கள் வருகை தர இருக்கின்றன. இத்தனை நாளாய் அவன் உள்ளத்திலே ஏக்கங்களும், எதிர்பாப்புகளும் மூர்ச்சைவிட்டு முடங்கிக் கொண்டிருந்தன. ஆனால் இன்று..... அவையெல்லாம் நீர்ச்சலனமாய் நீர்த்துப் போயின.

வாசு, பாடசாலை விட்டு விலகியதும், தொழிற் பயிற்சியை மேற்கொண்ட அந்த வட்டுக்கோட்டை தொழில் நுட்பக் கல்லூரியிலே ஆசிரியப் பணியை, இன்னும் இரண்டு மணி நேரத்துக்குப் பின் பொறுப்பேற்கப் போவதையிட்டு, அவனை அறியாமலே உள்ளம் மகிழ்ச்சியால் திளைத்தது.

ஆமாம் வாழ்க்கையின் வறுமையிலேயும் ஏழைத்தாயின் வயிற்றிலேயும் பிறந்துவிட்ட வாசு, சிறுவயதிலேயே தந்தையையும், தாயையும் இழந்துவிட்டான். ஆனாலும் உறவு என்று சொல்வதற்கு, உடன் பிறப்பான தங்கை விஜயே உற்ற துணையாக இருந்தாள். பருவ வயதை எட்டிப்பிடிக்கும் தங்கை விஜயைப் பற்றிய எதிர்கால நினைவுகளே, அண்ணன் வாசுவின் இதய அடித்தளத்தில் உறங்கிக்கொண்டிருந்தன. அவள் எப் பொழுது மணநாளாகக் காண்பாள் என்பதை ஆவலோடு எதிர்பார்த்துக் கொண்டிருந்தான். சீதனம் எனும் கொடுமைப் புயலில் அகப்பட்டு, மரணமே தஞ்சமென புகும் பல இளம் பெண்களைப் பற்றிய செய்திகளை, அன்றாட தினசரிப் பத்திரிகைகளில் படிக்கும் பொழுது, ஏழையான வாசுவின் உள்ளம் ஏனோ தடுமாறிவிடும். தன் ஒரே தங்கைக்கும் இந்த நிலை வரக்கூடாது என்பதற்காக தான் நிறைய உழைத்து சீதனங்கள் சேர்க்க வேண்டும் என பல இராத்திரிகளில் வெறும் கனவுகளேத்தான் கண்டு கொள்வான்.

அந்தக் கனவுகள் மட்டும்தானா. தளிமையில் இருக்கும் பொழுதுகூட அந்த உஷாவையும் அவனால் மறக்கவே முடியவில்லை.

ஆண்கள், பெண்கள் என கலந்திருந்த அந்தப் பாடசாலையிலே பத்தாம் வகுப்பு படித்துக் கொண்டிருந்த போது அங்கு கல்வி பயிலும் பாவையவன் உஷாவைப் பார்த்தவுடன் பிறந்த காதல், பாதி வழியிலேயே பிரியவைத்தான் கண்டது. நிமிர்ந்த கோபரமாய் ஜாதி அந்தஸ்தினால் உயர்ந்திருந்த உஷாவுக்கும், குனிந்த குடிசையாய் வறுமையோடு கூடப்பிறந்த வாசுவுக்கும் இடையே தோன்றிய அந்த உண்மைக் காதல், இறுதியில் கானல் நீராகவே மாறியது.

அப்பாவின் அதட்டலுக்கும் அம்மாவின் எரிச்சலுக்கும் அகப்பட்டுத் தவித்த உஷா, அன்றொரு நாள் பக்கத்து வீட்டு பாழாங் கிணற்றிலே வீழ்ந்து தன் காதல் கதையை 'கரு' இல்லாத, காதல் தொடர் கதையாக மாற்றாது, சிறு கதையாகவே முடித்துக் கொண்டாள். அந்த அதிர்ச்சி சம்பவத்தைக் கேட்ட வாசு அன்றிலிருந்து இறந்து போன உஷா, உயிரோடு எழுந்து வருவதுபோல் கனவுகள் காண்பான்.

தன் ஆசைகளையெல்லாம், கனவுகளோடு சுகத்தை அனுபவித்துக்கொண்டு வந்த வாசுவுக்கு இன்று தான் விரும்பிய அந்த ஆசிரியத் தொழில் பெறுவது கண்டு உள்ளத்துக்குள்ளே உண்மையான சுகந்தம் ஓடி விளையாடியது. இந்த ஆசிரியத்தொழில் மூலம் சீதனங்கள் பல சேர்த்து தன் தங்கையை நல்ல இடத்திலே வாழவைக்க வேண்டும் என்ற ஆடுத்த கனவும், நனவாகி நிறைவேறப் போவதையிட்டு, இரட்டிப்பு மகிழ்ச்சியில் திளைத்தான்.

கடமைகள் எல்லாவற்றையும் முடித்துவிட்டு, தன் அறைக்குள் நுளைந்தவாசு, தேவையான பத்திரங்களோடு நிமிர்ந்து சுவர்க் கடிக்காரத்தைப் பார்த்த பொழுது எட்டு மணி என முட்கள் காட்டி நிற்க, தங்கை விஜயிடமிருந்து விடை பெற்றுக் கொண்டான்.

யாழ். பஸ் நிலையத்தை நோக்கி விரைந்து வந்த வாசு, அங்கிருந்து வட்டுக்கோட்டைக்குச் செல்லும் பஸ் வண்டி ஒன்றிலே ஏறி அமர்ந்து கொண்டான்.

இருண்டு கிடந்த வாழ்க்கை இன்று வெளிச்சப் பாதையை நோக்கிச் சென்றிட, வாசுவின் உள்ளம் 'வாழ்க்கையில் ஏற்படுகிற வெற்றி தோல்வி' பற்றி கவிஞர் கண்ணதாசன் தந்திருந்த தத்துவத்தை எண்ணி அசைபோட்டது அது.

ஒப்பற்ற வீரர் துரோணர் வில்லை எடுத்தார் நரம்பிலே கணையை ஏற்றினார். வேங்கை ஒன்றினைக் குறி வைத்து நரம்பை இழுத்தார். அவரது கணை பறக்கும் முன்பே வேறொரு கணை வேங்கை மீது பாய்ந்தது. துரோணர் திரும்பிப் பார்த்தார். அங்கே ஏகலைவன் நின்று கொண்டிருந்தான். துரோணர் கூறினார்.

நல்லது உள்ளம் முடிவு சொல்லும் முன்பே எண்ணம் வெற்றி பெற்றுவிட்டது. இதில் தான் நீ விழிப்புடன் இருக்கவேண்டும் தோல்வியும் இப்படித்தான் இருக்கும்.

அந்தக் கண்ணதாசன் தந்த தத்துவத்திலே ஒன்றிப்போயிருந்த வாசு ஓடிக்கொண்டிருந்த பஸ்சின் எதிர்பாராத குலுக்கம் தந்த நிறுத்தத்தினால் சுயநினைவுக்கு வந்தவனாய் சுற்றும் முற்றும் பார்த்தான். ஆனால்..... அந்தச் சில வினாடிக்குள்..... எதிரே வந்த வாகனத்தினால், வாசு சென்று கொண்டிருந்த பஸ்வண்டி தூக்கி எறியப்பட்டது. பலத்த காயங்களுக்கான வாசு உடனடியாக யாழ். அரசினர் ஆஸ்பத்திரிக்கு அழைத்து வரப்பட்டான்.

அவசர சத்திரசிகிச்சை அங்கு அவனுக்கு அளிக்கப்பட்டபோதும் அவன் உயிரை காப்பாற்ற யாராலுமே முடியவில்லை. கனவுகளோடு வசந்தத்தையும் சுகந்தத்தையும் கட்டியணைத்திருந்த வாசு, இப்போது அவற்றையெல்லாம் காற்றோடு கலக்கவிட்டான்.

இவனது மரணத்தின் பிங் கல்லறையில் எழுதப்படுவது.

இவன் நித்திரையில் இன்று தான் கனவு இல்லை.

செ. கந்தராஜா,

இலத்திரனியல் — 3-ம் வருடம், 83/84

தந்தவனே வந்தனமே

வண்ணங்கள் தாம் கரைந்து
தூரிகை துணை கொண்டு
எண்ணம் போல் புரையெழுப்பி
பாரிற்சிந்த் போர்வையே,
விண்ணின் கீழ் திரைகடந்த
தேரேறி புகழ் மன்னன்போல்
கண்செருகும் விரையொளியை
மாறிடாமலீந்து வரும் திலகமதை
மண் வியப்பில் கரை காண
மர்மமாய் அந்தரத்தில் வைத்ததெப்படி;

அந்தரத்தில் குரங்கு தொங்குமெனின்
விந்தையல்ல இது மர்மமல்ல
வந்தவர் சென்றவிடம் நாம் செல்வதேன்
சிந்தைக்கு இது பெருந்தொல்லை
முத்தவர் இங்கிருக்க இளையவர் போவதேன்
தந்தை தாயும் இது அறியவில்லை
தத்துவமுத்து பெற்ற நாஸ்திக வித்தகரும்
தத்துவமாய் இதை தரவும் இல்லை
முத்து முத்தாய் நல் பத்தரும் சொன்னரே உயிர்
தந்தவனே நின்பதம் வந்தனமே!

F. E. கொன்ஸ்ரன்ரைன்,
இலத்திரனியல் — 3-ம் வருடம் 83/84

தொலைக்காட்சி தொழிற்படுவது எப்படி?

இனையோர் முதல் முதியோர் வரை தொலைக்காட்சிச் சாதனத்தை நாடாதவர் எவருமில்லை. இது விஞ்ஞானத் துறையில் காணப்படும் பொழுது போக்குச் சாதனங்களில் முக்கிய இடத்தைப் பிடித்து விட்டது. இது இயங்கும் முறையைச் சற்று நுணுக்கமாக ஆராய்ந்தால் பல வியக்கத்தக்க விடயங்கள் வெளிக் கொணரப்படும்.

தொலைக் கேள்வியில் நடப்பது என்ன? ஒரிடத்தில் எழுப்பப்படும் ஒலியலைகள் “மைக்ரோபோன்” உதவியால் மின் அலைகளாக மாற்றப்படுகின்றன. இந்த மின் அலைகள் மீடறன் அல்லது அதிர்வு (Frequency) அதிகம் கொண்ட ரேடியோ அதிர்வு அலைகளோடு தகுந்த முறையில் கலக்கப்பட்டு, மின் காந்த அலைகளாக வான வெளியில் அனுப்பப்படுகின்றன. பின்னர் ரேடியோ ஒலியலைகளுக்குரிய மின் அலைகளைப் பிரித்தெடுத்து; அவைகளுக்கு ஆற்றலூட்டி ஒலிப்பானில் (Speaker) செலுத்துவதன் மூலம் அவைகள் ஒலி அலைகளாகத் திரும்பப் பெறுகின்றன. ஆனால், தொலைக் காட்சியிலோ காட்சியிலுள்ள (Scene) ஒரு பொருளின் நிழல், ஒளிப்பகுதிகள் மின் அலைகளாக மாற்றப்பட்டு ரேடியோ அதிர்வு அலைகளோடு, உரிய முறையிற் கலந்து வான வெளியில் செலுத்தப்படுகின்றன. ஏற்குமிடத்தில் காட்சிக்கான மின் அலைகள் பிரிக்கப்பட்டுத் தக்க சாதனங்களின் மூலம் ஒளி, நிழற் பகுதிகளாக மாற்றப்பட்டுக் காட்சிப்படம் உருவாகிறது.

எனவே, தொலைக் கேள்வி என்பது, ஒலியலைகளைப்பற்றியது தொலைக்காட்சி என்பது ஒளிக் கதிர்களைப் பற்றியது. தொலைக்காட்சியில் ஒரு காட்சியின் ஒளி, நிழல் பகுதிகளை மின் அலைகளாக மாற்றுவதற்கும், பின் ஏற்குமிடங்களில் மின் அலைகளை ஒளி, நிழற் பகுதிகளாக திரும்ப மாற்றுவதற்கும், சாதனங்கள் தேவைப்படுகின்றன. அவை முறையே, ஒளி மின் கலம் (photo electric cell) கதோட்-கதிர்க் குழாய் (Cathode-ray tube). ஆனால், ஒரே சமயத்தில் காட்சியிலுள்ள எல்லா ஒளி நிழற் பகுதிகளையும் மின் துடிப்புகளாக மாற்ற முடியாது. ஆகவே காட்சியின் ஒவ்வொரு பகுதியும் அதனதன் ஒளிச்செறிவிற்கேற்ப மின்துடிப்புகளாக மாற்றப்படுகிறது. இவ்வாறு காட்சியை சிறு சிறு பகுதிகளாகப் பிரித்து ஆராய்வதற்குத் துருவுதல் (Scanning) என்று பெயர்.

நவீன கால தொலைக் காட்சியில் காட்சியைத் துருவும் வேலையைப் பரப்பிமிடத்திலும் ஏற்குமிடத்திலும் இலத்திரன் கற்றை செய்கின்றது. இங்கு இலத்திரன் என்பது அனுவை ஆக்கும் அடிப்படைத் துணிக்கைகளில் ஒன்று. இலத்திரன் எடை மிகவும் குறைவாக இருப்பதால், அவைகளை மிக விரைவாக முன்னும் பின்னுமாக அசைக்க முடியும். எனவே துருவுதலும், அதி சீக்கிரமாகவிருக்கும், நவீன தொக்காட்சிச் சாதனங்களில் 1/39 வினாடியில் ஒரு காட்சி முழுவதும் துருவப்படுகிறது. மேலும் இலத்திரன் கற்றை, ஒரு வினாடியில் 520 தடவை இடமிருந்து வலம் காட்சியைத் துருவுகிறது. அதாவது காட்சி 525 சின்னஞ் சிறு நீண்ட பகுதிகளாகப் பிரிக்கப்பட்டு ஆராயப்படுகிறது. நவீன தொலைக்காட்சிப் பரப்பகங்களில் காட்சியைத் துருவி காட்சியிலுள்ள ஒளி, நிழற் பகுதிகளைத் தாக்கி மின் துடிப்புகளாக மாற்றுவதற்காக ஒருவகைத் தனிப்பட்ட மின் குழாய்கள் பயன்படுத்தப்படுகின்றன. இத்தகைய குழாய்களை டி. வி. நிழற்படக் குழாய் (T. V. Camera) அல்லது pick up tube என்று அழைப்பர். இவை முறையே விம்ப ஆர்த்திகான் (image orithicon), விடிகான் (Vidicon) என்பவையாகும்.

பின், காட்சியின் ஒளி செறிவிற்கேற்ப மின் துடிப்புகளாக மாற்றப்பட்டு ரேடியோ அதிர்வு அலைகளோடு கலக்கப்பட்டு, பின் காந்த அலைகளாக அனுப்பப்படும் காட்சியை திரும்பப் பெறுவது எவ்வாறு என்று பார்ப்போம். தொலைக்காட்சி வாங்கிக்கு வீடியோ (Video) என்று பெயர், இதில் மின் துடிப்புகளை ஒளிப்பகுதிகளாக மாற்றப்படுவதற்கு ரினஸ்கோப் (Rines Cope) எனப்படும், கதோட்-கதிர்க் குழாய் பயன்படுத்தப்படுகிறது. கதோட்டிலிருந்து (குழாயின் எதிர் மின்வாய்) வெளிக்கிளம்பும் இலத்திரன் கற்றை ஒளித்திரையைத் தாக்குப்போது திரையில் ஓர் ஒளிப்புள்ளி உருவாகிறது. ஒளி பரப்ப கத்திலிருந்து மின் காந்த அலைகளாக வரும் காட்சிக்கான மின்துடிப்புகள் அவைகளைத் தாங்கிவரும் ரேடியோ அதிர்வு அலைகளோடு, ஏற்பியின் ஏரியலால் (receiver aerial) ஏற்கப்பட்டுப் பெருக்கப்படும். பின்னர், ரேடியோ அதிர்வு அலைகளினின்றும் பிரிக்கப் பட்டு ரினஸ் கோப்பிற்கு கொடுக்கப்படும். எனவே, பரப்பகத்தில் படப்பிரதிக்கு குழாயில் துருவும் இலத்திரன் கற்றை காட்சியின் ஒளி மிகுந்த பகுதிகளின் மீது விழுங்கால், ஏற்பியில் ரினஸ்கோப் குழாயின் ஒளிப்புள்ளி பிரகாசமாகவும் நிழற்பகுதிகளின் மீது விழுங்கால் ஒளிப்புள்ளி மங்கலாகவும் இருக்கும். மேலும் பரப்பகத்தில் படப்பிரதிக்கு குழாயில் இலத்திரன் கற்றை துருவும் வேகமும், ரினஸ்கோப்பில் இலத்திரன் கற்றை அசையும் வேகமும் ஒன்றாக இருக்கவேண்டும் எனவே காட்சிக்கான துருப்புகளுடன் இலத்திரன் கற்றையின் வேகத்தைப் பார்ப்பகத்தில் துருவும் கற்றையின் வேகத்திற்குச் சமமாக இருக்கும்படி (signal) செய்வதற்கான குறிப்பும் உரிய மூன்றையில் சேர்த்தே பரப்பப்படுகிறது.

வர்ணத் தொலைக் காட்சியில் பல்வேறு வர்ணங்களைக் கண்டாலும், அதை ஒரு மூவர்ணப்படமென்றே கூறவேண்டும். ஏனெனில், யங், ஹெல்ம்ஹோல்ட்ஸ் முதலிய விஞ்ஞானிகளின் ஆராய்ச்சிகளின் பயனாக அடிப்படை வர்ணங்கள் கிவப்பு, பச்சை, நீலம் ஆகிய மூன்றும் தான் எனவும். இம் மூன்று வர்ணங்களை வெவ்வேறு விகிதங்களில் கலப்பதால் பல உப வர்ணங்களை தோற்றுவிக்கலாமெனவும் அறிய நேர்ந்தது. இதன் அடிப்படையே வர்ணத் தொலைக் காட்சியின் உருவமைப்பாகும்.

ஒளி பரப்பகத்தில் ஒவ்வொரு வர்ணத்தையும் உணரும் மூன்று வெவ்வேறு படப்பிரதிக்கு குழாய்கள் இருக்கின்றன. இவை ஒவ்வொன்றினதும் விம்பத் தகட்டின் மீதும் காட்சியின் விம்பம் வீழ்த்தப்படும். விம்பத்தில் ஒரு பகுதியின் வர்ணத்திலுள்ள அடிப்படை வர்ணங்களுக்கான மின் துடிப்புகள் வர்ணங்களின் விகிதத்திற்கேற்ப அளவில் ஒவ்வொரு குழாயிலிருந்தும் கிடைக்கும். இம்மின் துடிப்புகள் பின்னர் மூன்று வெவ்வேறு குறிப்பிட்ட விகிதங்களில் கலக்கப்பட்டு பெருக்கப்படுகின்றன. பின் ரேடியோ அதிர்வு அலைகளுடன் கலக்கப்பட்டு வான வெளிக்கு அனுப்பப்படும்.

வாங்கியில், வர்ணங்களுங்கான மின் துடிப்புகள் பிரிக்கப்பட்டுப் படக் குழாய்க்குக் கொடுக்கப்படுகின்றன. இருவகைக் குழாய்கள், ஒன்று நிழல் மூடிக்குழாய் (Shadow mask tube); மற்றது குரோமேற்றன் குழாய் (Chromatron tube) வர்ணத் தொலைக் காட்சியில் படக் குழாய்களாக இருந்தும், குரோமேற்றன் குழாய் அவ்வளவு உபயோகப்படுவதில்லை.

நிழல் மூடிக்குழாய்:

இக் கதோட்-கதிர்க்குழாயில் மூன்று இலத்திரன் துப்பாக்கிகள் உள்ளன. (Electron guns) ஒவ்வொரு அடிப்படை வர்ணத்திற்கும், இத் துப்பாக்கிகளிலிருந்து செல்லும் இலத்திரன் கற்றைகள் மூன்றும் ஒளித்திரையை அடைவதற்குச் சற்று முன் ஒன்றை யொன்று குறுக்கிடும் வகையில் துப்பாக்கிகள் பொருத்தப் பட்டுள்ளன. சிவப்பு வண்ண

இலத்திரன் துப்பாக்கியிலிருந்து கிளம்பும் இலத்திரன் கற்றை சிவப்பு வண்ணத்தை வெளியிடும் ஒளிர் பொருட் புள்ளியின் மீது (phosphor dot trious) மட்டுமே படும் வண்ணம் இலத்திரன் துப்பாக்கிகளும் நிழல் முடியும் பொருட் தப்பட்டுள்ளன. ஆகவே இலத்திரன்களின் எண்ணிக்கையைக் கட்டுப்படுத்துவதன் மூலம் ஒரு முக்கூட்டுப் புள்ளியிலுள்ள (phosphor dot trious) ஒவ்வொரு வண்ணப் புள்ளியும் தனித்தனியே தோன்றாதவிடத்து தாரத்திலிருந்து நாம் பார்ப்போமானால், மூவண்ணப் புள்ளிகளின் ஒவ்வொன்றினதும் ஒளி செறிவிற்கேற்ப பல்வேறு வர்ணங்களைப் பார்க்க முடியும். மூவகை இலத்திரன் கற்றைகளையும் சேர்ந்தாற்போல் அசைப்பதன் மூலம் ஒளித்திரையின் பரப்பை துருவமுடியும். இவ்வாறு திரையில் வண்ணக் காட்சியைத் தோற்றுவிக்கலாம்.

தொலைக்காட்சி அலைகள், ரேடியோ அலைகளை விட மிகவும் சிறியவை; அதிக மீட்டர்கள் கொண்டவை, இவைகள் வெளியலைகளாகவே (space waves) தரை மட்டத்திலிருந்து சுமார் 15 km அளவில் பரவியிருக்கும் பவன வெளியிலேயே நேர் கோட்டில் ஊடுருவிச் செல்கின்றன. எனவே, தரைமட்டம் வளைந்திருப்பதால் இவ் அலைகளைப் பரப்பக ஏரியலிலிருந்து நேரடியாக அடிவானத்திற்குப்பால் அனுப்ப முடியாது. ரேடியோவில் ஒரு நிலைய நிகழ்ச்சிகளை இன்றோர் நிலையம். அஞ்சல் செய்வது போல தொலைக்காட்சியிலும் அஞ்சல் முறை பயன்படுகிறது. ஒவ்வொரு நிலையங்களும் முன்னுள்ள நிலையங்களிலிருந்து வரும் நிகழ்ச்சிகளை ஏற்றுப் பெருக்கி, அடுத்த நிலையத்தை நோக்கிச் செலுத்துகிறது. மேலும், அயன மண்டலத்திலேற்படும் மாறுதல்களால், சில சமயங்களில் ஒரு நாட்டுக்குள்ளேயே தொலைக்காட்சி அலைகள் திசைமாறிச் சென்று மறைந்து விடுகின்றன. மற்றுமோர் முறையில் செயற்கைக் கோள்களைப் பயன்படுத்தி, அங்கு அமைக்கப்பட்டிருக்கும் அஞ்சல் நிலையம் தரையிலிருந்து வரும் நிகழ்ச்சிகளை ஏற்று அஞ்சல் செய்கிறது. இம்முறையில் ரஷ்யா, அமெரிக்கா, இந்தியா போன்ற இடங்களில் நிகழும் நிகழ்ச்சிகளையும் நாம் இங்கு பார்க்க முடிகிறது.

இருபதாம் நூற்றாண்டில் விஞ்ஞானத்தின் விந்தையால் ஏற்பட்டுள்ள மாறுதல்களின் பிரதிபலிப்பாக, தொலைக்காட்சிச் சாதனம் அறிவிற்கு மெரு கூட்டுவதுடன், பொழுது போக்கு சாதனமாகவும் உலகரீதியில் கணிக்கப்பட்டு வருவது நாமறிந்த உண்மையாகும்.

K. S. ஜெயசீலன்,

இலத்திரனியல் — 2-ம் வருடம், 85/86

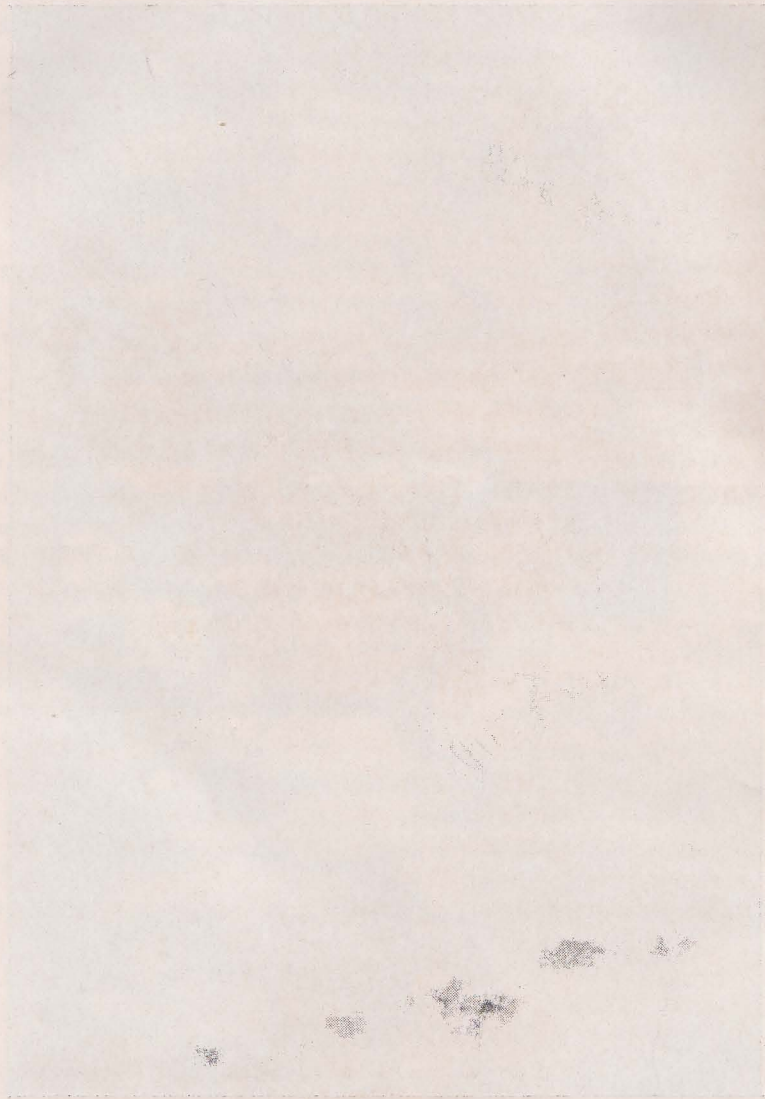
VOLLEY— BALL TEAM



Standing (L to R) : N. Kuhesan, S. Sathiyalingam, N. Sivapalan,
K. Jeyachandran and M. Gnanavel.

Sected (L to R) : Mr. K. N. Y. Maurice (Sports Administrator), N. Vimalaranjithan
(Sports Monitor), K. A. V. Thuraijasingham (Captain), The Director,
A. Ravindran and Mr. S. P. Ravindran. (Coach).

1. The first part of the book is devoted to a general
introduction to the subject of the book. It is
written in a very clear and concise manner, and
is well illustrated by numerous examples. The
author's treatment of the subject is very
thorough, and the book is well suited for
use as a text book in a course of instruction
in the subject.



THE END OF THE WORLD

இந்த நிலை மாறுமா?

உயர்வை நோக்கிய உள்ளத்திலே எண்ணற்ற எண்ணத்திரைகள் அலைமோத, எதையோ பறிகொடுத்தவன் போன்ற ஏக்கத்துடன் ஐம்புல உணர்வும் அறவே அற்றவனாய் சிந்தனை மேலோங்கச் சிலையாய் நிற்கிறான் இளைஞன். ஓர் இளைஞனா இல்லையில்லை, ஓராயிரம், ஒரு இலட்சம் அதனிலும் அதிகமென்றும் கூறலாம்.

படிமகனே படியென்று பாதி நித்திரையில் எழுப்பி விடுகிறான் பாசங்கொண்டதாய், பல்கலைகளையும் பயிற்றுவிக்க வேண்டுமென்ற ஆவலோடு பாடுபட்டுழைக்கிறான் தந்தை. பேணிக் காத்த பெற்றோர் மனங் கோணக்கூடாதெனத் துணிகிறான் மைந்தன். பகலிரவெனப் பாராது மழைவெய்யிலெனத் தயங்காது நோய்நொடியெனத் தூங்காது அல்லும் பகலும் அலைந்து திரிந்து அறிவைத் தேடுகிறான். பசி நோக்காது, கண்துஞ்சாது, உடல்வலி பார்க்காது படிக்கிறான். பரீட்சையும் எழுதிவிடுகிறான், பலாபலன்! அந்தோ பரிதாபம், பெற்றோரும், மற்றோரும் ஊக்கமளிக்க தன் துன்பங்களை மறந்தவனாய் மீண்டும் முடுக்குடன் படிக்கத் தொடங்குகிறான். அடுத்த ஆண்டிலாவது ஆண்டவரின் கருணையில் அனுமதி கிடைக்காதா; பல்கலைக்கழகம் கிட்டாதா என்ற ஏக்கம். முன்னிலும் மூச்சாகப் படிக்கிறான். அவன் எண்ணம்தான் நிறைவேறுமா? தரப்படுத்தல் என்ற தந்திரமுறைதான் ஒழிந்துவிட்டதே. ஆனால் அதனினும் பயங்கரம், இனரீதி, மாவட்ட ரீதி, பின்தங்கிய மாவட்டம் இப்படி இப்படி எத்தனை தடைகள் திறமைக்கு ஏது இடம்?

இத்தனையும் தாங்கும் சக்தி அவ்விளம் நெஞ்சுக்கு எங்கிருந்து வரும்? உள்ளம் உடைய உடல் சோரத் தயங்குகிறான். பட்ட கஷ்டங்களை எண்ணிப் பரிதவிக்கின்றான் இளைஞன். ஆறுதல் கூறவோ, தேறுதல் அளிக்கவோ வழியறியாது பெற்றோர் பெருங்கவலை கொள்கின்றனர். வெளிநாடுகளில் உயர்கல்வி கற்க வசதிபடைத்தவர்கள் செலவைப்பாராது அனுப்பி வைக்கின்றனர். ஆனால் அப்படி வசதிபடைத்தவர்கள்தான் எத்தனை பேர்?

“திக்கற்றவனுக்குத் தெய்வமே துணை” என்பது போல், அகதிக்கு ஆண்டவன் அருள்புரிந்தாற்போல் அவர்களை அரவணைத்து அறிவூட்டுகிறது அமெரிக்க நிறுவனமொன்று. ஆம். ஆயிரமாயிரமாக கடந்த 11 ஆண்டுகளாக அது உருவாக்கிய இளைஞர்கள் எத்தனை பேர். இலத்திரனியல், மின்னியல், இயந்திரவியல் இப்படி எத்தனையோ துறைகளில் விரக்தியுற்ற இளைஞர்கள் வீறுநடை போடுகின்றனர். செய்வதறியாது செயலிழந்த கானைகள் முயற்சியுடன் முன்னேறுகின்றனர். தமது திறமைக் கேற்பச் சான்றிதழ்களையும் பெற்றுப் பெருமிதம் அடைகின்றனர். தமக்கு வாழ்வழித்த தெய்வமான வட்டுக்கோட்டை நிறுவனத்தை வாயார மனமார வாழ்த்துகின்றனர். விரக்தியுற்ற இளைஞரின் ஏக விமோசனமான இந்நிறுவனம் கூடிய இளைஞரைத் தாங்கி வீறுநடையுடன் நீடிய சேவை செய்ய ஆண்டவன் அருள்புரியட்டும்.

இத்தனை அரும்பெரும் சேவையை அமெரிக்க நிறுவனம் அளித்தாலும், வாலிபர் பிரச்சனை ஒழிந்ததா. இல்லை. ஆண்டவன் சோதனை அவனைத் தொடர்கிறது. திறமைக்கேற்ப தரமான தராதரப் பத்திரம் இருந்தும் தகுதிக்கேற்ற பதவி கிடைக்கிறதா? அதற்குள் இனப்பிரச்சனை புருந்துவிடுகிறதே. பிறந்த நாட்டிலே எந்தப் பகுதியில்தான் அவன் சுயாதீனமாக உலாவிட முடிகிறது. சமூகத்தின் கனல் கொண்ட கண்கள் அவனை அடிக்கடி கடுகின்றன. வேலையில்லாத்திண்டாட்டம் வேதனை தருகிறது.

என்ன செய்வான் பாவம் பிறந்தும் வாழ்வில்லை. படித்தும் பயனில்லை. கடைசியில் அவன் சண்ட முடிவு? பறக்கிறான், பறந்துகொண்டேயிருக்கிறான். பொருள் பண்டங்களை விற்று - கட்டிய மனைவியின் தாலியை காசாக்கி - பிறந்த வீட்டை ஈடுகொடுத்துப் பணத்தைத் திரட்டிப் பறக்கிறான். உலகில் எங்கெங்கு நுழையமுடிகிறதோ, அங்கெல்லாம் நுழைகிறான். பொருள்தேட, தன்னை நம்பியவர்களைக் காப்பாற்ற, அருமைத் தங்கையரை வாழவைக்கத் தன்னையே தியாகம் செய்கிறான். இதுதான் இன்றைய இளைஞனின் நிலை.

பிறந்த பொன்னாட்டைக் கண்டு மகிழ இவன் திரும்பி வருவானா? வளர்த்த நாடு அவனுக்குத் திருப்பியும் வாழ்வளிக்குமா. அவன் உழைப்பின் பயனாக மகிழும் உற்றார் உறவினரை அவன் கண்குளிரக் காண்பானா? சொந்த மண்ணிலே தனக்கொரு வாழ்வை அமைத்துக் கொள்வானா?

இன்றைய இளைஞனின் கதி இதுவாகவே அமைந்துவிட்டது - இதே நிலை நீடித்தால் இனிமேல் வரப்போகும் இளைஞனின் கதி இதனிலும் மோசமாகலாம். துள்ளித் திரியும் பள்ளிச்சிறுவனுக்கு இக்கதி நேரக்கூடாது. வருங்காலத்திலாவது அவன் வளமான வாழ்வு வாழ்வதை வகுத்தே ஆகவேண்டும். எனவே இளையதலைமுறையினரே; விழித்தெழுங்கள். ஒன்றுபடுங்கள் ஆண்டவன் துணைபெற்று, அறிவை முன்வைத்து வருங்கால சமூகம் வாழ வழிவகை செய்யுங்கள். இனிமேலாவது இந்த நிலை மாறுமா?

வெற்றி உங்கள் கைகளில்.

J. B. மோகன்ராஜ்,

இலத்திரனியல் — 2ம் வருடம், 84/85.

English Elocution Contest — 1984

There is a growing awareness among people, particularly among workers from all sectors — government, private, commerce and mercantile, to gain what they have lost in the schools. A working knowledge of English has become necessary in view of the closer contact with other parts of the world for employment, commerce and trade and other similar purposes. It is precisely for these reasons that employers are arranging classes for employees in many establishments to help them to acquire a fair proficiency in the English Language.

It is both sad and disheartening to note that in this Institute, despite all the pains the Director is taking and motivations given, the majority of the students do not seem to show any concern in acquiring at least a smattering knowledge of the language.

Undaunted by this phenomenon, this year the Director, with always the interest of the student at heart, initiated an Elocution Contest in English to promote among students the art of speaking in public. The response for entries to participate, though poor, was adequate enough to conduct the contest.

The students were divided into three Groups - First Year, Second Year and Third Year and the Contest was held on the 7th March 1984, commencing at 9.15 a.m., with the Students' Union in over-all charge.

The following members of the Staff officiated as Judges :

Mr. S. Kanagasabai

Mr. K. N. Y- Maurice

Mr. V. Satchithanathan

Results of the Contest :

First Years :

First — Mr. R. Mohan

Second— Miss R. Vasanthi

Third — Miss A. Shanthavathani

Second Years :

First — Mr. V. Ganesan

Second— Not Awarded

Third — Not Awarded

Third Years :

First — Mr. P. Parameswaran

Second— Mr. Angelo Pillay

Third — Not Awarded

We offer our congratulations to the winners.

We thank the Judges for their ungrudging and whole-hearted co-operation towards the success of the contest, and Mr. F. E. Constantine, Secretary of the Students' Union for his assistance.

We owe a deep debt of gratitude to the Director for making the contest possible, for allowing us the use of the Assembly Hall and for the encouragement he has given at all times.

— The Organising Committee —

English Elocution Contest — 1935

The Contest was conducted by the Students' Union on the 6th November 1935. The students were divided into four groups according to the duration of the courses, as follows :

GROUP I : First Years and One to One-and-a-Half Year Courses.

GROUP II : Second Years.

GROUP III : Third Years.

GROUP IV : Crafts.

The following members of the staff officiated as judges :

Mr. S. A. P. Thuraiaratnam

Mr. E. M. Jebarajah

Mr. V. Satchithanathan

Results of the Contest :

GROUP I : (First Years / One-Year & One-and-a-Half Year Courses).

First : T. Gayathiri (Miss)

Second : D. Manoharan

Third : R. Ramani (Miss)

GROUP II : (Second Years)

First : B. Jeyaseelan

Second : N. J. Mahilrajan

Third : No award.

GROUP III : (Third Final Years)

First : R. Vasanthy (Miss)

Second : R. Anna Nageswary (Miss)

Third : A. Shanthavathany (Miss)

GROUP IV : (Crafts)

T. Sri Raveendran

commended.

— Scribbler —

STUDENTS UNION OFFICE - BEARERS

1985 — 86



Standing (L to R) : Miss. J. Ramani. S. Sureshwaran, A. Mahalingasivam,
K. A. V. Ihurairajasingham, (Asst. Secretary), N. Vimalaranjithan
(Sports Monitor), S. Jeyaseelan, (Asst. Sports Monitor),
T. Sivasubramaniam, S. Suthan (Fine-Arts Society). R. Sivakumar
(Editor), S. Suthakar and Miss. V. Srivani.

Seated (L to R) : Mr. R. S. Ratnakobal (Staff Adviser), S. Suresh (Treasurer),
S. Sivayogan (President), The Director (Patron), R. Mohan (Secretary),
Mr. M. Thayanathan (Vice-Patron) and Mr. A. M. Spencer (Staff Adviser)

STUDENTS' UNION

OFFICE — BEARERS

1985 / 1986

- Patron* : Mr. M. G. Pillainayagam
- Vice Patron* : Mr. N. Thangarajah (till December 1985)
: Mr. S. A. P. Thurairatnam (from Feb. 1986)
- Advisory Committee* : Mr. M. Thayananthan
: Mr. A. M. Spencer
: Mr. R. S. Ratnagopal
: Mr. E. M. Jebarajah
: Mr. I. Balasubramaniyam } (from Janu. 1986)
- President* : S. Sivayogan
- Vice President* : P. Sriharan
- Secretary* : R. Mohan
- Asst. Secretary* : K. A. V. Thurairajasingam
- Treasurer* : S. Suresh
- Sports Monitor* : N. Vimalaranjithan
- Asst. Sports Monitor* : S. Jeyaseelan
- Fine Arts Society—Secretary* : S. Suthan
- Editor* : S. R. Sivakumar
- Asst. Editor* : T. Terry Jenorge
- Common Room Monitors* : B. Jeyaseelan
: N. Nanthini (Miss)

Course Representatives

S. Suthakar		1st Year Electronics
V. Srivani (Miss)		1st „ Civil & Quantity – Surveying
F. X. Roger (till December 1985)		1st Year Electrical Power
J. Ramani (Miss)		Computer Programming
A. Mahalingasivam		Turners & Fitters
S. Ganeswaran (till August 1985)		Foundry Practice
T. Sivasubramaniam		Welding Practice
S. Sriskantharajah (till December 1985)		Automobile
S. Kugan (till December 1985)		Air Conditioning & Refrigeration
K. Jeganathan	} From January 1986	E. C. E. Part I
S. Sureshwaran		Draughtsmanship
R. Ratnarajah		Automobile
S. Rajeethan		Air-Con. & Refrigeration
F. X. Roger		Electrical Installation
E. Jeyanesan		Ist Year Electrical Power



The Students' Union — 1985 / 86

The Secretary Reports

I give here the report for the Academic Year 1985/86.

Our academic year, beginning July 1985 and ending April 1986, consisted of two semesters. During these periods, regular general meetings and special functions were held. These served to evoke much enthusiasm from the members and were very fruitful indeed.

Elections & Appointments :

A general meeting of the student body was convened on 10th July, 1985 by the Director of our Institute to elect the office-bearers and course representatives. All office-bearers were elected unanimously and those who took charge of the offices for the academic year 1985 / 86 were :

<i>President</i>	: Mr. S. Sivayogan
<i>Secretary</i>	: Mr. R. Mohan
<i>Treasurer</i>	: Mr. S. Suresh
<i>Sports Monitor</i>	: Mr. N. Vimalaranjithan
<i>Editor</i>	: Mr. R. Sivakumar
<i>Fine Arts Society</i>	
<i>Secretary</i>	: Mr. S. Suthan

Further, our Director, Mr. M. G. Pillainayagam, Patron of the Union, appointed the following members of the staff to the Advisory Committee :

Mr. A. M. Spencer
Mr. M. Thayananthan
Mr. R. S. Ratnagopal

Mr. N. Thangarajah was appointed as Vice Patron.

In January 1986, Messrs. S. A. P. Thurairatnam, E. M. Jebarajah and J. Balasubramaniam were co-opted to the staff Advisory Committee. Soon after, the post of Vice Patron fell vacant when Mr. N. Thangarajah left us to go abroad. We take this opportunity to thank him for his help and guidance and wish him all success in his new venture. On a recommendation made at a meeting of the Executive Committee and the Staff Advisers held on 28th January, 1986, the Director appointed Mr. Thurairatnam as Vice Patron.

Weekly General Meetings

In compliance with our Patron's request, the weekly general meetings were conducted on Wednesdays from 8.45 a. m. to 9.45 a. m. During this allocated time we organized a debate, a Tamil Speech Contest, a Tamil Poetry programme and an English Elocution Contest. We also had the privilege of listening

to three guest speakers. Dr. M. Theivendran, Divisional Health Officer, Jaffna spoke on First Aid and Health Care; Mr. S. Jebanesan and Mr. T. Visuvanathan of the staff of Jaffna College, Vaddukoddai spoke on "Manithanai Uruvakum Natpanpugal" and "Halley's Comet" respectively. These speeches, I proudly state, were appreciated by both the staff and students alike. We extend to them all our very sincere thanks.

Special Functions :

A musical programme, put on the boards on the 10th Institute Day by the Fine Arts Society, received the approbation of all present. My sincere thanks are due to the Adviser, Mr. R. S. Ratnagopal, the Secretary, Mr. S. Suthan and the participants for their keen interest.

We successfully conducted the Inaugural Inter-Hall Athletic Championship Meet with the co-operation of the staff and management. I thank our Sports Administrator, Mr. K. N. Y. Maurice, and the Sports Monitor, Mr. N. Vimalaranjithan, for their initiative and assistance. I also extend my thanks to the donors of Challenge Trophies and all those who contributed in many ways in making the Championship Meet a success. A special word of thanks is due to the members who donated a shield in the name of the Union.

The Saraswathy Pooja was celebrated on 23rd October, 1985. A special address delivered by Mr. C. T. Rajendram of the staff of Victoria College, Chulipuram and an eastern musical programme presented by our Fine Arts Society made the occasion a note worthy one. We thank Mr. C. T. Rajendram and the Music Group for their contributions.

I regretfully record that we had programmed an 'X' mas 'get-together,' with the annual lunch but they had to be cancelled owing to reasons beyond our control.

The opening of the new Common Rooms took place on 26th February, 1986 with a mini ceremony. We thank our Director for the kind thought in fulfilling a long - felt need.

The inaugural cultural programme intended to be an annual event was featured on 26th March, 1986 with playlets, musical items, poetry etc. Mr. & Mrs. Nithiyananthan were the Chief Guests. The entire programme was thoroughly enjoyed by the audience. We express our sincere gratitude to Mr. & Mrs. Nithiyananthan for their kind presence and the participants for their excellent performance.

Finally, we had our Get-together lunch on 5th April, 1986. I must thank all members of the Union, the Staff Advisory Committee, the staff and the special committees for their unstinted co-operation in making the function a success. I should take this occasion to thank our Guests of Honour, Mr. S. Sivathasan, Deputy Director Planning, Jaffna & Mrs. Sivathasan for their gracious presence.

Sports

The greater involvement of the students, both girls and boys, during the year has definitely been a source of encouragement.

Cricket : Our team under the captaincy of Mr. G. Jeevahan played four matches. Won one, lost two and drew one.

Soccer : The soccer team led by Mr. N. Vimalaranjithan played 7 matches. Won one, lost 4 and drew two. Winding up the season, we played a 'kick-off' match between the seniors and the juniors, TECHNOS & TECHNIS, styled respectively. TECHNIS won.

Volley Ball : Played 3 matches. Lost two and won one.

Badminton : Played 3 matches. Lost all.

Our sincere thanks are due in a very large measure to the Sports Administrator, Mr. K. N. Y. Maurice, for his on-the-spot encouragement and the personal interest he had shown to us regarding our sports activities.

Magazine Publication

Pursuant to a decision taken by the Director and the Staff, the magazine will be published by the Institute, and the Students' Union will continue to contribute its share in publishing its activities and achievements. We are indebted to the student Editor, Mr. R. Sivakumar, for his efforts to resuscitate a magazine that had almost gone into cold storage.

Once again, I thank all those who spared no pains in helping me in the execution of my onerous duties and the Union in its manifold activities and, in particular, I consider it an enviable privilege, on behalf of the members, to extend our sincere gratitude to our Patron, Mr. M. G. Pillainayagam, for his abiding interest in and his eternal vigilance over the affairs of the Students' Union.

Rajakulasuriyar Mohan,
Secretary.

Report of the Fine Arts Society, 1985/1986

I take great pleasure in submitting this report for the year under review.

We have conducted cultural programmes on special days of the Institute, such as, the Institute day and 'Vijayathasamy'.

On Institute day, a musical programme was presented by our Music Group. Mr. J. B. Mohanraj, Mr. G. Jeevahan, Miss. J. Ramani and Miss. Minothini were the vocalists, ably supported by instrumentalists, Mr. P. Kannan (guitar), Mr. N. Jeyantharaj (violin), Mr. S. Suthan (organ), Mr. S. Suresh (Miruthangam) and Mr. S. Sivasothy (accordian). The compere was Mr. S. Nimal and the audio system was controlled by Mr. N. Vimalaranjithan. Right through the programme the Assembly Hall rang with loud and spontaneous applause.

To celebrate the last day of Navarathri festival, we arranged a violin recital by Mr. P. Kannan. Background music was provided by Mr. S. Suthan (organ), Mr. S. Suresh (miruthangam) and Mr. S. Sivasothy (thabla). This programme was also well received by all those present.

Before I conclude, let me take this opportunity to express my sincerest thanks to all members of the Society for their kind and whole-hearted co-operation and to our Patron, Mr. M. G. Pillainayagam, for his helpful advice and ever-willing guidance at all times.

May the Fine Arts Society flourish!

S. Suthan,

Secretary

1. Sports Report — 1983|84

Volley-ball : The game of Volley-ball was introduced for the first time in our Institute. A tournament was organised from 7-11-83 to 16-11-83. Five teams participated. The second - year Team A won the championship and the third years were the runners up. I wish to thank Mr. T. Raveendran (Instructor in Welding) for the keen interest he had taken to make the tournament a success. I also thank the members of the Students' Union for their co-operation in this respect.

In-door games : The following in-door games were played during the year.

1. Badminton
2. Carrom
3. Chess
4. Draughts
5. Table-Tennis

A new Badminton court has been put up in the Abels' Auditorium. Arrangements were to be made to organise tournaments, but, owing to the tension prevailing in the country, these had to be abandoned.

For a very long time we have been trying our best to obtain a table-tennis table, but our attempts proved a failure. However, owing to the perseverance and untiring efforts of our Director, we were lucky to get not one, but two tables. These are being used now by the students. I take this opportunity to thank our Director for the keen and lively interest he had taken to provide us with all facilities.

Mr. T. Skantharajah, our Sports Master, with his wide experience in the field of sports, has been a tower of strength to the members of the Students' Union. I thank him for his guidance and valuable advice which have helped us to a great extent to achieve the best results in our sports competitions. I also wish to thank the assistant Sports Monitor, S. Ranjith, for the co-operation he has extended to me.

Foot-ball : Our foot-ball team was captained by coloursman R. C. A. E. Selvamohan. The other coloursmen in the team were T. Suthakaran and S. Ranjith. We played five matches during this season of which we won one and lost four.

Jaffna College Technical Institute Vs

Goals for against Results

Jaffna Central College	1	2	lost
St. John's College	0	3	lost
Canagaratnam M. M. V.	6	1	won
Kokuvil Hindu College	1	3	lost
Jaffna Hindu College	2	3	lost

Cricket :

Our team was captained by colours - man T. Suthakaran. The other colours men were P. Jeyakumar and R. Rajendran. We played 3 matches during this season and drew all three.

Jaffna College Technical Institute Vs

Results

Jaffna College (21-02-84)	Drew
Kokuvil Hindu College (25-02-84)	„
Kokuvil Central Community Centre (04-03-84)	„

Grounds :

Our existing play ground has been extended now. There is enough space for us to play both cricket and foot-ball. Owing to the continuous rain this season, we were unable to play matches on our grounds. In future, we hope to have matches on our ground. Here too, the Director has been responsible for the extension of our play ground. I thank him for all that he had done.

P. Jeyakumar,
Sports Monitor



2. Sports Report - 1984 / 85

The Games and Athletics programme for the year 1984/85 was drawn up at the beginning of the academic year. The continuous civil disturbances had affected the students' life and no activity was possible. The first term ended with no action at all.

The second term got off on a quiet note as the tension eased. Football games were played. 'The Techno' Vs 'Techni' was the curtain-raiser followed by Inter-Departmental matches. These games gave the students an opportunity to prove their skills at this game and represent the Institute. The selectors were able to select a strong side to turn out for the Institute. T. Raveendran and V. Srikugan were elected co-captains for the preliminary club matches. Four club matches were arranged, of which three were played. We won all the three matches convincingly. As we were preparing for the fourth game, down came the bullet-shower and completely destroyed the immediate future of football and the season ended abruptly.

The third term was not conducive for any type of out-door games. The Institute was on one session. We played a few soft-ball cricket matches and indoor-games, such as Badminton, Table-Tennis, and Volley-Ball. We took part in the Indoor-Games Tournaments conducted by both the Jaffna College and the Vaddukoddai YMCA. We did our best to see that sports activities did not suffer but proceed without much difficulty. Thus ended another year of sports at the Institute.

I must thank my predecessor and friend, S. Ranjit, who was responsible for all that we enjoyed during the year. I wish him success in his future endeavours. We are grateful to our new Sports Administrator, Mr. K. N Y Maurice, for all the encouragement and help rendered. We take this opportunity to convey to our former Sports Master, Mr. T. Skandarajah, our thanks and good-wishes. Finally, I wish to say how happy we were right through the year for the help and guidance we received from our Director and the members of the staff. I wish the Institute a happy and memorable year 1985/86.

T. Anpalagan,
Sports Monitor



3. Sports Report - 1985 / 86

The sports calendar for the academic year 1985/86 was drawn up with the view to revive games and athletics at the Institute. The year 1984/85 had its own program by fits and starts, and was not very beneficial to the students. In an attempt to make the sports life at the Institute a useful one, we took certain bold decisions. The first one was to group the students into three

Halls, namely Red Hall, Yellow Hall and Blue Hall, which were to be taken care of by Wardens. This resulted in three members of the staff being appointed as Hall Wardens to be in charge of the activities of the Halls. Lastly, we were to arrange and organise Inter-Hall Competitions in all possible games.

In order to see that our aims materialised, the Sports Committee planned to work out the activities on a Mini-Olympic pattern and were very successful at it. Within a period of seven weeks we were able to work off the Inter-Hall Competitions in Cricket, Football, Volley-Ball, Table Tennis and Badminton and complete it on a very successful note in the form of our Inaugural Inter-Hall Athletic Championships on the 13th and 14th September, 1985 under the distinguished patronage of His Lordship, the Rt. Rev. D. J. Ambalavanar (Bishop, J. O. C. S. I.) and Dr. (Mrs) Chandra Ambalavanar.

Results of the Inter-Hall Competitions:

EVENTS	CHAMPIONS	RUNNERS-UP
Cricket	Yellow Hall	Red Hall
Football	Red Hall	Yellow Hall
Volley-Ball	Yellow Hall	Red Hall
Table Tennis (Men)	Yellow Hall	Red Hall
Table Tennis (Women)	Red Hall	Blue Hall
Badminton (Men)	Red Hall	Blue Hall
Badminton (Women)	Red Hall	Blue Hall
Athletics : Men	Red Hall	Yellow Hall
Women	Yellow Hall	Blue Hall
Over-all	Yellow Hall	Red Hall

The Hall with the best all round performance was awarded the "Flag Trophy". This was won by Red Hall scoring 19 points with the Yellow Hall a very close second. S. Jeyaseelan (Red Hall) was the Champion Athlete among Men while Miss S Sathiyamalar (Yellow Hall) became the Women's Champion. S. Jeyaseelan was awarded the Best Performance Cup for Men for throwing the Javelin to a distance of 120 ft (36.58 metres) and the Best Performance Cup for Women was awarded to Miss. R. Ranji (Blue Hall) for throwing the Discus to a distance of 57 ft. 5½ in (17.51 metres).

Before the sports tide could wane, we focused our attention on Foot-ball and Volley-Ball.

Football's curtain-raiser — the Techno-Techni encounter, the second in the series, was played for M. Constantine Shield on 27-9-1985 with the powerful Techno Team beating a determined Techni side by 3 goals to 2. Thereafter, we played six matches winning one, drawing two and losing four.

Results : Vs Silver Stars S. C	Drew	1-1
Vs Jaffna College	Drew	3-3
Vs Skandavarodaya College	Won	3-2
Vs Manipay Hindu College	Lost	1-5
Vs Nadeswara College	Lost	2-3
Vs Kannahi S. C	Lost	1-3
Vs Kokuvil Hindu College	Lost	1-3

Volley-Ball, too, had its share of activities. The Staff—Students Match played on 25.10.1985 was an eye-opener to many students as far as this game was concerned. The Techno Vs Techni encounter followed; thereafter, we played four matches winning three of them. We played the "Over-head" type of Volley-Ball as we did not possess sufficient number of players who could play the "Set-up" type. We hope to introduce this type into our Volley-Ball soon.

Badminton and Table-Tennis occupied the evenings of most of the students. In addition to the Inter-Hall competitions, we played against Jaffna College, the Jaffna College Y M C A and the University of Jaffna teams, not with much success. We hope that with the experience gained we should turn out a side worthy of recognition.

Cricket occupied the entire Second Semester. After a few practice matches, we launched out to test our skills at cricket in both the normal and overs-limited games. We played four matches, won one, drew one and lost two:

Results : Vs Manipay Hindu College	Drew
N. Thivakaran scored 50 runs, M. Paramalingam bowled best capturing 8 wickets for 59 runs, including a hat-trick and R. Ratnarajah kept wickets well.	
Vs University of Jaffna	Lost by 8 wickets
N. Vimalaranjithan top- scored with 30 runs.	
Vs Skandavarodhaya College	Won by 57 runs
M. Paramalingam top-scored with 42 runs, while K. Jeyanathan returned the best bowling figures of 4 wickets for 25 runs	
Vs Jaffna College	Lost by 18 runs
N. Thivakaran bowled best capturing 3 wickets.	

In addition, we provided the students with indoor - games, namely Chess, Carrom and Draughts. These games tend to attract a good number of students. As the response is good, we hope to have Inter-Hall Competitions and Individual Championships in these games in future.

The following are the members of the respective teams of the Institute for the current year 1985/86.

CRICKET

G. Jeevahan (Captain)
B. Sivanesan (V. Captain)
N. Vimalaranjithan
S. Jeyaseelan
M. Thivakaran
S. Nimal
P. Sriharan
R. Mohan
R. Ratnarajah
M. Paramalingam
R. Sabeswaran
M. Thatparan
S. Nimalakumar
V. Sathieskumar
K. Jeganathan
T. Vigneswaran
B. Vasudevan
V. Kannan

BADMINTON

MEN

A. Raveendran (Captain)
V. Visaganathan
S. Jeyaratnam
S. Jeyaseelan
K. Jeyachandran
T. Vigneswaran

VOLLEY BALL

K. A. V. Thurairajasingham (Captain)
A. Raveendran (V. Captain)
M. Kuhesan
S. Sathiyalingam
M. Sivapalan
K. Jeyachandran
M. Gnanavel

FOOTBALL

N. Vimalaranjithan (Captain)
M. Thivakaran (V. Captain)
S. Jeyaseelan
K. Sakthivel
K. Kuhesan
E. Jeyanesan
A. Raveendran
J. D. Arulraja
N. Sivapalan
S. Segar
S. Sivayogan
K. A. V. Thurairajasingham
T. Vigneswaran
N. J. Mabilrajah
M. Gnanavel

WOMEN

Miss R. Anna Nageswari (Captain)
Miss T. Gayathiri
Miss S. Mathivathani
Miss N. Jeyanthi
Miss M. Ahalya

TABLE TENNIS

J. B. Mohanraj (Captain)
M. Jeyantharajah
S. Nimal
V. Kannan
S. Segar

The Students' Sports Committee consists of the following members:

Sports Monitor	— N. Vimalaranjithan
Asst. Sports Monitor	— S. Jeyaseelan
Cricket Captain	— G. Jeevahan
V. Captain	— B. Sivanesan
Secretary	— P. Sriharan
Football Captain	— N. Vimalaranjithan
V-Captain	— N. Thivakaran
Secretary	— P. Jeyaseelan
Athletics Captain (Men)	— N. Vimalaranjithan
(Women)	— Miss S. Sathiyamalar
Secretary	— S. Jeyaseelan
Volley Ball Captain	— K. A. V. Thurairajasingham
V-Captain	— A. Raveendran
Secretary	— K. Jeyachandran
Indoor Games Secretary	— S. Jeyaseelan
Badminton Captain (Men)	— A. Raveendran
(Women)	— Miss R. Anna Nageswari
Table Tennis Captain	— J. B. Mohanraj
Ground Secretary	— T. Vigneswaran

I thank the members of the students' Sports Committee for the assistance they gave me in working out our programme smoothly under very hard and trying conditions and the members of the Staff in guiding us at all times, particularly, at the time of our Inaugural Inter-Hall Athletic Championships. A special word of praise is due to the three Hall Wardens, Messrs. M. Thayanathan, S. B. Sabanayagam and S. Devanathan in assisting the Sports Administrator, Mr. K. N. Y. Maurice in practices during our preparation for the various competitions.

We have seen a very active year pass by as regards Games and Athletics for the first time at the Campus. This was made possible by the untiring efforts of our Sports-loving Director, Mr. M. G. Pillainayagam and the Sports Administrator, Mr. K. N. Y. Maurice. Our thanks are due to them.

I wish my successor and the students a fruitful and enjoyable time in the coming year.

N. Vimalaranjithan,
Sports Monitor

COUNCIL OF MANAGEMENT — 1986

1. Mr. J. M. Sabaratnam, B. A. (Lon), J. P. — Chairman
2. Mr. S. M. V. Tissanayagam, B. Sc., Eng. (Hon.), C. Eng., F. I. E. (SL),
M. I. C. E. (Lon.) — Vice Chairman
3. Mr. A. Kadirgamar, B. Sc., M. A. — Secretary
4. Mr. W. N. S. Samuel, B. A. (Lon.), Dip. Ed. (Cey.) — Treasurer
5. Mr. M. G. Pillainayagam, B. Sc. Eng., M. Sc. (Ag. Eng.), C. Eng.,
P. Grad. Dip. (U. K.), M. I. Mech. E. (Lon.) —
Director — J. C. T. I.
6. Mr. C. Jeyaratnam, B. Sc., (Agri.), M. Sc. — Principal — J. C. A. I.
7. Rt. Rev. D. J. Ambalavanar, Bishop, J. D. C. S. I.
8. Mr. A. C. Canagarajah, B. Sc., Eng. (Hon), C. Eng., F. I. C. E. (Lon),
F. I. E. (SL).
9. Prof. A. Thurairajah, B. Sc., Eng. (Hon), Ph D., D. I. C.,
F. I. C. E. (Lon), F. I. E. (SL).
10. Mr. S. Rasanayagam, O. B. E., B. Sc., Eng., A. C. G. I.,
F. I. E. E. (Lon.), F. I. E. (SL).
11. Dr. J. P. C. Phillips, M. B. B. S.
12. Dr. W. D. Joshua, B. Sc., M. Sc., PhD.
13. Mr. K. Pooranampillai, B. A. (Lon.), Post Graduate Cert. Ed.,
(Selly Oak, Birmingham, U. K.)
14. Mr. L. P. C. Canagasingham, Dip. in Agri.
15. Mr. S. Raja Ascervatham, B. A. (Econ.)

THE STAFF — 1985 / 86

Academic Staff

Director :

- Mr. M. G. Pillainayagam — B.Sc. (Eng)., M.Sc. Ag. Eng.,
M. I. Mech E., A. M. I. E. (S.L).,
C. Eng., A. M. I. E. E

Assistant Director :

- Dr. T. Vinayagalingam — B.Sc. Eng. (Hon)., M.Sc.,
PhD. (Birm)., M.ASME, MAIAA

Lecturers :

- Mr. N. Thangarajah — B. Sc. Eng (Hon)., Dip. Com. Prog.
Mr. S. A. P. Thurairatnam — B. Sc. Eng (Hon)., M. I. E. (S.L)., C. Eng.
Mr. A. M. Spencer — B. A. (Lond)., Dip. Ed. (Cey).
Mr. I. Balasubramaniam — J. T. O., B.Sc. Eng (Hon)
Mr. E. M. Jebarajah — B. Sc. Eng.
Mr. S. A. Rajaselvam — B. Sc. Eng. (Hon)
Mr. K. N. Y. Maurice — M. I. I. M. (U.K), M. B. I. M. (U.K),
M. Inst. S. M. M. (U.K), L. T. I. (Manch).

Assistant Lecturers :

- Mr. S. Brihadiswaran — A. M. I. E. (Lond), Assoc. Plant. E.,
E. C. E. (Lond) Parts I & II
Mr. S. Vanadeva — B.Sc., E. C. E. (Lond) Part I.
Mr. V. Vinayagammoorthy — B.Sc. Eng.
Mr. K. Sureshkumar — B. Sc., E. C. E. (Lond) Parts I & II.
Mr. S. Subendran — B. Sc., Eng.

Instructors :

- Mr. S. B. Sabanayagam — Tech. Dip — Energy Technique &
Electronics (Munich)
Mr. V. Satchithanathan — B.Sc. (Phy.), M. I. M. I. (Lond),
M. I. E. (Lond), M. I. P. (S.L)
Mr. M. Thayanathan — Tech. Dip. (Mech).
Mr. R. S. Ratnakobal — Tech. Dip., Dip (A/C & Refrig.)
Mr. T. Selvendran — Tech. Dip. (Automobile)
Mr. S. Purushothaman — Tech. Dip. (Electronics).,
F. T. C (C & G) Lond.
Mr. S. Kantharajah — Tech. Dip. (Electronics).
Mr. S. B. Dhivakaran — Dip. Com. Prog & D. P.
Miss. V. Muthukumar — Dip. Com. Prog.
Mr. N. Nitgunam — N. D. T. (Mech. Prod).
Mr. C. Subramaniam — E. C. E. (Lond) Part I,
Dip (Draughtsmanship).
Mr. S. Ayathurai — Dip (Draughtsmanship).

Mr. K. Sri Ranganathan	- Tech. Dip. (Electronics)
Mr. S. P. Raveendran	- Tech. Cert. (Welding).
Mr. P. Sritharan	- Tech. Cert. (Foundry)
Miss. M. Appadurai	- B. A. Madras
Mr. S. Nesarajan	- Tech. Dip. (M/C Practice) Dip (Welding, Radio & Electronics & Electrical Wiring).
Miss. R. Thambirajah	- N. D. T. (Civil).

Administration

Mr. K. Thambiayah	- Accountant
Mrs. R. Rajenthiram	- Typist
Mr. N. Sivayogasundaram	- Clerk
Mr. S. Devanathan	- Clerk of Works
Miss. S. Gunaratnam	- Typist
Miss. V. Muthukumar	- Typist

Library Service

Mr. J. Arulanandan	- Librarian
Mr. N. Satkunasivam	- Library Assistant
Miss. K. Kailayanathan	- Library Assistant

Auxiliary Services

Carpentry	- Mr. M. Ramasamy, Instructor
Masonry	- Mr. T. Rajalingam, Instructor

Minor Employees

Mr. Mathevar	M. Nagaratnam
M. Tharmakulasingam	

Games & Athletics

Mr. K. N. Y. Maurice — Sports Administrator

BADMINTON TEAM



Standing : (*L to R*) Miss. S. Mathivathani, Miss. T. Gayathiri, V. Visakanathan,
K. Jeyaratnam, S. Jeyaseelan, K. Jeyachandran, T. Vickneswaran,
Miss. N. Jeyanthi and Miss. M. Ahalya.

Seated : (*L to R*) Mr. S. P. Raveendran (Coach), Mr. K. N. Y. Maurice (Sports
Administrator), A. Ravindran (Captain), The Director,
Miss. Anna Nageswari (Captain), N. Vimalaranjithan (Sports Monitor)
and Mr. S. A. P. Thuraiatnam (Coach).

ВНЕШНИЙ ЛЕВ

LIST OF GRADUATES

Academic Year
1983-84

Academic Year
1984-85

Academic Year
1985-86

Technician Diploma in Electronics & Telecommunication Engineering

First Class

S. Skantharajah
P. E. Constantine

Nil

Nil

Second Class (Upper Division)

A. M. K. Pillay

A. Kugathasan

Nil

Second Class (Lower Division)

N. Senthilnathan
R. C. A. E. Selyamohan
M. Thevaraveendran

S. Mohanathasan
T. Thirumagan

Miss. R. Vasanthy

Pass

P. Parameswaran
T. Suthaharan
T. Vijayaraj
S. Selvendran
B. Sathiendran
P. Uthayakumar

T. Kondiah
K. Ambikabalan
T. Anpalagan
S. Vallapai Ganeshan
N. Ganesbathasan
K. Kandasamy
S. Soundaranathan
V. Suresh

V. Balachandran
V. Kannan
G. Ravibalan
Miss. A. Shanthavathany
S. Suthan
Miss. R. Anna Nageswar
P. Premakumar
N. Jeyantharajah
J. B. Mohanraj
G. Jeevahan
S. Nimal

Technician Diploma in Electrical Power Engineering

First Class

Nil

Nil

Nil

Second Class (Upper Division)

Nil

Nil

Nil

1983-84

1984-85

1985-86

Second Class (Lower Division)

T. Nagathas

P. Uthaiannathan

Nil

N. Ravishankar

K. Kirupannathan

Pass

S. Balasubramaniam

V. Srikanth

S. Sivayogan

R. Gnanendran

N. Vimalaranjithan

R. Santhirakumar

Technician Diploma in Mechanical Engineering

First Class

Nil

Nil

Nil

Second Class (Upper Division)

Nil

Nil

Nil

Second Class (Lower Division)

Nil

Nil

Nil

Pass

P. Jeyakumar

M. Raveendran

A. Ravindran

N. Kesavan

A. S. Suresh

K. Kanagaratnam

P. Subaskaran

Technician Diploma in Civil Engineering & Quantity Surveying

First Class

Nil

Second Class (Upper Division)

R. Mohan

R. Sivakumar

Second Class (Lower Division)

B. Sivanesan

1983—84	1984—85	1985—86
Pass		

G. D. Arulraj

Technician Diploma in Computer Programming & Data Processing

First Class

Miss. J. Ramani
Miss. M. Ahalya

Second Class (Upper Division)

T. Thasarathan

D. Manoharan

Second Class (Lower Division)

Miss. T. C. Jeyanthi
A. Janakumar
S. Sakthivel

Nil

Pass

M. Jeyandran

Miss. K. Kirijadevi
Miss. R. Ranjini

Technician Certificate in Air Conditioning & Refrigeration

Pass with Merit

Nil

Nil

S. Kugan

Pass

P. Jeyamohan
S. Jeyaparan
T. Manoharathasan
R. Nimalaratnam
S. Sivanesan

Nil

V. S. P. T. Prasath
T. Kukananthan
N. Thillairajah

Technician Certificate in Automobile Technology

Pass with Merit

Nil

Nil

S. Sriskantharasa

1983 - 84

1984 - 85

1985 - 86

Pass

Nil

Nil

M. A. Uthayaraj
J. A. Jeyakumaran
S. Kugathanan
M. Ragurajan
N. Sivanathan
T. Vignarajah
J. J. Andrew
S. J. Elmo

Craft Certificate in Electrical Installation Practice

Pass with Merit

K. Naganathan

Pass

F. X. Roger
G. Sukumaran
T. Sabesan
T. Sivakumar
V. Sukumar
A. Uruthrananthan
P. Kumaraguru

Craft Certificate in Machine Shop Practice (Turners & Fitters)

Pass with Merit

Nil

S. Raveindran
M. Karunainathan
T. Sivasubramaniam
A. Sivarajah

T. Sriravindran
S. Karunarajah

Pass

T. Abilakumaran
K. Balakumar
R. Mathivanan
N. Nirmalarajah
P. Rajiharan
N. Sashikaran
P. Sivakumar

A. Jegathasan
V. Baskaran
S. Premakumar

K. Vicknarajah
S. Gnanasekar
K. Jeevarasa
S. Kantharajah
A. Mahalingasivam
K. Subramaniasivam
V. Vignarajah

1983-84
Pass

V. Sivarajah
S. Sireetharan
K. Vijayakumar
N. Thavaneswaran
N. Theenathayalan

1984-85

1985-86

S. Anandalingam
K. Kunarajah

Craft Certificate in Foundry Practice

Pass with Merit

Nil

B. Ganeshan

Nil

Pass

R. Christy
Francis Felician
E. Kupenthiran
R. Somasekaran
R. Kodeeswaran

S. Balaskanthan
H. S. Devashanthan
S. Sivapalan

A. Sritharan

Craft Certificate in Welding Practice

Pass with Merit

Nil

S. Sivanesan

Nil

Pass

S. Dhivaharan
S. Gnanasekaran
R. P. Jeyakumar
S. Leninraj
N. N. Ranjan
K. Singarajah
S. Sriruban
N. Suthakaran
G. Thiruloganathan

V. Maheswaran
A. Murugananthan
S. Ragavan
T. Sutheswaran

T. Sivasubramaniam
A. Thavaseelan
P. R. Innasithamby
A. Jogatarzan

Craft Certificate in Advanced Welding Practice

Pass with Merit

Nil

1983-84

1984-85

1985-86

Pass

K. Singarajah
S. Sriruban
N. Suthaharan

Professional Engineering - Part I

First Class

C. Vasudevan Nil

Second Class (Upper Division)

Nil S. Manokaran

Second Class (Lower Division)

Nil Nil

Pass

V. R. Chandrakumara S. Mahendran
J. A. D. Jegatheesan S. Sathananthan
K. Kanagaratnam
Miss. J. Kanagaratnam
S. Kalaraj
R. Suresan
S. Sriharan
Miss. V. Seevaratnam
P. V. Yogarajah
R. Muthukumaran

* * *

STUDENTS' UNION
EXECUTIVE COMMITTEE — 1986/87

<i>President</i>	: K. S. Jeyaseelan
<i>Vice President</i>	: R. Regenalld Terrence
<i>Secretary</i>	: N. Gajendran
<i>Asst. Secretary</i>	: P. Anura
<i>Treasurer</i>	: S. Sathiyaseelan
<i>Editor</i>	: B. Jeyaseelan
<i>Sports Monitor</i>	: N. Thivakaran
<i>Asst. Sports Monitor</i>	: T. Vickneswaran
<i>Fine Arts Secretary</i>	: K. A. V. Thurairajasingam

STUDENTS' UNION
EXECUTIVE COMMITTEE - 1986/87

* K. S. Jeyaseelan

Printed at
Bastian Press

402, Main Street, Jaffna,
(Sri Lanka)

Treasurer : S. Sathiyaseelan

Editor : B. Jeyaseelan

Sports Monitor : N. Thirukaran

Asst Sports Monitor : T. Vickneswaran

Print Asst Secretary : K. A. V. Thirunavukarasu



Printed at
Bastian Press
402, Main Street, Jaffna,
(Sri Lanka)